Inflation Targets – What Factors Can Help to Explain Their Levels

Joanna Niedźwiedzińska *

Abstract

Inflation targeting is nowadays used by around 40 countries, with each of them tailoring some features of the strategy to its own needs. This holds especially for deciding on the level of inflation targets. The analysis conducted in the paper aims at identifying factors affecting the choice of the target levels, with macroeconomic, structural and institutional characteristics of the reviewed economies being investigated. The main conclusion is that both backward- and forward-looking models can help to explain how inflation targets are set. Evidently inflation and GDP growth (past and forecast) together with information on a possibly ongoing disinflation process are of key importance, but – especially for emerging market economies – also inflation variance and the level of economic development seem to influence the target levels. Moreover, many of the institutional features related, among others, to transparency and accountability of the reviewed central banks, were found significant in the analysis.

Keywords: monetary policy, central banking, policy design

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*National Bank of Poland; e-mail: joanna.niedzwiedzinska@nbp.pl; ORCID: 0000-0002-4835-8904

1 Introduction

Inflation targeting (IT) is nowadays used by around 40 countries in the world. This makes IT one of the most popular monetary policy frameworks, that is used by a relatively heterogeneous group of countries (Ciżkowicz-Pękała et al., 2019). Although there is a broad consensus that the key elements of an IT strategy include acknowledging price stability as the primary goal of monetary policy, a public announcement of a numerical target for inflation, formulating monetary policy on the basis of a very broad set of information, and applying high transparency and accountability standards to central banks' policies, each inflation targeter may tailor some features of the strategy to its own needs (Mishkin, 2001; Svensson, 2008). This holds especially for deciding on the level of an inflation target itself.

Almost by definition IT puts a lot of emphasis on the publicly announced target level, as a way to influence inflation expectations (Bernanke and Mishkin, 1997). The choice of the target level is crucial for the anchoring effect, because it should be regarded as credible by the public. When deciding on the target level, authorities also need to take into account a number of theoretical and practical arguments speaking in favour of a low, but not excessively low, level of preferred inflation (Fisher, 1994; Mishkin and Schmidt-Hebbel, 2002). The target should be low enough to preserve the value of money and mitigate distortions caused to the economy by elevated inflation, but also high enough to allow for adjustments amidst downward nominal rigidities and to limit the risk of hitting an effective lower bound for nominal interest rates (Blanchard et al. 2010; Ball, 2014). Also the level of economic development may play a role in deciding on the appropriate level of the target due to possible Balassa-Samuelson effects (Balassa, 1964; Samuelson, 1964).

Looking at the levels of inflation targets used by IT central banks, it is clear that they are not homogenous (Niedźwiedzińska, 2018). At present, if one considers targets' midpoints, they range from 2% in a number of advanced economies, to 8% in Ghana. Two noticeable points are that advanced economies tend to have lower inflation targets than emerging market economies, and that despite a significant dispersion all IT central banks aim at stabilising price growth at some positive levels. The evolution of inflation targets shows that they are rather stable, which is understandable taking into account the main aim of their introduction, namely to serve as nominal anchors. However, inflation targets have also been revised from time to time – both in advanced as well as in emerging market economies. In a number of cases this can be explained by the ongoing disinflation process, but at times the targets were also revised upwards.

As already noted, a level of the target is of key importance for the success of an inflation targeting framework. Despite this, there is not much empirical research investigating the topic what factors are influencing decisions on the announced target levels. It seems that, so far, the only analysis of how inflation targets are set was done in the paper of Horváth and Matějů (2011). The authors used information gathered from a questionnaire of their own design and reviewed official publications

of IT central banks and governments in 19 countries to see what factors drove the choices of inflation targets. They also estimated models explaining determinants of the target levels in their sample of countries using unbalanced panel interval regressions. They found that both macroeconomic and structural factors (such as a level and variability of inflation, a rate of economic growth and global inflation), as well as institutional features (such as central bank's credibility) were influencing levels of inflation targets. Moreover, their results showed that authorities tended to select a wider range for targeted inflation when the macroeconomic environment was less stable. To the author's knowledge, since the research of Horváth and Matějů (2011) no other paper dealt with these issues.

The analysis conducted in this study also aims at identifying factors affecting the choices of the target levels, but several important extensions are proposed.

First, whereas again macroeconomic, structural and institutional characteristics of the reviewed economies are considered, many more potentially significant variables are investigated. The set of macroeconomic variables – apart from backward-looking variables related, for example, to inflation and GDP growth – includes also forward-looking variables, such as forecast inflation and forecast GDP growth. Adding a forward-looking perspective offers a possibly more realistic view on how the inflation targets are selected. Structural indicators linked, for example, to the level of economic development, are examined as well, with several variables being considered in capturing more fundamental characterises of the economies. Moving to the institutional features, a number of indicators are proposed that are constructed by the author based on a detailed review of IT central banks' institutional arrangements. The review encompassed collecting and coding information on rules and practices affecting such aspects of central banks' policies as, for example, independence, transparency and accountability, as a way to account for central banks' credibility. Overall, for each of the 41 analysed monetary authorities around 60 issues were identified as important for investigating central banks' institutional set-ups, and were looked at from the date of an IT adoption by a given monetary authority, until 2017. This resulted in creating a unique database of around 35 000 pieces of information that could be used to build indices describing institutional arrangements governing central banks. Although all information is publicly available, it was necessary to visit each central banks' website separately to gather it in a usable format.

Second, the contribution of the paper is that it analyses experiences of 41 inflation targeters with setting their inflation targets – in each country since the IT adoption by a given monetary authority. The empirical study encompasses the period ending in 2017. Consequently, the sample size is already quite big and the coverage of countries and time quite broad. In fact, the study covers virtually all inflation targeters and over the whole history of applying an IT framework.

Third, as opposed to Horváth and Matějů (2011) who used model specifications with random effects, in this paper panel regressions with fixed effects are employed. Such a choice follows from the indications of the Hausman tests and seems justified by

the issue of interest. A major advantage of such an approach is that time-invariant country characteristics should not blur the results. A possible drawback could be that it is more difficult to obtain statistically significant results with fixed effects compared to random effects models. This, however, turns out not to be the case, and adjusted R^2 is in many instances even higher than in Horváth and Matějů (2011).

The paper is structured as follows. After the introduction, the second section reviews theoretical literature dealing with selected aspects affecting preferable levels of inflation. The main findings from analysing central banks' actual choices of inflation targets are described in the third section, while the fourth section presents data and methodology used to investigate determinants of the target levels. The results of empirical models together with some robustness checks are discussed in the fifth section. The final section concludes the paper. List of inflation targeting countries, description of data sources, and details on the construction of institutional indicators used in the analysis can be found in appendices.

2   Some theory behind inflation targets

In general, price stability is desirable, as high and volatile inflation is associated with costs (Fisher, 1994; Mishkin and Schmidt-Hebbel, 2002). Inflation introduces uncertainty and may provide misleading signals if price changes are wrongly interpreted as reflecting movements in demand (Lucas,1973). As contracts are typically specified in nominal terms, by affecting the real value of assets and liabilities, high inflation means shifting wealth from creditors to debtors, whereby its elevated volatility makes avoiding these redistribution effects more difficult. Amidst staggered price adjustments and downward nominal rigidities, high and volatile inflation may also lead to misallocation of resources, due to its potentially negative influence on expected profits and labour markets. Lastly, higher inflation increases the real value of tax obligations and raises costs of holding liquid assets, such as cash (Bofinger, 2001).

At the same time, too low inflation may be challenging as well (Blanchard et al. 2010; Ball, 2014). Traditionally, the main argument behind that claim was related to the "grease-the-wheels" story. With downward rigidity of nominal wages, positive price growth enables real wage "cuts" without lowering nominal wages, potentially improving labour market efficiency (Tobin, 1972). While this is still a valid point, currently more emphasis is put on an effective lower bound (the so-called Zero Lower Bound – ZLB, which in practice for a number of central banks turned out to be not exactly at zero, but in slightly negative territory). With lower targeted inflation, the risk that a central bank will face a limit for reducing its policy rate if the economy is hit by a major shock increases. In order to stimulate demand monetary authorities may be therefore forced to use non-standard measures whose effectiveness and costs are not always easy to assess (Bank of Canada, 2011). Another reason for choosing a

somewhat higher desired level of inflation is the possible existence of a measurement bias (due to the difficulty to compute price changes adjusted for quality improvements and substitution among products), meaning that inflation may in fact be lower than indicated by official data (Yates, 1995; Mayes and Chapple, 1995). Moreover, central banks in emerging market economies should also take into account the consequences of catching-up processes for domestic price developments. In particular, Balassa-Samuelson effects – if they affect price changes – would speak in favour of higher inflation targets in that group of countries (Balassa, 1964; Samuelson, 1964).

Within an inflation targeting framework the aim of announcing a numerical target for inflation is to provide a clear nominal anchor for inflation expectations. The use of inflation – a variable which is commonly known, frequently measured and well understood – should strengthen the anchoring effect (Bernanke and Mishkin, 1997). At the same time, the anchoring effect heavily depends on the credibility of the announced target. If economic agents do not believe that the central bank can indeed deliver its goal, they will not adjust their expectations in line with the target. For that reason, of key significance is the level of the target. This is true for countries that aim at stabilising inflation at a given level, but – even more so – for countries that aim first at completing a disinflation process before moving to stabilising inflation.

Regarding an inflation stabilising motive, the above arguments for a low, but not too low, level of targeted inflation should be taken into account. On the one hand, the target should allow for preserving the value of money and mitigate distortions caused to the economy by changing prices – which supports possibly low targets. On the other hand, the target should provide room for adjustments amidst downward nominal rigidities and possibly limit the risk of hitting a ZLB – which supports somehow higher targets.

