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INFLATION TARGETING AND DISINFLATION IN SERBIA*, **

Inflaciono targetiranje i obaranje inflacije u Srbiji

Abstract

This paper provides a brief overview of the existing monetary policy strategies and their advantages and weaknesses. The analysis highlights the strengths of the flexible inflation targeting regime and its role in disinflation processes in countries with high inflation history. It then focuses on Serbia and discusses monetary policy instruments within the flexible inflation targeting regime which have spurred the stabilization of inflation at a low level over the past three years. In addition to prudent National Bank of Serbia (NBS) interest rate policy, the analysis suggests the role of: (i) significant improvement of NBS communication channels and transparency which enabled anchoring of inflation expectations; (ii) interventions on both segments of the foreign exchange market which reduced excessive daily exchange rate volatility and hence business conditions uncertainty with no impact on the long-term gradual depreciation trend; (iii) changes in the structure of open market operations which strengthened the market elements in liquidity operations and reduced excessive liquidity as well as changes in the reserve requirements policy which favored the long-term sources of external financing. We conclude with some challenges and opportunities for the monetary policy in the future.

Keywords: *inflation targeting, inflation expectations, monetary policy, forward guidance, policy rate*

Sažetak

Rad pruža kratak pregled postojećih strategija monetarne politike uključujući njihove prednosti i slabosti. U analizi je poseban naglasak stavljen na jake strane režima fleksibilnog ciljanja inflacije i njegove uloge u procesu obaranja inflacije u zemljama sa istorijom visoke inflacije. Posle toga fokus je pomeren na Srbiju i analizu instrumenata monetarne politike u okviru režima fleksibilnog ciljanja inflacije koji je stabilizovao inflaciju na niskom nivou tokom poslednje tri godine. Pored prudencijelne politike kamatnih stopa NBS, analiza ističe ulogu: (i) značajnog unapređenja komunikacionih kanala i transparentnosti NBS što je omogućilo usidravanje inflacionih očekivanja, (ii) intervencija na oba segmenta deviznog tržišta što je smanjilo preveliku dnevnu volatilnost i neizvesnost u uslovima poslovanja bez uticanja na dugoročni trend postepene depresijacije i (iii) promene u strukturi operacija na otvorenom tržištu koje su jačale tržišne elemente u operacijama likvidnosti i smanjivanja viška likvidnosti, kao i promene u politici obavezne rezerve koje su podsticale dugoročne izvore spoljnog finansiranja. Na kraju smo ukazali na neke izazove i mogućnosti pred kojima se nalazi monetarna politika.

Ključne reči: *ciljana inflacija, inflaciona očekivanja, monetarna politika, usmeravanje očekivanja (forward guidance), referentna kamatna stopa*

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Introduction

The health of the overall economy and society is closely related to the health of monetary system of every country. Experiences with high inflation in some countries, including Serbia with two hyperinflationary episodes, whereby the one occurring in 1993-94 had the form of classical hyperinflation (the second highest in economic history), has increased the awareness of social and economic costs of inflation.

As the phenomenon of an exorbitant change in the price level, inflation affects the crucial signal effect of prices in a market economy. This substantially aggravates the process of decision making by consumers, businesses, and the state, thus decreasing their efficiency. When an increase in prices endangers the signal function of prices, then the allocative function of prices – the essence of a market economy – is also affected. When prices remain without their allocative function, the basic preconditions for the functioning of a market economy disappear.

Economic theory has offered numerous research studies and findings of the costs imposed by inflation on society and citizens and how inflation can be brought under control. An increase in prices brings numerous elements of uncertainty that endangers economic growth and aggravates the planning of business decisions. At the same time, as a specific form of taxing market participants, including citizens and firms, as well as the state itself, inflation causes a massive redistribution of wealth and power in society. On the other hand, deflationary experiences suggest that deflation can as well have worsening disturbing effects on the business decisions of the market participants and consequently on economic growth. Thus, a consensus has been reached in economic theory and increasingly globally among economic policy makers that achieving price stability is extremely important and that low and stable inflation is the most important monetary policy (MP) goal since that is the best way to ensure sustainable economic development over the long term.

At one time, Nobel Prize laureates *Paul Samuelson* and *Robert Solow* [30] argued that work by *A. W. Phillips* [28], which became known as the Phillips curve, suggested that there was a long-run trade-off between unemployment and inflation. Such a view implied that economic policy makers had to choose between two concrete goals – inflation and unemployment – and decide how high an inflation rate would be acceptable to achieve a lower rate of unemployment (in their opinion, this was a classical trade-off). *Samuelson* & *Solow* even argued that the nonperfectionist goal of a 3% unemployment rate could be achieved at what they considered being not-too-high inflation rates of 4-5%. Their view was very influential, but it was of no use when the inflation rate in the United States and other industrialized countries rose to over 10% in the 1970s and not what they expected (4-5%). The United States plunged into an inflationary whirlpool, which is known in theory as the "Great Inflation." The trade-off suggested by *Samuelson* and *Solow* was strongly challenged by *Milton Friedman* [11] and *Edmund Phelps* [27], who independently argued that there was no long-run trade-off between inflation and unemployment; rather, the economy should gravitate toward some natural rate of unemployment, in the long run, no matter what the rate of inflation was. In other words, the long-run Phillips curve would probably be vertical while the efforts to lower the rate of unemployment below the natural rate would only result in higher inflation. The Friedman-Phelps natural rate hypothesis was immediately adopted and incorporated into numerous formal econometric models. Bearing in mind that a long-run Phillips curve trade-off led to the "Great Inflation" central banks (CBs) adopted the natural rate hypothesis or, in other words, that there was no long-run trade-off. Consequently, for conducting economic policy, it is essential not to have a long-run trade-off between inflation and employment. The countries with the highest inflation rates are also the ones with the highest money growth rate. This evidence led *Milton Friedman* [11, p. 39] to make his famous statement: "*Inflation is always and everywhere a monetary phenomenon.*"

The experience of the current crisis, known as the Great Recession (GR), suggests that financial stability is also needed for price and output stability. Before the GR, it was held that price and output stability provided the basis for financial stability. However, the success of CBs in stabilizing inflation and reducing business cycle fluctuations before 2007 ("Great Moderation") failed to

protect the economy from financial instability and plunging into the GR. Analyzing a series of crises and comparing them with the current one, *Carmen Reinhart* and *Kenneth S. Rogoff* [29] pointed out that crises are causing deep financial disruptions always had longer recovery periods, and unemployment was decreasing at a slower pace.

Therefore, over the last few years, CBs have been faced with two, equally important tasks: to achieve low and stable inflation, on one side, and to ensure financial stability, on the other. This paper will primarily deal with the first task, price stability, and where necessary the financial stability problem will also be addressed. Further research will also be geared toward financial stability.

Theoretical aspects of conducting MP strategy

We have seen that price stability is very crucial for the long-term health of an economy. According to *Frederic S. Mishkin* [20, p. 366], price stability can be defined as low and stable inflation. In the process of achieving price stability, MP uses nominal anchors (NA); those are nominal variables which link the price level with achieving price stability. The role of NA is to keep the defined nominal variable within a narrow range for the purpose of promoting price stability. To that end, an NA is a guide to low and stable inflation expectations. The key to MP success lies in defining a credible NA, which will ensure low and stable inflation over the medium and long term by anchoring inflation expectations.

