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Research Report

Strategies of monetary and exchange rate policy in the perspective of Romania's accession to the European Union: Romania's monetary institutions and policy: meeting the EU challenge

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European Institute of Romania

Study no. 2

**STRATEGIES OF MONETARY AND EXCHANGE RATE
POLICY IN THE PERSPECTIVE OF ROMANIA'S
ACCESSION TO THE EUROPEAN UNION**
**Romania's Monetary Institutions And Policy: Meeting The EU
Challenge**

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Final draft

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1. INTRODUCTION

Romanian policymakers share much enthusiasm about Romania joining the European Union by 2007 following the same steps that will lead in May 2004 to the accession of ten new countries. In June 2003, the European Council of Thessalonica stated that the EU would welcome Bulgaria and Romania in the EU in 2007, provided that both countries comply with the membership criteria.

A brief look to basic indicators (Table 1.1) shows that, while very ambitious, from an economic perspective, the goal could be achieved should reform policies be pursued consistently and firmly and the absorption of the EU's first eastern enlargement unfolds smoothly. After a decade of hesitations, Romania's economic performance has been improving in recent years: economic growth has hovered around 5% per year, inflation has come down to about 14% in 2003, the banking system is much cleaner and more solid now. Most macroeconomic balances are, more or less, kept under control. All these accomplishments prompted main rating agencies to upgrade Romania's grades lately. On the other hand, major weaknesses persist, which raise fundamental challenges for economic policy in general, and for monetary and exchange rate policy in particular. Sober and realistic examination of the state of the Romanian economy indicates that the 2007 timetable is a tall order when weighted against the EU requirements of nominal and real convergence. Nonetheless, the policy course and the chapter negotiations connected to the transposition of the *Acquis Communautaire* are set on this time schedule.

Basic requirements to green light Romania were stated by the EU at several times. For instance, the 2002 *Roadmap to Accession* spelled out that the Romanian economy should be able to withstand strong competitive pressures which will come with the market liberalization for product and services and the full opening of the capital account. This important document also indicated that the country should made significant progress with respect to disinflation; this would build on stronger company financial discipline, tighter control of money supply, and further development of the banking sector.¹ Indeed,

¹ *Roadmaps for Bulgaria and Romania*, 2002. Communication from the Commission to the Council and the European Parliament, COM 2002/624. www.europa.eu.int/comm/enlargement/docs/pdf/roadmap-br-ro-2002_en.pdf.

in the realm of economics, Romania faces one of the biggest difficulties in taming inflation and building a credible and efficient monetary system and policy.

If the criteria for joining the EU are more or less clear, the optimal policies to attain them are less well spelled out. For, it is not sufficient to mention fiscal rectitude, tight monetary policy, or wide privatisation in order to come up with the right (optimal) combination of measures – in the case of a relatively backward economy, which is plagued by huge inefficiencies, insufficient restructuring of industry, fragile institutions, and last, but not least, an underdeveloped financial system. As the EU emphasises the need for disinflation, what should be the optimal monetary policy? Today (early 2004) Romanian policymakers take for granted that, in order to join the EU in 2007, inflation must be brought to below 6% by 2006. But what kind of monetary policy and exchange rate policy should Romania undertake under such circumstances? Can Romania bring inflation to a one digit level on a sustainable basis? Can inflation targeting be adopted in 2005 successfully? And if that is the case, what about dealing with the issue of fiscal dominance, in view of the size of quasi-fiscal deficits, in such a short span of time?

This study aims at exploring *country characteristics* and the *institutional set-up* which both impose constraints on the shaping of monetary policy in Romania. Monetary policy (goals and macro-management) is analysed in conjunction with the fiscal and exchange rate policies. The analysis uses as working assumptions the time set for EU admission and also the requirements for joining at a later time the ERM2; it aims at getting a better grasp of policy determinants, and, simultaneously, at suggesting policy options which can help attain fundamental policy goals. Of course, no study can pretend to take into account all the factors; this one emphasises those that seem the most relevant for efficient decision making with respect to monetary policy.

After a brief analysis of the EMU monetary institutions and policy (Section 2), in Section 3 we outline the main elements (goals and instruments) of the Romanian monetary policy in the interval 1999-2003. Section 4 emphasises the constraints imposed on monetary management by the structure of the Romanian economy. Section 5 investigates the monetary policy goals weighted against the requirements for EU accession. The last Section presents a series of policy recommendations with a focus on the Romanian central bank's stated intention of introducing inflation targeting in 2005.

The study ends with a conclusion. An appendix contains an attempt of an econometric model for the Romanian economy, which is still work in progress.

Main structural and macroeconomic indicators 2002

	Area	Mil habitants	GDP per capita, in Euro (pps)	GDP growth rate (%)	Share of agriculture in GDP (%)
Bulgaria	111	7,9	5900	4,8	12,5
Cyprus	9	0,8	17400	2,2	4,3
Czech Rep,	79	10,2	14400	2,0	3,7
Estonia	45	1,4	10000	6,0	5,4
Hungary	93	10,2	13600	3,3	4,3
Latvia	65	2,4	8500	6,1	4,7
Lithuania	65	3,5	9400	6,7	7,1
Malta	0,3	0,4	11700	1,2	2,8
Poland	313	38,2	9500	1,6	3,1
Romania	238	21,8	5900	4,9	13,0
Slovakia	49	5,4	11400	4,4	4,5
Slovenia	20	2,0	17700	3,2	3,3
Turkey	775	69,6	5500	7,8	11,5

	Budget deficit to GDP (%)	Public debt to GDP (%)	Current account to GDP (%)	FDI (stock, euro per capita)	Inflation rate (%)	Unemployment rate (%)
Bulgaria	-0,6	57	-4,7	273	5,8	18,1
Cyprus	-3,5	na	-5,3	na	2,8	3,8
Czech Rep,	-3,9	23	-6,3	2289	1,4	7,3
Estonia	1,3	5	-12,3	2092	3,6	9,1
Hungary	-9,2	50	-4,0	na	5,2	5,6
Latvia	-3,0	14	-7,7	978	2,0	12,8
Lithuania	-2,0	28	-5,3	723	0,4	13,1
Malta	-6,2	na	-3,9	6418	2,2	7,4
Poland	-4,1	48	-3,6	963	1,9	19,9
Romania	-2,2	29	-3,4	252	22,5	7,0
Slovakia	-7,2	34	-8,2	903	3,3	18,6
Slovenia	-2,6	31	1,7	1543	7,5	6,0
Turkey	-10,0	na	-0,8	293	45,0	10,4

| Source : Strategy Paper and Report of the EC on the progress towards accession by Bulgaria, Romania and Turkey, 2003

| Source : BIS 73rd Annual Report, 2003

Table 1.1.

2. MONETARY DEVELOPMENTS IN THE EMU

According to the Amsterdam Treaty (1997) which is now an integral part of the Treaty on the European Union², all the new EU members must join the Euro Area after a period that may be more or less extended. In this context, Romanian monetary institution should not only support the transition to a market economy, but it should be kept in mind that *in the long run* Romania should also be able to cope with the constraints of the New Exchange Rate Mechanism (ERM2). According to the Convention for the New Exchange Rate Mechanism (September 1st, 1998) a central rate against the euro will be defined for every euro candidate, as well as a standard fluctuation band of $\pm 15\%$ (a narrower band may be negotiated on a bilateral basis). Euro candidates should keep their currency within the New Exchange Rate Mechanism (ERM2) for at least two years before accession.³

These two goals require that the National Bank of Romania should structure the Romanian banking system, and more generally, the institutions concerned with monetary policy, within a framework fully consistent with the functioning of the Eurosystem. Given these elements, it is obvious that any recommendations concerning the Romanian monetary system and policy should build on: a good understanding of the EMU system, policy and constraints; a precise diagnosis of the contemporaneous Romanian situation. This section presents the European monetary context.

2.1 The ECB's mission and the official position

The European Central Bank (ECB) was set up in 1999 to manage monetary policy within the European Monetary Union (EMU). At that time, the Bank took over the former national central banks in the EMU member states. The ECB has a large autonomy, since,

² See the Treaty on European Union at the web address: www.europa.eu.int/eur-lex/en/treaties.

³ See: "The Eurosystem and the EU enlargement process", *ECB Monthly Bulletin*, February 2000; "The ECB and the accession process", Speech by Willem F. Duisenberg, delivered at the Frankfurt European Banking Congress, November 23, 2001, www.ecb.int/key/01/sp011123.htm; Niels Thygesen, "The path to the euro for the enlargement countries", Speech delivered at the European Parliament on May 8, 2002, www.europarl.eu.int/comparl/econ/pdf/emu/speeches/20020521/thygesen.pdf; "Central Europe and the euro: up for adoption", *The Economist*, June 1, 2002. The text of the "Conventions and Procedures for the ERM2" on September 11, 1998 is available at: www.banque-france.fr/gb/euro/bce/cpresse/2c.htm.

by the Founding Act, it should never bail out spendthrift governments of the member states; it also has a large independence, given that the political influence of the governments over the central bank is quite low.

In this sub-section we present the main ECB mission and its official position over several important issues; in the next sub-section we describe the main policy instruments, and then, in sub-section 1.3, we comment on the ECB policy in the 1999-2003 period.⁴

2.1.1 Price stability

In keeping with Article 105 of the consolidated version of the Treaty on European Union, the primary objective of the ECB is *to maintain price stability in the Euro-zone*. Price stability should be achieved in the medium run, thus the Bank is not expected to accommodate price variations due to terms of trade or other shocks. As put forward by Mishkin (2000), an institutional commitment to price stability is not sufficient per se to bring about the much needed credibility for a central banker; this general goal should be transposed into a simple quantitative target. In 1998, the European Monetary Institute defined *price stability* as “a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) for the euro area of below 2%” (ECB 2001). The HICP is a weighted average of consumer price indices, collected following a uniform methodology, over the euro member countries. In May 2003, the ECB Governing Council reconfirmed the main definition of price stability, but added a slight nuance: the Governing Council agreed that in the pursuit of price stability, “it will aim to maintain inflation rates close to 2% over the medium term.”⁵

2.1.2 Employment and growth

In the same Article 105, the Treaty on European Union also states that, without prejudice to the objective of price stability, the ECB shall support the general economic policies in the Community with a view to contributing to the achievement of the Community goals as laid down in Article 2. According to the latter, the Union shall “promote economic and social progress and a high level of employment and to achieve

⁴ Information is available on the ECB Web site, www.ecb.int. See on this issue Fourçans and Vranceanu (2004).

⁵ See “The ECB’s Monetary policy strategy”, May 8, 2003, www.ecb.int/press/03/pr030508_2en.htm. At that time, the perceived risk of deflation was even stronger in the United States.

balanced and sustainable development...". This might suggest that the ECB is not indifferent to the economic development of the Euro-area.

Yet, at several occasions, ECB officials put forward their "hands-off" attitude with respect to the "real sector". The official position of the ECB is that the best way the Bank has to promote growth is by maintaining price stability. Jean-Claude Trichet, the ECB President since November 2003, stated that "by anchoring a low level of inflation in the years to come, and not in the medium term but also in the long term, we pave the way for this favourable financial environment which is conducive to growth."⁶

2.1.3 A money quantity target?

Between 1999 and 2003, and according to ECB officials' declarations, the Bank closely monitored the growth rate of the monetary aggregate M3, taken as "the first pillar of monetary policy". The "reference value" has been set to an annualized 4.5% increase in M3.⁷ This increase would be consistent with an inflation rate below 2% (the velocity is expected to decline by 1-1.5% per year). In practice, the money growth rate exceeded systematically the target (it was about 6.5% in 2003), without triggering a reaction in terms of policy instruments. This is hardly surprising, since no tight relationship between the money growth rate and inflation could be unveiled (Gerlach and Svensson, 2003). On May 2003, the ECB Governing Council decided to play down the role assigned to money growth; further on, this will be considered as one indicator among many others able to convey useful information on future inflation trends.⁸

2.1.4 The exchange rate

ECB officials claim to follow a strictly neutral stance with respect to the exchange rate. They often state that the best way to support the international value of the euro is to

⁶ Jean-Claude Trichet: [Introductory statement to the press conference on 8 January 2004](#), Frankfurt am Main, 8 January 2004.

⁷ See the "Annual review of the reference value for monetary growth" in the *ECB Monthly Bulletin* of December 2002.