Regarding a disinflation motive, announcing a credible disinflation path is crucial for the success of the disinflation process. On the one hand, the path should allow for delivering price stability in a not too distant future in order to lower inflation expectations – which supports possibly ambitiously declining targets. On the other hand, the path should be manageable, so that monetary policy measures have time to transmit into the economy, best without creating too many distortions by causing, for example, recessions – which supports less ambitiously declining targets.

3   Inflation targets in practice

Moving to central banks' practise, it is useful to look at different economies, as IT countries are not a homogenous group. In this section 41 inflation targeters are taken into account, identified based on information from central banks' websites cross-checked with an overview of monetary policy frameworks published by the IMF (IMF, 2018, pp. 6-8).

Figure 1: Initial target levels at the time of adopting an IT strategy in IT advanced and emerging market economies

Figure 2: Changes in inflation target levels in IT advanced and emerging market economies

Source: Compilation based on information from central banks' websites.
Notes: Target level in the case of point targets is the value of the point target and in the case of target bands – the midpoint of the band. In the case of economies where the target is specified as "below $x\%$" it is assumed that the target is $x\%$. Initial target level is the target announced when an IT strategy was adopted. Current target level refers to inflation targets for 2018.

When comparing the evolution of the inflation target levels (understood as point targets for point targets – irrespective whether they have explicitly indicated tolerance bands or not, and midpoints of target bands – irrespective whether they have explicitly indicated midpoints or not), there are several points worth emphasising.

First, over the years, there has been a visible decline of the target levels across countries (Figure 2). Within advanced economies, an exception to this trend could be observed in New Zealand, which raised its target from the initial level of 0-2% set in 1990, first to 0-3% (in 1996), and later to 1-3% (in 2002). In emerging market economies upward revisions of the targets were more frequent, although they were still relatively rare and rather of a transitory nature. In two countries they were accompanying changes of the targeted inflation measures (from core inflation to headline inflation), whereas in most cases upward revisions of the targets were the result of too optimistic disinflation paths envisaged by the authorities. With the view to restore credibility of the targets, they were raised for some time, before the authorities could return to a gradual decrease of targeted inflation. Thus, despite these transitory upward revisions, also in emerging market economies the trend to lower inflation targets is notable.

Second, the choices of the analysed central banks confirm that there are, however, limits to how low inflation targets should be in order not to create too much risks. Currently, all inflation targeters officially aim at keeping the average price growth at a slightly positive level (only in Switzerland, where the target is defined as "less than 2%", it is not clear if 0% inflation should be considered consistent with the target).

Third, also the dispersion of the target levels has decreased visibly over time for both groups of economies, but much more significantly for advanced economies (Figure 3; Figure 4). Nowadays, 12 advanced economies use around a 2% target, and 2 countries (Australia and Iceland) use slightly higher targets of around 2.5%. Within emerging market economies, most frequently used targets are around 3% targets (used by 8 countries from that group) and around 4% targets (adopted by 6 countries). The dispersion of the target levels in emerging market economies is, however, relatively high. It ranges from around a 2% target in Peru to around an 8% target in Ghana. The reason for this is that there are many more newcomers in that group of countries, which introduce an IT strategy first to finalise a disinflation process (Figure 1).

Fourth, despite a general decline, still advanced economies tend to have lower target levels than emerging market economies (Figure 2). This holds independently whether one looks at the initial target levels (with an average for advanced economies at 3.6%, and an average for emerging market economies at 5.7%), or at the current target levels (with an average for advanced economies at 2.1%, and an average for emerging market economies at 3.9%).

Higher target levels in emerging market economies may be related to lower levels of their economic development and acknowledging the possible Balassa-Samuelson effects. This point may be of particular importance, due to still growing popularity of an IT framework among emerging market economies, with many of them being

Figure 3: Dispersion in inflation target levels in IT advanced economies
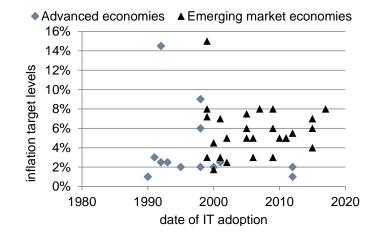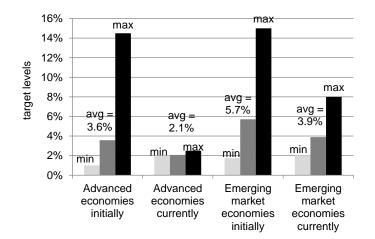

Figure 4: Dispersion in inflation target levels in IT emerging market economies

Source: Compilation based on information from central banks' websites.
Notes: See notes to Figure 1 and Figure 2.

less developed countries that had not yet finalised a disinflation process. Therefore, including newcomers, almost by definition increases the average level of inflation targets in that group of countries.
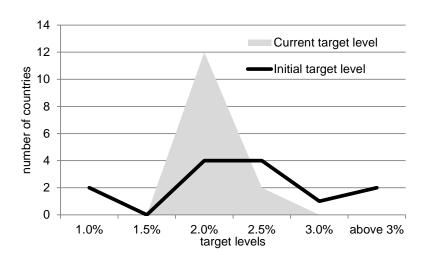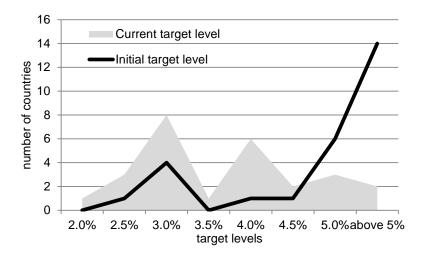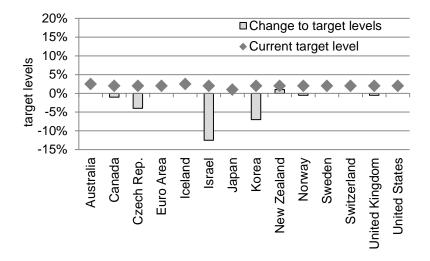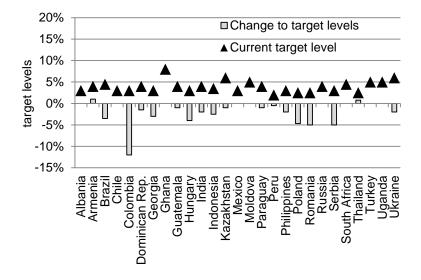
Figure 5: Changes to inflation target levels in IT advanced economies

Figure 6: Changes to inflation target levels in IT emerging market economies

Source: Compilation based on information from central banks' websites.
Notes: See notes to Figure 1 and Figure 2.

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At the same time, it should be noted that in some emerging market economies the target levels are already comparable with those of advanced economies (Figure 5; Figure 6). This is the case, in particular, in Peru (with a target of 2% ± 1 pp.), Poland and Romania (with targets of 2.5% ± 1 pp.) and Thailand (with a target of 2.5% ± 1.5 pp.).

Fifth, while this is still more typical for emerging market economies, also some advanced economies adopted an IT strategy as the final stage of a disinflation process. Assuming that disinflation can be understood as lowering targeted inflation from a relatively high level to below 6% (the threshold of 6% is somewhat arbitrary, but given the fact that many emerging market economies have around 4-5% targets, it seems reasonable), this has been the case in 14 inflation targeters – 2 advanced economies (Israel, Korea), and 12 emerging market economies (Brazil, Colombia, the Czech Republic – which until 2009 were classified by the IMF as an emerging market economy, Georgia, Ghana, Hungary, Indonesia, Kazakhstan, Poland, Romania, Serbia and Ukraine). With the exception of Ghana, which for many years now has been trying to bring inflation down, and Kazakhstan and Ukraine, where the central banks adopted an IT strategy only in 2015-2017, judging by the declining inflation targets all the other countries managed to sustainably lower their inflation within an IT framework (Table 1).

Regarding disinflation, several observation are worth making. The initial target levels used for completing disinflation processes ranged from around 15% in Colombia and Israel, to around 6% in the Czech Republic, Georgia and Indonesia (with an average of 8.4%). The phase of lowering inflation took between 1 year in the Czech Republic, Hungary, Korea and Romania, up to 7 years in Israel (with an average of 3.1 years). Looking at subsequent changes to the target levels, the average desired pace of a disinflation process was 1.8 pp. per year.

Finally, as inflation targeting emerged as an attempt to address specific problems faced by some central banks in the 1980s, it has been evolving over time, as new countries adopting IT tried to adjust it to their own needs. Experimenting affected also formulations of the targets and for that reason modifications of the targets were not rare (Niedźwiedzińska, 2018).

Only 6 countries have never reformulated their inflation targets (4 advanced economies – the euro area, Japan, Switzerland and the United States, and 2 emerging market economies – Mexico and Uganda). Having said that, in 2003 the ECB changed the wording of its definition of price stability from "below 2%" to "below, but close to, 2%", claiming, however, that this was not a change of the target, but its clarification. Also Japan, when setting a numerical value for targeted inflation in 2012, announced a price stability goal in the medium to long term at a positive range of 2% or lower, and a goal at 1% "for the time being", but already in 2013 a price stability target was simply defined as annual inflation at 2%. This was not treated as changing the target, because from the very beginning the 2% goal was envisaged.

