

# 5 DISINFLATION AND INFLATION TARGETING IN ROMANIA\*

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## Abstract

*With a view of enhancing disinflation inflation targeting (IT) was introduced in Romania in mid-2005. Contradictory pressures have challenged ever since the functioning of this monetary policy regime owing to peculiar features and objectives of the Romanian economy. First, the requirements imposed by the achievement of nominal and real convergence in order to join the European Union, and, eventually, the European Monetary Union, ask for sustainable high economic growth and the consolidation of disinflation simultaneously, which is an extremely ambitious task. Second, the economics of inflation targeting tells that the “divine coincidence” of inflation stabilization and real stabilization objectives can be achieved in specific economic circumstances, which might be pretty hard to fulfill in the Romanian economy. Third, the operational requirements of the implementation of a strict inflation targeting regime are unlikely to be met under the current monetary transmission mechanisms; this paper argues that a soft version of inflation-targeting is feasible under the circumstances. Fourth, the integration into global financial market (and a premature opening of the capital account) increases the sensitivity of the economy to external shocks and diminishes the efficiency of an independent monetary policy.*

**Keywords:** inflation targeting, Romania

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## **Introduction**

Disinflation has been pursued successfully in Romania in this decade. Inflation came down from over 40 per cent in 2001 to 4.9 per cent (Dec. on Dec.) in 2006. In 2007, when Romania joined the European Union, inflation went up again (above 6.5 %) owing to adverse internal and external shocks.

The benefits of a low-inflation environment are unquestionable, as price stability is the ultimate objective of monetary policy. In addition, low inflation is a pre-condition for EU accession. There only remains the other critical question, namely, what is the proper strategy to achieve the ultimate objective? Different central banks have adopted different strategies placing a different emphasis on the various pieces of information, or elements of their decision-making process or different aspects of their communication policies. Inflation targeting (IT) is one of those strategies.

The National Bank of Romania (NBR) introduced IT in 2005. This regime brings a series of benefits for a central bank, including a clear policy focus on inflation. At the same time the Romanian central bank was in need to unburden its monetary policy to achieve further disinflation. But three main contradictory pressures have been likely to arise: First, the requirements imposed by the need to achieve nominal and real convergence with a view to joining the European Union in 2007 and European Monetary Union (EMU) at a later stage push the central bank toward a policy mix that is able to ensure growth and further disinflation simultaneously. Second, under inflation targeting the 'divine coincidence' of inflation stabilization and real stabilization objectives can be achieved only in specific economic circumstances. Third, the operational requirements of a 'hard' inflation targeting regime have been unlikely to exist under the current monetary transmission conditions.

The central question of this paper is under what circumstances inflation targeting can (could) be implemented in Romania. Section 1 summarizes the recent history of inflation in Romania. Section 2 presents the context of disinflation and dilemmas of monetary policy. Section 3 reviews distinguishing features of the IT monetary policy framework and experience with IT in various countries. Section 4 examines challenges posed by IT implementation in Romania. Section 5 discusses policy choices. Conclusions highlight also implications of the current turmoil in international financial markets and of changes in the world economy (including the rise of Asia and effects of climate change), which would complicate the task of disinflation.

### **1. Where does Romania's monetary economy come from**

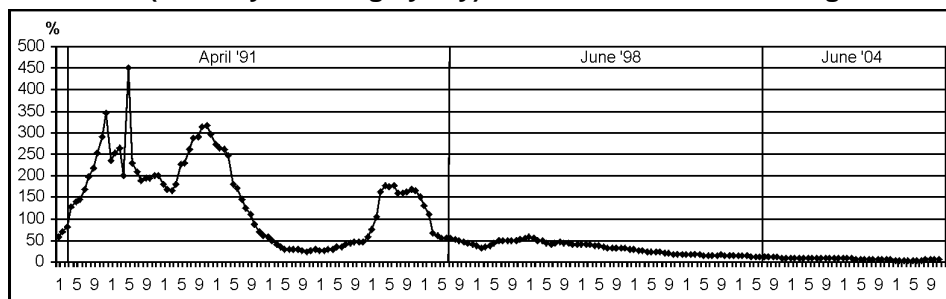
From the beginning of transition monetary policy had to carry the burden of too slow a restructuring of the economy. Price stability, which should have been the prime aim of monetary policy, was frequently sacrificed, causing Romania to build up an image as a high-inflation country (Figure 1). The dramatically high inflation rates at the beginning of the 1990s were not the result of central bankers' disinterest in pursuing price stability; in the absence of a functioning tax system, seigniorage was simply the only way to finance

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government expenditures aside from borrowing. The multiple and varying objectives to be met by monetary policy in the 1990s were rarely consistent with the achievement of inflation reduction. Therefore the policy choices may appear unsystematic, myopic and even inconsistent with basic principles of what macroeconomic models suggest is good policy practice. Arguably, structural features of the economy (including *structural strain*, which is illustrated by arrears<sup>2</sup>) undermined the conduct of monetary policy.

**Fig. 1**

**CPI (monthly % change y-o-y) and the institutional changes**

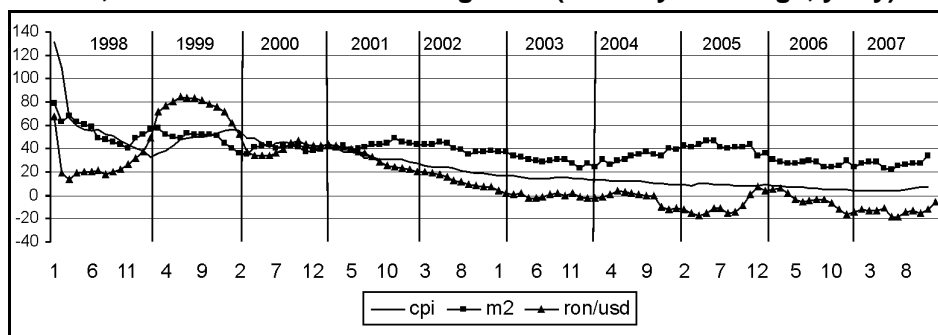


Source: INSSE.

Disinflation (Figure 2) coincides with the institutional context created by a more independent NBR.<sup>3</sup> In 1998 inflation was 40.6 per cent. At the time monetary aggregates were used as a monetary policy anchor – neither the exchange rate nor interest rates were an option, given the small amount of foreign reserves and the unpredictable relationship of interest rates with inflation.

**Fig. 2**

**M2, CPI and RON/USD exchange rate (monthly % change, y-o-y)**



Source: INSSE.

The NBR's monetary policy framework was based on minimum reserves and frequent 'deposit-taking' operations for liquidity control. When foreign debt service payments peaked and the danger of insolvency loomed large in 1999, adjusting the current account became the first aim of monetary policy; consequently, inflation climbed to 54.8 per cent. In 2000 inflation came down 40.7 per cent.