The second reason for establishing an NA is that it can be an obstacle to emerging time-inconsistency problems (TIP) in which MP is conducted on a discretionary, day-by-day basis; if for example, the CB performs discretionary MP, which is more expansionary than expected by the market participants, inflation expectations will not increase. However, as soon as market participants realize that the CB conducts expansionary policy, inflation expectations will begin to rise, which will inevitably cause an increase in prices and wages. Therefore, it is recommended that the CB should not try to surprise the public with expansionary MP episodes because long-term inflation-related results will be better. However, if the CB conducts MP that will fall into the TIP trap, long-term outcomes will be poor.

In a technical sense, an NA enables a uniform price level determination, which is essential for achieving price stability, coupled with the lowering of inflation expectations. At the same time, the NA limits discretion and eliminates the TIP, which arises when politicians pursue short-term interests instead of long-term ones.

What MP strategies are now available to CBs and what are their crucial advantages and disadvantages?

Certain academic circles in the world advocate a return to the gold standard. To what extent this idea is now acceptable? Before World War I, the world economy functioned under the gold standard regime where the currencies of most countries were directly convertible into gold at fixed rates [20, pp. 433-434]. Under this regime, the value of the national currency is expressed in gold units and the state is obliged to buy and sell gold at a fixed price. In essence, the gold standard can be treated as a specific case of the fixed exchange rate, or as commodity price level targeting. It should be pointed out, however, that this is the most rigid monetary regime which is appropriate for fiduciary money. In essence, under this regime interest rates adjust to gold price changes. And when the question about the gold price is raised, the question of how to target the gold price instead of the prices of goods and services is raised as well.

Is the possible alternative a return to coins? By the nature of things, it is clear that under conditions of a globalized economy in which electronic deposit money is dominant, it is clear that such an alternative is impossible. Is it possible to return to the Bretton Woods system where the United States guarantees the conversion of its dollar into gold at a fixed price (but only to other countries)? This alternative is not suitable either because there is no direct relationship between gold stock and money supply. If CBs opt for the establishment of a direct relationship between high-powered money (Mh) and gold, then Mh will have to be 100% backed by gold. This means that CBs will be converted into a gold-based currency board with the unit of account (USD, EUR) defined regarding one fine ounce of gold. *Barry Eichengreen* [7], [8], [9] analyzed all problems and dilemmas associated with the gold standard, and he concluded that key problems of the gold standard include:

(i) Transactional problem – the total value of gold held by CBs in the world today amounts to about USD 1,300 billion while the global deposits of the banking system to over USD 60,000 billion;
(ii) Instability – such a system can generate very high gains to gold owners and on a global scale about 90% of gold is now privately owned; the question that imposes itself is how to determine the initial price of gold and how to transfer gold itself from one place to another, and
(iii) Credibility – the experience of the 1930s warns that demand-pull inflation will squeeze out the mentioned unit of gold weight over time.

If the gold standard is not a valid alternative for MP strategy to keep inflation low and stable under contemporary conditions, what NAs are then available? *Mishkin* [16], [18], [20] gives the following five alternatives:

(1) *Exchange rate targeting* (*ERT*) – As an NA, ERT has a long history and has proved effective in bringing down inflation quickly in those countries which could not ensure low and stable inflation, and the independence of their CBs (*Pranjul Bhandari* and *Jeffrey A. Frankel* [2]; *Mishkin*, [17], [19], [20]).

ERT can have two versions:

(i) "Soft pegs", which involve pegging that is not institutionalized; this means that it is highly susceptible to a speculative attack and currency crises, as shown by the experience of Latin America, East Asia, and Turkey – due to which this MP strategy was abandoned, and
(ii) "Hard pegs", which can rapidly break inflation psychology and stabilize the economy; this version is suitable for countries with weak political and monetary institutions, since it produces fast results; however, a sustainable stabilization policy of this ERT version implies – at least over the medium term – the conduct of a rigorous prudential supervision of the financial system and sustainable fiscal policy;

The crucial characteristics of ERT as MP strategy are:

(a) Information on achieving the goal are immediately evident, which makes it transparent;
(b) MP loses its independence since shocks from the country whose currency was used for anchoring are directly transmitted to the country in which targeting is implemented (among other things, through interest rates), and
(c) The loss of the possibility to respond to domestic shocks, which leaves the anchoring country susceptible to speculative attacks.

(2) *Monetary targeting* (*MT*) – Under this regime, the selected nominal variable is targeted. As a rule, it is one of the monetary aggregates M. Since ERT was not a favourable solution in many industrialized countries, they opted for the MT, primarily under the influence of *Milton Friedman*'s monetarism [11]. According to *Mishkin* [20] the crucial MT characteristics are:

(a) The main advantage of MT about ERT lies in the possibility that the CB adjusts MP to domestic problems; the CB selects the level of inflation, which can differ from that in other countries, and also enables a response to output fluctuations;
(b) Under the MT regime, like in the case of ER, information on the achievement of the goal is immediately evident, and
(c) On the other hand, the mentioned MT advantages depend directly on the fulfillment of a very specific precondition: (i) there must exist a reliable relationship between the goal variable (inflation or nominal income) and the targeted aggregate; the highest risk of this MP regime stems from the following: if the velocity of money is unstable, then this relationship is weak and the monetary aggregate will not send a reliable signal on the MP stance; this calls into question the ability of the MT regime to serve as the communication tool that increases MP transparency and makes the CB accountable to the public; in the 1990s MT was adopted in several countries, but the form of its implementation differed completely from M. Friedman's strategy based on the constant money supply growth rule; in the United States, Canada and the United Kingdom (UK) MT proved successful in inflation control; the implementation of this regime in Germany and Switzerland served as a communication method which is, in a way, similar to IT; all things considered, MT had a

limited success because the demand for money is unstable due to innovations in financial markets.

(3) *Inflation targeting* (*IT*) – Since the 1990s, IT has been gaining in significance (New Zealand, Canada, the UK, Sweden, Switzerland, Australia, Chile...) so that today it is implemented by nearly 30 countries (in an explicit form). This MP regime was especially popularized by *Frederick Mishkin* [17], [19], [20], *Lars E. O. Svensson* [31], [32], [33] and *Ben Bernanke* (2004) in some their works. The IT regime is characterized by the following five elements [20, pp. 371-372]:

(i) The public announcement of medium-term numerical inflation targets, including upper and lower tolerance bands;

(ii) An institutional commitment to a) price stability as the primary goal of monetary policy and b) the attainment of the inflation target;

(iii) An information inclusive strategy in which many variables, and not just monetary aggregates or the exchange rate (ER), are used in decision making, coupled with the decreasing role of intermediary goals (like monetary growth):

(iv) Increased transparency of MP strategy through communication with the public and markets about plans, objectives, and decisions of the monetary authorities, and

(v) Increased accountability of CBs for attaining the inflation targets.

The fulfillment of all five IT preconditions points out that this MP regime is much more than just the public announcement of the numerical target for inflation over the medium term. As a medium-term MP strategy, by influencing three aspects of monetary policy – its constraints, objectives, and beliefs, it has several advantages over the mentioned alternatives (*Mishkin* [16], [17], [20], *Carl Walsh* [37]):

(a) In contrast to ERT, but similar to MT, IT enables MP to focus on the domestic situation and shocks in the domestic economy;

(b) IT has an advantage over MT because it is not linked to a stable relationship between money and inflation – in IT this relationship is not essential; rather, it uses all available information to determine the best set of MP instruments;

(c) IT is easily understandable to the general public and, thus, it is transparent – the explicit inflation target increases the accountability of CBs, thus reducing the probability of facing the temporal inconsistency problem; a medium-term numerical goal may not always be achieved, but there is an open possibility of responding to short-term shocks;

(d) Like ERT, IT is understandable to the public, and transparency (it is less probably that MT will be understandable to the public) increases the accountability of CBs; the increased accountability of CBs reduces the danger of temporal inconsistency. At the same time, by formally committing to a publicly announced target, IT could influence private sector inflation expectations and allow the CB to achieve some of the gains from an optimal commitment policy; and

(e) By aligning the public's expectations of the target inflation rates with the CB's goal, lower inflation could be achieved without a negative effect on real economic activity, that is, without an associated increase in output volatility.