Table 1: Disinflation processes within an IT framework in advanced and emerging market economies

	Start year	End year	Start level	End level	Decrease per year
Israel	1992	1999	14.5%	4.0%	1.5 pp. per year
Korea	1998	1999	9.0%	3.0%	6 pp. per year
Brazil	1999	2004	8.0%	5.5%	0.5 pp. per year
Colombia	1999	2003	15.0%	5.5%	2.4 pp. per year
Czech Rep.*	1998	1999	6.0%	4.5%	1.5 pp. per year
Georgia	2009	2015	6.0%	5.0%	0.2 pp. per year
Ghana	2007	ongoing	8.0%	?	?
Hungary	2001	2002	7.0%	4.5%	2.5 pp. per year
Indonesia	2005	2008	6.0%	5.0%	0.3 pp. per year
Kazakhstan	2016	exp.2019	7.0%	5.0%	exp. 0.7 pp. per year
Poland	1999	2002	7.2%	3.0%	1.4 pp. per year
Romania	2005	2006	7.5%	5.0%	2.5 pp. per year
Serbia	2009	2011	8.0%	4.5%	1.8 pp. per year
Ukraine	2017	exp.2019	8.0%	5.0%	exp. 1.5 pp. per year

Source: Compilation based on information from central banks' websites.
Notes: The upper panel in the table refers to advanced economies. The lower panel in the table refers to emerging market economies. For Ghana the disinflation process still continues and no information is available what level of inflation should be maintained in the longer term which is indicated by the question mark (?). For Kazakhstan and Ukraine disinflation processes have stared only recently and information included in the table corresponds to the announced disinflation paths (indicated by the term "exp."). *In the Czech Republic between 1998 and 2001 the target referred to CPI inflation adjusted for regulated prices and for the effects of administrative measures (e.g. indirect tax increases, subsidy cancellations).

All the other inflation targeters have changed either the level of their targets, their type (choosing from a point target/a point target with tolerance bands/a band target/a band target with a midpoint), time horizon (choosing from an end-year target/a continuous target), or the inflation indicator to which the target referred to (choosing from headline inflation/core inflation).

Considering the focus of the paper, i.e. changes to the target levels, they proved to be, by far, the most often changed feature of inflation targets. The target levels have been changed on 118 occasions – 32 in advanced economies (in 8 inflation targeters) and 86 in emerging market economies (in 21 inflation targeters). The reason for emerging market economies being more eager to change their target levels can be, to a great extent, explained by the already mentioned disinflation processes that were more typical for emerging market economies.

4 Data and empirical methodology

The empirical analysis is based on a panel data set covering both advanced and emerging market economy inflation targeters. In the baseline estimations almost all inflation targeters, as of 2018, are included, with the exception of countries that adopted an IT framework less than 5 years prior to 2018. This means that 37 economies are considered.

Since different countries adopted an IT strategy in different years (beginning with New Zealand in 1990), they are included in the analysis starting at different points in time, and thus the panel is unbalanced (see Appendix A). The time series used are of annual frequency, as – apart from rare cases when targets were revised during a given year (such a situation took place in Brazil, Indonesia, Poland and Turkey) – inflation targets are set for a minimum period of one year (for example, in Colombia, Poland and the United Kingdom). In fact, very often targets are valid for several years (for example, in Canada, Iceland and Turkey), or are permanent (for example, in Chile, Norway and South Africa). The period studied ends in 2017.

The dependent variable – the level of the inflation target, is defined as a midpoint of the inflation target set in a given country for a given year. More specifically, for countries using point targets with tolerance bands (21 analysed economies), or point targets without tolerance bands (10 analysed economies, with targets specified as "below $x\%$" included in that category as well), a point target is considered, while for countries using band targets with midpoints (2 analysed economies), or band targets without midpoints (4 analysed economies), a midpoint of the band is considered.

A selection of explanatory variables follows from theoretical arguments and central banks' practices (see Appendix B). It includes macroeconomic, structural and institutional indicators.

Macroeconomic indicators encompass both backward- and forward-looking variables related to the current economic conditions of a given country and its environment (such as inflation, inflation deviations from the inflation target, GDP growth, forecast inflation, forecast GDP growth, global inflation). Importantly, adding a forward-looking perspective is a significant extension to the existing research and offers a possibly more realistic view on how the inflation targets are set.

Two issues related to the basic macroeconomic indicators are worth commenting in the context of the research question. First, given the fact that inflation and GDP growth should have more bearing on the choice of the inflation target at the initial stage of pursuing an IT strategy by a central bank, these indicators (both past and forecast) are weighted with diminishing weights. For the first 3 years after adopting an IT framework, inflation and GDP indicators are taken at their face value, whereas later on diminishing weights are applied to those data (see Appendix B). Such a procedure should take into account the fact that for mature inflation targeters these variables should be of less importance, assuming gathering some credibility from following an IT regime. Second, regarding inflation deviations from the target, these should not necessarily be treated the same independently of the target type selected by a given

monetary authority. As already noted, inflation targets may be specified in various ways, suggesting different tolerance for more pronounced deviations from the target midpoint. For that reason, apart from a simple measure of inflation deviations from the target midpoint, also a measure of major deviations is constructed. For point targets, the indicator of major deviations is the same as the simple measure, but in the case of point targets with tolerance bands it considers only deviations that are greater than half of the width of a tolerance band, and in the case of band targets (with or without midpoint) it considers only deviation beyond the band limits (see Appendix B).

Apart from macroeconomic indicators, structural indicators are investigated as well. These are understood as characteristics of an economy that are not of a short-term nature and change only very gradually (such as the level of economic development measured with various indicators, an ongoing disinflation process, volatility of inflation, degree of trade openness). Overall, as inflation targets should be rather stable over time, structural factors may have a stronger role to play than indicators related to the state of the economy, but both may matter for the process of setting inflation targets.

On top of that, institutional indicators are added that describe such aspects of central banks' policies as: how experienced a country has been with following an IT strategy, how much independence has been granted to a monetary authority, how well informed decision-makers are when discussing monetary policy, how transparent a decision-making process is at a central bank, how transparent overall a monetary authority is in pursuing IT, how high accountability standards are in a central bank (see Appendix C). All of these indices should help to assess credibility of a monetary authority, which is captured by a summary index being the average of all the listed individual indices. The construction of institutional indicators is based on a similar approach as developed and used in, among others, Cukierman et al. (1993), Eijffinger and Geraats (2006) and Warsh (2014), but adjusted for the fact that the sample includes inflation targeters only. With the exception of one index (related to independence), all indices have a time series dimension, reflecting changes introduced to central banks' policies over the years. While institutional features do not change quickly, they do evolve, which may influence the process of inflation target setting.

The set of institutional features is quite broad since it comprises of six individual indicators plus a summary index, all of which are constructed by the author following a detailed review of IT central banks' institutional arrangements. The review encompasses collecting and coding information on rules and practices related to around 60 issues of interest in each of the 41 analysed monetary authorities from the date of the IT adoption by a given central bank, until 2017. All information is publicly available, but to gather it each central bank's website had to be separately investigated, and numerous documents – often archive ones – had to be analysed. As a result, a unique and rich database of around 35 000 pieces of information has been created that allowed to study a broad range of institutional dimensions related to

monetary policy of inflation targeters.

All explanatory variables are lagged in order to mitigate problems related to potential endogeneity issues. This is also in line with the fact that inflation targets are set with at least a few months notice. Thus, in particular, considering macroeconomic variables, it can be safely assumed that the authorities do not know data for a given year while deciding on the inflation target for that year. As already noted, in some cases the targets are set several years in advance, which is especially the case for permanent targets. However, as showed in Horváth and Matějů (2011), controlling for the exact timing should not influence the results too strongly.

Almost all data were taken from the IMF, with the exception of global inflation which was approximated by OECD inflation, and information on inflation targets which was collected from central banks' websites (see Appendix B). Indices used to analyse institutional set-ups of conducting monetary policy in a given central bank were constructed based on publicly available information by the author.

The baseline empirical model used in the study is a panel regression of the following form:

$$y_{i,t} = \alpha_i + \beta X_{i,t-k} + \varepsilon_{i,t}, \tag{1}$$

where $i = 1, \ldots, N$ corresponds to individual countries included in the analysis, $t = 1, \ldots, T$ corresponds to a time dimension of the panel, and k corresponds to the number of lags included in the model. y is the dependent variable, which is the level of inflation target set for a given economy (i) for a given year (t). X is a matrix of explanatory variables that are likely to influence the dependent variable, taking into account also possible lags (k). ε is an error term and α and β are vectors of parameters to be estimated.

Considering the results of Hausman tests, which for the majority of specifications indicated that random effect estimators are biased, fixed effects models were used. Since these models cannot be estimated when the set of explanatory variables includes constants for a given central bank, the index related to independence could not be taken into account as a regressor. However, as being part of the summary index, it indirectly was considered in the analysis.

Regarding estimation method, fixed effects regression models with Driscoll and Kraay standard errors were employed that produce robust standard errors for panel regressions with cross-sectional dependence. Taking into account the sample size (i.e. around 550 observations for the full sample and around 250-300 observations for any of the subsamples) the lack of normality of residuals, which proved to be the case, was not considered a major issue.

5 Results and robustness check

As a starting point for the analysis, two basic model specifications were estimated for all the reviewed 37 IT countries, namely – a backward-looking model and a forward-looking model (Table 2, Table 3). Given these basic specifications, additional variables

related to macroeconomic conditions, structural characteristics and institutional features were tested for their significance (all lagged). As the final step, following the general-to-specific procedure based on the full set of potential explanatory variables (all lagged), the concluding specification was reported that included all relevant indicators and was to describe the data generating process to the extent possible. The main findings are as follows.

The main backward-looking specification was based on inflation (lagged one period and weighted with diminishing weights) and GDP growth (lagged one period and weighted with diminishing weights) that were supplemented with a dummy variable indicating whether a country was still in a disinflation process.

The main forward-looking specification was based on forecast inflation for one year ahead (lagged one period and weighted with diminishing weights), forecast GDP growth for one year ahead (lagged one period and weighted with diminishing weights) and again a dummy variable indicating whether a country was still in a disinflation process.

In both specifications higher inflation (past and forecast) was associated with higher inflation targets, whereas coefficients related to GDP growth (past and forecast) were negative – though, in backward-looking specifications, the coefficient related to past GDP growth was insignificantly different from zero. Not surprisingly, the fact that a country was still in a disinflation process significantly pushed inflation targets up. Forward-looking model fitted the data slightly better, but overall both specifications seemed to explain inflation target setting to a similar extent.