By then the exchange rate had replaced monetary aggregates as the anchor of monetary policy, but the need to finance the budget deficit and to keep the current account deficit within reasonable limits prevailed over disinflation considerations.

In 2001, while exceeding the target of 25 per cent, inflation declined to 30.4 per cent. Helped by declining interest rates on T-bills, the NBR also succeeded in imposing its interest rate policy for the first time. The NBR avoided a large real appreciation of the domestic currency, but again failed to sterilize the mounting liquidity following the purchases of foreign exchange. In 2002 inflation went down to 17.8 per cent, below the target of 22 per cent. While pushing disinflation, the NBR also kept an eye on economic growth and external equilibrium. The control of monetary aggregates (via base money) continued to shape monetary policy. Liquidity was controlled through reverse repos and deposit-taking.

In 2003 the inflation target, 14 per cent, was attained. The traditional conflict between disinflation and mitigation of the external disequilibrium tendency eased, while the euro was adopted as a reference exchange rate. Disinflation progressed further in 2004 and inflation (end of the year) fell to 9.3 per cent. The NBR relied on the stability of the exchange rate as an anchor and the control of liquidity through heavy sterilization operations.<sup>4</sup> Keeping the budget deficit low has helped disinflation. In August 2005 NBR adopted a new monetary policy strategy - inflation targeting and initiated the redenomination of the domestic currency. The end year inflation reached 8.6% slightly outside the 7.5%±1% the extended target band. All over the year the NBR faced the problem of stopping the overheating of the economy, which required a tightened monetary policy and the problem of stopping the large capital inflows which required diminishing the interest rate differential. The end year inflation fell slightly below the central target of 5%. In 2007 Romania became a Member State of the European Union. The reappraisal of risk, which were boosted by the turbulences in the financial markets (which were triggered by the American sub prime mortgage loans), reversed the appreciation trend of the domestic currency by mid year. The poor agricultural year and the increasing oil price added other inflationary pressures. The end year inflation of 6.6% was far beyond the 4%±1% targeted band.

## **2. The context of disinflation**

In mid-1999 Romania went through a short but serious financial crisis, and avoided default on the external debt by drastically adjusting the balance of payments, among other things, by halving the budget deficit. Prior to the crisis, an overvalued Romanian leu (ROL) gradually eroded export competitiveness and depleted the NBR's foreign exchange reserves. Since 2000 the NBR has directly pursued the policy goals of

1. rebuilding and consolidating the stock of foreign exchange reserves and of preventing an excessive ROL appreciation (consistent goals);
2. achieving gradual disinflation.

Since the goals (1) and (2) are not mutually consistent, the NBR has had to rely on two instruments. To achieve the goals of recovering reserves and limiting real ROL appreciation so as to support export competitiveness, the NBR has bought large amounts of foreign currency after 1999, increasing its current foreign exchange

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reserves cover to more than four months of imports. This substantial accumulation of reserves contributes to reducing the country-specific risk and to improving Romania's credit rating and implicitly its terms of borrowing. In turn, the cheaper access to international capital comes with additional pressure on the NBR to buy foreign currency if it keeps fighting ROL appreciation. When, at the end of the period (2002–2003), the NBR slowed down the pace of buying foreign currency, the ROL appreciated slightly against the reference currency basket.<sup>5</sup>

When buying foreign currency, the NBR also injected liquidity into the economy, and these interventions were never fully sterilized. The monetary base (M0) and the money stock (M2) increased throughout this period and the consequences on inflation were almost immediate.<sup>6</sup> Up to 2003 disinflation occurred while the NBR tried to prevent the ROL from appreciating against the euro and the US dollar. Since then the ROL has undergone steady real appreciation against the reference currency basket.<sup>7</sup>

Unlike in industrial countries, where the central bank is a net creditor of the banking sector,<sup>8</sup> in Romania – as in the transition countries that joined the EU in 2004 – the central bank is a net debtor. In Poland, Hungary and the Czech Republic, the central bank's monetary management consists in adjusting the monetary base by modifying the volume of resources borrowed from commercial banks (for one-week or two-week periods) through regular tender operations. The target instrument is the interest rate that the central bank pays for these credits. Of course, the interest rate the central bank must pay depends on interest rates reported on commercial bank deposits, reserves and loans to households. This is an equilibrium price and is driven by market forces.

Since 2001 the NBR has 'attracted deposits', that is, borrowed resources for one-month periods from commercial banks. Unlike in the case of the above mentioned monetary policy regimes, the underlying target seemed to be rather quantitative. It appears that the NBR first defined the volume of resources it wants to borrow (as a means of controlling liquidity), and then set the interest rate at a level at which commercial banks would want to lend.

The NBR's method of attracting deposits may have been quite effective in dragging liquidity,<sup>9</sup> but has been atypical since most other countries follow the opposite strategy, that is, first choose and announce the interest rate, then see how many resources are attracted; in a third step, adjust the instrument if the target is missed. In the NBR procedure, the interest rate has not seemed to be the key variable; thus it has not conveyed high-quality information about the monetary policy stance, in particular when some form of rationing occurs in the demand for borrowed resources.

Arguably, the recent years' successful disinflation brought the interest rate pass-through in Romania closer to the pass-through levels prevailing in other Central European economies (Tieman, 2004). But the central bank's heavy net debtor position and commercial banks' oligopoly status, as well as still immature financial markets, have stood in the way of an effective interest rate policy.

Unsurprisingly, the rapid accumulation of foreign exchange reserves after 1999 and a contained expansion of the monetary base, given these sterilization operations, led to a monetary structure where the monetary base was covered several times by foreign exchange reserves; at the end of 2007 this coverage was about 2.5 times (in previous years it was higher). In other words, the relationship between the monetary base and

hard currency reserves has been tighter than in standard currency board agreements, where this ratio is one to one. This does not necessarily imply that Romania has abnormally high reserves, but rather points to the underdevelopment of the banking sector and credit activity (low monetization).

### **3. Inflation targeting (IT)**

The NBR introduced inflation targeting as a new monetary policy regime in 2005 in order to strengthen disinflation and bolster the central bank's credibility.

#### **3.1. IT as a monetary policy regime**

The broadest definition of inflation targeting is a monetary policy framework that accords overriding importance to the maintenance of price stability. The narrower definition says that inflation targeting is a monetary policy framework based on the adoption of a monetary policy rule in which forecasts of future inflation play a central role, either in the form of instrument rules or of target rules. An instrument rule expresses the monetary policy instrument as a simple and usually linear function of deviation of a few key macroeconomic variables from their target level. A target rule expresses the monetary policy instrument as the solution to an optimization problem defined by a loss function describing the costs associated with deviations of specific goal variables from their target levels subject to the constraints imposed by the model of the economy's structure.