The mainstay of IT, as MP strategy, is the announcement of a medium-term numerical target for inflation, in an institutional commitment to have price stability as the primary goal of MP. This NA includes a large amount of information and series of variables in decision making, which are not only monetary ones. The essential characteristic of IT is the increased transparency of MP strategy through communication with the public and the market concerning the plans and goals of MP makers, coupled with the increased accountability of CBs for attaining the inflation target.

Responding to the remarks that IT is a rigid regime with excessive focus on inflation, *Lars E. O. Svensson* [32] advocates introducing "flexible" IT with the target criterion which involves not only the projected path of the inflation rate but one or more other variables, such as a measure of the output gap, as well. In this way, the

problem of IT rigidity is eliminated, while a modern concept of IT is flexible.

In the countries that failed to keep IT within the desired limits, either due to the implementation of structural reforms or fiscal consolidation, so that IT is conducted on a phase-by-phase basis because MP failed to maintain the inflation target as the main objective, the MP sub-regime known as "Inflation Targeting Light" is applied (ITL, *Carare* & *Stone*, [4]). The most frequent cause of failure lied in the absence of a sufficiently strong fiscal position. ITL is often applied as a transitional solution for maintaining monetary stability until the implementation of structural reform, after which a flexible IT targeting regime is applied.

(4) *MP without an explicit NA* (*FED's "Just Do It" approach*) – This is the MP strategy conducted very successfully by the Fed since the 1980s. During that period, an implicit NA was used, not an explicit one, to (or "intending to") ensuring long-run inflation control. Also, this strategy involved forward-looking behavior, which consists of careful monitoring for signs of future inflation, coupled with so-called "preemptive strikes" against the threat of inflation. The forward-looking character of preemptive actions is in line with work of *Friedman* [11] who first pointed out that the effects of MP have very long time lags due to price inertia such that MP would need 12 months to have an effect on output and over 24 months on inflation. Since this regime has no explicit NA, it is known as a "Just Do It" approach. The regime is less transparent than IT and is susceptible to undesirable shocks. The key assumption for its success is a high CB credibility.

Faced with the problem of conducting MP during the GR, the FED abandoned an implicit NA on 25 January 2012 and de-facto switched to flexible IT [20, p. 380].

(5) *Nominal GDP targeting* (*NGT*) – Nominal GDP targeting as an NA was especially popularized in academic circles during the current crisis [2], but is not operatively conducted by any CB in the world. In essence, NGT can be reduced to an IT version in which the CB targets the growth of nominal GDP – NGDP (NGDP = real GDP x price level); for example, if the CB's IT is 2%, and the expected GDP growth 3%, it follows that the nominal goal is to achieve 5% NGDP growth. NGT has the elements of the IT regime because the targeted rate of NGDP growth is related to the chosen numerical target for inflation. NGT implies that the CB will respond to a slowdown in economic activity even if inflation is not declining; given the unchanged inflation rate, a decline in GDP will bring about a decline in NGDP, so that the monetary authorities are obliged to conduct an expansionary MP.

The motive for NGDP targeting in this literature is to achieve a credible monetary expansion and higher inflation rates, which are quite the opposite of the context that *Meade* [15] and *Tobin* [36] had in mind when they established NGT. This flexibility of NGT, as a practical way to achieve the goal of the day, be it monetary easing or tightening, and its focus on stabilizing demand are longstanding advantages.

The potential advantage of NGT is focusing not only on IT but also on real GDP; when real GDP growth is below the potential one, or IT is below the goal, it is necessary to conduct expansionary MP in order to increase aggregate demand, which can be very useful under conditions at a "zero-lower bound" rate.

The potential disadvantages of NGT are:

(a) The assumption for a successful implementation of NGT is a very reliable assessment of GDP growth, which can pose a problem; IT is strongly focused on inflation, which can cause excessive fluctuations in GDP (although this was more or less overcome under the flexible IT regime) – under the NGT regime, the nominal rate of GDP growth is targeted and not inflation (NGP growth contains an increase in prices /IT/ as well as NGDP growth); should real GDP decline, IT would automatically increase, which will result in lax MP; the most delicate issue is the rate of NGDP growth which will be announced. The GDP estimates are frequently changed. The data on prices (IT) are more frequent than NGDP data, and

(b) By its nature, NGT is much more difficult for communication with the public than IT; moreover, it can even be confusing (the IT concept is much better understood in the public, because the inflation rate is widely recognized by the public).

Looking at the survey of relevant literature, it can be concluded that under present conditions flexible IT emerges as a dominant MP strategy. An important element in conducting this strategy is the targeted level of inflation. In practice, all countries with IT opt for some medium level of the inflation target that is substantially above zero (New Zealand 1-3%, Canada, Sweden, Switzerland and the UK 2%, Australia, Iceland and Norway 2.5%, Poland 2.5±1%, the Czech Republic 2±1%, Israel 1-3%, Hungary 3±1%, Brazil 4.5±1%, Chile 3±1%, Thailand 0.5-3%, South Africa 3-6%, Mexico 3±1%, South Korea 3±1%, Romania 2.5±1%, Serbia 4±1.5%, Turkey 5±2%, Albania 3±1%...).

Why as a rule inflation is targeted at 2%, that is, much above 0%? *Mishkin* [20, pp. 382-383] argues that should inflation be targeted at a lower level, at 0.5%, for example, too low inflation can generate negative effects on the real sector and GDP, coupled with a serious threat of plunging into deflation, which could result in financial instability. Consequently, targeting 0% or 0.5% would certainly be very risky. Another problem is related to the threat of facing the zero-lower bound and liquidity trap problems. However, this threat is minimal at the target level of 2%. Analyzing price and wage stickiness *George Ackerloff* [1] points out that 2% IT leaves room for eliminating price and wage disparities. Experience has shown that maintaining the inflation target above 0% (but not too much above) over a longer period does not lead to the instability of inflation expectations or decline in CB credibility.

The controversial work of *Oliver Blanchard*, *Giovanni Dell'Ariccia*, and *Paolo Mauro* [3] advocated an increase in IT to at least 4%. What happens with the real interest rate (RIR = ir = i – πe) when the nominal interest rate (NIR) is 4%? Since the essence of a conventional MP is NIR management, when interest rates drop to 0%, the room of 4% allows wider maneuvering; consequently, what led Blanchard and his associates to advocate an increase in IT was the problem of zero-lower bound (ZLB) on the policy rate because the degree of limitation declines with an increase in the target. For example, the goal of 0%, would not be desirable because the RIR could not decline enough and remain an incentive for aggregate demand. This argument is theoretically sustainable, and an increase in IT has its advantages and its risks. However, the price of this solution is very high. Namely, the advantages of this solution exist only in combination with the ZLB problem, and those episodes are rare while the costs arising from distortions caused by a rise in inflation are enormous. Economic theory has taught us that it is much more difficult to stabilize inflation at the level of 4% than at the level of 2%, and when inflation increases above 2%, the public changes its expectations, and there is a growing suspicion that the CB credible goal is price stability – if it can be 4% then why it cannot be 6% or 8%. The previously mentioned US experience of the 1960s, coupled with the support of Nobel Prize laureates *Samuelson* & *Solow* to the tolerance of 4-5% inflation rates, ended in a dramatic increase in inflation, which could not be curbed anymore. Inflation increased to more than 10% in early 1980, which was followed by *Paul Volcker's* very expensive reigning in inflation. In this regard, Serbia's experiences are also very illustrative and warning at any moment.