In the backward-looking specifications, out of the considered additional macroeconomic and structural indicators, only inflation variance seemed to significantly influence the levels of inflation targets. While the coefficient was only mildly negative, it suggested that higher past inflation variance implied lower target. This outcome is somewhat counterintuitive, but possibly the disinflation dummy is capturing most of the effects associated with periods of the highest inflation volatility. Another explanation may be that countries with low inflation targets do not regard even quite sizeable inflation volatility around the target as a threat to their credibility, and thus, apply fully flexible inflation targeting. The remaining macroeconomic and structural indicators had no material impact on the dependent variable.

In the backward-looking specifications, out of 6 considered institutional features, 3 indices were of significance, namely these related to how mature an IT strategy was in a given country, how transparent a central bank was, as well as the overall index summarising all IT institutional features. Each of them had a negative impact on the levels of inflation targets. This would support a claim that investing in enhancing central banks' institutional set-ups allows for lower inflation targets.

The general-to-specific approach resulted in a specification encompassing inflation and a disinflation dummy (with both of those variables having a positive impact on inflation targets), as well as two institutional indicators describing how mature an IT strategy was and how well informed a decision-making process was (with the first

indicator implying a negative effect and the latter suggesting a positive impact).

In the forward-looking specifications, out of the considered additional macroeconomic and structural indicators, only inflation variance and GDP per capita turned out to be significant. The signs of the coefficients were negative – i.e. higher inflation variance and higher level of economic development implied lower target. For GDP per capita, negative relationships with the dependent variable seemed to confirm that more developed economies tend to set lower inflation targets.

In the forward-looking specifications, out of the considered institutional features, a somewhat higher fraction of indices was significant compared to the backward-looking versions of the model. 5 out of 6 indices were of importance, namely these related to how mature an IT strategy was in a given country, how transparent a decision-making process was, how transparent and accountable a central bank was, and the overall index summarising all IT institutional features. Each of them had a negative impact on the levels of inflation targets.

Considering the indications of the general-to-specific approach, the concluding forward-looking specification included forecasts inflation, forecasts GDP growth, a disinflation dummy and inflation variance (with inflation and a disinflation dummy positively effecting inflation targets, while GDP growth and inflation variance negatively impacting them), together with the two institutional indicators that proved significant also in the backward-looking concluding model, i.e. indicator on how mature an IT strategy was and how well informed a decision-making process was (the signs of the coefficients were the same as in the backward-looking concluding model).

In none of the specifications past inflation deviations from the target turned out to be visibly affecting the target levels. This held irrespective whether the deviations were measured in a simplified way or whether they were more accurately accounting for possibly different degree of tolerance for major deviations by respective central banks that could be implied by their choice of the target type (see Appendix B). Likewise, such structural variables as PPP level, trade to GDP ratio or OECD inflation proved to be insignificant. Even when interaction terms of these indicators with an emerging market economy dummy were used, they were largely found obsolete.

As the analysed sample of countries is rather heterogeneous, the next step was to estimate models separately for advanced economies and separately for emerging market economies (Table 4, Table 5, Table 6, Table 7). Looking at the estimation results the following points can be made.

Models estimated separately for the two subsamples indicate that from the considered set of variables the main factors influencing the levels of inflation targets remain to be inflation (past and forecast – lagged one period and weighted with diminishing weights), GDP growth (past and forecast – lagged one period and weighted with diminishing weights), and a dummy variable indicating whether a country was in a disinflation process. The signs of the estimated coefficients were in line with the signs of the coefficients for the full sample estimations (though, in the case of advanced

Table 2: Estimation results – backward-looking models based on a sample of countries pursuing IT for at least 5 years (37 countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CPI_avg_diminishing_ after_3y_lag_1	0.16 *** (4.52)	0.14 *** (3.98)	0.13 *** (3.75)	0.17 *** (4.75)	0.16 *** (4.50)	0.16 *** (4.06)	0.16 *** (4.03)	0.17 *** (4.48)
GDP_rate_diminishing_ after_3y_lag_1	−0.00 (−0.60)	−0.00 (−1.38)	−0.00 (−1.38)	−0.00 (−1.09)	−0.00 (−0.57)	−0.00 (−0.43)	0.00 (0.10)	−0.00 (−1.38)
Disinflation	3.23 *** (6.60)	2.93 *** (4.98)	3.13 *** (4.79)	3.30 *** (6.45)	3.21 *** (6.00)	3.26 *** (6.49)	3.31 *** (6.63)	3.18 *** (6.56)
CPI_avg_deviation_ from_target_lag_1		−0.01 (−0.50)						
CPI_avg_major_deviation_ from_target_lag_1			−0.01 (−0.51)					
CPI_var_3y_lag_1				−0.02. (−1.87)				
PPP_lag_1					−0.00 (−0.29)			
GDP_PPP_per_capita_ lag_1						−0.00 (−0.32)		
Fin_develop_lag_1							0.04 (0.06)	
Trade_GDP_ratio_lag_1								−0.00 (−0.45)
No. of observations	586	549	548	586	586	575	512	572
N	37	37	37	37	37	37	37	37
T	6-28	5-27	5-27	6-28	6-28	4-28	4-26	6-27
R-Squared	0.61	0.52	0.54	0.62	0.61	0.61	0.62	0.62
Adj. R-Squared	0.58	0.48	0.50	0.59	0.58	0.58	0.58	0.59
Hausman Test - chisq	28.11	141.07	169.58	188.36	36.79	2.06	2.83	38.14
df	3	4	4	4	4	4	4	4
p-value	0.00	0.00	0.00	0.00	0.00	0.72	0.59	0.00

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

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Table 2 (cont.): Estimation results – backward-looking models based on a sample of countries pursuing IT for at least 5 years (37 countries)

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CPI_avg_diminishing_after_3y_lag_1	0.16 *** (3.88)	0.10 * (2.40)	0.13 *** (3.43)	0.13 *** (3.38)	0.13 *** (3.30)	0.13 *** (3.39)	0.12 ** (2.96)	0.10 * (2.50)
GDP_rate_diminishing_after_3y_lag_1	−0.00 (−0.59)	−0.00 (0.53)	−1.3e−03. (−1.57)	−0.00 (−1.46)	−0.00 (−1.31)	−0.00 (−1.39)	−0.00 (−0.86)	
Disinflation	3.23 *** (6.65)	2.70 *** (5.44)	2.95 *** (5.05)	2.94 *** (5.02)	2.94 *** (5.04)	2.95 *** (5.06)	2.91 *** (5.02)	2.66 *** (5.87)
OECD_inf_lag_1	0.01 (0.21)							
Mature_IT_lag_1		−0.21 *** (−6.19)						−2.28 *** (−7.62)
Informed_IT_lag_1			0.01 (0.27)					0.16 *** (3.75)
Explicatory_IT_lag_1				−0.05 (−0.98)				
Transparent_IT_lag_1					−0.04. (−1.72)			
Accountable_IT_lag_1						−0.07 (−0.94)		
Fully_fledged_IT_lag_1							−0.15 * (−2.49)	
No. of observations	586	549	549	549	549	549	549	549
N	37	37	37	37	37	37	37	37
T	6-28	5-27	5-27	5-27	5-27	5-27	5-27	5-27
R-Squared	0.61	0.56	0.52	0.52	0.52	0.52	0.52	0.57
Adj. R-Squared	0.58	0.52	0.48	0.48	0.48	0.48	0.49	0.54
Hausman Test - chisq	173.63	69.06	36.09	241.31	148.53	98.26	32737	192.24
df	4	4	4	4	4	4	4	4
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

Table 3: Estimation results – forward-looking models based on a sample of countries pursuing IT for at least 5 years (37 countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CPI_plus_y1 diminishing_after_3y_lag_1	0.32 *** (4.84)	0.26 ** (3.27)	0.25 ** (3.24)	0.33 *** (5.10)	0.32 *** (4.84)	0.32 *** (4.71)	0.31 *** (4.75)	0.33 *** (4.70)
GDP_plus_y1 diminishing_after_3y_lag_1	−0.22 ** (−3.12)	−0.16 * (−2.12)	−0.15 * (−2.16)	−0.22 ** (−3.09)	−0.22 ** (−3.14)	−0.24 *** (−3.38)	−0.22 ** (−3.25)	−0.23 ** (−3.07)
Disinflation	3.10 *** (6.36)	2.85 *** (4.76)	3.07 *** (4.55)	3.16 *** (6.30)	3.08 *** (5.87)	3.11 *** (6.38)	3.16 *** (6.43)	3.07 *** (6.29)
CPI_avg_deviation from_target_lag_1		0.01 (0.31)						
CPI_avg_major deviation_from_target_lag_1			0.00 (0.10)					
CPI_var_3y_lag_1				−0.02 ** (−2.91)				
PPP_lag_1					−0.00 (−0.25)			
GDP_PPP_per_capita_lag_1						−2.0e − 05. (−1.73)		
Fin_develop_lag_1							−0.40 (−0.57)	
Trade_GDP_ratio_lag_1								−0.00 (−0.74)
No. of observations	586	549	548	586	586	575	512	572
N	37	37	37	37	37	37	37	37
T	6-28	5-27	5-27	6-28	6-28	4-28	4-26	6-27
R-Squared	0.66	0.55	0.56	0.66	0.66	0.66	0.66	0.67
Adj. R-Squared	0.63	0.51	0.52	0.64	0.63	0.64	0.64	0.64
Hausman Test - chisq	131.10	64.02	65.74	1385.19	138.68	12.41	4.01	65.66
df	3	4	4	4	4	4	4	4
p-value	0.00	0.00	0.00	0.00	0.00	0.01	0.40	0.00