⁸ See "The ECB's Monetary policy strategy", May 8, 2003, www.ecb.int/press/03/pr030508_2en.htm.

pursue internal price stability. Thus, according to official position, the exchange rate is not a policy objective *per se*.⁹

Throughout the 1999-2003 period, ECB officials opposed (in public) the idea of using interest rates to stabilize the exchange rate (i.e., increasing interest rates when the euro depreciates and vice-versa). This declared “benign neglect” of the international value of the euro contrasts sharply with the public perception of the euro exchange rate against the dollar, which seems to be considered as the main yardstick for measuring the success of the euro.¹⁰ In particular, an excessively weak euro (about 0.85 US \$/euro) has brought about a coordinated intervention to support the euro during the 2000 fall, against a background of criticism about the lack of credibility of the ECB; in the opposite, a seemingly excessively strong euro (1.3 \$/euro) led to criticism on the damaging impact on exports and counter-competitive effect in early 2004, to the point that the newly appointed ECB President, Jean-Claude Trichet, declared that he “does not particularly like excessive volatility or excessive turbulence” in January 2004. By February 2004 the ECB Press releases dropped any reference to the “strong” euro, to speak about a “stable” currency. All in all, the relatively short period of existence of the euro seems to be characterized by significant (and perhaps not justified on pure economic fundamentals) exchange rate volatility. In the years to come, it should not be excluded that the ECB and the Fed decide to jointly support a more stable euro/dollar exchange rate.

However, the ECB agrees that the exchange rate represents one among many others indicators that should be included in the inflation forecast.¹¹ The international value of the euro has a direct impact on internal prices, via import prices. In particular, euro depreciation would increase inflationary risks and vice-versa. Given the low share of imports in total GDP for the Euro-zone as a whole (below 15%), the direct impact can

⁹ See “The euro – a stable international currency”, Speech of Otmar Issing to the Hungarian Academy of Science, Budapest, February 27, 2003, www.ecb.int/key/03/sp0302227.

¹⁰ See “The single currency and European integration”, speech delivered by Sirkka Hämmäläinen at the seminar “EMU Experience and Prospects – A Small State Perspective”, Institute for European Affairs, Dublin, October 16, 2000, www.ecb.int/key/00/sp001016.

¹¹ See “Presentation of the ECB’s Annual Report 2002 to the European Parliament”, Introductory statement by Willem Duisenberg, www.ecb.int/key/03/sp030703 and “Monetary and Fiscal Policy in the Euro Area”, Speech by Willem Duisenberg to the International Monetary Conference, Berlin, June 3, 2003, www.ecb.int/key/03/sp030303; see also IMF (2000).

only be weak; however, depending on the pass-through effect on prices, the total impact may be more or less important.

2.2 The ECB instruments

The monetary policy instruments of the ECB are: minimum reserves, open market operations and standing facilities. It can also intervene directly in the foreign exchange market. Against the background of a significant money demand, the minimum reserves help inducing a structural shortage of liquidity in the Eurosystem. To increase their liquidity, banks borrow resources from the ECB over various time periods (short term or long term). Banks can also get (or place) overnight liquidity with the central bank for predetermined interest rate (so called lending or deposit standing facility).¹²

The ECB controls liquidity in the euro-area mainly through short-term reverse-repo operations. Every week, the ECB opens a call for tenders for the Euro-zone counterparts (banks and other financial institutions). It then lends cash to banks for a one week period against collateral (high grade bonds). Banks are asked to inform the ECB about the interest rate they are prepared to pay for every euro they borrow, knowing that those that offer to pay the higher price will be first served. Every month the Governing Council of the ECB decides on the downward limit on interest rates in this bidding operation, i.e. *the minimum bid rate*.¹³ According to information released by the ECB, this minimum bid rate aims at signalling the monetary policy stance to money market operators (ECB 2001).¹⁴ Assuming a stable demand function for monetary base, a higher short term rate is tantamount to a restrictive monetary policy, and vice-versa.

Banks may lend and borrow overnight resources between them in the money market, the so-called EONIA overnight rate; this market interest rate is close to the minimum bid rate and is capped by the marginal lending and overnight deposit facilities, at which commercial banks may borrow or place overnight resources with the ECB (Figure 2.1).

¹² See on this topic ECB (2001), Ayuso and Repullo (2003) and Fourçans and Vranceanu (2004).

¹³ Until June 2001 the ECB used a fixed rate auction, where banks borrowed reserve money at a constant pre-announced interest rate. This system was highly unstable (call for bids became as high as 100 times the allotment!) and had to be abandoned.

¹⁴ The signaling role of the minimum bid rate was emphasized by Willem Duisenberg at the *ECB Press Conference* on June 8, 2000, cf. www.ecb.int/key/00/sp000608.htm.

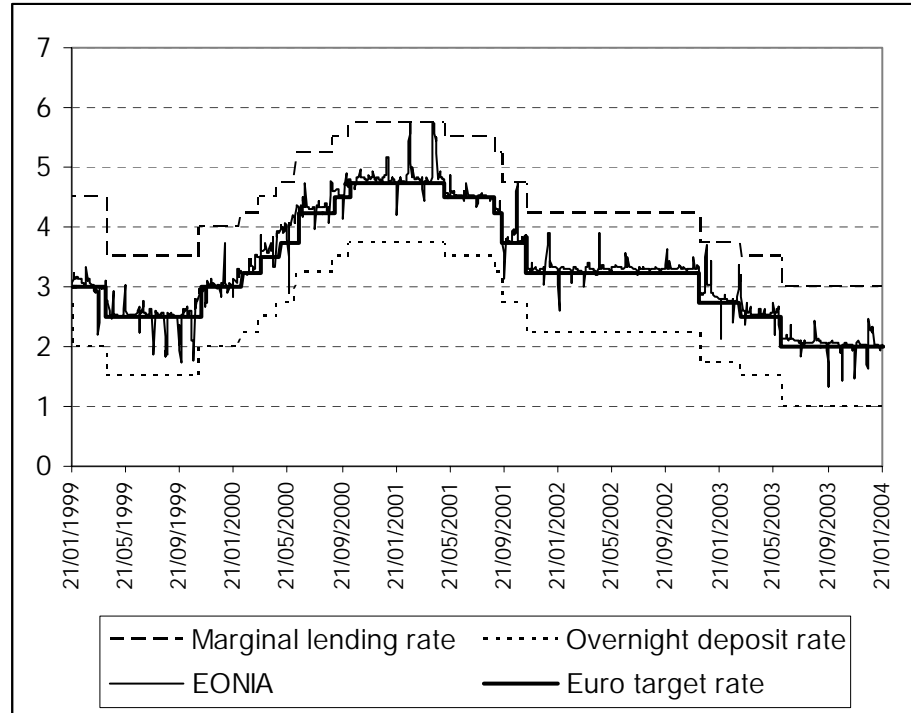


Figure 2.1. Main instruments of the ECB and the overnight money market interest rate (Eonia). Source: Thomson Datastream.

Over the last economic cycle, the ECB pushed up short term rates in the late 1999 - 2000, when the European economy showed strong activity and reduced rates when it slowed down.

Gearing interest rates may also have an impact on the international value of the euro. The basic relationship would suggest that a higher interest rate would lead to euro appreciation and conversely. From experience it comes out that the link between interest rates and the exchange rate is however not very stable. To oppose what may appear to be an excessive appreciation/depreciation of the euro, the ECB also can (and did) intervene directly in the foreign exchange market.

2.3 The ECB interest rate rule

The actual behaviour of a central banker may be analyzed by inferring from the data an empirical monetary policy rule. Such a rule describes the relationship between the

main central bank instrument as the dependent variable -- in general, the target short term interest rate -- and relevant economic independent variables. Svensson (1999) distinguishes between an explicit instrument rule, where the instrument is related to predetermined variables only and an implicit instrument rule, where the instrument comes out as a function of forward looking variables.

These rules are also referred to as Taylor rules, according to the name of John Taylor who developed this methodology (Taylor, 1993). Inspired by the US experience, Taylor focused on the role played by inflation and real economic activity in monetary policy management, the two main goals of the Federal Reserve. Denoting by $E[-]$ the expectation operator and by I_t the information set at the time the interest rate is chosen (i.e., at time t), such a baseline policy rule takes the form:

$$i_t^* = \bar{i} + \beta(E[\pi_{t+k}|I_t] - \bar{\pi}) + \gamma E[y_{t+q}|I_t] + AE[\Theta_{t+\lambda}|I_t]$$

where i_t^* stands for the *target* interest rate, π_{t+k} is the inflation rate k periods ahead, $\bar{\pi}$ is the target inflation rate, y_{t+q} is the average output gap q periods ahead; Θ is a vector of variables other than inflation and the output gap (at time $t+\lambda$) and A is the respective vector of coefficients. \bar{i} can be interpreted as the desired (target) nominal interest rate, to be obtained when both inflation and output are at their target level. β and γ are given parameters. In so called contemporaneous rules, k , q and l are set to zero; in "forward looking rules", some of them are positive.

Several economists pointed to the important role played by the β coefficient on the stability of the macroeconomic system (inter alia, Kerr and King, 1996; Bernanke and Woodford, 1997; Clarida et al., 2000). They worked out simple macroeconomic dynamic models, with three main equations: an IS curve, linking the output gap to real interest rates; a Phillips curve, whereby the inflation rate is positively related to the output gap; and a monetary policy rule. When a shock pushes inflation above the target, the Central Bank increases its interest rates according to the policy rule. If $\beta < 1$, the increase is not strong enough to bring about a higher real interest rate, demand is stimulated, and, *via* the Phillips curve mechanism, inflation is further enhanced. To the contrary, if $\beta > 1$, the

strong response of the Central Bank brings about an increase in the real interest rate, which tempers demand and inflation.

The fact that the ECB has such a short history makes difficult but not impossible the econometric estimation of an interest rate rule *à la* Taylor. The better understanding the ECB objectives should guide the implementation of goals and policies in the euro candidate countries. Table 2.1 below summarizes the main findings. All these studies point to the sensitivity of the ECB to the real activity; if the actual output goes below its trend (or the output growth rate falls below the target), the Bank will reduce interest rates and vice-versa.

In most these studies, the ECB will increase interest rates if the inflation exceeds the 2% target, but it is not clear whether the Banks's action is stabilizing or not; some economists found that the β coefficient is bigger than one, some others found a β lower than one. As a comparison, all studies about the Fed in the nineties show that the American central bank reacts very energetically to excessive inflation (β larger than one).

STUDY	TYPE OF RULE	PERIOD	β	γ	REMARKS
Gerdesmeyer & Roffia, 2003	Contemporaneous	99.01-02.01	0.45	0.30	
Ullrich, 2003	Contemporaneous	99.01-02.08	0.25	0.63	0.08 coefficient of the real ex. rate
Fourçans & Vranceanu, 2004	Contemporaneous	99.04-03.10	0.43	0.26(a)	0.08 coefficient on the nominal exchange rate
	Forward (+6)	99.01-03.10	2.8	0.19(a)	
Surico, 2003	Contemporaneous	97.07-02.10	1.93	0.20	Quadratic term in inflation
Sauer & Sturm, 2003	Contemporaneous	99.01-03.03	0.03	0.76	
	Contemporaneous	99.01-03.03	0.95	0.50(a)	

(a) real activity proxied as the industrial output growth gap.

Table 2.1. A review of main Taylor rules estimates for the EMU

In the study by Ullrich (2003) the ECB appears to react to real appreciation of the euro by lowering the interest rate; this reaction would suggest that the real activity goal is more important than would indicate the coefficient on output gap alone. In the study by

Fourçans and Vranceanu (2004), nominal appreciation pushes the ECB to reduce interest rates; this would suggest that the Bank takes into account the depressing impact on prices that nominal appreciation would entail, and accommodate its monetary policy accordingly. Most empirical studies on the ECB show that, despite its verbal commitment to the reference value in the money stock growth rate, the Bank pays little attention to this indicator.

To sum up, from these studies, it might be inferred that the ECB interest rate rule is not very different from the Fed's policy. It is characterized by some weight set on real activity (a "leaning against the wind" policy) and some weight set on inflation (but is this weight strong enough?). Some studies also point that the ECB is indeed "not indifferent" to the exchange rate stability, which appears to be -- in some of the estimated rules -- a direct policy goal.

It must be emphasized that these simple linear estimates do not allow to infer the ultimate goal of the Central Banker. As Svensson (1997, 1998) has shown, a linear reaction function, including on the right hand side other variables than inflation (output gap, exchange rate) may be characteristic of a forward looking policymaker concerned with inflation only; it may also be consistent with a policymaker concerned with price and output stability.