Since monetary policy works its effect on inflation with a significant delay (at least nine months and up to two years) inflation targeting is in fact inflation forecast targeting (Svensson, 1997). Inflation forecasts are contingent upon the central bank's view of the transmission mechanism, the current state of the economy and a planned path for the instrument. Complex econometric modelling and statistical inference building on high-quality data and economic information are needed in order to produce reliable forecasts (a subjective assessment of the inflation path may be included too). All this highlights the logistical challenge linked with IT implementation.

The inflation targeters are explicit about the long-run inflation rate that constitutes price stability. The inflation target announcement aims at increasing credibility and anchoring inflation expectations. It is useful in establishing the political legitimacy for an independent central bank, especially when taking unpopular decisions.

#### **3.2. The economics of inflation targeting**

The strongest rationale of the inflation targeting regime is that under some reasonable conditions stabilization of prices is equivalent to the stabilization of output around its natural level – that is, the level of output that would prevail if there were no nominal rigidities (Blanchard, 2003). The equivalence holds in models with staggered price setting and rational expectations. Achieving the natural level of output, though, may not maximize welfare if it comes at the cost of large distortions in the composition of output. The class of models for which full price stability is optimal from the point of view of welfare maximization requires a sum of restrictive assumptions (Woodford, 2004).

One restrictive assumption is that there are assumed to be no shocks that would require the relative price of any good to vary over time in an efficient equilibrium. If an efficient allocation of resources requires relative price changes, due to asymmetries in the way different prices are affected by shocks, maintaining the stability of a symmetric index of prices is not generally optimal (Aoki, 2001).

The second restrictive assumption is the flexibility of wages. Although this assumption is one common in the sticky price models (Christiano et al., 2001), it might not be validated in practice. If both wages and prices are sticky with price stabilization, the real wage will be frequently misaligned, as will be the relative wages of different types of labour if these are not set in perfect synchronization.

The third restrictive assumption is the lack of market power and distorting taxes. In the case when these are present the equilibrium level of economic activity is likely to be too low on average. When this is true, not only is the flexible price equilibrium level of output different from the optimal level, but real disturbances will not shift these two quantities to quite the same extent. This means that the gap between the level of output associated with a policy that maintains stable prices and the optimum level of output will be varying in time. As a consequence, it will not be possible to simultaneously stabilize inflation and the welfare relevant output gap.

### **3.3. Experience with inflation targeting worldwide, in transition (emerging) economies**

Whether the macroeconomic effects of inflation targeting are better than the effects of any other monetary policy pursuing price stability is controversial. Levin et al. (2004) investigate the experience of inflation targeters and non-targeters since 1994 in a number of OECD countries and emerging countries. They find that inflation is more persistent for non-targeters especially when the focus is on core inflation and not CPI. They also find that GDP growth volatility is the same for targeters and non-targeters, but inflation volatility is higher for inflation targeters. However, they recognize that the extent to which the reduction of inflation can be credited to IT is not obvious. As for emerging markets (including the Czech Republic, Hungary and Poland), the results document that the introduction of the inflation target moves inflation expectations down gradually, the transition is a smooth one and not characterized by a break at the introduction of IT. Again, the question is the extent to which the reduction of inflationary expectations can be due to the introduction of inflation targeting and not due to a whole range of other institutional changes (fiscal consolidation, a greater degree of central bank independence) which are introduced alongside with inflation targeting.

Bernanke et al. (2001) analyse the macroeconomic effect of inflation targeting using three different tests. First, they use the so-called sacrifice ratio and Philips curve equation in order to decide whether disinflation has been achieved at a lower cost than otherwise expected. The results suggest that the adoption of inflation targeting in New Zealand, Canada, United Kingdom and Sweden did not alter significantly the real economic costs of achieving disinflation. Second, they test whether the private sector inflation expectations inferred from surveys or forecasters and from interest rate differentials have declined after targeting beyond the degree associated with a drop in inflation. The evidence from both the survey data and interest rate differentials suggests

that the adoption of inflation targeting does not establish immediate credibility for monetary policy. However, inflation targeting does help to pin down inflation expectations as the new regime becomes established. The third test tries to determine whether the interaction between inflation, monetary policy and real GDP have changed following the adoption of inflation targeting. The results show that the economic performance of non-targeters over the period considered is not appreciably different from that of inflation targeters.

Inflation targeting has been a more challenging task in transition economies than in developed countries. As experience with IT in transition economies shows, the central banks in these countries often missed inflation targets by a sensible amount. Jonas and Mishkin (2003) look at the potential difficulties and evaluate the outcome in the three East European countries – the Czech Republic, Hungary and Poland – that claim to use the IT system. They conclude that although the progress with disinflation has been good, the comparatively high level of uncertainty in these countries makes it relatively difficult to predict inflation over the medium term as required by the inflation targeting framework. These difficulties result in frequent undershooting and overshooting of the inflation target. Undershoots of the inflation targets have resulted in serious economic downturns that has eroded support for the central bank in both Poland and the Czech Republic.

The same conclusion arises from the Daianu and Lungu (2004) study of the performance in the three East European inflation targeters. The central banks in all three countries have had limited success in hitting inflation targets. Moreover the inflation volatility has become larger. The authors point out several possible explanations. First, the difficulty in these countries to disentangle the source of the shock, which stems from the fact that the effects of structural changes these economies undergo overlap with those brought about by external causes. Second, there is the possibility for monetary policy to pursue multiple objectives. Fearing political tension these countries might assign higher weights to economic growth than the central banks would acknowledge and thus deviate in fact from the inflation targeting framework. Third, fiscal policy, on an unsustainable path, might play a damaging role in influencing inflation expectations.

#### **4. Implementing inflation targeting in Romania**

The European Commission's Regular Report on Romania's progress towards accession, from October 2004, acknowledged that '...Romania complies with the criterion of being a functional market economy. Vigorous implementation of its structural reform programme should enable Romania to cope with competitive pressure and market forces within Union.' As a matter of fact, Romania joined the EU in 2007.

The objectives of monetary and fiscal policy for the coming years are indirectly set by the requirements of nominal and real convergence criteria.

**Table 1**

**The constraints of nominal criteria for euro adoption (data for 2006)**

	Budget deficit	General	Inflation (%)	Long term interest
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	(% of GDP)	government gross debt (% of GDP)		rate (%)
<b>Reference value</b>	<b>-3</b>	<b>60</b>	<b>&lt;2.8</b>	<b>&lt;6.2</b>
Czech Republic	-3.5	30.9	2.2	3.8
Hungary	-10.1	67.6	3.5	7.1
Poland	-2.2	42.4	1.2	5.2
Slovakia	-3.4	33	4.3	4.3
Romania	-2.9	12	4.8	7.27

Source: European Central Bank-Convergence Report December 2006 and NBR.