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

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Table 3 (cont.): Estimation results – forward-looking models based on a sample of countries pursuing IT for at least 5 years (37 countries)

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CPI_plus_y1_diminishing_after_3y_lag_1	0.32 *** (4.74)	0.23 ** (2.87)	0.26 ** (3.14)	0.26 ** (3.15)	0.26 ** (3.13)	0.26 ** (3.14)	0.25 ** (3.08)	0.24 ** (2.89)
GDP_plus_y1_diminishing_after_3y_lag_1	−0.23 ** (−3.26)	−0.21 ** (−3.01)	−0.17 * (−2.24)	−0.18 * (−2.34)	−0.18 * (−2.45)	−0.17 * (−2.35)	−0.20 ** (−2.72)	−0.19 ** (−2.60)
Disinflation	3.08 *** (6.51)	2.56 *** (5.12)	2.84 *** (4.69)	2.83 *** (4.66)	2.83 *** (4.70)	2.85 *** (4.74)	2.77 *** (4.69)	2.59 *** (5.36)
CPI_var_3y_lag_1								−0.01 * (−2.24)
OECD_inf_lag_1	0.04 (1.42)							
Mature_IT_lag_1		−0.23 *** (−7.25)						−0.28 *** (−7.37)
Informed_IT_lag_1			−0.03 (−1.27)					0.11 ** (2.79)
Explicatory_IT_lag_1				−0.12 ** (−2.66)				
Transparent_IT_lag_1					−0.08 *** (−3.68)			
Accountable_IT_lag_1						−0.18 ** (−3.12)		
Fully_fledged_IT_lag_1							−0.23 *** (−4.59)	
No. of observations	586	549	549	549	549	549	549	549
N	37	37	37	37	37	37	37	37
T	6-28	5-27	5-27	5-27	5-27	5-27	5-27	5-27
R-Squared	0.66	0.59	0.55	0.55	0.55	0.55	0.56	0.60
Adj. R-Squared	0.64	0.56	0.51	0.51	0.52	0.51	0.52	0.57
Hausman Test - chisq	291.93	12.36	54.64	160.36	74.15	77.88	426.86	162.89
df	4	4	4	4	4	4	4	6
p-value	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '·' 0.1. T-statistics in parenthesis.

Table 4: Estimation results – backward-looking models based on a sample of advanced economies pursuing IT for at least 5 years (14 countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CPI_avg_diminishing_after_3y_lag_1	0.16 ** (3.28)	0.04. (1.88)	0.03 (1.38)	0.17 *** (3.53)	0.16 ** (3.23)	0.17 ** (3.26)	0.17 ** (3.07)	0.19 *** (3.70)
GDP_rate_diminishing_after_3y_lag_1	0.00 (1.16)	0.00 (0.27)	0.00 (0.32)	0.00 (0.58)	0.00 (1.17)	0.00 (0.89)	0.00 (1.14)	0.00 (0.71)
Disinflation	6.25 *** (19.58)	6.42 *** (21.47)	6.42 *** (21.73)	6.23 *** (19.13)	6.24 *** (19.30)	6.23 *** (20.43)	6.19 *** (19.79)	5.99 *** (27.26)
CPI_avg_deviation_from_target_lag_1		-0.01 (-0.80)						
CPI_avg_major_deviation_from_target_lag_1			-0.02 (-0.71)					
CPI_var_3y_lag_1				-0.03 (-1.57)				
PPP_lag_1					-0.00 (-0.49)			
GDP_PPP_per_capita_lag_1						0.00 (1.48)		
Fin_develop_lag_1							0.43 (0.91)	
Trade_GDP_ratio_lag_1								0.00 (0.23)
No. of observations	268	255	254	268	268	267	240	254
N	14	14	14	14	14	14	14	14
T	6-28	5-27	5-27	6-28	6-28	6-28	4-26	6-27
R-Squared	0.90	0.92	0.93	0.91	0.90	0.91	0.91	0.93
Adj. R-Squared	0.90	0.91	0.93	0.90	0.90	0.90	0.90	0.92
Hausman Test - chisq	2.68	14.57	13.56	5.66	0.54	2.83	7.64	150.55
df	3	4	4	4	4	4	4	4
p-value	0.44	0.01	0.01	0.23	0.97	0.59	0.11	0.00

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

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Table 4 (cont.): Estimation results – backward-looking models based on a sample of advanced economies pursuing IT for at least 5 years (14 countries)

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CPI_avg_ diminishing_after_3y_lag_1	0.17** (2.95)	0.01 (0.50)	0.03 (1.18)	0.02 (0.95)	0.02 (0.96)	0.03 (1.25)	0.02 (0.75)	
GDP_rate_ diminishing_after_3y_lag_1	0.00 (1.40)	0.00 (1.35)	0.00 (0.74)	0.00 (0.81)	0.00 (1.00)	0.00 (0.80)	0.00 (1.06)	
Disinflation	6.25*** (20.44)	6.20*** (16.07)	6.48*** (19.76)	6.50*** (19.52)	6.48*** (20.27)	6.47*** (20.48)	6.46*** (20.43)	6.02*** (13.25)
GDP_PPP_per_capita_lag_1								$3.5e - 0.5$** (2.71)
OECD_inf_lag_1	−0.03 (−0.91)							
Mature_IT_lag_1		−0.10* (−2.15)						−0.21** (−2.76)
Informed_IT_lag_1			−0.03. (−1.79)					
Explicatory_IT_lag_1				−0.08* (−2.17)				
Transparent_IT_lag_1					−0.05** (−2.70)			
Accountable_IT_lag_1						−0.09* (−2.34)		
Fully_fledged_IT_lag_1							−0.10** (−3.01)	
No. of observations	268	255	255	255	255	255	255	254
N	14	14	14	14	14	14	14	14
T	6-28	5-27	5-27	5-27	5-27	5-27	5-27	5-27
R-Squared	0.90	0.93	0.92	0.92	0.92	0.92	0.92	0.93
Adj. R-Squared	0.90	0.92	0.91	0.92	0.92	0.91	0.92	0.93
Hausman Test - chisq	6.03	1.13	3.74	24.16	2.59	7.49	0.52	149.86
df	4	4	4	4	4	4	4	3
p-value	0.20	0.89	0.44	0.00	0.63	0.11	0.97	0.00

Table 5: Estimation results – forward-looking models based on a sample of advanced economies pursuing IT for at least 5 years (14 countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CPI_plus_y1_ diminishing_after_3y_lag_1	0.22 *** (5.16)	0.06 * (2.39)	0.07 *** (3.47)	0.23 *** (5.41)	0.22 *** (5.13)	0.22 *** (5.39)	0.23 *** (5.23)	0.24 *** (4.61)
GDP_plus_y1_ diminishing_after_3y_lag_1	−0.12 ** (−2.72)	0.03 (−0.69)	−0.06 * (−2.35)	−0.12 ** (−2.90)	−0.12 ** (−2.77)	−0.08 (−1.15)	−0.11. (−1.78)	−0.13 * (−2.41)
Disinflation	6.05 *** (26.67)	6.38 *** (23.08)	6.35 *** (26.51)	6.07 *** (26.61)	6.04 *** (26.14)	6.04 *** (25.79)	6.00 *** (24.84)	5.96 *** (24.06)
CPI_avg_deviation_ from_target_lag_1		−0.01 (−0.69)						
CPI_avg_major_ deviation_from_target_lag_1			−0.01 (−0.76)					
CPI_var_3y_ lag_1				−0.02 (−1.49)				
PPP_lag_1					−0.00 (−0.90)			
GDP_PPP_per_ capita_lag_1						0.00 (0.98)		
Fin_develop_lag_1							0.33 (0.64)	
Trade_GDP_ratio_ lag_1								−0.00 (−0.70)
No. of observations	268	255	254	268	268	267	240	254
N	14	14	14	14	14	14	14	14
T	6-28	5-27	5-27	6-28	6-28	6-28	4-26	6-27
R-Squared	0.92	0.92	0.93	0.92	0.92	0.92	0.92	0.93
Adj. R-Squared	0.91	0.91	0.93	0.91	0.91	0.91	0.91	0.93
Hausman Test - chisq	2.39	0.10	3.62	2.92	0.36	96.61	14.02	3.26
df	3	4	4	4	4	4	4	4
p-value	0.5	1.00	0.46	0.57	0.99	0.00	0.01	0.52

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

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Table 5 (cont.): Estimation results – forward-looking models based on a sample of advanced economies pursuing IT for at least 5 years (14 countries)

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CPI_plus_y1_ diminishing_after_3y_lag_1	0.22 *** (5.03)	0.06. (1.85)	0.06 * (2.26)	0.06 * (2.08)	0.06 * (2.07)	0.06 * (2.21)	0.06 * (2.06)	
GDP_plus_y1_ diminishing_after_3y_lag_1	−0.11. (−1.83)	−0.08 (−1.54)	−0.06 (−1.27)	−0.07 (−1.38)	−0.07 (−1.39)	−0.06 (−1.18)	−0.08. (−1.66)	
Disinflation	6.06 *** (26.09)	6.10 *** (16.51)	6.42 *** (21.44)	6.43 *** (21.17)	6.42 *** (21.74)	6.40 *** (22.05)	6.38 *** (21.84)	6.27 *** (15.58)
OECD_inf_lag_1	−0.02 (−0.44)							
Mature_IT_lag_1		−0.11 * (−2.23)						−0.10 * (−2.34)
Informed_IT_lag_1			−0.04 * (−2.37)					
Explicatory_IT_lag_1				−0.09 ** (−2.64)				
Transparent_IT_lag_1					−0.05 ** (−3.07)			
Accountable_IT_lag_1						−0.11 ** (−2.98)		
Fully_fledged_IT_lag_1							−0.12 *** (−3.77)	
No. of observations	268	255	255	255	255	255	255	255
N	14	14	14	14	14	14	14	14
T	6-28	5-27	5-27	5-27	5-27	5-27	5-27	5-27
R-Squared	0.92	0.93	0.92	0.92	0.92	0.92	0.92	0.92
Adj. R-Squared	0.91	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hausman Test - chisq	1.95	3.96	1.29	1.25	2.56	0.57	0.95	2.89
df	4	4	4	4	4	4	4	2
p-value	0.75	0.41	0.86	0.87	0.63	0.97	0.92	0.24