3. INFLATION TARGETING: THEORY AND POLICY

3.1 Basics of IT

Historically, to achieve their main objectives (most often, low inflation and, eventually, sustained growth) numerous central banks targeted some intermediate variable, such as a monetary aggregate or the exchange rate. Success with this method requires that (a) the central bank were able to control the intermediate variable and (b) that there is a stable relationship between the intermediate target variable and the ultimate objectives. For instance, it was sometimes claimed that the Bundesbank and Swiss National Bank outstanding record of low inflation should be accounted for by their policy of targeting a monetary aggregate (monetary targeting). Other scholars underlined that in

deeds the Bundesbank set more emphasis on inflation forecasts than on the monetary aggregate, and also that the SNB was concerned with many other indicators (Gerlach and Svensson, 2003).

In recent years, several governments in developed and developing countries decided to implement “inflation targeting” (IT). Pioneers were New Zealand (1990), Canada (1991), Chile (1991), Israel (1992), United Kingdom (1992), Australia (1993) and Sweden (1993). In Eastern Europe, the Czech Republic, Poland and Hungary claim to have adopted this system (after 1998). Under the IT system, the central bank manages monetary policy instruments with the direct goal of *containing inflation over the medium run*. In this setup, inflation becomes the overriding goal of monetary policy. All the other indicators (output gap, money stock growth, the exchange rate, etc) become auxiliary variables; the central bank will take them into account only if this information helps it to improve its inflation forecast.

Experience with monetary policy management in the developed countries has shown that the impact of monetary policy changes on inflation works its effects with a significant lag (at least nine months, and up to two years for a full impact). To make things simple, when central bankers undertake a change in the main instrument at time t , the effects on inflation will be felt much later (let say, after 6 quarters, that is at time $t+6$). Therefore, if the central bank wants to achieve a quantitative inflation target, it must act in a forward-looking manner, that is must decide today on ground on a reasonable forecast of inflation at time $t+x$ (x being the number of quarters in the forecast). To utilize Svensson’s (1997) clear definition, inflation targeting should be interpreted as “inflation forecast targeting”. As Svensson (1997) mentioned, if the central banker is competent, the inflation forecast will be highly correlated with actual future inflation (which is unknown to the policymaker at the time of decision).

It should be emphasised that under IT, inflation forecasts are *contingent* upon the central bank view on 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 is needed in order to produce reliable forecasts (a subjective assessment of the inflation path may be included too). The forecast quality varies much from one central bank to another, in keeping with their

expertise, experience with forecasting, and available data. No doubt that the better the forecast precision, the better will be the public image of the central baker.

In theory, the instrument planned path *might be seen as the solution to a dynamic programming problem*, where the bank has to find the instrument path that brings inflation close to the target while minimizing output volatility over the chosen time horizon (Svensson, 1999; 2000). In practice, the Bank might follow some simple decision rule consistent with its medium run objectives. The parameters of the rule depend on the quality of the forecast.

In Figure 3.1. we describe how a central banker takes its decision under the IT policy regime. At date t , the policymaker must decide on the instrument (interest rate). He knows the previous inflation path and, given its knowledge of the economy, has an idea of the future path for inflation. The *conditional* forecast on the inflation rate π , calculated for x quarters ahead is denoted by $E(\pi_{t+x}|I_t)$, where I_t is the information set available at the date of the forecast. Notice that the initial forecast is obtained for an unchanged instrument (and that a change in the instrument would allow to obtain a different forecast).

Figure 3.1 describes a situation where although at time t the inflation rate falls below the target, in the medium run (8 quarters ahead), the inflation forecast, obtained for a constant instrument value, exceeds the target. In this case, the policymaker must tighten its monetary policy (although at time t inflation is below the target).

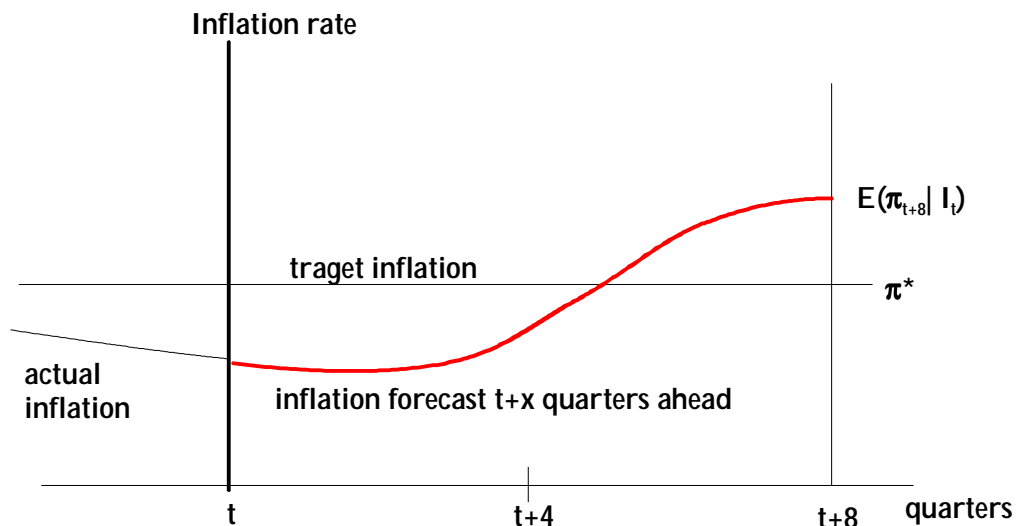


Figure 3.1. IT – the basic logic

From this simple (hypothetical) example, it can be seen how important is for the policymaker to dispose of reliable forecasts. A reliable forecast implies that over a long period the average forecast error must be zero and the variance of the forecast error must be as low as possible. Obviously, such a forecast can be obtained only if the policymaker has a good knowledge of the monetary transmission mechanism, and of the economy as a whole.

If the central bank model (or models) is (are) correct (on average) and if the central bank communicates extensively on the forecasting method, private agents may form better inflation expectations under this policy regime. It goes without saying that, if the central bank communicates by using a wrong model, its ex post credibility would be adversely affected, given that no private agent can trust an unreliable policymaker.

From the implementation point of view, a basic prerequisite for inflation targeting is the central bank's full *autonomy* and *independence*. In particular, all links between the Treasury and the Central Bank should be neutralized, and the Bank should be endowed with powerful *policy instruments* and granted full control over these instruments. Furthermore, political influence over the Central Bank should be irrevocably suppressed.

Then inflation targeting needs to define the *relevant price index*; in general, it is a traditional consumer price index. In the Euro-area, the relevant index is the Harmonized Consumer Price Index (HCPI). Countries that adopt IT will next have to choose *a target and a band*; for instance, for a long period the UK aimed at the 2.5% central value within the 1% to 4% band; in Canada, New Zealand and Sweden the bands are respectively 1-3%, 0-2% and 1-3%. In Hungary the first target was of 7% with a +/-1% band, Czech Republic had an initial band of 5.5-6.5% and Poland aimed at bringing inflation below 9.5%; they then brought down this target through time. At the end of 2003, the December over December inflation rate fell in the Czech Republic to 1% and in Poland to 1.7%, thus both comply with the 2% Euro criteria norm. In Hungary, inflation was at the same time as high as 5.7% and some critics pointed to the inconsistency between the monetary and the exchange rate policy of the Hungarian central bank.¹⁵

¹⁵ See: "The Balcerowicz Effect", *The Economist*, January 31, 2004.

The bank must then decide on the instruments she wants to utilize. In the last years, central banks all over the world choose to have a say on short term interest rates, mainly through reverse-repo operations carried out in the money market. Thus the basic instrument is some repo-refinancing interest rate. At regular intervals the Bank will adjust the main instrument (the interest rate) so as to bring the inflation forecast (over 6 to 8 quarters) as close as possible to the target.

BOX. Inflation Targeting – the Bank of England approach

The Bank of England (BoE) has introduced the IT regime in 1992. In January 2004, the UK replaced the RPIX price index (which excludes mortgage payments) with the HCPI (which includes them) and which is the official index of the ECB. The Bank aims at holding the inflation rate within a narrow band around the 2% central value. Because monetary policy works its effect with several lags, under IT the central bank takes a forward looking stance over inflation developments; more in detail, the BoE focuses on inflation developments over a two year period. In order to implement this policy, it makes use of forecasts obtained from various models. Although for the forecasting process there is a so-called core macroeconomic model of the UK economy, the BoE also uses the forecasts obtained from several other smaller models. These are intended to capture and explain some phenomena that are rather difficult to assess by simply using the core model. For example they could offer a better understanding of the recent past by explaining the causes of recent events or, sometimes, they could evaluate a new prospective economic development. They are also used to test the appropriateness of assumptions made about the driving processes used in the core model.

The models output are a useful tool because they facilitate a better comprehension of how the economy works allowing for empirical quantification and thus helping in understanding the monetary policy transmission mechanism. Aided by the forecast output of these models, the BoE's Monetary Policy Committee (MPC) make a judgement about the future potential developments of inflation and output growth. Every month, the BoE publishes a two-year ahead forecast for the annual CPI and RPIX inflation and four-quarter growth rate of GDP, under the assumption of constant short-term UK interest

rates, in the form of a fan-charts. The fan-charts are intended to depict the large degree of uncertainty surrounding central projections – which represent the most likely view of the developments in the economy. Thus, the fan-charts can be viewed as probability distributions that show the likelihood of possible outcomes (Britton et al. 1998).

The forecast process at the BofE takes several steps. First, there is a meeting between the MPC and the BofE staff aimed at establishing the key assumptions together with a risk assessment. These are then incorporated into the BofE's economic models by the forecasting team in order to obtain a draft forecast. The draft forecast is analysed by the MPC which may require changes subject to revised assumptions and new information. Finally the forecast is fine-tuned by the MPC in response to the latest economic developments.

All monetary policy decisions are interpreted and motivated in the light of these forecasts. The basic principle is that a deviation of the forecast from target requires a current intervention of the Bank: when the forecast exceeds the target, monetary policy is tightened and vice-versa.

Not a few influential economists are enthusiastic about this monetary policy framework (see e.g. Bernanke and Mishkin, 1997; Bernanke 2003). They argue that such a policy regime allows ruling out the inflation bias connected with time inconsistency; indeed, since under IT the central bank has a single goal (price stability), there can be no conflicts of interest between multiple objectives -- like the standard conflict between inflation and economic activity. The policymaker's accountability should be quite high under IT since her performance can be directly measured, for instance by the deviation between actual inflation and the target. Transparency is taken a step further since the forecasting method (econometric model) is made available to the public. In general, IT central banks communicate very much on their policy and forecasting methods. This helps private agents to obtain better inflation expectations, which should entail lower economic fluctuations.

However, all these theoretically appealing benefits from IT may not be so easy to grasp, in particular in the difficult context of the developing countries. Subsection 3.3 takes a closer look at this issue.

3.2 Is the ECB a genuine “inflation targeter”?

The US Federal Reserve and the National Bank of Japan are clearly not of the IT type, since neither of them has an explicit inflation target. Moreover, the Fed has an explicit goal of economic activity stability: its “leaning against the wind policy” (i.e., tightening monetary policy in booms and loosening it in recessions) was documented by many empirical studies. The systematic Japanese interventions in the foreign exchange market are also notorious. What about the ECB?

The ECB could not afford to adopt monetary targeting, since in a new economic environment, characterized by a wide heterogeneity in the member countries, with new monetary institutions and a money market in ongoing development, it would not have been possible to infer from data (which were and still are scarce) a reliable money demand function.¹⁶ As mentioned, at its start, the ECB emphasized the essential role money should hold in its monetary policy, but come to realize, by the end of 2003, that this commitment was unrealistic.

It was neither too logical to adopt exchange rate targeting, since the relationship between prices and the exchange rate is weak in a relatively closed economic area; in addition, exchange rate targeting comes to relinquish monetary policy to a foreign central bank, which might not have been compatible with the goal of an economically independent European Union.

Is the ECB an inflation targeter? Like the IT countries, the ECB has an explicit inflation target, and must keep inflation closely below the target (i.e., a 2% increase in the HCPI) *in the medium run*. It is also highly independent and autonomous (its range of instruments is impressive, the governments’ bail-out is banned, and member country governments’ political influence over the Bank is weak).

In the previous section we have shown that the current *output gap* appears to be a significant variable in the ECB interest rate rule (see Table 2.1). It is too early to say whether this variable is just an indication of the concern with price stability in the

¹⁶ Attempts to build such a model from consolidated data from pre-EMU period are subject to strong statistical biases.

medium run (forward-looking behavior about inflation) or the Bank has as an independent, long-term goal of stabilizing output fluctuations. Such an objective would not conflict with the ECB founding Laws (see the Treaty on European Union).