The experience of industrialized countries has shown that flexible IT is MP strategy that achieves the best results regarding maintaining low and stable inflation. Flexible IT emphasizes the attainment of the goal over the medium term (2-3 years), which also enables the attainment of other goals over the short term such as, for example, output. Flexible IT strategy contains the defined rule on achieving price stability over the medium term but, within it, the CB has the discretion to respond to shocks, which is known in theory as "constrained discretion" in the commitment rules versus discretion. As a response to the problems brought by the Great Inflation, CBs achieved greater independence from the government, while becoming more transparent and accountable to a set of prespecified rules. This was the period known as the Great Moderation, the triumph of rules over discretion and the overcoming of TIP, which was followed by a consensus on the mandate of CBs: low and stable inflation. On the other hand, a number of emerging markets adopted IT in the period when their current inflation was above the long-run sustainable level and used strategy as the basic tool to increase their credibility, anchor inflation expectations and embark on the process of convergence towards stable and low inflation, Some countries (Israel, Chile, Mexico,

Peru) initiated the process when inflation was at a distinctly high level (15-45%), while a significant number of them had two-digit inflation at the beginning (such as the Czech Republic, Hungary, Colombia, and Serbia). In such situations, the introduction of a strict IT concept would have an uncertain effect on the reduction of inflation, coupled with potentially large negative effects on output. Therefore, most countries adopted a gradualist approach, implying a phased disinflation process, combined with the communication of the CB commitment to attaining the inflation target within a specified time-limit. The empirical experience of these countries (*Goncalves* & *Salles* [12], *Lin* & *Ye* [14], *de Mendonca* & *Souza* [5]) has shown that, after adopting the IT regime, emerging markets recorded a greater decline in the level of inflation and output volatility compared to non-IT countries during the same period.

Under the IT regime, CBs differ in terms of (i) a concrete inflation target (headline or core inflation / headline inflation, excluding more variable components of the adopted price index, such as food and energy/, with or without the inclusion of government-controlled prices); ii) the level and range of the inflation target; iii) the time horizon in which the target is attained (one year or longer, bearing in mind lags in the effects of monetary policy); iv) the type of accountability if the target is not met (in the disinflation process CBs usually have a stronger preference for overshooting the target range of inflation than for undershooting); (v) the existence of escape clauses (in the case of the defined significant external shocks /supply-side/ the goal is not binding). In conducting MP strategy, CBs can use different instruments. Under the IT regime, the primary role is played by the policy rate within open market operations (OMO) with an aim to directing price increases towards the targeted level. Depending on the characteristics of an economy, the additional instruments that are used include discount policy, reserve requirements (RR) policy, the interest rate on RR, interventions in the foreign exchange market, large-scale asset purchases and forward guidance (FG). The motivation for and experience with the choice of each element of MP's IT strategy and instruments requires a special analysis which is beyond the scope of this paper. In continuation, we will briefly focus on the role of FG under the IT regime, bearing in mind the relatively limited discussion about this MP instrument in domestic literature. In continuation, we will also analyze the recent inflation trends in Serbia.

The role of forward guidance

Forward guidance (FG) is the term used by CBs to communicate what their future MP will be. By using FG, CBs aim to influence the expectations of market participants and reduce uncertainty in markets. The underlying mechanism relies on the assumption (long-present in the literature) that the market participants' current behavior reflects their expectations about the future which itself depends on the expected path of the future interest rates and monetary policy stance.

FG about future policy settings, in the form of a published policy-rate path, has for many years been a natural part of normal MP for several CBs (the Reserve Bank of New Zealand and the Swedish Riksbank). Recently, the FED, the Bank of Canada, the ECB, and the Bank of England have used different forms of verbal FG to affect market expectations about future policy settings. The FG has been introduced by these CBs in the context of a binding lower bound for the policy rate [33]. It has been used as a way of implementing a more expansionary policy when the policy rate has been restricted by a lower bound. That kind of FG is a normal part of the policy and communication of these CBs. These CBs all pursue flexible IT in some form, meaning that the objective of the policy is to stabilize both IT around an announced inflation target and resource utilization around its long-run sustainable rate. In January 2012, FOMC of the FED (2012) adopted a very transparent flexible IT. *Svensson* [33] believes that there are good reasons why FG, in the form of publishing a policy-rate path, has become a normal part of flexible IT for several CBs.

Economists sometimes refer to two broad forms of FG: Delphic and Odyssian [13]. In the classic Delphic version of FG, the CB states its economic outlook without any further commitment. This form of FG tends to affect short-term interest rates. However, when the short-term rate has a natural floor at zero or is at the ZLB, a stronger

signal is needed from CBs to stimulate their economies. Odyssian FG at the zero bound involves trying to convince markets that once the economy eventually recovers the CB won't move interest rates straight away and will instead wait longer before responding to rising inflation and growth. This raises the disposable income of borrowers, encouraging more activity in the economy.

The main objective of FG thus is to steer not only short-term but also medium-term market expectations of the interest rates (i.e. affect the shape of the yield curve). By doing so, the monetary authorities strive to align better broader financial conditions with their macroeconomic scenario in order to deliver an appropriate level of monetary stimulus or restraint. FG in which the CB is obliged to keep the policy rate low for a longer period of time is thus another way of reducing long-term interest rates relative to short-term one and hence an RIR reduction for investments.

Inflation targeting in Serbia

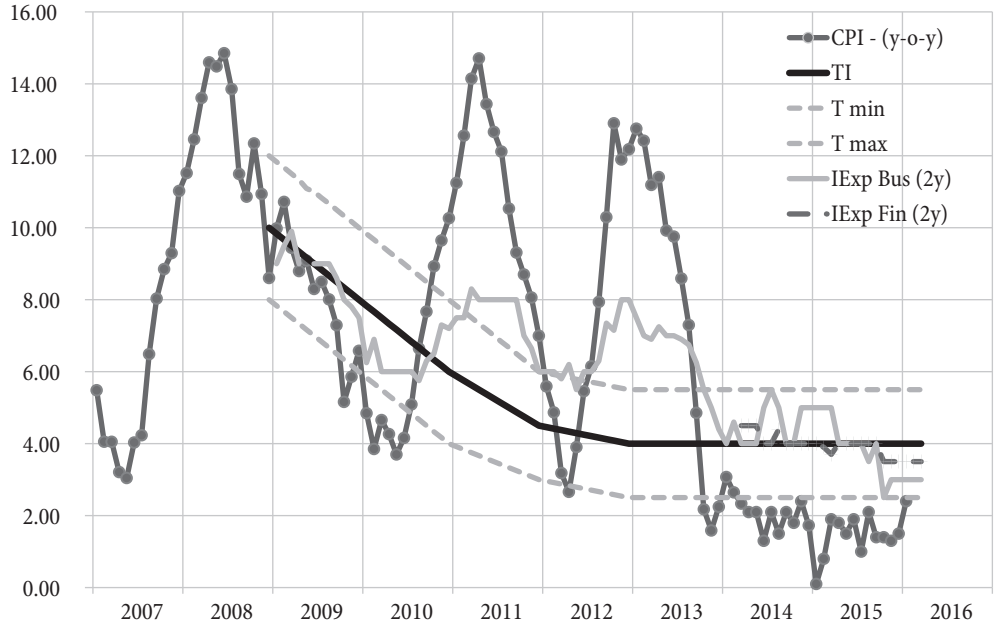
Serbia had bitter experience with inflation and the collapse of its national currency. The most severe case of that collapse occurred in 1993 when Serbia plunged into the second highest classical hyperinflation in human history, which ended in a complete destruction of the national currency, the dinar, in January 1994, when the "new dinar" was introduced. The experiences of that period are still present in businesses and among citizens due to which the issue of conducting MP in Serbia is very delicate. All market participants are very cautious. They have bitter experience so that their expectations quickly adjust to rational expectations.