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

Table 6: Estimation results – backward-looking models based on a sample of emerging market economies pursuing IT for at least 5 years (23 countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CPI_avg_diminishing_after_3y_lag_1	0.15 *** (3.42)	0.13 ** (3.21)	0.13 ** (3.27)	0.15 *** (3.54)	0.15 *** (3.54)	0.15 ** (2.90)	0.15 ** (2.93)	0.16 *** (3.87)
GDP_rate_diminishing_after_3y_lag_1	$-2.8 - e03$ * (−2.34)	$-4.2e - 03$** (−3.19)	$-4.2e - 03$* (−3.10)	$-2.9e - 03$* (−2.38)	−0.00 (−1.62)	$-2.8e - 03$* (−2.01)	−0.00 (−1.32)	$-2.7e - 03$* (−2.21)
Disinflation	2.27 *** (7.61)	1.79 *** (7.10)	1.79 *** (7.13)	2.30 *** (7.16)	2.09 *** (7.24)	2.27 *** (7.10)	2.30 *** (7.65)	2.22 *** (8.13)
CPI_avg_deviation_from_target_lag_1		−0.01 (−0.49)						
CPI_avg_major_deviation_from_target_lag_1			−0.02 (−0.47)					
CPI_var_3y_lag_1				−0.01 (−0.84)				
PPP_lag_1					$-6.7e - 04$. (−1.80)			
GDP_PPP_per_capita_lag_1						−0.00 (−0.03)		
Fin_develop_lag_1							−0.03 (−0.02)	
Trade_GDP_ratio_lag_1								−0.00 (−0.79)
No. of observations	318	294	294	318	318	308	272	318
N	24	24	24	24	24	24	24	24
T	6-19	5-18	5-18	6-19	6-19	4-19	4-17	6-19
R-Squared	0.53	0.40	0.40	0.53	0.53	0.52	0.52	0.53
Adj. R-Squared	0.48	0.34	0.34	0.48	0.49	0.48	0.47	0.49
Hausman Test - chisq	1.49	71.47	76.41	12.98	21.89	0.01	56.62	6.66
df	3	4	4	4	4	4	4	4
p-value	0.68	0.00	0.00	0.01	0.00	1.00	0.00	0.15

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

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Table 6 (cont.): Estimation results – backward-looking models based on a sample of emerging market economies pursuing IT for at least 5 years (23 countries)

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CPI_avg_diminishing_after_3y_lag_1	0.15 ** (2.94)	0.10 * (2.19)	0.12 ** (2.69)	0.11 * (2.58)	0.11 * (2.43)	0.11 * (2.48)	0.11 * (2.25)	0.11 * (2.35)
GDP_rate_diminishing_after_3y_lag_1	$-2.7e-03$ * (-2.21)	$-2.6e-03$ ** (-3.30)	$-4.1e-03$*** (-4.09)	$-3.8e-03$*** (-3.72)	$-3.8e-03$*** (-3.67)	$-3.7e-03$*** (-3.72)	$-3.3e-03$*** (-3.63)	
Disinflation	2.27 *** (7.61)	1.71 *** (6.74)	1.81 *** (7.16)	1.77 *** (7.05)	1.79 *** (7.03)	1.81 *** (6.91)	1.74 *** (7.18)	1.72 *** (6.74)
OECD_inf_lag_1	-0.02 (-0.29)							
Mature_IT_lag_1		-0.15 *** (-3.64)						-0.17 *** (-4.10)
Informed_IT_lag_1			-0.00 (-0.04)					
Explicatory_IT_lag_1				$-0.13.$ (-1.71)				
Transparent_IT_lag_1					-0.07 (-1.55)			
Accountable_IT_lag_1						$-0.23.$ (-1.66)		
Fully_fledged_IT_lag_1							-0.20 * (-2.18)	
No. of observations	318	294	294	294	294	294	294	294
N	24	24	24	24	24	24	24	24
T	6-19	5-18	5-18	5-18	5-18	5-18	5-18	5-18
R-Squared	0.53	0.42	0.40	0.40	0.40	0.40	0.41	0.41
Adj. R-Squared	0.48	0.36	0.34	0.34	0.34	0.34	0.35	0.36
Hausman Test - chisq	104.05	29.20	102.86	16920	242.78	24.20	60.94	26.78
df	4	4	4	4	4	4	4	3
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

Table 7: Estimation results – forward-looking models based on a sample of emerging market economies pursuing IT for at least 5 years (23 countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CPI_plus_y1_ diminishing_after_3y_lag_1	0.31 ** (3.08)	0.26 * (2.31)	0.26 * (2.36)	0.32 ** (3.20)	0.31 ** (3.11)	0.31 ** (2.98)	0.30 ** (2.99)	0.32 ** (3.10)
GDP_plus_y1_ diminishing_after_3y_lag_1	−0.22 * (−2.16)	−0.15 (−1.51)	−0.15 (−1.53)	−0.22 * (−2.17)	−0.22 * (−2.17)	−0.26 * (−2.55)	−0.24 * (−2.57)	−0.22 * (−2.16)
Disinflation	2.26 *** (7.76)	1.83 *** (6.45)	1.83 *** (6.49)	2.30 *** (7.47)	2.11 *** (7.18)	2.18 *** (7.44)	2.23 *** (7.89)	2.24 *** (7.82)
CPI_avg_deviation_ from_target_lag_1		0.00 (0.07)						
CPI_avg_major_ deviation_from_target_lag_1			−0.00 (−0.04)					
CPI_var_3y_ lag_1				−0.01. (−1.68)				
PPP_lag_1					−5.9e − 04* (−2.09)			
GDP_PPP_per_ capita_lag_1						−7.0e − 05 *** (−3.36)		
Fin_develop_lag_1							−1.92 (−1.30)	
Trade_GDP_ratio_ lag_1								−0.00 (−0.57)
No. of observations	318	294	294	318	318	308	272	318
N	24	24	24	24	24	24	24	24
T	6-19	5-18	5-18	6-19	6-19	4-19	4-17	6-19
R-Squared	0.57	0.42	0.42	0.57	0.57	0.57	0.57	0.57
Adj. R-Squared	0.53	0.36	0.36	0.53	0.53	0.53	0.52	0.53
Hausman Test - chisq	2.50	82.93	86.82	15.09	16.20	25.52	31.97	0.18
df	3	4	4	4	4	4	4	4
p-value	0.48	0.00	0.00	0.00	0.00	0.00	0.00	1.00

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

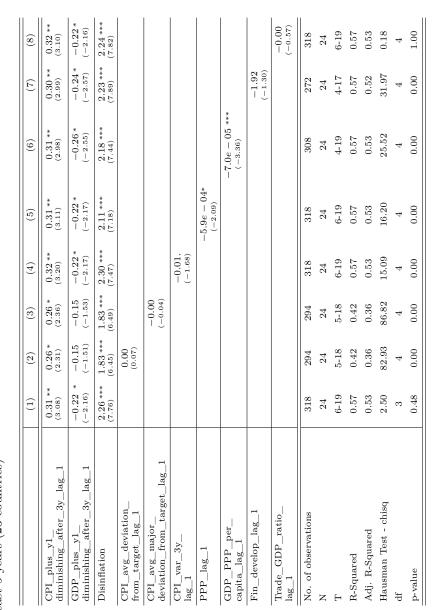Table 7 (cont.): Estimation results – forward-looking models based on a sample of emerging market economies pursuing IT for at least 5 years (23 countries)

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
CPI_plus_y1_ diminishing_after_3y_lag_1	0.31 ** (3.07)	0.24 * (2.11)	2.25 * (2.20)	0.26 * (2.23)	0.25 * (2.20)	0.25 * (2.18)	0.25 * (2.16)	0.14 * (2.42)
GDP_plus_y1_ diminishing_after_3y_lag_1	−0.23 * (−2.22)	−0.19. (−1.96)	−0.17 (−1.61)	−0.18. (−1.73)	−0.18. (−1.84)	−0.18. (−1.81)	−2.20. (−1.97)	
Disinflation	2.24 *** (7.59)	1.67 *** (5.89)	1.76 *** (6.33)	1.71 *** (5.95)	1.76 *** (6.13)	1.8 *** (6.3)	1.68 *** (6.09)	1.53 *** (7.02)
CPI_var_3y_lag_1								−0.01 * (−2.43)
PPP_lag_1								−9.4e − 04*** (−3.67)
OECD_inf_lag_1	0.06 (1.24)							
Mature_IT_lag_1		−0.20 *** (−6.29)						−0.16 *** (−3.90)
Informed_IT_lag_1			−0.09 * (−2.28)					
Explicatory_IT_lag_1				−0.28 *** (−3.40)				
Transparent_IT_lag_1					−0.16 *** (−2.88)			
Accountable_IT_lag_1						−0.44 ** (−3.28)		
Fully_fledged_IT_lag_1							−0.37 *** (−4.89)	
No. of observations	318	294	294	294	294	294	294	294
N	24	24	24	24	24	24	24	24
T	6-19	5-18	5-18	5-18	5-18	5-18	5-18	5-18
R-Squared	0.57	0.46	0.42	0.43	0.43	0.43	0.44	0.44
Adj. R-Squared	0.53	0.40	0.36	0.37	0.37	0.37	0.39	0.38
Hausman Test - chisq	55.07	20.71	70.47	614.02	56.50	23.54	54.60	245.47
df	4	4	4	4	4	4	4	5
p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Computations based on data collected from sources indicated in Appendix B.
Significance codes: '***' 0.001, '**' 0.01, '*' 0.05, '.' 0.1. T-statistics in parenthesis.

economies, for some specifications, coefficients related to GDP growth turned out to be insignificantly different from zero).