Unlike genuine IT countries and more like the Fed, the ECB shares only a moderate concern for transparency. It is not clear how the Governing Council decides on interest rates given that the internal discussions are secret. The Bank does not issue an official inflation forecast. This is not surprising, given the high technical difficulties to carry out the task of obtaining reliable forecasts. As emphasized by Svensson (1999, pp. 645), “the lack of an EMU-wide transmission mechanism from monetary policy and the corresponding unavoidable uncertainty about the transmission mechanism will... constitute a formidable difficulty”.

Early 2004, the framework for monetary policy management within the EMU area was clearly stated by the ECB President, Jean-Claude Trichet: “In our economic analysis, we introduce all elements, all factors, that have a bearing on the situation, and [...] we are not the prisoner of an equation, we are not the prisoner of a system of equations, we are not the prisoner of an algorithm which would dictate our conduct and behaviour.”¹⁷ That is, the ECB regime appears to be closer to the “just-do-it” behavior of the US Fed than to the the fully-fledged IT system of the UK or Sweden central banks.

All in all, the ECB *is not* a genuine inflation targeter although it has borrowed important elements from this policy. Like in the US, in the EMU monetary policy aims at *flexibility* so as to be able to address, in an efficient way, the most various threats to price stability, including exceptional events (deflation, war, terrorist attacks, imports price shocks, stock market major crises, etc...).¹⁸ It should be emphasized that a country does not become an “inflation targeter” by merely choosing an inflation target. It is essential for an IT central bank to be able to get reliable conditional forecasts of the inflation rate, and to adapt its main instrument accordingly.

¹⁷ Jean-Claude Trichet, President of the European Central Bank, Transcript of the answers at the Press Conference on January 8, 2004.

¹⁸ The speech by Allan Greenspan, “Risk and uncertainty in monetary policy” on January 3, 2004 is a convincing plea in favor of flexibility and adaptive monetary policy management. See www.federalreserve.gov/boardocs/speeches/2004/20040103/default.htm.

3.3 IT in the context of developing countries: a comment

What about the global performance of the IT group of countries? In a comprehensive study, Mishkin and Schmidt-Hebbel (2001) argue that inflation targeting proved to be in general a successful policy. IT reinforced accountability, credibility, resilience to external shocks and helped high inflation countries to reduce inflation to normal levels (most of them were emerging economies). Yet they point that, at the end of the process, inflation in IT countries is not lower than in non-IT countries. Fraga, Goldfajn and Minella (2003) also argue that average inflation in both emerging and developed economies fell after the adoption of IT.

As experience with IT in transition economies shows, the central bank in these countries often missed inflation targets by a large margin. Jonas and Mishkin (2003) look at the potential difficulties and evaluates the outcome 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 relative high level of uncertainty in these countries makes it relatively difficult to predict inflation over the medium term – as required by the IT approach.

This is not a minor shortcoming. In the developed countries, adoption of IT implies that the central bank dispose of the technical ability to:

- (1) have a reliable conditional forecast inflation (6-8 quarters ahead); and
- (2) know how to adapt its instruments so as to bring the forecast close to the target.

All the benefits which derive from IT in terms of accountability and credibility stem from these conditions. Obtaining a reliable conditional forecast is a very difficult task – and the ECB itself did not take this challenge! What if the forecast is wrong? Just take a look at figure 3.1 – and imagine that the *true* forecast falls below the target; the policymaker tightens monetary policy when it should loosen it. The relationship between the instruments is in general assumed to be known; but is this relationship carved in stone for a developing economy, featuring important structural fragility?

Therefore, for a developing economy, the central bank's credibility may be adversely affected by adoption of IT, given that the risks of getting wrong forecasts and missing inflation target consequently are quite significant. By adopting a rigid framework for monetary policy management in the context where the criteria for the well functioning of this framework are not fulfilled, the central bank's credibility can only be damaged.

Furthermore, as inflation developments in recent years show, inflation in almost all the Central and Eastern European countries has been following a downward trend – irrespective of the choice of monetary arrangements and regimes the central banks these countries have employed. If sensible domestic fiscal and monetary policies are being pursued there are no reasons to think why disinflation should not continue in the absence of a genuine IT regime.

4. MONETARY DEVELOPMENTS IN ROMANIA

4.1 The overall picture

Romania has finished the 2003 year with a positive, but not unblemished macroeconomic record. Economic growth has been probably around 4.8%, inflation has come down to 14.1% (December on December of the previous year), the budget execution has ended, seemingly, with a deficit of 2.4% of GDP (less than the programmed one of 2.6%) and the reserves of the Central Bank have grown up to almost 9 billion euro; inward foreign direct investment also has risen to over one billion euros, though not in a spectacular fashion. The continuation of disinflation is particularly commendable. These results were accompanied by upgrades made by the main rating agencies, albeit Romania is still a few notches below an investment grade.

What has spoiled the picture somewhat has been the big surge of the current account deficit, which is estimated to have reached about 5.8% of GDP (compared to 3.6% in the previous year).¹⁹ At the same time it is important to notice that, because of the insufficient level of inward foreign direct investment, a threshold limit for the safe

¹⁹ While the rise in the current account deficit is quite considerable it needs to be judged over a longer period of time. As a matter of fact, an average size of the current account deficit would be around 5% of GDP during the period 2000-2003.

financing of the current account deficit – in the case of the Romanian economy – appears to be around to 7% of GDP; whenever the deficit moved in the vicinity of that level its financing became pretty difficult and painful adjustment of the balance of payments were asked for (this situation is amply illustrated by the last decade).

What are driving factors behind the rise of the current account deficit in 2003? A macroeconomic explanation would be the engine of economic growth last year, which was driven by internal demand rather than by exports, as was the case in previous years. Other causes are to be found in the financial indiscipline and inefficiency in the economy (for arrears allow firms to import while not paying domestic creditors), heavy dependency of exports on intermediate imports, the worsening terms of trade for the Romanian economy (oil has been more expensive), the severe drought which entailed additional imports of grains and foodstuffs, the low ability to produce competitive domestic products, the real exchange rate appreciation of the domestic currency (and the Euro appreciation vs. the USD, which made imports from the US dollar zone extremely attractive), and last, but not least, the diminution of the general subsidy given to exporters in 2000. A surge in consumer credit which fuelled the demand for imported goods has also made a contribution to this rise.

In addition, tensions related to an insufficient restructuring of the hard core of industry have continued to be felt and may have contributed to the rise of the trade deficit; an illustration of these tensions is the persistence of large arrears in the economy.

	2000	2001	2002	2003*
Real GDP, Annual % change	2.1	5.7	4.9	4.8
CPI inflation (% , Dec to Dec)	40.7	30.3	17.8	14.1
Budget deficit (% of GDP)	-3.5	-3.3	-2.7	-2.4
Public sector and guaranteed debt (% of GDP)	29.9	27.4	28.3	28.4
Current account deficit (% of GDP)	-5.7	-5.6	-3.6	-5.8
Total ext. debt, (% of GDP)	31	35	32	NA
Total ext debt (% of exports)	81	85	85	NA
Exchange Rate (ROL/USD)	25,926	31,597	33,500	33,391

Source: National statistics, IMF, and authors' estimates (*)

Table 4.1: Romania: evolution of main macroeconomic indicators

Arguably, the economic year 2004 is important *per se*, but also for the direction the Romanian economy takes afterwards. This is so since disinflation is getting into a critical stage, whose further advance hinges essentially on fiscal and financial discipline; while the latter depend considerably on the restructuring of several key industrial sectors (such as energy generation and distribution).

4.2. Recovering reserves and opposing the ROL appreciation

In mid-1999 Romania went through a short but serious financial crisis, and avoided default on the external debt by a drastic balance of payments adjustment – which involved a reduction by half of the budget deficit. Prior to the crisis, an overvalued ROL gradually eroded export competitiveness and depleted the NBR foreign exchange reserves. Since 2000, the NBR has pursued several policy goals in a direct way:

- (1) to rebuild and consolidate the stock of foreign exchange reserves and to prevent an excessive ROL appreciation (consistent goals);
- (2) to achieve gradual disinflation.

Since the goals (1) and (2) are not mutually consistent, the NBR had to gear two instruments.

To achieve the goals of recovering reserves and limit the real ROL appreciation so as to support export competitiveness, the NBR bought large amounts of foreign currency after 1999, to the point that its current foreign exchange reserves cover four months of imports.

Figure 4.1 displays the graph of foreign exchange reserves in the period 1999-2004.

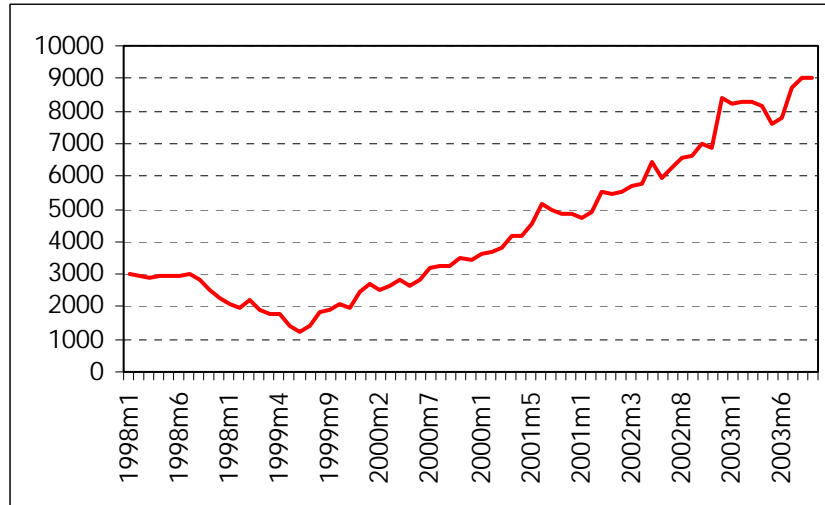
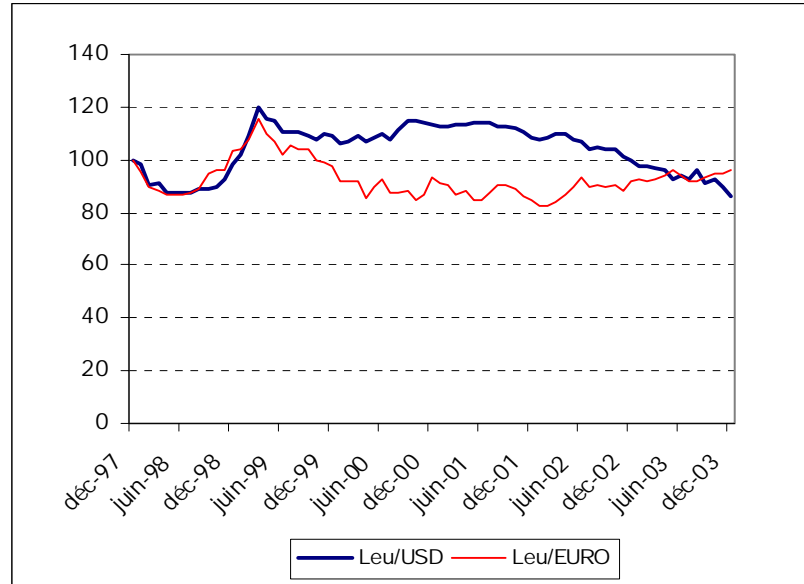


Figure 4.1 NBR foreign exchange reserves, million euros

This substantial accumulation of reserves contributes to reducing the country specific risk and improving the credit rating of Romania, which could thus borrow in more advantageous terms; in turn, the cheaper access to the international capital came with additional pressure on the NBR to buy foreign currency if it kept fighting the ROL appreciation.

When, at the end of the period (2002-2003), the NBR slowed down the pace of buying foreign currency, a slight appreciation of ROL against a currency basket happened (Figure 4.2).²⁰

²⁰ Since the start of 2004 the basket is made up of 80% euro and 20% USD.



Source: IMF data.

Figure 4.2. ROL real exchange rate against the US dollar and euro

When the NBR bought foreign currency, it also injected liquidity in the economy, and these interventions were never fully sterilized. . Both the monetary base (M0) and the money stock (M2) increased throughout this period and consequences on inflation were almost immediate. As put forward by Daianu and Vranceanu (2001), a shock to the money stock reached its maximum impact on inflation only three months later.