In the years ahead, monetary and fiscal policies should give priority to preserving the momentum in disinflation and growth (see Table 1). The question is how fast Romania should bring down inflation to the EU rate without incurring an excessive output loss. The experience of the last few years would indicate that an average annual 3–4 per cent of real appreciation of the domestic currency is manageable against the backdrop of increasing remittances from abroad. But how would a steady appreciation of the domestic currency impact on competitiveness over the longer run? Is inflation targeting an appropriate monetary policy regime? The sharp rise in external deficits in the last couple of years and the depreciation of the Romanian currency in the last quarter of 2007 should vindicate those who expressed misgivings about the appreciation trend against the backdrop of sharply rising external deficits.

### 4.1. Rationale for adopting IT in Romania

The adoption of IT was judged as a means to bring major benefits for Romanian monetary policy. First of all, by enlarging the projection period in which an inflation target is pursued, the central bank would escape from the trap of time inconsistency. Second, by adopting a single publicly acknowledged goal, such as an inflation target pursued over the medium term, the central bank could manage inflation expectations so that the required short-run deviation from the target does not jeopardize the final goal. Third, the central bank might benefit from a kind of 'demonstration effect' by using a method adopted in some of the EU's newest members.

In order to benefit from these advantages the NBR needed to choose an appropriate time for introducing inflation targeting. Most inflation targeting countries choose to adopt the new regime only after having some initial success in lowering inflation from previously high levels; this happened in Romania during 2001–2004. In order to gain credibility for the new regime it is important to be able to meet the target with a high probability. This means benefiting from proper logistics and a thorough understanding of the monetary transmission mechanism. A clear signal that both government and central bank support and share responsibility of the new approach enhances the success.

The choice of the target is critical. The right target should mitigate the adverse effect of economic conditions, which could move away the inflation targeting from an optimum monetary policy. Although there is an agreement that inflation and not the price level be targeted and that the optimal target is not zero but a small positive rate of inflation, there is no consensus on what measure of inflation should be targeted. The choice of the latter depends on which characteristics of economy divert inflation targeting from an

optimal monetary policy: wage stickiness, market power and distortionary taxes, relative price adjustments (a series of nominal rigidities).

#### **4.2. Features of the monetary economy in Romania**

Understanding the monetary transmission process is vital to the appropriate design and implementation of monetary policy (of IT). This proves to be a fairly challenging task even for developed economies when there is uncertainty about the way monetary impulses propagate into the real sector. In Romania the task has been harder since the undergoing structural changes add more uncertainty regarding the economic effects of a given monetary policy measure. Uncertainties revolve around the 'fiscal dominance' issue as well. It is essential to identify factors that influence the effectiveness of the monetary transmission mechanism significantly.<sup>10</sup>

##### **4.2.1 The structure of the banking sector**

As in other accession countries, banks hold by far the bulk of financial intermediation in the Romanian economy. The banking sector is largely dominated by a few private banks among which the largest and the latest privatised is basically a market maker<sup>11</sup> and is characterized by a rapidly rising ratio of assets to GDP. At the end of 2007 the share of banks' total assets in GDP was 56 per cent (but this ratio is one of the lowest compared to other Eastern European economies). Moreover, the banking sector has all the characteristics of an oligopoly (Antohe et al., 2003). In September 2007 the five largest banks representing 12 per cent of total banks held around 58 per cent of assets, 62 per cent of deposits, and 59 per cent of loans. This degree of market power diminishes the effectiveness of monetary policy, given that under such a market structure, the control of the central bank over liquidity in the banking system is weakened (commercial banks may use their abnormal oligopoly profits to counter a NBR impulse).<sup>12</sup>

##### **4.2.2 Low monetization**

The share of M2 in GDP has been fluctuating around 24 per cent over the last decade and rose to 35% by end 2007, which is still low as compared with developed economies and even with other transition economies. The low level of monetization is indicative of inefficiencies still at work in the banking system and the lack of experience of private agents in using money as a coordination device. The low monetization bears on the effectiveness of monetary policy. For instance, if private agents do not finance investment projects through bank credits or bonds, interest rates have less of an impact on economic activity.

##### **4.2.3 Euroization/dollarization (on both asset and liability sides)**

In a partially dollarized (euroized) economy, the dollar (euro) is used in any of the three classical roles of money: unit of account, instrument of exchange and store of value, the more relevant being the first two (Calvo, 1999).

Given Romania's inflation history over the last 17 years it is therefore not quite surprising that the dollarization/euroization phenomenon should be so entrenched. After reaching a peak of 46 per cent at the beginning of 2002 the proportion of the hard

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currency component in M2 has steadily fallen to around 40 per cent at the end of 2003 and 28 per cent at the end of 2007 against the background of the ROL's sharp appreciation.<sup>13,14</sup> Compared to other Eastern Europe economies, Romania is one of the most highly dollarized/euroized countries.<sup>15</sup> Asset substitution leads, inevitably, to an increased volatility of demand for domestic money, which makes the management of monetary policy by the NBR more difficult. The success of disinflation and the ROL's appreciation are likely to reverse currency substitution.

Recent literature on financial crises focuses on the other side of private agents' balance sheets and puts forward financial risks associated with liability dollarization, for example a situation where private and public debts are denominated in a foreign currency. As compared to currency substitution (asset dollarization), this is quite a different perspective on dollarization (euroization) and must be explicitly dealt with (Reinhart et al., 2003). Various risks indeed may be connected to a significant dollar debt, in particular if the international value of the local currency can slide down.<sup>16</sup>

### **4.2.4 The informal sector and the demand for cash**

A factor that generates additional complications when attempting to forecast the effects of monetary policy on aggregate demand is the existence of a large informal sector, which, to some extent, explains why the demand for cash is so important in the Romanian economy. In general, the size of the informal sector has followed an upward trend,<sup>17</sup> growing from a low of 9 per cent in 1993 to a (possible) high of 42 per cent in 2000.<sup>18</sup> Since then it has been on a decline.

From a monetary point of view, the existence of a large informal sector increases the demand for cash (both ROL and hard currency). Since factors that affect the informal sector change, so does the demand for money.

### **4.2.5 Size and openness**

As Romania is a small open economy, the exchange rate is by far the most important channel of the monetary transmission mechanism because, in contrast to other channels, it affects not only aggregate demand but also aggregate supply. A depreciation of the exchange rate, caused by a loosening of monetary policy, for example, could induce firms to raise their domestic prices even in the absence of any increase in aggregate demand. Moreover, as exchange rate information is available instantaneously on financial markets, wages and prices tend to adjust before movements in import costs have worked their way to the cost structure. This is a particular feature of the economies with a high inflation track record, such as Romania.