Over the past 13 years, Serbia has applied different MP strategies, whereby de facto ERT (in some form) and IT (officially) have been dominant. An analysis of the specificity of introducing IT into Serbia has been prepared by *Dragutinović* [6]. The applied strategies included:

(i) January 2003 – September 2006: ERT regime coupled with crawling peg;
(ii) September 2006 – December 2008: ERT coupled with managed (dirty) float; and
(iii) January 2009 to present day: flexible IT.

Figure 1 shows inflation movements in Serbia since 2007 (CPI), the inflation target with the lower and upper limits (TI, Tmin, and Tmax) as well as movements in inflation expectations for next two years of business (IExp Bus) and financial sector (IExp Fin). One can observe a high volatility of the year-over-year inflation rate until 2013, its abrupt lowering in 2013 and, finally, its decline below the inflation target in October 2013 where it has remained to the present day.

Figure 1: Monthly inflation rate in Serbia (y-o-y, %)



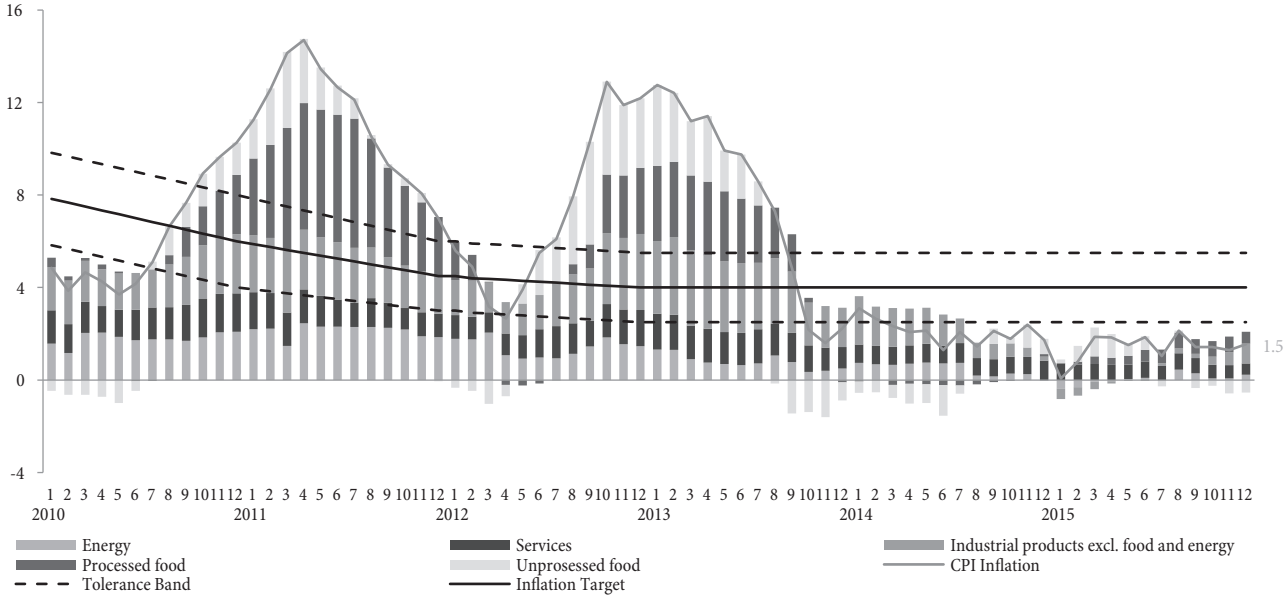
Source: Inflation Report – February 2016. National Bank of Serbia

Figure 2 shows the decomposition of inflation into its basic components over the past five years. The movements show that food prices display high volatility, which significantly contributed to the acceleration of inflation during 2011 and 2013, and whose effect diminished during the recent period. The decline in energy prices during 2014-15 influenced a fall in inflation while the contribution of the prices of industrial products (and, to a lesser degree, the prices of services) to overall inflation was significantly reduced after 2013. An analysis of the components of overall inflation shows that one part of the latest fall in inflation was associated with a global decline in the commodity and energy prices, as well as a lower domestic aggregate demand due to a fall in GDP in 2014 and the effects of the fiscal consolidation process. However, a significant part of disinflation movements is related to the policy conducted by the NBS in this period. In what way the NBS succeeded in curbing inflation and maintaining it at a stable and low level for 30 months already?

Since mid-2012, while keeping the MP strategy unchanged (flexible IT), the NBS has, in our opinion, applied MP instruments which, with typical time lags [11], had a disinflationary effect and spurred the stabilization of inflation at a low level from October 2013 to the present. *Tabaković* [34], [35] emphasizes the improvement of NBS communication channels and transparency, intervention on both segments of the foreign exchange market as well as changes in reserve requirements policy and the direction of open market operations.

(1) A significant improvement of NBS communication channels and transparency in line with the aforementioned characteristics of the flexible IT regime enabled the anchoring of inflation expectations. The inflation expectations of market participants have a direct impact on their business decisions and, thus, the price level over the short term. For the already mentioned reasons (the bitter experience and behaviour of market participants based on rational expectations) the anchoring of inflation expectations at a low level is a vital prerequisite for achieving price stability and increasing the efficiency and credibility of MP. The experience of other countries [32] points to the significance of the stabilization of inflation expectations and positive effects of increasing credibility in the first years of IT implementation and explains the primary orientation of NBS policy towards reducing inflation during the past period. The inflation expectations of the financial sector (the standard measure of expectations in literature) were declining from the end of 2012 (Figure 1) and stabilized at the level around the inflation target at the end

Figure 2: Decomposing monthly inflation (y-o-y, %)