4.3. Fighting inflation

It should be noticed that the salient feature of the interval 2000-2003 (as compared to the past decade) is disinflation. Annual Inflation rates declined from over 60% in 2000 to about 14% in late 2003.

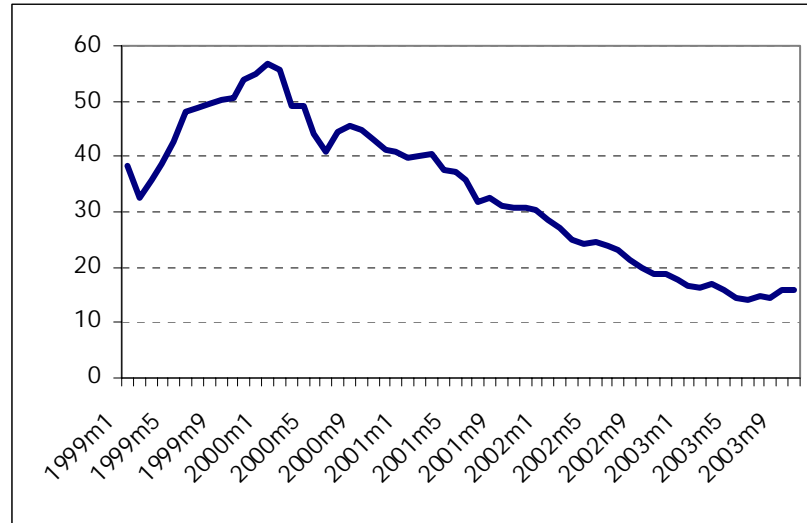


Figure 4.3. CPI based inflation rate, month over the same month of previous year

This favourable downward trend in inflation occurred despite the continuing NBR effort to prevent the ROL appreciation against the euro and the dollar (a depreciated ROL would contribute to enhance inflation), up to 2003 (since then ROL has undergone steady real appreciation against a currency basket). The explanation should be found in the NBR effort to sterilize its interventions in the foreign exchange market. Let us take a closer look to this sterilization mechanism.

In industrial countries, the demand for money is significant (relatively stable) and, to cope with the structural shortage of liquidity (in general, induced by the requirement of compulsory reserves), commercial banks borrow liquidity from the central bank against collateral. The Central bank is a net creditor of the banking sector. As shown before, every week the ECB will lend money for a one week period, in what we call a *reverse-repo* operation. It alters the amount of borrowed reserves by tuning the marginal interest rate required on these resources. In the opposite situation, when the banking and financial system is underdeveloped, the economic activity is low and the interest rates is high, the overall demand for money in the economy is weak. As a consequence, the central bank may alter the amount of liquidity in the banking sector by absorbing resources from commercial banks in a *repo* operation. The Central bank is a net debtor. Figure 4.4. displays simplified Central Bank balance sheets in the two distinct configurations.

Central Bank is a net creditor of banks CB balance sheet		Central Bank is a net debtor of banks CB balance sheet	
Assets	Liabilities	Assets	Liabilities
Reserves of foreign exchange	Monetary base (cash and bank compulsory reserves)	Reserves of foreign exchange	Monetary base (cash and bank compulsory reserves)
Treasury bonds		Treasury bonds	
Credit to banks		Borrowed resources from banks	

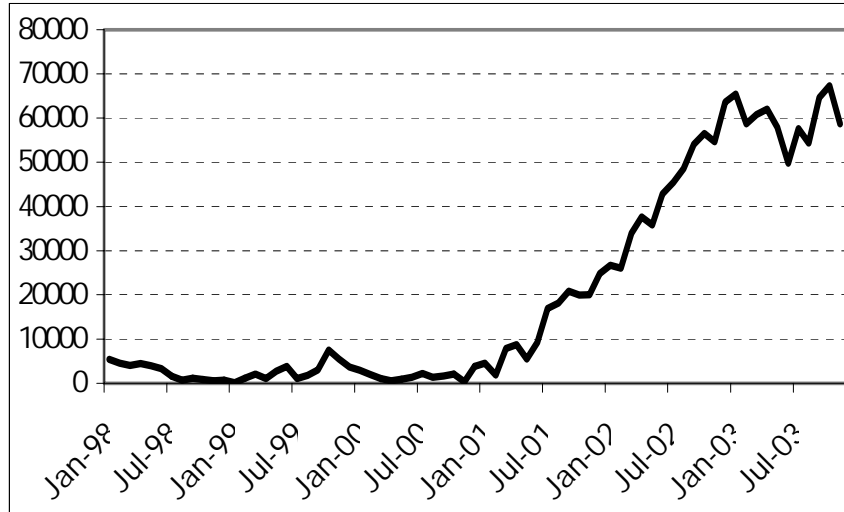
Figure 4.4. Stylised CB balance sheets

It should be noticed that in all transition economies, and even in the most advanced countries on their way toward a market economy and integration with the EU (i.e. Poland, Hungary, the Czech Republic), *the central bank is a net debtor* (at least until early 2004).²¹ After 1998 these three countries adopted the IT system (although in Hungary there may be some questioning whether exchange rate stability did not conflict with price stability) and made significant progress in fighting inflation (which, in December 2003, was well below 2% in Poland and the Czech Republic). They all impose relatively small compulsory reserves ratios (about 2%, like the ECB). Monetary management consists in adjusting the monetary base by modifying the volume of borrowed resources from commercial banks (for one or two week period) under a regularly held call for tenders operation. The target instrument is the *interest rate* that the central bank pays for these credits. By increasing the interest rate, the central bank can attract more resources and vice-versa. Of course, the interest rate the central bank must pay depends on interest rates reported on commercial bank deposits, reserves and private credits. This is an equilibrium price and is driven by market forces.

Since 2001 the NBR has been borrowing resources for a one month period from commercial banks (what it is called "attracting deposits", which is not very correct since it is not an overnight credit). The average amount of NBR liabilities towards commercial banks amounted to 65000 billion ROL in October 2003, compared to only 14000 billion ROL in February 2001 (Figure 4.5). The October figure should be compared with the

²¹ See for instance the documents : for Hungary, english.mnb.hu/module.asp?id=113&did=1209, and english.mnb.hu/module.asp?id=113&did=786 and english.mnb.hu/dokumentumok/monet_en_2002.pdf, for Poland : nbp.pl/en/publikacje/index.html and for the Czech Republic : www.cnb.cz/en/d.php.

90900 billion ROL of monetary base in the same month: borrowed resources represented some 40% of the total liabilities of the central bank (or cca 70% of the monetary base).



Source: NBR Monthly Bulletins Data

Figure 4.5 Stock of Deposits Attracted by NBR (Billions ROL)

The main difference with the former three central banks is that the target is quantitative: it appears that the NBR chooses an objective in terms of the volume of resources it wants to borrow, than chooses the interest rate so as to make sure that commercial banks want to lend. To convince commercial banks to lend money, in 2003 the NBR offered attractive, risk free interest rates of about 20% (annualized) compared to an inflation forecast of about 15% (annualized, over the credit period – one month). Somehow puzzling, the risk free interest rates on these resources borrowed from commercial banks (over a short period) appears to have been also higher than interest rates at some commercial credit granted by banks (which are risky).

The NBR method –of attracting deposits-- may be quite effective in dragging liquidity, but it is atypical, since most the other countries follow the opposite strategy, i.e. 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 current procedure, the interest rate does not seem to be the decision variable; thus it may not convey high quality information about the monetary policy stance, in particular when some form of

rationing in the demand for borrowed resources occurs. The appendix at the end of the study tries to illustrate the NBR practice of controlling liquidity.

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 show that the latter has a strong impact on inflation rates (in a six lag model). In a simple regression model, it comes out 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. (R2A=0.50).

Unsurprisingly, the rapid accumulation of foreign exchange reserves after 1999 and a contained expansion of the monetary base given these sterilization operations led to quite a bizarre monetary structure, where in January 2003 the monetary base was covered almost four times by foreign exchange reserves (Figure 4.6).

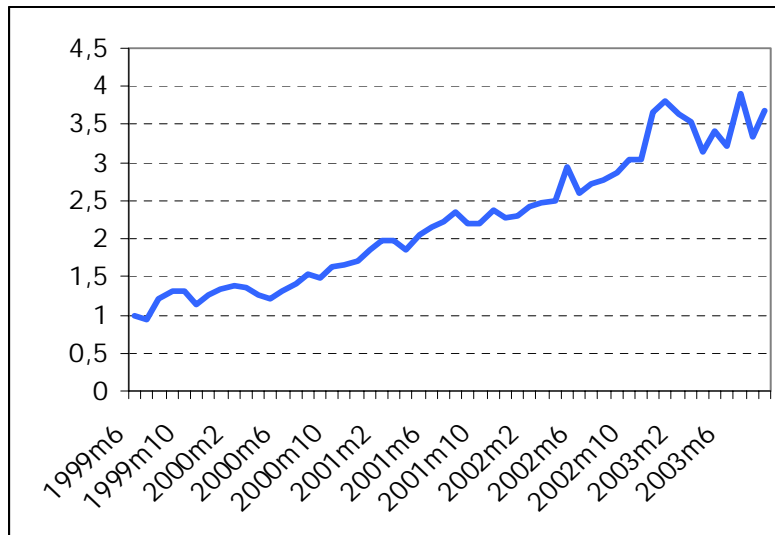


Figure 4.6. NBR foreign exchange reserves to monetary base ratio

In other words, the relationship between the monetary base and hard currency reserves is tighter than in standard currency board agreements, where this ratio is one to one. This does not necessarily imply that Romania has abnormal reserves, but rather

points to the severe underdevelopment of the banking sector and credit activity (low monetisation).

5. GENERAL CONDITIONS FOR MONETARY POLICY MANAGEMENT

The purpose of this section is to outline several features of the Romanian economy that influence monetary and exchange rate policy conditions significantly. Adhering to the EU will be only an initial step of the transition process Romania is undergoing. The ultimate target will be to achieve real convergence towards the EU. This looks like solving a complex dynamic programming problem where the initial conditions (the Romanian current economic position), the intermediate (Copenhagen criteria), and final values (Maastricht criteria) are known and the purpose is to find the optimal path for instruments (monetary, fiscal and others).

Understanding the monetary transmission process is vital to the appropriate design and implementation of monetary policy. This proves to be a fairly challenging task even for developed economies uncertainty about the way monetary impulses propagate into the real sector. In the case of Romania the task is even harder with the problem being compounded by the fact that the Romanian economy is continuously re-shaping its structure. Changes in the structure of the economy are bound to add more uncertainty regarding the economic effects of a given monetary policy measure.

Traditionally, four channels of transmission of monetary policy have been identified in modern financial systems. The first is through the direct interest rate effect, which affects market interest rates, such as bank deposit rates. This in turn will affect spending, saving and investment behaviour of individuals and firms. The second channel is through credit availability. The third channel is through asset prices such as bonds, equities, and physical assets (i.e. housing). The fourth channel is through the exchange rate. It goes without saying that this classification is quite general for direct effects blend with indirect effects. In all this interplay expectations intervene significantly. The exchange rate represents the relative price of domestic and foreign money, so it depends

on both domestic and foreign monetary conditions. However, the precise impact on exchange rates due to an official interest rate change is rather difficult to assess, as it is bound to depend on expectations about domestic and foreign interest rates and inflation.

In Romania, the channels for monetary transmission are in developing stages. An issue of central importance is then to identify those factors that may play a role in hindering the effectiveness of monetary transmission mechanism. The remainder of this chapter looks into several features of the Romanian economy that bear on influence upon monetary policy conditions.