For advanced economies, beside the variables listed above, none of the macroeconomic nor structural characteristics seemed to matter for analysing inflation target setting. At the same time, out of the proposed institutional features, all – 6 out of 6 – proved important, with each of the indices negatively influencing the inflation target levels. This result held for both backward- and forward-looking specifications. Interestingly, including any of the institutional indicators in a model reduced the meaning of inflation, making it even insignificant in forward-looking specifications.

The general-to-specific procedure for advanced economy subsample resulted in concluding models encompassing only disinflation dummies (positively impacting the dependent variable), and institutional indicators describing how mature an IT regime was (exerting a negative impact), that in the case of a backward-looking model were supplemented with GDP per capita indicator (having a very mildly positive effect of the target levels).

In the case of emerging market economies, PPP level turned out to negatively influence the dependent variable, and in forward-looking specifications also inflation variance and GDP per capita delivered a negative impact. Again, institutional features seemed to play an important role. Almost all of the coefficients related to institutional indicators were significantly negative, with the only exceptions being indices on how well informed a decision-making process was and how transparent a central bank was that in backward-looking specifications were found insignificantly different from zero. Following the general-to-specific approach, inflation (past and forecast) and disinflation dummies (all having a positive impact), together with institutional indicators on how mature an IT strategy was (associated with a negative effect) turned out to be the most important in describing the dependent variable in the subsample of emerging market economies. Additionally, in a forward-looking specification, also inflation variance and PPP level were found significant (both exerting a negative impact on the target levels).

Overall, the results seemed robust, also when other subsamples were considered. In particular, to check whether the results are not driven by merely newcomers, a subsample of countries pursuing IT for at least 10 years was used (28 countries). The estimation results were not much different compared to the full sample results.

Moreover, to verify whether the results are not biased by countries that used to target core inflation measures, a subsample of inflation targeters with headline inflation targets was used (29 countries) – again, with no major bearing on the estimation results. Another way to check how strongly inflation targeters using core inflation measures as a target variable were different from other inflation targeters, was to add in the original models a dummy variable taking the value of 1 for countries in periods when they targeted core inflation measures. The dummy variable, however, turned out to be consistently insignificant in all specifications.

Moreover, some summary observation can be made that are relevant for assessing the

findings.

First, the models were estimated on relatively big samples. This follows from the fact that the paper analysed experiences of 41 inflation targeters with setting their inflation targets, taking into account the whole history of an IT framework. As a consequence, not only the main results can be considered as more solid, but reliable subsamples' estimates could be produced as well. Additionally, given the relatively big number of observations, violating the assumption of the normality of residuals does not seem too problematic.

Second, including apart from advanced economies also a considerable number of emerging market economies, which have been changing their target levels more often, resulted in higher variability of the dependent variable, compared to the analysis of Horváth and Matějů (2011), which should improve the findings.

Third, the specifications encompassed many regressors potentially important for the inflation target setting. In particular, a broad range of institutional arrangements were investigated, based on the constructed indices. Although not all of them proved statistically significant, the direction of their impact on the inflation target levels was consistently negative.

Fourth, unlike in Horváth and Matějů (2011), panel regressions with fixed effects were used, which offered an advantage that time-invariant country characteristics were explicitly taken into account and did not affect the remaining results. While a possible drawback of this approach could be that no statistically significant results would be found, this turned out not to be the case. Moreover, in many instances, adjusted R^2 was even higher than in models estimated in Horváth and Matějů (2011).

6 Conclusions

The proposed models were not meant to fully describe the setting of inflation targets, but rather to indicate which factors should be considered important in that process. Based on the discussed results, it seems that both backward- and forward-looking models can help to explain the inflation target levels, with forward-looking models fitting the data slightly better. Evidently inflation (past and forecast), GDP growth (past and forecast) and an ongoing disinflation process are of key importance. Out of the other analysed variables, also inflation variance, PPP level and GDP per capita turned out to influence the levels of inflation targets – especially in emerging market economies. Regarding the proposed indicators describing institutional features of an IT strategy as pursued by the reviewed central banks, most of them were found useful in the analysis.

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A   Country coverage

Argentina, was not included, although it has been classified as following an inflation targeting framework by the IMF (2018), because Argentina announced launching an IT strategy in 2016, but already by late 2018 had to suspend it, and turned to monetary base targeting. Likewise, Uruguay was not included, although it has been classified as following an inflation targeting framework by the IMF (2018), because the Central Bank of Uruguay describes its strategy as an inflation target scheme based on monetary aggregates, and not as IT.

In turn, the euro area, Switzerland and the United States were treated as inflation targeters, although the central banks of these economies do not describe their strategies as IT. The reason for that was the fact that their monetary policy frameworks share almost all key features of IT and in practical terms are indistinguishable from IT.

Table 8: List of countries

Country name	Date of IT adoption	Country name	Date of IT adoption
Albania	2009	Mexico	2001
Armenia	2006	Moldova	2010
Australia	1993	New Zealand	1990
Brazil	1999	Norway	2001
Canada	1991	Paraguay	2011
Chile	1999	Peru	2002
Colombia	1999	Philippines	2002
Czech Republic	1998	Poland	1999
Dominican Republic	2012	Romania	2005
euro area	1998	Russia	2015
Georgia	2009	Serbia	2009
Ghana	2007	South Africa	2000
Guatemala	2005	Sweden	1995
Hungary	2001	Switzerland	2000
Iceland	2001	Thailand	2000
India	2015	Turkey	2006
Indonesia	2005	Uganda	2011
Israel	1992	Ukraine	2017
Japan	2012	United Kingdom	1992
Kazakhstan	2015	United States	2012
Korea	1998		

Source: Compilation based on information from central banks' websites and an overview of monetary policy frameworks published by the IMF (IMF, 2018, pp. 6-8).

B   Data description and sources

List of variables is provided in Table 9.

C   Institutional indicators

Each index ranges from 1 to 10.

The higher the scores, the better is the assessment of bank's institutional set-up. The highest score within each category is associated with a practice or a rule considered as the most advisable one based on the existing literature. In cases when it is not clear what should be the most advisable practice or rule, the highest score is given to the dominant practice among the analysed central banks. When no information on central bank's practice or rule is available, the lowest score is assumed.

Scores are given based on publicly available information regarding a point of interest. Indices 1 to 6 are summarising specific aspects of IT. Each index (from 1 to 6) is based on answers to 10 questions related to the issue analysed. Some questions are
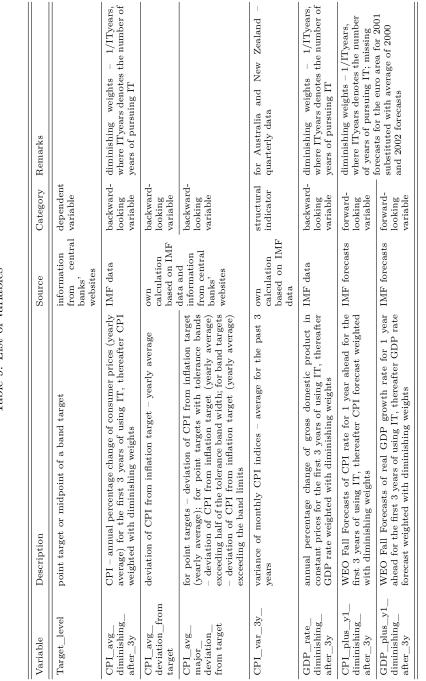

Table 9 (cont.): List of variables

Variable	Description	Source	Category	Remarks
Disinflation	1 for observations with an ongoing disinflation process (understood as lowering inflation to below 6%), zero – otherwise	own compilation based on information from central banks' websites	structural indicator	dummy
PPP	purchasing power parity – expressed in national currency per current international dollar	IMF and OECD data	structural indicator	
GDP_PPP_per_capita	gross domestic product in constant international dollars per person	IMF data	structural indicator	
Fin_develop	IMF Financial Development Index	IMF data	structural indicator	index for Germany used as a proxy for the euro area
Trade_GDP_ratio	goods and services imports and exports to nominal GDP in USD	own calculation based on IMF data	structural indicator	missing data substituted with averages of previous and next year data
OECD_inf	CPI average for OECD countries	OECD data	backward-looking variable	
Mature_IT	index describing how mature an IT strategy is – see Appendix C		institutional indicator	
Independent_IT	index describing how independent a central bank is – see Appendix C		institutional indicator	constant
Informed_IT	index describing how well informed monetary policy decisions are – see Appendix C	own calculation based on information from central banks' websites	institutional indicator	
Explicatory_IT	index describing how transparent a monetary policy decision-making process is – see Appendix C		institutional indicator	
Transparent_IT	index describing how transparent a central bank is – see Appendix C		institutional indicator	
Accountable_IT	index describing how accountable a central bank is – see Appendix C		institutional indicator	
Fully_fledged_IT	index summarising all institutional features of an IT strategy – see Appendix C		institutional indicator	

included in more than one indices, which reflects their importance for several aspects of institutional set-ups, but it is a rare occasion.

Index 7 recapitulates all the institutional features of an inflation targeting regime as put into practice in a given central bank. Index 7 is computed as an average of indices 1 to 6.

With the exception of index 2, related to central bank's independence, which is constant for a given country, all the other indices have a time series dimension.