One indicator of a country's degree of trade openness is the average share of foreign trade with respect to GDP.<sup>19</sup> In Romania, this share has been growing constantly since 1998 – from 23 per cent in that year to close to 40 per cent in this decade, which shows increasing integration within the world economy. Although the Romanian economy is one of the least open economies among the newest EU members, its trade shares are still higher than the average for the euro area.<sup>20</sup>

The real appreciation of the ROL together with an impressive increase in the domestic credit have led to a steady and sharp rise in the current account deficit (up to around 14

per cent in 2007). Earlier (like in 2003), this forced the NBR to postpone its plans for further capital account liberalization; among the transactions that were scheduled to be liberalized at the end of 2003 were trading by residents in foreign securities, short-term financial loans and credits (obtained by residents from non-residents) as well as allowing non-residents to open ROL-denominated bank accounts and trade in domestic securities.<sup>21</sup>

The timing of the complete capital account liberalization is important. A premature opening of the capital account could translate into a financial turmoil if other macroeconomic criteria are not met first (Daianu and Vranceanu, 2003). In a small open economy like Romania the world interest rate is given. Large speculative foreign inflows tend to exploit the interest rate differentials and thereby take advantage of the existing arbitrage opportunities. This would make the Romanian economy a potential target, as real interest rates here are high and would thus ensure that a capital gain is realized.

The low diversification of trading instruments in Romanian financial markets can limit speculative inflows to some extent. The Bucharest Stock Exchange Market (BSE) had a capitalization-to-GDP ratio of 25% by end 2006. The bond market is also underdeveloped with issuance of corporate bonds being virtually absent. Arguably, government T-bills are among the most traded instruments but a tight fiscal stance imposes a ceiling on the quantity that is currently issued.<sup>22</sup> Nonetheless, the range of financial instruments has only one direction to go and, thereby, it does not eliminate the threat posed by speculative flows.

The bottom line is that the EU accession conditions forced Romania to open its capital account fully, which, as suggested by several Romanian economists (Daianu and Vranceanu, 2003), was premature. But, apparantly, EU officials did not accept a waiver in this regard.

#### **4.3. Structural constraints of IT implementation**

The 'divine coincidence', which is associated with inflation targeting, is not easy to achieve. Arguably, Romania's economy does not fit into the class of models which ensures the simultaneity of inflation stability and output stability around its natural or optimal level. At the same time, the dampening effects on economic activity of nominal rigidities could be counteracted by significant efficiency reserves which exist in the Romanian economy; these reserves could fuel growth in the years to come. But the issue posed by nominal rigidities is significant.

Thus, relative prices need further adjustment. Administered prices represent still 21 per cent of total prices (which are included in the consumer price index). The productivity growth differential between traded and non-traded goods is larger than in developed countries. And the relative price of non-traded goods to traded goods would tend to increase. Under a flexible exchange rate regime, as it will be under IT, the Balassa-Samuelson effect will result in some combination of inflation and nominal appreciation. If the Balassa-Samuelson effect is large, the authorities in countries with flexible exchange rate regimes might feel compelled to allow the exchange rate to appreciate rapidly, which may attract more volatile capital inflows and hurt competitiveness.

Second, wages might not be flexible enough in Romania. Iara and Traistaru (2004) found no evidence for the adjustment of regional average pay to local unemployment in

Romania – unlike in Poland, Bulgaria or Hungary, where the unemployment elasticity of pay hovers around  $-0.1$  found in advanced economies. The new Labour Code does not help flexibility either. Employment declined by 2 million between 1990 and 2007, with 10 per cent of the decline occurring during (emigrations has contributed much to this decline).<sup>23</sup> In addition, most wages are pegged to the minimum wage. The frequency of the change in minimum wage and the magnitude of change have a considerable effect on wage dynamics.

Third, concentration is high in many industrial sectors and gives considerable market power to economic agents. This can be easily seen in the case of basic products (steel, cement, and so on) and utilities.

#### **4.4. Policy implications of IT**

Inflation targeting in Romania has to cope with a series of challenges, which bear on the concrete form of its implementation.

##### **4.4.1 The credibility challenge**

If targets are missed by large margins this would undermine the credibility of the new policy regime. In order to avoid this situation the models used need to be thoroughly worked out and tested. As mentioned already the construction and use of proper models is a formidable logistical problem in an economy that is still undergoing structural change.

##### **4.4.2 Overburdening of budget policy**

The co-ordination between monetary and fiscal policies is crucial in achieving macroeconomic stability (Mishkin, 2000). Given the choice of monetary targets to set prices, fiscal policy is significantly constrained because it has to achieve optimality in tax patterns, solvency, and ensure long-run consistency between debt and money holdings. In Romania fiscal policy has been rather restrictive over the last years.<sup>24</sup> However, the budget deficit picture is more complicated because of, primarily, two phenomena. The first is the social security system tension. Here, the pension system is probably in the most precarious state. In 2007, Romania had five officially registered workers for every six retired persons. However, the picture is distorted by the fact that, out of the country's working population of around 9.5 million, only 4.7 million appear to be employed. With around 0.4 million being unemployed the remainder of the labour force work either abroad or in the informal economy under the status of unpaid family worker or self-employed. One should also consider the large part of the population in the rural area.<sup>25</sup>

Since 1996, the share of pension expenditure in total government expenditure has grown from 5.2 per cent to 17.2 per cent in October 2007. The pension costs will, undoubtedly, continue to pile up the pressure on government expenditure. This phenomenon is likely to be further exacerbated by a declining birth rate and increased emigration with expected EU entry. Addressing the pension system issue means reforming the existing pay-as-you-go (PAYG) system, where pension expenditure in any given year is financed by that year's contributions in the form of payroll taxes.

The second issue is the poor financial discipline that has been persisting within the economic system. The establishment of such a culture in which the non-payment of utility bills and other budgetary debts has been tolerated meant, in effect, that large implicit subsidies have been draining the budget. A large part of these arrears can be found in the energy sector. Low collection rates and a long-lasting policy of keeping prices below current costs have pushed up the quasi-fiscal deficits in this sector to several percentages of GDP in recent years. Only in the last couple of years have energy prices approached market clearing levels.

It is difficult to predict a time horizon under which the volume of arrears could be brought steadily under control. Therefore, the indirect potential future threat to the government budget is going to persist endangering the course of macroeconomic stabilization. One should also factor in the expenses related to the implementation of the *acquis communautaire*. These costs (including the co-financing of EU funds) could mount to several percentages of GDP.