5.1 The financial system and monetary-related factors

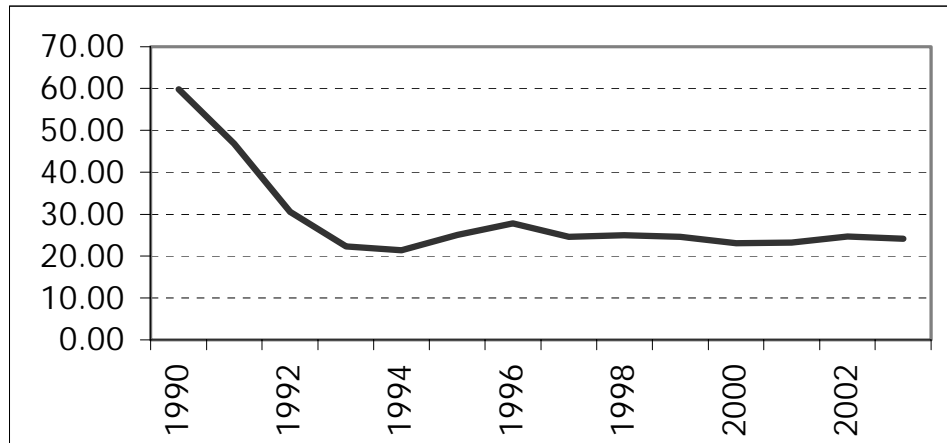
5.1.1 The industrial structure of the banking sector

An element that plays a vital role in the propagation of monetary policy impulses is the *industrial structure of the banking system*. In Romania, as in other accession countries, the financial system is skewed, with banks holding by far the bulk of financial intermediation in the Romanian economy. The banking sector is largely dominated by a few private banks and a very large majority state owned bank (BCR, which is basically a marker-maker) and is characterised by a low ratio of assets to GDP. At the end of 2001 the share of banks' total assets in GDP was only 31% (this ratio is one of the lowest compared to other Eastern European economies). Moreover, the banking sector has all the characteristics of an oligopoly. Between 1999 and 2002 around 85% of the ROL deposits and 90% of the domestic credit in ROL were held by 1/6th of the banks (Antohei et al. 2003). Such a high level of deposit and credit concentration yields a higher degree of market power for the large banks. This is bound to increase not only the inefficiency in the intertemporal allocation of resources, but also the ineffectiveness 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).²²

5.1.2 Low level of monetization

Another important feature of the Romanian economy is its *low level of monetisation*. The share of M2 in GDP has been fluctuating around 24% over the last decade (Figure 4.1) which is extremely low as compared with developed economies and even with other transition economies. The low level of monetisation is indicative of the major inefficiencies still at work in banking system and the lack of experience of private agents to use money as a coordination device.



Source: NBR Monthly Bulletins Data

Figure 5.1. Broad money, M2 as % of GDP

The low level of monetisation 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. A major challenge for the Romanian Central Bank is to support the remonetisation of the economy without fuelling inflation. This may happen only if the demand for money increases in a

²² 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.

significant way: this implies both a strong economic activity and more trust in the banking sector.

5.1.3 Massive euro/dollarization (on both asset and liability sides)

Massive dollar(euro)isation is another feature of the Romanian economy that adds to the uncertainty regarding the outcome of the transmission of monetary policy impulses.

In a *partially dollarized* (euroized) economy, the dollar (euro) is used in any of three classical role of money: unit of account, instrument of exchange and store of value, the more relevant being the first two (Calvo, 1999).²³ Economists refer to the situation where dollars (euros) serve as an alternative means of payment as to “currency substitution”. When currency substitution is at work, private agents prefer holding their wealth in dollar denominated assets (including dollar cash) rather than in domestic denominated assets; in particular, they will prefer dollar to domestic currency denominated bank deposits.

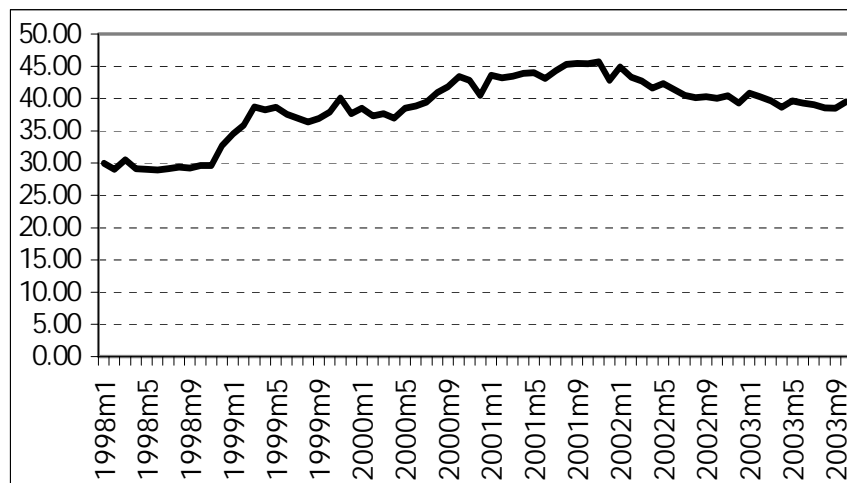
Typically, currency substitution emerges as a response to volatile and unpredictable inflation and to economic and political uncertainty. Given the Romanian’s inflation history over the last 14 years it is therefore not quite surprising that dollar(euro)isation phenomenon is so entrenched. The public sought protection from the cost of holding ROLs and ROL denominated assets by holding dollar (euro) denominated assets. Apart from that, dollar(euro) prices have been extensively employed in contracts as a means of indexation that induced a natural transaction demand for dollars.

What is noticeable is resilience of deposit dollar(euro)isation in spite of the recent disinflation (Figure 4.2). The proportion of hard currency component in M2 has fallen to around 40% at the end of 2003 after reaching a peak of 46% at the beginning of 2002.²⁴ As a comparison, Reinhart et al. (2003) has showed that between 1996 and 2001, the

²³ In contrast to partial euro(dollar)ization, a *fully euro(dollar)ized* economy will replace the domestic currency with the foreign one.

²⁴ 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.

average ratio of foreign currency denominated deposits in broad money for a sample of selected emerging market economies was 18.4%. In their sample Argentina had the highest ratio, 52.5%, followed by Turkey with 45.9%. Compared to other Eastern Europe economies, Romania is one of the highest dollar(euro)isated countries. In 2001 for example the ratio of foreign exchange deposits in M2 was 9.9 for the Czech Republic, 13.3 for Poland, and 30.1 for Slovenia. Obviously, this is an indication for perceived risks associated to ROL denominated assets (ROL deposits) and to the excessively low rates of return on these assets (deposits) given these risks (inflation volatility).



Source: NBR Monthly Bulletins Data

Figure 5.2 Percentage of Hard Currency Component in Broad Money, M2

Asset substitution confirms the public’s relatively low confidence level in the ROL and leads, inevitably, to an increased volatility of the demand for domestic money, which makes the management of monetary policy by the NBR more difficult.

Recent literature on financial crises focus on the other side of private agents balance sheets and put forward financial risks associated to *liability dollarization*, i.e. 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. Obviously, the local

currency depreciation would put additional strain on the debt service. Furthermore, when firm or bank assets are denominated in the local currency, currency depreciation erodes their net worth; as a consequence, the corporate sector may put a brake on investment, which in turn depresses global demand and would self-enforce a demand-driven crisis (see for an explanation of this *balance sheet effect*, Aghion et al. 2001; Jeanne and Zettlemeyer, 2002).

Many economists agree that, coupled with an increased mobility of capital, this 'original sin' (i.e. significant dollar debt liabilities, public and private) were at the origin of the financial crises that hurt the developing world in the nineties, and that government have to intervene more actively in controlling the proliferation of these imbalances (see Daianu and Vranceanu, 2003).

5.1.4 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.

The informal economy activities are defined here as households' unregistered economic activities. They are usually the result of non-registration of production units, under-statement or the non-registering of trade activities. There have been a number of studies that attempted to estimate the size of the informal sector in Romania (Albu et al. 1998; Ciupagea, 2001; Albu et al., 2001; French et al., 1999). According to these, in 1998 for example, the share of the non-accounted economy in total GDP was anything between 23% to 36%, depending on the assumptions used to estimate it. In general, the size of the informal sector has followed an upward trend, growing from a low of 9% in 1993 to a (possible) high of 42% in 2000.

The reasons of why it has been so are multiple. However, three of them bear a significant importance. Firstly, the choice of economic agents to operate in the informal sector is a natural response to avoiding an excessive tax burden.²⁵ Romanian's tax rates,

²⁵ A new Fiscal Code which envisages a reduction in income tax rates is due to come into effect in 2005.

in general, are not exceedingly high, but social security contributions are, probably, the highest in Europe ; this creates an incentive for households to engage in informal activities in order to increase their disposable income.²⁶ Firms also tend to under-state their volume of foreign trade while non-registering a large part of domestic trade transactions.

Secondly, a complicated mechanism of regulation in various markets has led to the emergence of a largely bureaucratic system. As a result, an increasing number of companies have switched parts of their activities to the informal sector in an effort to avoid administrative barriers and corruption.

Thirdly, an insufficiently trustworthy financial system together with a lack of financial instruments, have increased the probability of economic agents engaging in informal cash transactions.

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.

5.2 Arrears and the fiscal burden

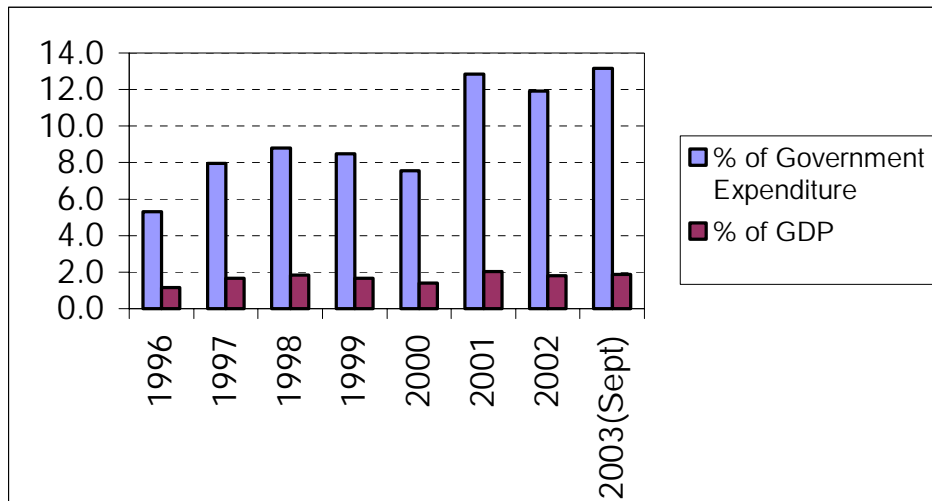
The co-ordination between monetary and fiscal policies is crucial in achieving macroeconomic stability (Mishkin, 2001). Given the choice of monetary targets to set prices, fiscal policy is significantly constrained because it has to achieve optimality in tax patterns, solvency, and ensure long-run consistency between debt and money holdings. In Romania fiscal policy has been rather restrictive over the last years. The general government deficit has been cut from 5.4% (without privatisation revenues) of GDP in 1998 to an estimated 2.4% of GDP in 2003. As rosy as the budget deficit picture might look on paper, in reality the situation is more serious due to, primarily, two phenomena.

The first is the social *security system crisis*. Within this, the pension system is probably in the most precarious state and, unless it faces a swift overhaul, it is difficult to

²⁶ A point worth noting here relates to the agricultural sector. In Romania the share of agricultural employment in total employment is extremely high. Data released by Eurostat puts the 2001 figure to 44.5%. Although the agriculture contribution to GDP is only 12%, around 85% of agricultural employment consists of self-employed workers who do not earn a wage. Almost all their economic activities take place in the informal sector.

see how it can avoid a collapse. In 2001, Romania had 0.63 officially registered workers for every retired person. However, in Romania the picture is distorted by the fact that, out of the country's working population of 11 million, only 4.5 million appear to be employed. With less than 1 million being unemployed the remainder of the labour force work either abroad or in the informal economy. One should also consider the large part of the population in the rural area. In comparison, the ratio of workers to pensioners in Europe, already considered to be in the crisis zone, currently stands at 4 to1 and is forecast to decline to 2 to 1 by the year 2040.

Since 1996, the share of pension expenditure in total government expenditure has grown from 5.2% to 13.3% in September 2003 (Figure 5.3). The pension costs will, undoubtedly, continue to pile up the pressure on the government expenditure in the years to come. This phenomenon is likely to be further exacerbated by a declining birth rate and increased emigration with expected EU entry.



Source: NBR Monthly Bulletins Data

Figure 5.3. Pensions Expenditure

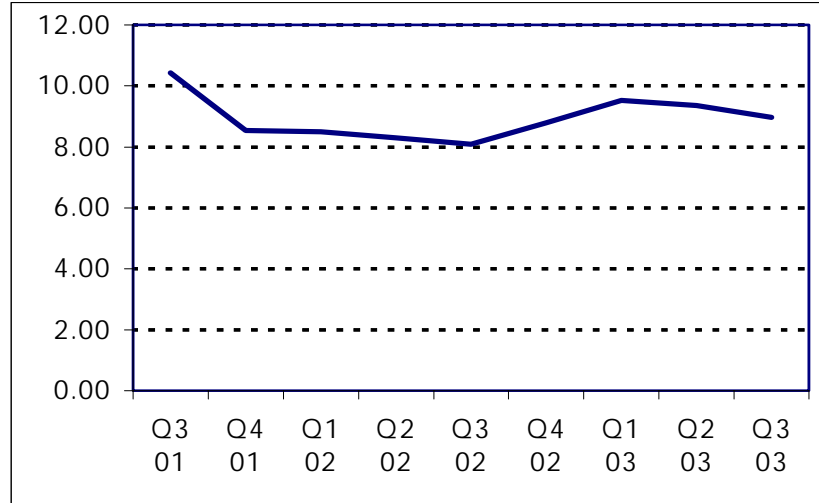
Addressing the pension system issue means reforming the existing pay-as-you-go (PAYG) system - where pension expenditure in any given year is financed by that year's contributions in the form of payroll taxes.