Using fixed effects estimators means that no constants can be introduced as explanatory variables. For these reason index 2 had to be dropped from estimations. However, as index 2 is a part of index 7, its construction is also described below.

1. Mature_IT – index	Scores			Scores
1. Inflation targeting in place		6.	Target horizon	
a) For more than 10 years	1		a) Continuous target	1
b) For more than 5 and up to 10 years	0.5		b) End-year target	0
c) For less than 5 years	0	7.	Target level (midpoint)	
2. Price stability in a central bank mandate			a) Up to 3%	1
a) Price stability as a single objective	1		b) Above 3% and up to 4%	0.5
b) Priority given to price stability in case of multiple objectives	0.5		c) Above 4%	0
c) Multiple objectives and no priority given to price stability	0	8.	Width of the target	
3. Authority setting the target			a) Point target	1
a) Bank	1		b) Point target with tolerance bands of up to $\pm$ 1 pp. or a band target with width of the band up to 2 pp.	0.5
b) Bank together with the government	0.5		c) Point target with tolerance bands wider than $\pm$ 1 pp. or a band target with width of the band above 2 pp.	0
c) Government	0	9.	Changes to the formulation of the target in the last 3 years	
4. Frequency of announcing the target			a) None within the last 3 years	1
a) Permanent target	1		b) At least 1 within the last 3 years	0.5
b) Every few years	0.5		c) Still disinflation	0
c) Every year	0	10.	Exchange rate arrangement	
5. Targeted measure			a) Floating	1
a) Headline inflation	1		b) Other managed	0.5
b) Headline inflation + escape clauses	0.5		c) Soft pegs	0
c) Core inflation	0			

2. Independent_IT – index	Scores			Scores
1. Authority setting the target		6.	Rules on dismissal	
a) Bank	1		a) Limited reasons for dismissal not allowing for discretion or related to duties	1
b) Bank together with the government	0.5		b) Reasons allowing for discretion or related to duties	0.5
c) Government	0		c) No limits to dismissal or no information	0
2. Single or multiple bank's mandate		7.	Government representative in a monetary policy committee	
a) Price stability as a single objective	1		a) None	1
b) Multiple objectives (with or without prioritisation)	0		b) Yes – but without voting rights	0.66
3. Term of office of the governor			c) Yes – with voting rights	0.33
a) Above 6 years	1		d) Yes – chairing the committee	0
b) Above 4 years and up to 6 years	0.5	8.	Possibility of influencing monetary policy decisions by the government	
c) Up to 4 years or no fixed term	0		a) No	1
4. Reappointment of members*			b) Yes – but monetary policy committee has the final word (only postponement)	0.5
a) Reappointment not possible	1		c) Yes	0
b) Reappointment allowed but with a limit of terms	0.5	9.	Lending to the government	
c) Reappointment allowed without a limit of terms or no fixed term	0		a) Prohibited	1
5. No conflict of interest and no political activity requited at appointment			b) Allowed to a limited extent	0.5
a) Both included as rules related to appointment	1		c) Allowed or not regulated in legal acts	0
b) One of the above included as rules related to appointment	0.5	10.	Formal independence granted in the law to the central bank	
c) Not required or no information	0		a) Explicit independence	1
			b) No explicit independence	0

* In countries with the governor being a single decision maker, rules on reappointing the governor are considered.

3. Informed_IT − index	Scores			Scores
1. Decision-making process		6.	Forecast horizon	
a) Voting	1		a) Above 2 years	1
b) Consensus	0.66		b) Above 1 year and up to 2 years	0.66
c) Governor as a single decision maker	0.33		c) Up to 1 year	0.33
d) No information	0		d) No forecasts	0
2. External members in a monetary policy committee		7.	Forecast variables	
a) Many (half of the committee or more)	1		a) Inflation, GDP and interest rate	1
b) Some (up to a half of the committee)	0.5		b) Inflation and GDP	0.66
c) None	0		c) Inflation only	0.33
3. Expertise required at appointment			d) No forecasts	0
a) Included as a rule related to appointment	1	8.	Forecast presentation	
b) Not included as a rule related to appointment or no information	0		a) Fan charts – showing central projections and uncertainty intervals	1
4. Ownership of forecasts			b) Line charts – showing central projections	0.66
a) Committee	1		c) No charts – only description	0.33
b) Bank	0.66		d) No forecasts	0
c) Staff	0.33	9.	Forecast presentation at press conferences	
d) No forecasts	0		a) Yes	1
5. Frequency of publishing inflation reports with forecasts			b) No or no forecasts	0
a) Every second decision-making meeting or more often	1	10.	Recommendation from staff for the committee	
b) Less often	0.5		a) Yes	1
c) No forecasts	0		b) No or no information	0

4. Explicatory_IT – index	Scores			Scores
1. Frequency of decision-making meetings		6.	Forecast of individual decision makers	
a) 8 per year	1		a) Published	1
b) More than 8 per year	0.5		b) Not published	0
c) Less than 8 per year	0	7.	Press conferences after decision-making meetings	
2. Size of a monetary policy committee			a) Yes – after every decision-making meeting	1
a) Above 5 members and up to 10 members	1		b) Yes – but only when a new forecast is published*, or when the policy is changed	0.5
b) Up to 5 members	0.5		c) No	0
c) Above 10 members	0	8.	Voting records	
3. Role of the governor in decision-making process			a) Full voting records available with a short lag**	1
a) Strong position of the governor - chair, casting vote and less that 4 other members	1		b) Ratio of votes available with a short lag	0.66
b) Very strong position of the governor – a single decision maker	0.5		c) Any voting records available with a longer lag	0.33
c) Less strong position of the governor	0		d) No voting records available or no information on decision-making process	0
4. Rules on quorum and voting		9.	Revealing dissenting views – in press releases, press conferences, minutes, etc.	
a) Simple rules (quorum with the governor and simple majority voting)	1		a) Yes – dissenting views presented explicitly (with names)	1
b) Complicated rules on quorum or voting	0.5		b) Yes – dissenting views presented, but without indicating names	0.5
c) No information	0		c) No revealing of dissenting views (all documents present views of the committee)	0
5. Ownership of forecasts		10.	Recommendation from staff for the committee and publishing staff background reports	
a) Committee	1		a) Both	1
b) Bank	0.66		b) One of the above	0.5
c) Staff	0.33		c) No or no information	0
d) No forecasts	0			

* This also includes the case of Switzerland where press conferences are held after every second meeting.
** This also includes cases where decisions are taken by the governor as a single decision maker, or by a committee by consensus.

5. Transparent_IT – index	Scores			Scores
1. Publishing monetary policy strategy and annual reports		6.	Publishing minutes	
a) Yes – both monetary policy strategy and annual reports available as separate documents	1		a) Yes	1
b) Yes – one publication available as a separate document	0.66		b) No	0
c) Annual report as a compilation of other reports and strategy described at the website	0.33	7.	Revealing dissenting views in minutes	
d) Not published	0		a) Yes – indicating individual views (with names)	1
2. Press releases			b) Yes – indicating some divergence of views, but without indicating names	0.5
a) Yes – after each decision-making meeting	1		c) No indication of divergence of views	0
b) Yes – but only after some decision-making meeting	0.5	8.	Lags in releasing ratios of votes	
c) No	0		a) No lag in releasing ratios of votes (in press releases/press conferences)	1
3. Forward-looking component of press releases			b) Some lag in releasing ratios of votes (in minutes/inflation reports)	0.66
a) Yes – rather explicit	1		c) Long lag in releasing ratios of votes (in annual reports)	0.33
b) Yes – but rather vague	0.5		d) No voting records available	0
c) No	0	9.	Lags in releasing full voting records	
4. Frequency of publishing inflation reports with forecasts			a) No lag in releasing full voting records (in press releases/press conferences)	1
a) At least 4 per year	1		b) Some lag in releasing full voting records (in minutes/inflation reports)	0.66
b) 3 per year	0.66		c) Long lag in releasing full voting records (in annual reports)	0.33
c) Below 3 per year	0.33		d) No full voting records available	0
d) No forecasts	0	10.	Publishing staff background reports	
5. Press conferences – any			a) Yes – published with a very short lag (up to few days)	1
a) After each decision-making meeting	1		b) Yes – but published with some lag (after a week or later)	0.5
b) When a new projection is published or every second meeting	0.66		c) No	0
c) Only after a decision-making meeting when the policy was changed	0.33			
d) None	0			

6. Accountable_IT – index	Scores			Scores
1. Publishing monetary policy strategy		6.	Open letters	
a) Yes – as a separate document	1		a) Yes	1
b) Yes – as description at the website	0.5		b) No	0
c) Not published	0	7.	Rules on dismissal related to absences	
2. Publishing annual report			a) Indicated as a reason for dismissal	1
a) Yes – as a separate document	1		b) No or no information	0
b) Yes – as a compilation of other reports	0.5	8.	No conflict of interest required at the appointment of decision-makers	
c) Not published	0		a) Included as a rule related to appointment	1
3. Parliamentary hearings			b) No or no information	0
a) Yes	1	9.	Frequency of publishing inflation reports with forecasts	
b) No or no information	0		a) At least 4 per year	1
4. Submitting reports to the parliament			b) 3 per year	0.66
a) Yes	1		c) Below 3 per year	0.33
b) No or no information	0		d) No forecasts	0
5. Frequency of reporting to the parliament (via hearings or reports)		10.	Publishing press releases, minutes and holding press conference after each decision-making meeting	
a) At least 3 times per year	1		a) Yes – all of the above	1
b) Less than 3 times per year or no information on frequency	0.5		b) Two of the above	0.5
c) No reporting	0		c) Otherwise	0

7. Fully_fledged_IT – index	
1. Mature_IT – index 2. Independent_IT – index 3. Informed_IT – index 4. Explicatory_IT – index 5. Transparent_IT – index 6. Accountable_IT – index	average of all individual indices