It is arguable that IT would strain the budget through its deflationary bias. And there could be a reverse of the fiscal dominance issue in this regard. This is why there is need for multi-annual budget programming and further fiscal consolidation. What brings some light, however, is that revenue collection seems to have improved lately.

#### 4.4.3 Excessive appreciation of the ROL

Due to massive capital inflows and 'free floating' and since full capital account opening was bound to happen in 2007 a substantial real appreciation of the domestic currency was to be expected.<sup>26</sup> But unless productivity gains are adequate (substantial) a sort of a 'Dutch disease' could be in the making. This issue poses a challenge to exchange rate policy in the framework of IT. As Chang and Velasco (2000) said, 'how to float is the problem'.

#### 4.4.4 Possible large variability of output dynamics

There is an agreement in the literature that a central bank should care about asset prices, including exchange rates, at least to the extent they influence inflation and output. Within an inflation targeting framework a forward-looking central bank would bear in mind how asset price movements affect output and inflation forecasts. These policy implications outline a policy challenge for NBR: what form of IT is feasible?

## **5. Policy choices (MP and ERP)**

The Romanian economy has some distinct characteristics that ask for a careful consideration of the appropriate monetary and exchange rate policies. The current and potential future pressures on the government budget require a close co-ordination of monetary and exchange rate policies with budget policy.

The NBR introduced a regime of inflation targeting in 2005. As several authors (Daianu et. al, 2004; Daianu and Kallai, 2005; Daianu, Lungu, 2005, etc) argued a 'soft' form of IT was appropriate under the circumstances. This 'soft' monetary framework would

focus on inflation but, initially, it would consider shorter horizons (two to four quarters) than the medium term, would not neglect exchange rate completely, would work closely with the government on budget policy and would further delay the full opening of capital account. And this is what circumstances compelled the NBR to do in practice, irrespective of some bold statements which were made at the start of the new policy regime.

The ECB's monetary policy regime was also an option to consider. Another option would have been to keep the previous monetary policy regime and wait for better conditions in order to introduce IT. As some say, 'if it ain't broke why fix it'. Trying to practice a 'hard' form of IT would have been highly costly.

### **5.1. Inflation targeting: why a 'hard' version is not recommended<sup>27</sup>**

The benefits derived from an IT regime, in terms of accountability and credibility, stem from using reliable conditional forecasts and using effective policy instruments. Obtaining a reliable conditional forecast is a difficult task. The relationship between the instruments is in general assumed to be known. In practice, inflation targeting central banks need one (several) stable macro-econometric model(s) to get the inflation forecast and simulate the impact of a change in the set of instruments over the inflation path. Arguably, the interest rate on resources borrowed by the NBR from commercial banks (so-called 'attracted deposits') might be this instrument. Yet, the interest rate pass-through remains a policy challenge in view of the NBR's massive sterilization operations, the market power of some commercial banks and still immature domestic financial markets.<sup>28</sup>

Furthermore, it is the challenge of econometric modelling. It may be argued that for no country correct econometric models can be built. True, all models are subject to estimation biases; furthermore, model parameters change when policy changes. But estimating a model for a relatively stable economy with relatively stable policies (for example the UK or Sweden) is not the same thing as estimating a model for an economy whose structure and policies are changing. Econometric modelling is almost an impossible task when the structure of an economy is changing, which is obviously the case for a transition country; that difficulty prompted ECB officials not to seriously consider a euro area macro-econometric model (in particular, given that the adoption of the euro is altering the inner structure of EMU). And the IT attempts in Central European countries are very 'loose' in reality.<sup>29</sup>

The NBR needs to improve its basic forecasting tools; without an appropriate bond yield curve, tracking inflation expectations is quite hard. As a substitute, before a wide range of bonds with various maturities become available, NBR could implement some form of survey on inflation forecast of market analysts. Notice that it is difficult to forecast the money demand given the weight of the informal sector and because shifts in expectations make private agents to arbitrate between local and foreign currencies, which all may legally be used as a store of value (and even as a transaction instrument).<sup>30</sup> Supply in the broad money stock is also hard to monitor since a substantial portion of the money stock is in hard currency and cash in circulation holds a large portion of base money.

Given these uncertainties, the risks of taking decisions on the basis of a wrong two-year forecast are quite high. Today the NBR's credibility is quite high, in view of the disinflation achieved until now. This capital of credibility can only be adversely affected if the NBR forecasts come out to be wrong systematically.

What about the timing of IT implementation? If Romania has to follow (with a lag) the same path as the most advanced transition economies (Poland, Hungary, the Czech Republic) it may face massive capital inflows in the near future, which would push towards a sharp real appreciation of the domestic currency. To put some breaks on the decline in export competitiveness, from a social welfare point of view it may be useful to push down the interest rate. But independent employment and competitiveness goals may clash with the low inflation goal, as required by the IT regime.

Romania joined the EU in 2007; it must set its monetary institutions and policy in line with the euro area, so as to join, at a later date, EMU provided conditions are appropriate. But the European Central Bank (ECB) itself is not a genuine IT central banker. Like the Fed, the ECB made the choice of flexibility, although it has precise quantitative targets in terms of inflation.

The ECB experience is enlightening on several other issues; many empirical studies have shown that the ECB is not indifferent either to fluctuations in economic activity or the exchange rate. It seems that for a central bank, 'flexibility' is an asset at least as important as 'credibility'. Early studies in the credibility of monetary policy argued that discretion is at the origin of all the evils in monetary management. In more recent analyses, it came out that if the lack of flexibility (discretion) casts serious doubts on the sustainability of the banking system itself, then the credibility risk may occur at a deeper layer.

## **5.2. Exchange rate policy**

Romania's foreign financial position is sound, with a satisfactory country risk rating,<sup>31</sup> a relatively low external debt, and no difficulties in financing the debt service. The NBR stock of foreign exchange reserve is quite normal according to international standards.

Lately the NBR allowed for more flexibility in the determination of the exchange rate. This trend should continue. Direct interventions might still be conducted in an exceptional way, to fend off speculative attacks or terminate a bubbly behaviour of the domestic currency.

This does not imply a fully hands-off attitude over the international value of the ROL, but a managed, market-based influence of the NBR over the exchange rate, consistent with its price stability goal via its (direct or indirect) influence over short-term interest rates. Flexibility in the realm of exchange rates will enhance the capacity of the NBR to pursue the goal of internal price stability by increasing the effectiveness of monetary policy; the latter's effectiveness would be helped by controls on speculative capital flows.

Romania plans to join the ERM II by 2012 with a view of becoming an EMU member by 2014. This will shift the NBR's focus back from price stability to exchange rate stability. But the two goals are not inconsistent, since in the medium run the international value of the currency can be stable only if its internal value is stable.