Source: Inflation Report – February 2016. National Bank of Serbia

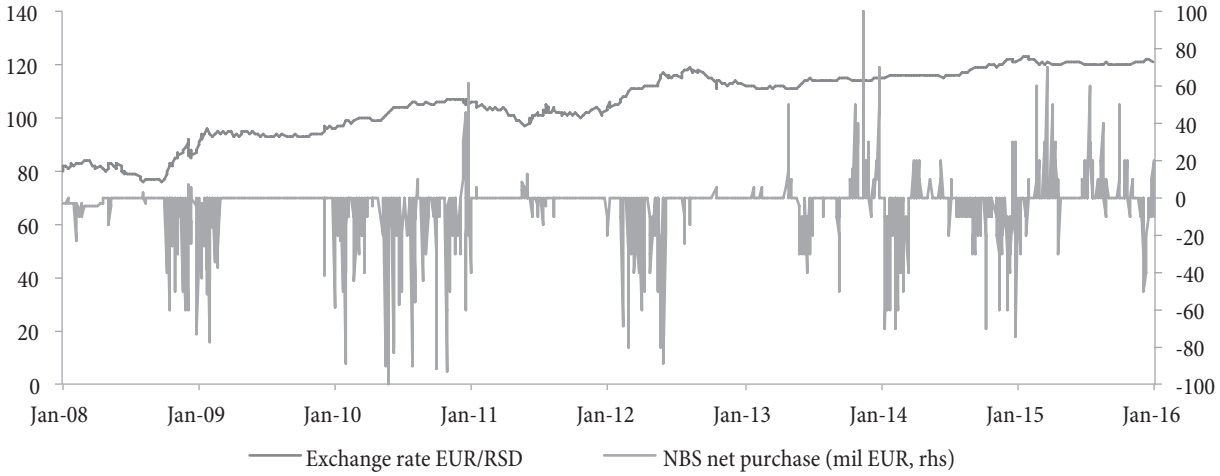
of 2013. At the moment inflation expectations for next two years are anchored below inflation target. The quantitative measures of the credibility of monetary policy based on the calculations by *Nedeljković*, *Savić*, & *Zildžović* [26] also point to improvement. The anchoring measure of NBS credibility (the extent to which inflation expectations do not react to temporary inflation shocks) has risen by 25% (from 0.52 in 2009 to 0.66 in 2015), while the level at which the inflation expectations are anchored (which can deviate from the official target) has fallen from 7.5% to 5.5% over the same period. According to the latest Inflation Expectation Survey of the NBS (January 2016) one-year ahead inflation expectations of corporates equalled 2.5%, entering the target tolerance band; household inflation expectations returned within the band from October 2014 and stabilized at 5%, inflation expectations of trade unions are at 3.15%; hence, mid-term term inflation expectations of all institutional sectors have been within the target tolerance band for almost a year. Inflation expectations thus appear to be anchored, and there are no major inflationary and disinflationary pressures.

(2) Intervention in both segments of the foreign exchange market – The NBS appears on the sell side and, much more aggressively than before, on the buy side of the interbank foreign exchange market with an aim to eliminate excessive daily oscillations, which contributed to the reduction of daily exchange rate fluctuations and more stable operating conditions for market participants. Although under the standard IT regime, the role of a nominal exchange rate is related to attaining the inflation target, the characteristics of the domestic economy – (i) a high level of deposit and credit euroization and thus the transmission of foreign exchange risk to credit risk; (ii) the low development level of the foreign exchange market and thus large influence of global capital movements on exchange rate volatility – are such that the exchange rate movements cannot be exclusively assessed in terms of inflation, but have much broader implications for maintaining macro-financial stability. On the other hand, the CB excessive reactions toward limiting exchange rate movements can create the perception of market participants that the exchange rate de facto serves as the nominal anchor which reduces the efficiency of IT strategy. The best practice to prevent such the problem is to ensure a clear CB communication and transparent policy of interventions to curb excessive exchange rate volatility without affecting the long-term trend, the policy that has been conducted by the NBS over the past three years. Figure 3 shows the daily movement of the dinar exchange rate vis-à-vis the euro and some interventions in the foreign exchange market (a positive amount: a net purchase of foreign exchange; a negative amount – a net sale of foreign exchange). It can be observed that exchange rate volatility has been reduced over the past three years, which is in large degree the result of NBS policy, intervening to a more significant extent in both directions compared to the previous period, thus preventing the current market trends from creating the self-fulfilling expectations of participants in a certain direction. On the other hand, interventions have not influenced a change in the long-term gradual depreciation trend.

(3) Changes in reserve requirements policy and the direction of open market operations: i) through different changes in the reserve requirements on short and long-term sources, long-term sources of financing have been stimulated and the share of short-term flows – more susceptible to external shocks – in total external sources of banks' assets have been reduced from 43.7% in January 2010 to 24.4% in December 2015; ii) through an increase in the share of foreign exchange reserve requirements, which is earmarked in dinars, and the change of the direction of REPO operations, the NBS has reduced excess dinar liquidity, thus lessening depreciation and inflationary pressures.

Apart from changing additional MP instruments, the basic MP instrument, the policy rate, was initially increased

Figure 3: Nominal exchange rate and NBS FX interventions

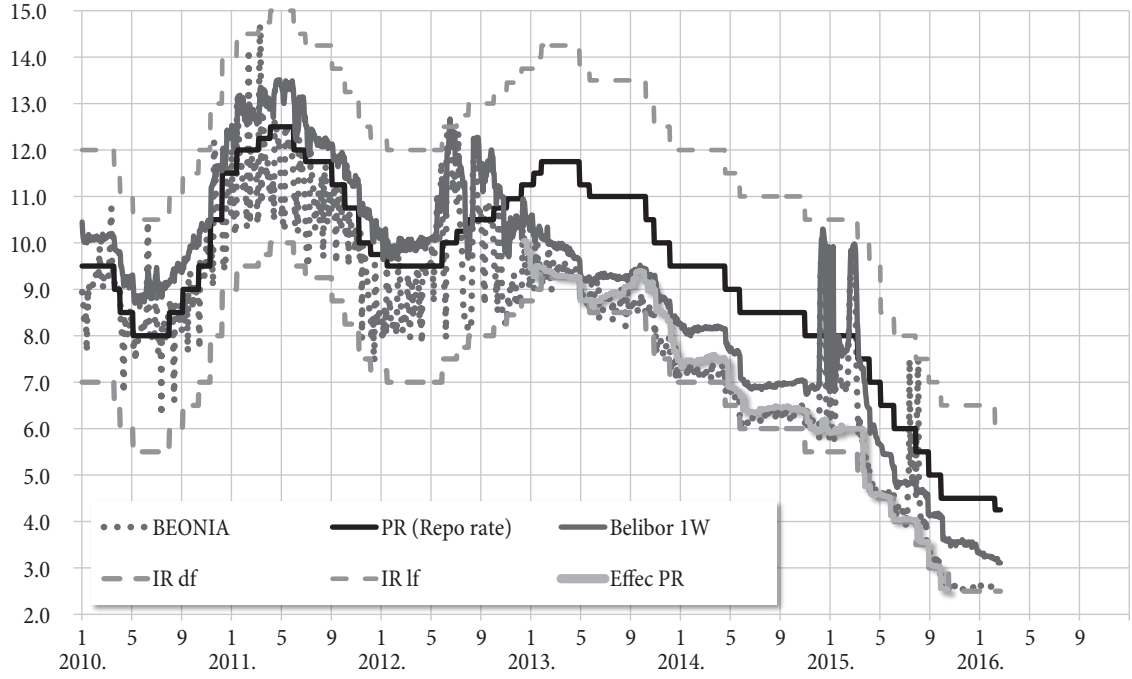


Source: National Bank of Serbia

from mid-2012 until February 2013, while in May 2013 there began a gradual relaxation of the policy rate (Figure 4, gray solid line), which was accelerated during 2015. Bearing in mind the necessity to create credibility and stabilize inflation in the first years of the IT application, as well as the need to maintain macroeconomic stability under conditions of external and fiscal policy shocks, a prudent interest rate policy conducted by the NBS in the previous period (with the expected time lag) had a positive impact on inflation stabilization and a decrease in inflation expectations.