Although there is a draft project law prepared by the Ministry of Work and Social Solidarity progress with adopting the legislation has been slow so far. The project envisages the introduction of three pillars, the first would be based on a compulsory public sector system, the second would bring in private pensions while the third pillar would consist of company pensions based on voluntary workers contributions.

The introduction of these changes is going to impact on the savings and investment decisions households make. With the emergence of pension funds the Romanian financial system is set to become more diversified, and supposedly healthier, creating an additional channel through which monetary policy could operate. The pension funds regulation and supervision issues are of paramount importance given Romanian recent history of investment fund and banking collapses.

The second issue is constituted by the poor financial discipline that has been persisting within the economic system. Since 1990 loss-making companies, especially state-owned enterprises and public utilities, have accumulated large arrears. 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. Apart from this, high inflation has been consistently used by these companies to survive, thus masking their inefficiency; high inflation has been used by debtors to reduce their debts (arrears) in real terms) As a result resources have not been allocated to the most productive uses, impairing global efficiency. The upshot has been a substantial increase of the quasi-fiscal deficits that put under strain the state of public finances.

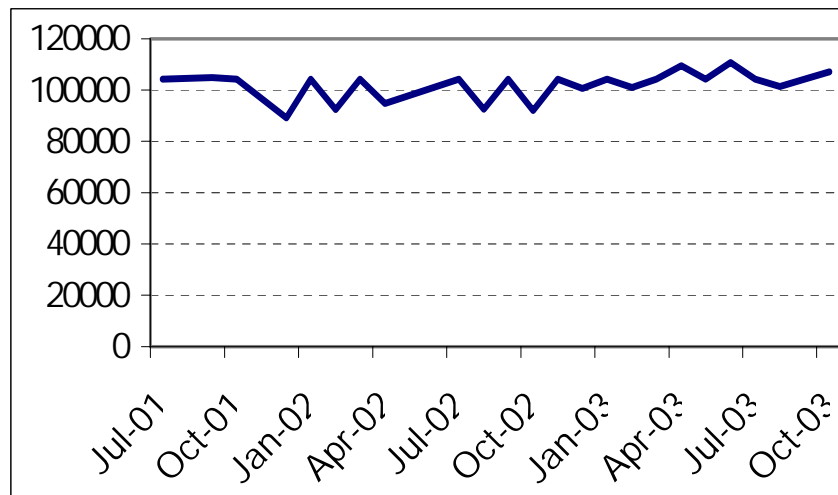
To remedy this, in 2001 the government issued an emergency ordinance (OUG no. 79/2001), which set the legal framework for monitoring the financial discipline of 86 large debtors. The purpose was to try to reduce the volume of arrears by setting up a monthly surveillance programme of wage expenses, debts, and losses for the companies under consideration. In spite of these measures, however, the size of arrears (of the monitored companies) as percentage of GDP has fluctuated around 9% of GDP (Figure 4.4).



Source: Authors' calculations from the Ministry of Finance data.

Figure 5.4. Arrears of Monitored Companies, per cent of GDP

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 in recent years the quasi-fiscal deficits in this sector to several percentages of GDP (Cosse, 2003). In spite of the reduction in the number of monitored companies the stock of total arrears has increased in real terms during the same period (Figure 5.5).²⁷

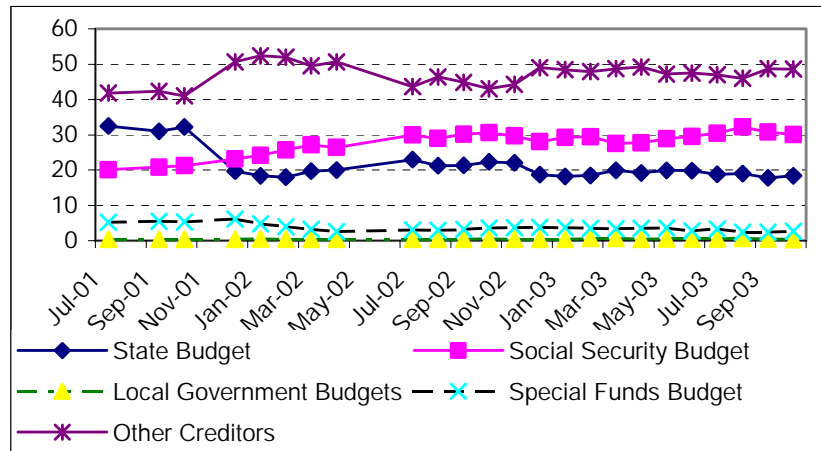


²⁷ Out of 86 enterprises that were on the monitoring list on the 31 July 2001, when the monitoring programme started to be implemented, only 73 were left on the list in October 2003. During the period some of them were subject to various rescheduling and write-off arrangements in the context of enterprise restructuring and privatisation.

Source: Authors' calculations from the Ministry of Finance data.

Figure 5.5 Arrears of Monitored Companies, July 2001 prices, Billion ROL

The volume of arrears to the consolidated general government has been also following an upward trend in 2003 (Figure 5.6). What is more worrying is the fact that these increases occurred regardless of government's efforts to strengthen tax administration.



Source: Authors' calculations from the Ministry of Finance data

Figure 5.6 Arrears of Monitored Companies, % in total

Given the relative lack of progress in imposing a financial and commercial discipline in a number of state-owned and public utilities so far, the difficulty is to be able to predict a time horizon under which the volume of arrears could be brought under control. Otherwise, the indirect potential future threat to the government budget is going to persist endangering the course of macroeconomic stabilisation. Essentially there are two main ways in which the stock of arrears (and quasi-fiscal deficits) could be brought down, improving the tax collection mechanism and speeding up privatisation. With respect to the first issue, there seems to be some headway. Payments by large state-owned enterprises – which are at the root of the problem – tended to improve in 2003. With respect to the privatisation progress, however, the signals are mixed.

The responsibility of industrial privatisation is split between the Authority for Privatisation and Management of State Ownership (APAPS) and the Ministry of Economy and Commerce (MEC). The MEC holds almost 80% of total state assets, the majority of which are in the energy sector.²⁸ And it is precisely this sector that suffers from numerous privatisation delays. Given the fact that energy tariffs, which are indexed to the US dollar, are set below cost recovery levels the energy sector has kept running large losses (see also Cosse, 2003). These have been further accentuated during the first half of 2003 due to the increase in the world fuel prices (partly compensated by a weak dollar). Although the government and the IMF agreed with a timetable for energy price liberalisation, there have been delays in its implementation.

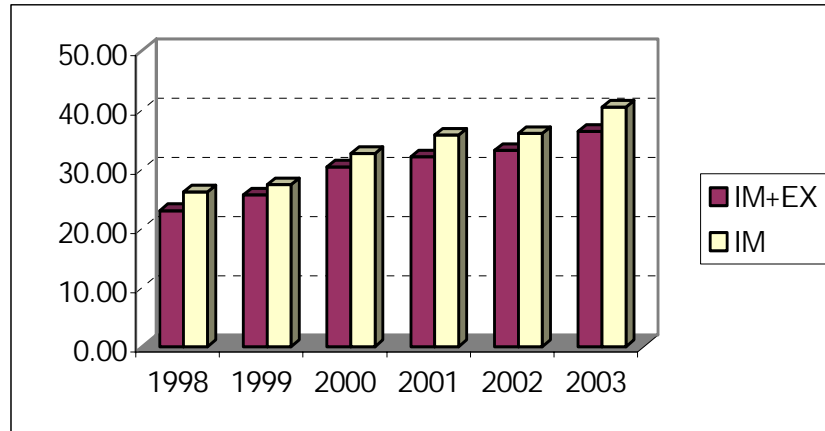
5.3 External factors

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 the 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, whereby exchange rate movements are perceived as an indicator of future tradable price changes.

The more open an economy is, the larger the impact of any exchange rate movements on domestic prices. One indicator of a country's *degree of trade openness* is the average share of foreign trade with respect to GDP.²⁹ In Romania, this share has been growing constantly since 1998 from 23% to an estimated 36% in 2003 (Figure 5.7) showing increasing integration of Romania within the World economy.

²⁸ Energy utilities account for more than 70% of the total share capital held by the state.

²⁹ Exports plus imports divided by 2 as a share of GDP.



Source: NBR Monthly Bulletins Data

Figure 5.7. Percentage of Trade in GDP

Although this makes the Romanian economy one of the least open economies among those of EU accession candidates, its trade shares are still higher than the average for the euro area. (According to the 1999 EBRD Transition Report the average share of trade in GDP for the EU candidate countries was 45%.)

The EU is the largest trading partner: in 2002 the share of Romanian EU imports in total imports was 58.1% while 67.1% of the Romanian exports were in the EU. The NBR policy of a modest real appreciation of the ROL together with an impressive increase in the domestic credit have led to a sharp increase of the current account deficit – which reached 5.8% of GDP in 2003. This situation has made the NBR to postpone its plans for further *capital account liberalisation*. Among the transactions that were scheduled to be liberalised 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.³⁰

The timing of the complete capital account liberalisation is extremely important. A premature opening of the capital account could translate into a financial crisis if other macroeconomic criteria are not met first (Daianu and Vranceanu, 2003). In a small open

³⁰ Some of the capital control regulations have been changed, however. For example, from 2004 residents will be allowed to take abroad any amount of foreign currency with the requirement to declare sums that exceed 10,000 euro.

economy like Romania the world interest rate is given. Large speculative foreign inflows tend to exploit the interest rate differentials allowing them to take advantage of the existing arbitrage opportunities. This would make the Romanian economy a potential target, as real interest rates here are high and so would ensure that a capital gain is realised.

The low diversification of trading instruments in Romanian financial markets could limit speculative inflows to some extent. The Bucharest Stock Exchange Market (BSE) had a very small capitalisation to GDP ratio of 6% at the end of 2003. The bond market is also underdeveloped with issuance of corporate bonds being virtually absent. Arguably, government T-bills are among most traded instruments but a tight fiscal stance imposes a ceiling on the quantity that is currently issued. (Part of the government's debt is euro denominated.). Nonetheless, the range of financial instruments has only one direction to go and, thereby, it does not eliminate the threat posed by speculative flows.

Like in the other transition economies, in Romania the share of productive capital per worker is rather low. Given the low income and savings, in order to accumulate capital, Romania must heavily rely on foreign investment. So far, for Romania, the tendency in FDI inflows is rather disappointing. Since 1989, the cumulative level of per capita has been extremely low when compared to other accession countries (Figure 5.8).