## **6. Conclusion**

All in all, Romania has been on a favorable economic track in this decade: economic growth has averaged above 5 percent yearly and inflation has declined at a steady pace until 2006 (Table XX.2). It is true, however, that major vulnerabilities persist: external deficits have risen sharply and disinflation is not yet consolidated (a new bout of inflation occurred in 2007 due to powerful adverse shocks). Further progress in economic stabilization hinges on deepening structural reforms, prudent budget policy (including fiscal consolidation), restrained wage policy (in spite of intense labor shortages), reducing overall economic inefficiency and quasi-fiscal deficits. The country seems poised to attract more foreign investment were the business environment continue to improve.

The characteristics of the Romanian economy do not favour the 'divine coincidence' if hard inflation targeting would be attempted. The economy still needs substantial relative price adjustments, wages have to be more flexible, the economic structure shows too much market power, and the tax system is still pretty distorting. In addition, the NBR needs to develop its own capacity to implement inflation targeting.

A 'soft' form of inflation targeting has proved to be an unavoidable choice in practice, as some economists had argued it would happen. A 'soft' IT framework focuses on inflation but considers shorter horizons (two to four quarters) than the medium term, does not neglect the exchange rate completely, works closely with the government on budget policy, and delays the full opening of the capital account (this was done in Romania until the end of 2006).

An ECB-like system, as a very loose form of IT, could have been also an option (Issing, 2004). Under such an arrangement, the policy maker focuses on price stability too, but monetary policy management builds on the 'just-do-it' principle. In the case of a small and still fragile economy, flexibility does not clash with credibility; to the contrary, both back each other. Sophistication required by a genuine (hard) IT regime would introduce unnecessary risks, and additional noise in the economy, deemed to accentuate, not to dampen fluctuations.<sup>32</sup>

The years to come will reveal a major clash between, on one hand, the need to consolidate disinflation and, on the other hand, an expanding budget expenditure (as a result of EU funds absorption and the need to comply with the *acquis communautaire*). This would be particularly tricky when the capital account is fully opened (and, consequently, crowding out does not operate as a means to dampen aggregate demand). Nonetheless, this major policy challenge should not lead to a relaxation of the effort to continue disinflation. Inflation targeting, in its soft form, should take this challenge into account. Likewise, a reform of public expenditure would help deal with the clash between a restrictive monetary policy and an expanding budget expenditure.

Monetary policy in Romania, budget policy (macroeconomic policy in general) should heed the effects of the deepening international financial crisis (following the debacle in the US sub-prime mortgage market and the "freeze" in credit markets). These financial turbulences ask for more prudence on the part of national policy makers, especially where external deficits are pretty large and inflation is still high. Romanian budget policy

would be imprudent were it to target larger budget deficits in the years to come --under the circumstances of deepening tensions on world financial markets.

The economic rise of Asia and effects of climate change (such as recurrent droughts, that damage crops) entail a tendency of rise in the prices of energy and food. This would impact severely Romania where energy and foodstuffs make up a sizeable portion of the consumption basket of most citizens. Consequently, the dynamics of inflation would be negatively affected (the year 2007 was a glaring example in this respect). It might be that even "core inflation" would register a rise in the years to come. The National Bank of Romania would see its inflation targeting regime facing an additional challenge as a result of such occurrences.

Table 2

## Macroeconomic indicators, 1998–2007

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007 <sup>1</sup>
GDP, RON billion	37.38	54.5	80.3	116.7	151.2	189.0	246.5	288.04	342.4	266.6 <sup>2</sup>
GDP, annual growth, % change	-4.8	-1.2	2.1	5.7	5	4.9	8.5	4.1	7.7	5.8 <sup>3</sup>
CPI, % change, end year	40.6	54.8	40.7	30.3	17.8	14.1	9.3	8.6	4.87	6.6 <sup>3</sup>
Net foreign assets, RON billion	1.6	4.1	9.2	16.8	23.6	25.2	35.3	41.5	38.7	28.5
Net domestic assets, RON billion	7.6	9.2	9.2	10.2	13.6	20.8	28.0	45.0	72.0	107.6
Domestic credit, RON billion	7.9	10.1	11.2	14.3	20.0	30.1	36.5	54.6	95.9	142.2
Non-government credit, RON billion	5.9	5.7	7.5	11.8	17.8	30.2	39.3	59.8	92.3	133.3
Non-government credit, annual growth, % change	64.5	-2.3	30	57.6	51.1	69.5	29.9	52.1	54.3	44.4
Foreign currency loans, RON billion	3.4	3.3	4.4	7.0	11.1	16.7	25.3	32.7	43.7	68.6
Foreign currency loans, annual growth, % change	77	-4.4	34	58.6	58.4	49.8	42.7	29.2	33.6	56.9
Broad money, M2, RON billion	9.2	13.4	18.5	27.0	37.3	46.0	63.1	86.2	110.4	128.7
Broad money, M2, annual growth, % change	48.9	44.9	38	46.2	38.1	23.3	23.1	36.6	28	16.6
T-bills with discount, average yield, %	72.7	76	49.7	35.7	17.3	18	16.4	5.4	-	7.85
Attracted deposits, stock, daily average, RON billion	0.07	0.36	0.38	1.32	4.32	6.02	8.09	12.03	11.14	6.26
Attracted deposits, interest rate, %	106.3	66.2	49.2	38.3	28.2	19.1	20	9.4	8.48	7.44
Share of foreign currency deposits in M2, end year, %	32.6	37.6	40.4	42.8	39.3	37.1	35			
M1, RON billion	2.2	2.9	4.6	6.4	8.8	11.3	22.9	33.7	48.7	68.1
M1, % growth	18	34.2	56.2	38.8	37.3	28.3	26	47.2	44.5	39.8
Current account deficit, EUR million	-2,575	-1,355	-1,494	-2,488	-1,623	-2,877	-5,099	-6,888	-10,156	-13,346 <sup>4</sup>
Current account deficit, % in GDP	-8	-3.5	-3.7	-5.5	-3.3	-5.8	-8.4	-8.7	-10.3	
Budget deficit, % of GDP	-2.8	-2.5	-4.4	-3.5	-2	-1.5	-1.5	-1.4	-1.9	-2.9
Exchange rates, RON/EUR (average)	0.9989	1.6295	1.9955	2.6026	3.1255	3.7555	4.0532	3.6233	3.525	3.333
Exchange rates, RON/USD (average)	0.8875	1.5332	2.1692	2.9060	3.3055	3.3200	3.3636	2.9136	2.8108	2.436
Real appreciation (-)/ depreciation (+), against the basket <sup>5</sup>	..	..	-5.7	-5.64	-2.37	-3.22	-5.5	-18.08	-9.01	-12.46

<sup>1</sup> November 2007 ; <sup>2</sup> January-September, 2007; <sup>3</sup> estimation for 2007; <sup>4</sup> January-October 2007

<sup>5</sup> The basket was 0.6 EUR–0.4 USD up to 2003 and 0.75 EUR–0.25 USD since 2003.