Although interest rate policy was cautious, the effective interest rates in the money market (BEONIA and Belibor) have been lower than the policy rate by 1.5-2 pp since 2013. The reason lies in the fact in December 2012 the NBS also changed the method of performing open market operations, whereby auctions are conducted at the variable interest rate (effective policy rate, grey solid line), coupled with the limit on the amount of liquidity withdrawal, opposite to fixed policy rate in the previous period. This measure enabled the strengthening of the

Figure 4: Interest rate dynamics in Serbia (RSD), daily data, p.a. in %



Source: Inflation Report – February 2016. National Bank of Serbia

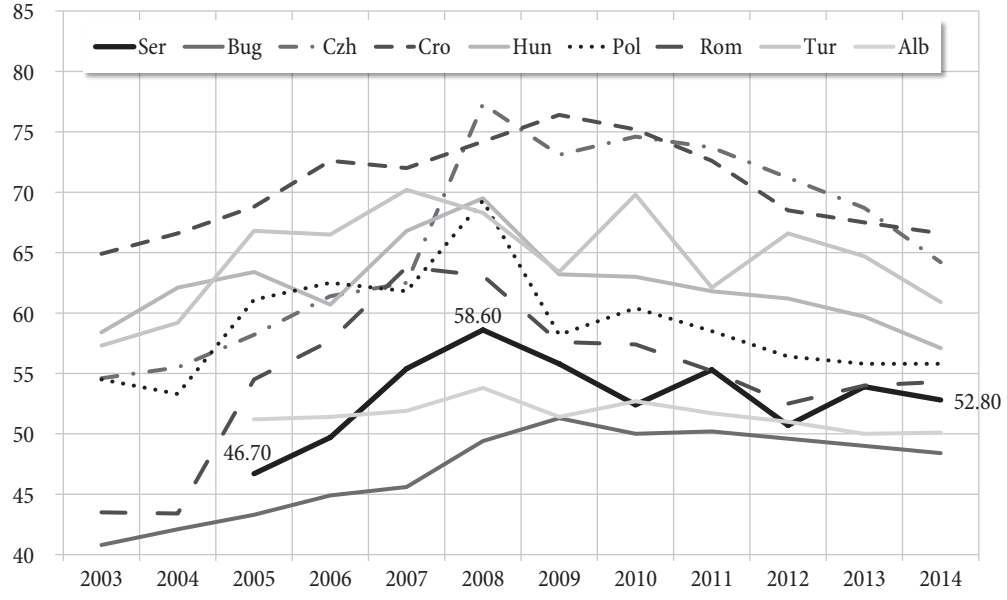
market elements through the bidding of commercial banks for the placement of available liquid assets with the NBS. This led to a decline in interest rates in the money market in the presence of excess dinar liquidity. In this way, the NBS acted proactively on reducing dinar carry trade attractiveness in the period of abundant global liquidity, thus reducing the potential volatility of the exchange rate, while accepting a certain level of the effective interest rate volatility. The higher volatility of the effective interest rate may reduce its signaling role in the MP transmission mechanism; however, the effective interest rate movements thus far did not display significant volatility and conveyed a clear trend signal.

Target inflation level and price disparities: The case of Serbia

In accordance with the Agreement on Inflation Targeting concluded between the NBS and the Government of the Republic of Serbia (adopted at the session of the Government of the Republic of Serbia on 19 December 2008) and the Memorandum of the National Bank of Serbia on Setting Inflation Targets for the Period 2009-2011 (adopted by the NBS Monetary Policy Committee meeting on 22 December 2008) (NBS, 2008), obliging the NBS to set the target inflation rates in cooperation with the Government – the Executive Board of the NBS set the target rate of overall inflation (with the permissible tolerance band), measured by the annual procentual change in the consumer price index for the period from January 2017 to December 2018 to the amount of 4%, with the permissible tolerance band of ±1.5 pp.

The fact that the inflation rate has remained below the lower tolerance band for over 20 months could signal that changes in the inflation target and/or adjustments in the tolerance band or the time horizon in which the target is attained may be warranted. In assessing the signal, one needs to take into account that a low level of inflation was significantly contributed by a decline in the prices of primary products in world markets, primarily a decline in the prices of oil and primary agricultural products and industrial raw materials, small increase in government-controlled prices in the domestic market and lower domestic aggregate demand over this period. The disappearance of these factors will bring about a gradual rise in inflation and return within the existing tolerance band. Other arguments in favor of maintaining the inflation target within the existing tolerance band are the expected price convergence process towards EU levels and the provision of wider room for MP maneuvering since there is no medium-term framework for the adjustment of government-controlled prices, as well as instability in the agricultural products market.

Figure 5: Degree of price convergency (EU28=100)



Source: Inflation Report – August 2015. National Bank of Serbia, p. 7

The price disparities in Serbian economy to EU price levels in fact have deepened during the GR. According to NBS Inflation Report [23, pp. 7-8], the price level in Serbia compared to the EU is now lower (52.8% level) than in 2008 (58.6%), which points to the deepening of price disparities (Figure 5). Divergence from the EU price level was also recorded in other countries in the region. Considered by the groups of products, the lower price convergence level was recorded in the case of products whose prices are government-controlled – the prices of energy products in the first place – whose level is about 44% of the EU price level (Figure 8). The next group of products includes alcoholic beverages and cigarettes 49% (Figure 9). The highest level of convergence was recorded in the case of clothing 93% (Figure 7) and food and non-alcoholic beverages 73% (Figure 6).

Such a price structure in the Serbian market also imposes the need to speed up an increase in government-controlled prices relative to an increase in the general price level and target inflation in the subsequent period in order to achieve convergence with the EU. Taking into account past trends, 5-8% annually increase in regulated price over 2016-18, coupled with their share of 20% in the consumer basket, could contribute to a rise in annual inflation by

Figure 6: Price convergency (EU 28=100) – Food

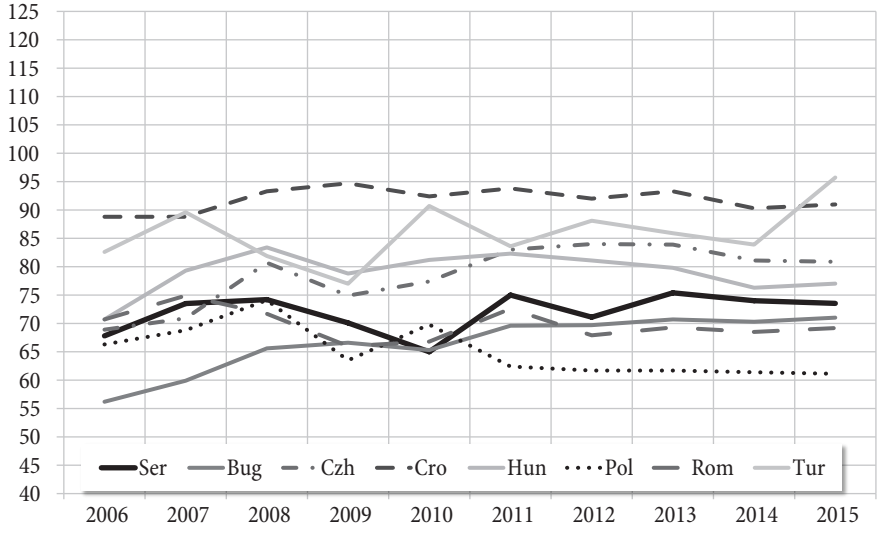
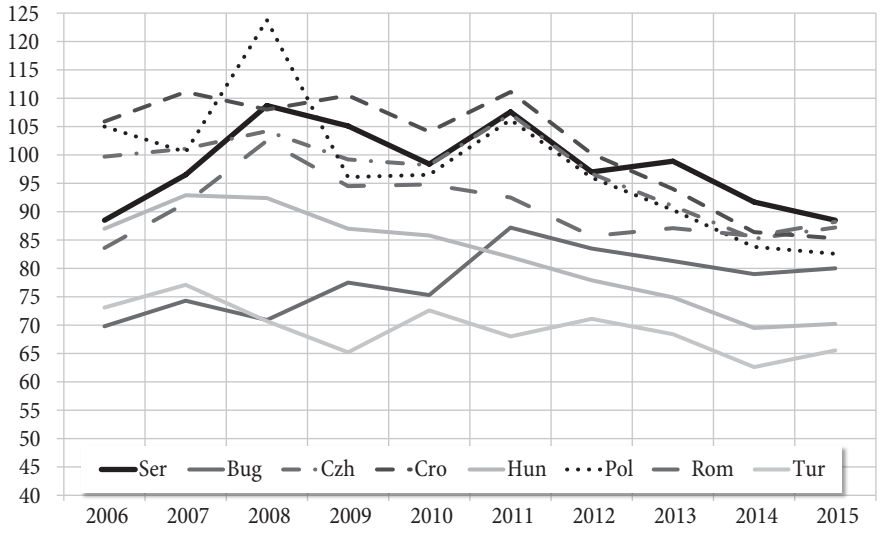