Source: NBR.

**Notes**

1. The authors thank Laurian Lungu and Thomas Reininger for their comments on the paper. It goes without saying that the authors bear sole responsibility for its content.
2. Daianu (1994).
3. According to Law 101/1998, which has replaced Law 34/1991, the fundamental objective of the NBR was to ensure the stability of domestic currency with a view to maintaining price stability. Only the latest Law 312/2004 stipulates the fundamental objective as being the maintenance of price stability.
4. The exchange rate pass-through between 1997 and 2003 was found large and fast (Gueorguiev, 2003) justifying the choice of exchange rate as basic anchor for disinflation.
5. During 2002–2003 the currency basket was made up of 60 per cent euro and 40 per cent US dollar. In January 2004 the currency basket composition changed to 75 per cent euro and 25 per cent US dollar. In November 2004 the NBR announced that the basket was to become 100 per cent euro-based.
6. As put forward by Daianu and Vranceanu (2001), a shock to the money stock reached its maximum impact on inflation three months later.
7. The currency basket was dropped (in favour of the euro) in November 2004.
8. For instance, the ECB will lend money for a one-week period, in a reverse-repo operation. It alters the amount of borrowed reserves by tuning the marginal interest rate required on these resources.
9. A Granger causality test over the inflation rate (INF) and the NBR liabilities towards commercial banks (LLNBR) (in logarithms) over the period 1998.01–2003.09 shows that the latter has a strong impact on inflation rates (in a six lag model). A simple regression model (Daianu et al., 2004), reveals that:  $INF_t = 5.33 + 0.26INF_{t-1} - 0.41LLNBR_{t-2}$ . The negative and statistically significant sign of the LLNBR coefficient suggests that the deposit attracting operations had a stabilizing impact on prices ( $R^2A=0.50$ ).
10. Traditionally, four channels of transmission of monetary policy have been identified in modern financial systems. The first is channel is the direct interest rate effect, with the central bank's key rates affecting market interest rates. This in turn will affect the spending, saving and investment behaviour of individuals and firms. The second channel is credit availability. The third channel is asset prices such as bonds, equities, and physical assets (for example housing). The fourth channel is the exchange rate. In all transmission channels, expectations intervene significantly.
11. Not un-frequently the NBR has relied on BCR in order to relay its interest rate policy signals.
12. There is a vast theoretical and empirical literature which shows that the impact of a given monetary policy on banks depends on the industrial organization of the sector. One implication of this is that larger banks are able, in principle, to shelter their profits from fluctuations in monetary policy.
13. Arguably, the indicator used to measure the degree of currency substitution could somehow underscore the extent of the phenomenon since it does not include foreign currency in circulation due to the inherent difficulties in measuring the latter.
14. As a comparison, Reinhart et al. (2003) has shown that between 1996 and 2001, the average ratio of foreign currency-denominated deposits in broad money for a sample of selected emerging market economies was 18.4 per cent. In their sample Argentina had the highest ratio, 52.5 per cent, followed by Turkey with 45.9 per cent.
15. In 2001 for example the ratio of foreign exchange deposits in M2 was 9.9 per cent for the Czech Republic, 13.3 per cent for Poland, and 30.1 per cent for Slovenia.
16. See for an explanation of this balance sheet effect Aghion et al., 2001, Jeanne and Zettelmeyer, 2002.
17. The reasons of why it has been so are multiple. First, the choice of economic agents to operate in the informal sector is a natural response to avoiding an excessive tax burden

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(social security contributions are, probably, the highest in Europe). Second, because of a complicated mechanism of regulation an increasing number of companies have switched parts of their activities to the informal sector. Third, a still underdeveloped financial system has increased the probability of economic agents to engage in informal cash transactions.

18. Ciupagea, 2001; Albu et al., 2001; French et al., 1999.
19. Exports plus imports divided by two as a share of GDP.
20. According to the 1999 EBRD Transition Report the average share of trade in GDP for the EU candidate countries was 45 per cent.
21. Some of the capital control regulations have been changed, however. For example, from 2004 residents are allowed to take abroad any amount of foreign currency with the requirement to declare sums that exceed EUR 10,000.
22. In September 2004 almost 50 per cent of the total internal public debt of EUR 3.3 billion represented T-bills and 12 per cent represented T-bills issued in foreign currency (down from 14.4 per cent registered in December 2002).
23. It seems that the recent growth cycle is jobless-driven and productivity-driven.
24. The general government deficit has been cut from 5.4 per cent (without privatization revenues) of GDP in 1998 to an estimated 2.4 per cent of GDP in 2003. For 2004 the deficit is forecast at 1.6 per cent.
25. In comparison, the ratio of workers to pensioners in Europe, already considered to be in the crisis zone, currently stands at four to one and is forecast to decline to two to one by the year 2040.
26. See also Isarescu et al. (2003).
27. See also Daianu et al. (2004).
28. Tieman (2004) is more optimistic in this regard.
29. Levin et al. (2004) show that in emerging economies the weight of food in the price index is much higher than in developed economies. This increases inflation volatility, and makes more difficult for the policymakers the task of reaching their targets, with adverse consequences on central bank credibility; they also argue that most developing countries cannot afford to neglect the exchange rate, which is often a focal point for inflation expectations. But a dual objective is contradicting the IT principle. Levin et al. (2004) also show that in the emerging economies that adopted IT (including the Czech Republic, Hungary and Poland) there was no significant reduction in long-term expected inflation after the introduction of IT. There was neither any significant reduction in short-term expected inflation after the introduction of the IT; the downward trend in inflation expectations could be put forward well before adoption of IT. Another observation is that in emerging economies the adoption of IT has been frequently associated with overshooting or undershooting; possible explanations for missing the targets are: difficulties of controlling and forecasting inflations, the larger shocks, the lower credibility of the central bank.
30. Antohi et al. (2003) document well the difficulties the NBR staff faced to forecast the demand for money.
31. Fitch-IBCA, S&P and Moody's raised Romania's sovereign rating to investment grade in 2004 and 2005.
32. As Greenspan (2004) put it when referring to easing monetary policy in 1998 'the product of a low probability event and a potentially severe outcome can be judged as a more serious threat to economic performance than the higher inflation that might ensue in the more probable scenario'. The uncertainties clouding the way the monetary transmission works render the eventual inflation forecasts too approximate and make advisable embodying into the monetary policy a risk management policy. Central banks need to consider not only the most likely future path, but also the distribution of possible outcomes about the path.

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