Figure 7: Price convergence (EU28=100) – Clothing



Source: Inflation Report – August 2015. National Bank of Serbia, p. 8

1-1.6 pp. In addition, higher GDP growth in Serbia relative to the Eurozone could, due to the Balassa-Samuelson effect, enhance the price convergence. For example, in the period 2005-2008, at the GDP growth rate of 5%, the price level increased from 46.7% to 58.6%. In its Memorandum [22], the NBS explains that inflation targets for 2017 and 2018 are set above the quantitative definition of price stability and inflation targets of advanced economies (2.0% or 2.5%) due to the assessment that the process of structural reforms and the liberalization of prices, i.e. nominal, real and structural convergence to the European Union, will not be completed by 2018. Serbia has no medium-term government-controlled price adjustment plan, which could influence an increase in inflation oscillations in the coming years and it would be good to adopt such a plan.

Overall, the cyclical drivers of low inflation over the past 20 months coupled with the price convergence process and uncertainty with respect to the pace of regulated prices adjustment imply that low inflation on its own does not provide a clear signal that changes in the inflation target and/or adjustments in the tolerance band or the time horizon in which the target is attained are required. Nevertheless, such options could be analyzed and implemented under the right conditions.

Figure 8: Price convergence (EU28=100) – Energy

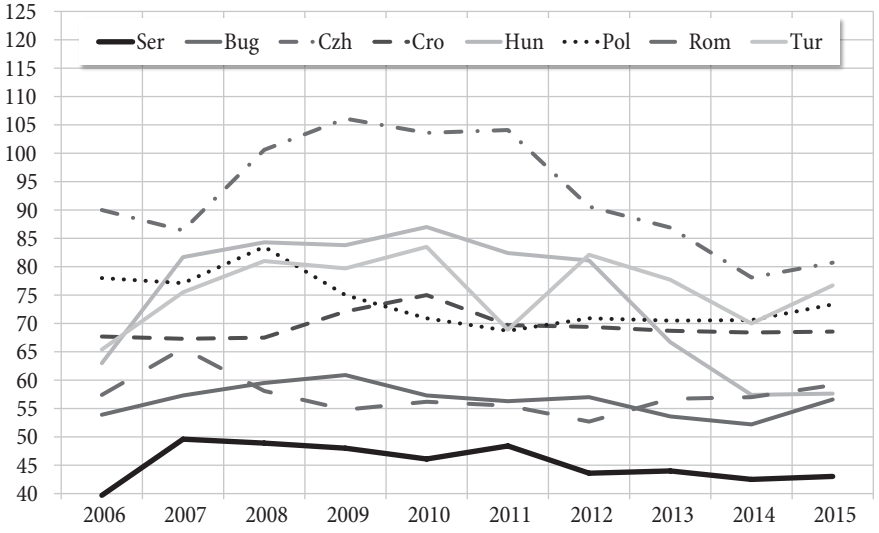
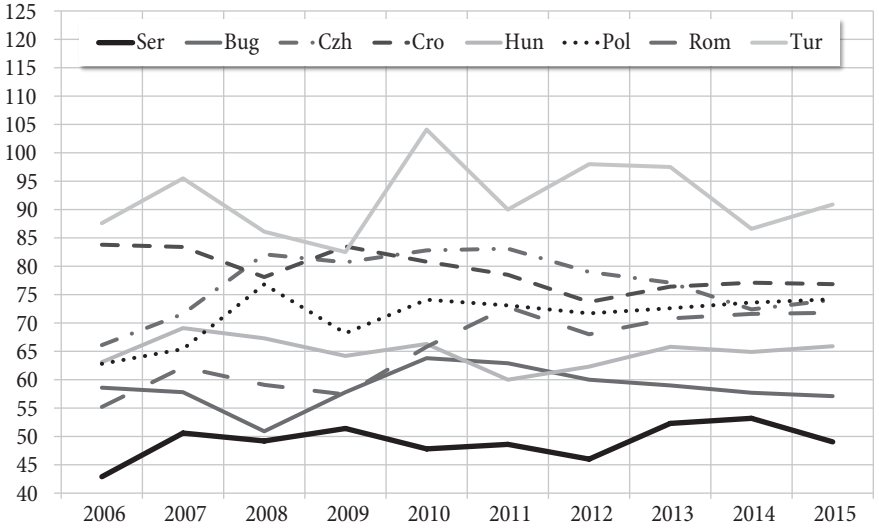


Figure 9: Price convergence (EU28=100) – Alcoholic beverages and cigarettes



Source: Inflation Report – August 2015. National Bank of Serbia, p. 8

Conclusions

This paper provided a brief overview of the existing monetary policy strategies and their advantages and weaknesses. The analysis suggests that flexible IT regime is MP strategy which achieves the best results in maintaining low and stable inflation in industrialized countries and speeding up the disinflation process in the countries with the historically high inflation levels. The crucial role in this process is played by an increasing disconnect between the past inflation and inflation expectations and the strengthening of the credibility of the CB.

The results of flexible IT implementation in Serbia and the use of the described MP instruments over the last three years suggest significant improvements in the key elements of the successful IT-led disinflation process:

a) Inflation is reduced to its sustainability zone which is, under the cyclical disinflation shocks, below the lower tolerance band, but still in the comfort zone (due to price disparities, etc.) and

b) Anchoring of inflation expectations – during 2014, the inflation expectations of all market participants were anchored for 12 months ahead and in 2015 for 24 months ahead, while the credibility measure of MP increased in the same period. Stable and well-anchored inflation expectations contribute to the greater credibility of the MP framework, which enables the CB to achieve the same degree of MP restrictiveness by a small increase in the policy rates, thus generating smaller negative effects on economic activity and vice versa. The necessity to build up sufficient credibility prompted NBS and other CBs from Central and Eastern Europe to focus on inflation. Fully anchored expectations around the target in perspective would allow greater IT flexibility and even implementation of some unconventional measures of MP to support economic recovery (as the Czech Republic has done during the post-2008 period).

The increase in NBS credibility and stabilization of inflation expectations could improve the effectiveness of the expectations channel of the monetary policy, known as Forward Guidance. As this channel is operating with a smaller lag compared to other transmission channels, this could induce greater flexibility in conducting MP in the future. Along this path, the crucial role will be played by the communication of MP measures and removal of structural inflation factors (agricultural and trade policy measures) to maintain the achieved stabilization (of both inflation and expectations) when the first price pressures are exerted.

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