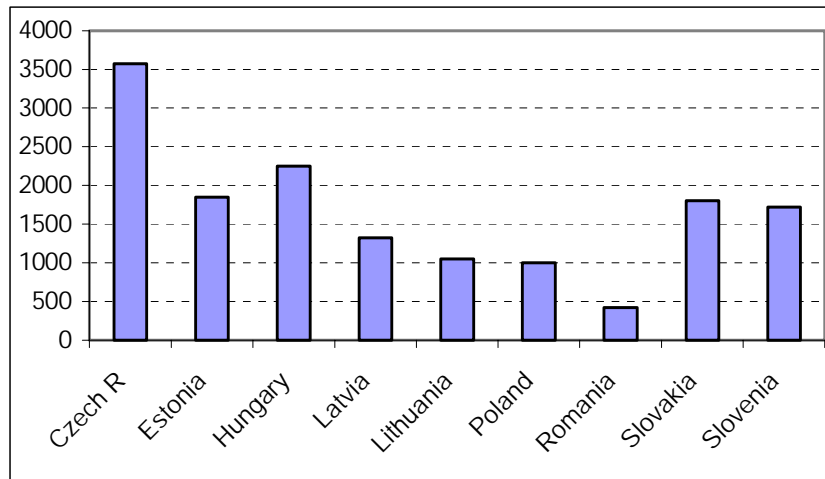
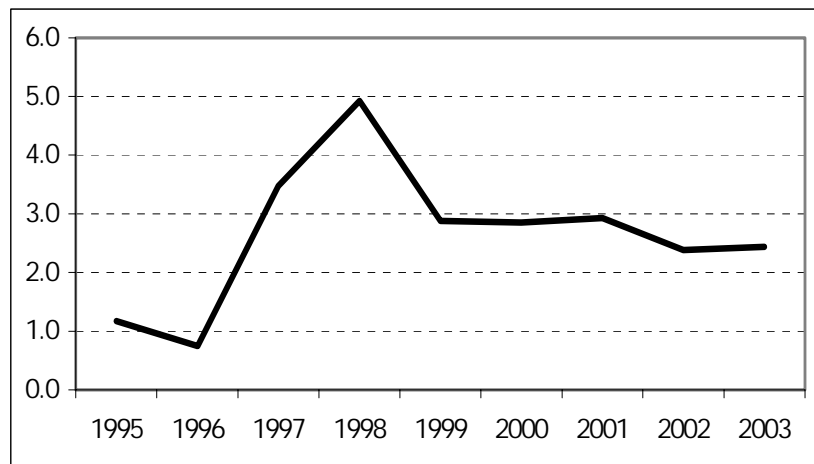


Figure 5.8. Cumulative FDI inflows per capita, 1989-2002 (USD)

Source: EBRD

Furthermore, the FDI as percentage of GDP has been following a downward trend since 1998 (Figure 4.9). The impact of capital flows is of fundamental importance not only because it brings new technologies, but also because they help establish the financial discipline that is crucial to the effective functioning of a market economy. So, to an extent, the low level of FDI reflects investors' sentiment about the Romanian economy and their perceptions about the business climate here. One has to acknowledge, however, that this perception has been improving lately following an improved economic performance and upgrades from the main rating agencies.



Source: NBR Monthly Bulletins Data

Figure 5.9. Net FDI as % of GDP

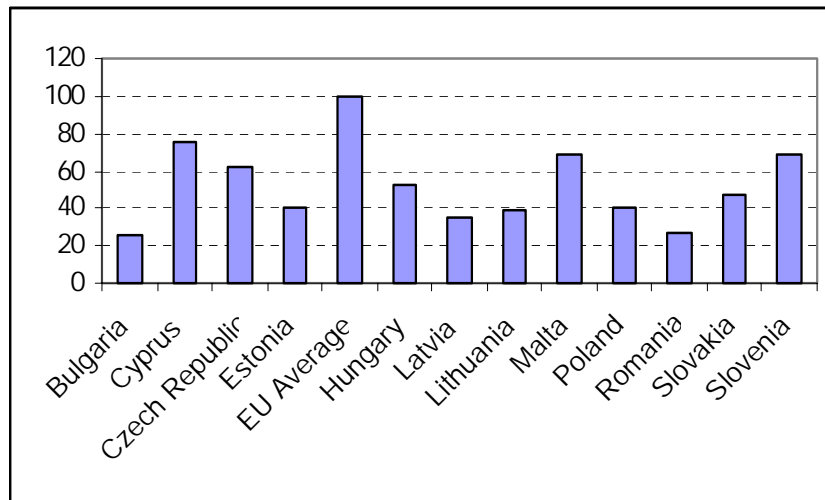
The sum up, the Romanian economy has some distinct characteristics that ask for a careful consideration of the appropriate monetary and exchange rate policies. The large stock of arrears and potential future pressures to the government budget, such as the high cost of pensions expenditure or fiscal costs in the run up to EU entry, require a co-ordination of those policies with fiscal policy.

6. MONETARY POLICY GOALS IN THE RUN-UP TO THE EU

6.1 EU relevant requirements for membership

In August 2003, the government submitted its third Pre-Accession Economic Programme, which it negotiated with various domestic institutions. The programme reaffirms the government's commitment to its economic reform agenda. While nobody doubts the political willingness to join the EU there are questions about the ability to deepen reforms –not the last because of the election year.

The issue at stake is that monetary policy cannot act alone for achieving nominal and real convergence towards the EU, structural and fiscal policies need to be adjusted to this objective too. The latest Eurostat data show that in terms of GDP per capita Romania and Bulgaria lag behind all other future EU members (Figure 6.1).



Source: Eurostat

Figure 6.1. GDP per Capita as Percentage of EU Average for the Accession Countries in 2002

It is therefore not surprising that one of the first priorities Romania has is to achieve sustainable growth that would allow it to diminish the GDP gap with other EU countries. However, this can only be possible if other conditions are met first - such as

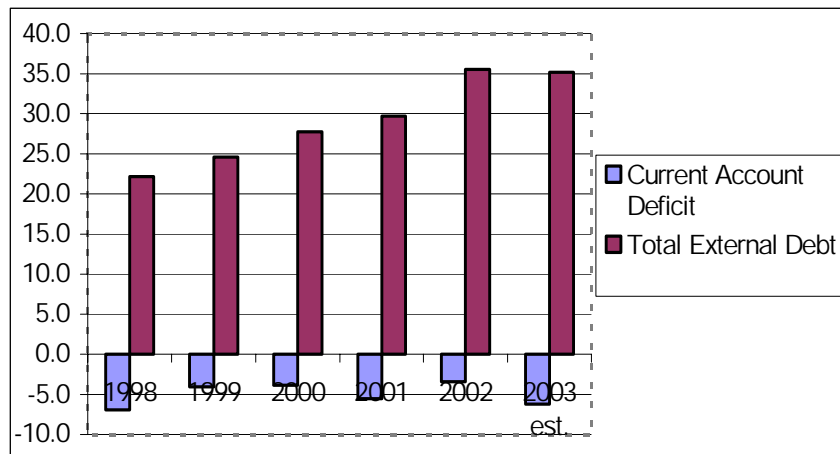
financial discipline, stabilisation, development of the financial system and of the business climate.. And here Romania still has some way to go. What is of paramount importance though is that Romania maintains its current timetable for EU accession. As challenging as it may be this is crucial for at least two reasons. Firstly, as Romanian history suggests, the implementation of reform has been painstakingly slow in the absence of external pressure. The continuous monitoring under the IFIs and EU programmes has played a great deal of importance by helping in the implementation of reform programmes, and subsequently in enforcing them.³¹ Secondly, sooner or latter, these reforms would have had to be dealt with anyway. The EU accession deadline simply ensures that these are done sooner by effectively forcing the government to implement them. Romania cannot afford to lose this momentum, especially when the EU commitment to take in new members is still there. Postponing the entry date would lead to a shift in domestic expectations – which are already set for Romania joining the EU in 2007 – and this could have adverse macroeconomic effects.

The conditions for the EU membership are set forth in the Copenhagen criteria. Meeting these essentially means adopting the *Acquis*, the EU's regulatory framework. There are cost and benefits to that but in the long-term the latter would, arguably, outweigh the former. This was certainly the case for Portugal, Spain, and especially Ireland which all experienced rapid growth after becoming EU members. Besides, the EU in 2007 might look different from the one in 2004. Squabbles over the EU constitution together with recent references made by a group of EU members aimed at establishing a 'core' EU are not that encouraging. Whatever form might the EU have in 2007 it would be desirable for Romania to be in. Entering into EMU however, is another story and the accomplishment of this looks unlikely in the near future, at least until the Romanian structural deficiencies are sorted out.

6.2 The external balance constraint

³¹ One has to remark, however, that not all pieces of advice provided by the IFIs or the EU are optimal when it comes to a development-focused programme. Tax policy and liberalization of the capital account, or privatization without due attention paid to market regulation, are examples in this regard.

The evolution of the current account deficit has been often used by foreign investors as a benchmark set rule of thumb in order to re-evaluate their investments in a particular country. An analysis done by Caroline Freund over a sample of 25 developed economies that experienced large adjustments in the current-account deficit found that deficits usually began to reverse when they exceeded 5% of GDP. Such adjustments were typically accompanied by a 10-20% fall in the real exchange rate. However, looking only at the current account data could prove to be restrictive for countries with a low level of external debt and too lax for large debtors. To address these shortcomings private financial investors have tended to be more concerned that the external debt should converge somewhere between 50% and 60% of GDP than paying attention solely to current account data (Kaune, 1997). What does this imply for Romania? The current account picture looks rather bleak lately, whereas the total external debt does not (Figure 6.3).



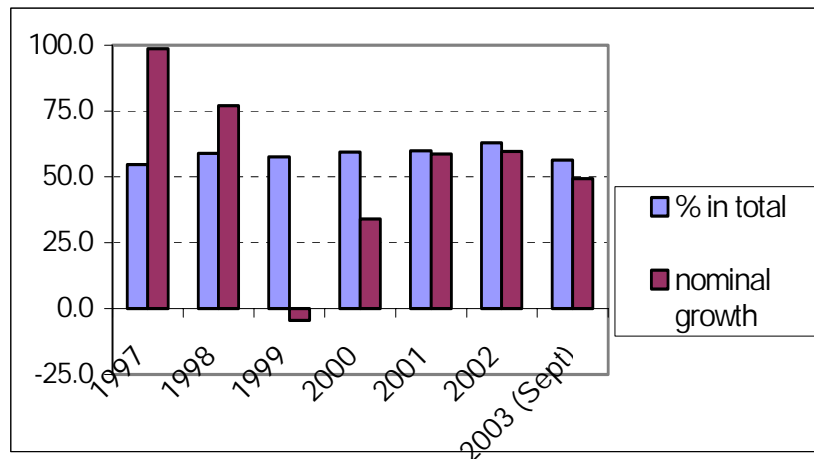
Source: IMF

Figure 6.3 Current Account Deficit and Total External Debt as Percentage of GDP

Although total external debt has been following an upward trend since 1998, the estimated figure for 2003 suggests it is only 35% of GDP, lower than the prudential criteria private investors seem to use. However, it should not be forgotten that 1990s troubles in Latin America (Mexico, Argentina) took off when the external debt was lower

than 40% of their GDP. Not only is the mere debt to GDP ratio an important indicator for debt sustainability but also the volatility of the income flow. The higher this volatility, the lower the sustainable debt level (Besancenot et al. 2004).

The recent deepening of the current account deficit reflects, essentially, the level of excess domestic demand. Helped also by falling interest rates the demand for credit, especially the hard currency denominated credit, has been one of the factors that have been fuelling domestic demand.³² Figure 6.4. shows that the availability of hard currency denominated non-governmental debt was severely constrained in 1999, after the banking financial collapses, but has been following an upward trend ever since.



Source: NBR Monthly Bulletins Data

Figure 6.4. Hard Currency Non-Governmental Debt

Recent measures implemented by the NBR and the Finance Ministry aimed at reducing the households' demand for domestic credit are bound to have limited effectiveness. Stifling domestic demand is not enough; there is need for policies that would allow that excess demand to be matched by domestic investment. Moreover, this protective measure is only a short-term solution.

³² A relatively stable ROL/USD exchange rate, a real appreciation of the ROL, and the interest rate differential between the credit in ROL and the credit in USD over the last year have made the USD denominated credit to be cheaper than the ROL denominated credit.

As mentioned in Section 4, the NBR opposed the ROL appreciation by buying hard currency (dollars, euros) between 1999-mid 2002, and tried to sterilize these interventions (starting with 2001) so as to prevent the increase in the supply of money (see Figure 6.2). This latter policy was meaningful in a context where another main priority for the NBR was to recover a normal stock of foreign exchange reserves. Since this second goal has now been achieved the NBR may more effectively fight inflation if it reduces its interventions in the foreign exchange market.

What can be done about sterilisation costs since the NBR cannot be completely insensitive to exchange rate dynamics? Given the idiosyncratic structure of the Romanian economy, and mainly its financial fragility, it may be useful to set up some market-based capital controls on short term capital inflows. Experience shows that in crisis times, these capitals are highly volatile, and their flight might reinforce the crisis. So, if there is no perfect substitution between short term and long term capital flows, taxing short run inflow (for instance, by introducing the requirement of a non remunerated deposit – Chile-type measure) would oppose excessive ROL appreciation.

A country would be subject to little financial instability if foreign capital inflows help financing high yield investment projects. The situation might be quite different if private agents borrow external savings for consumption purposes. In the Romanian context, it is instructive to notice that in 2003 consumer credit expanded at a very high pace (it rose by about 300% in one year). One has to acknowledge, nonetheless, that this credit represents only about 20% of non-governmental credit (some 2.4% of GDP).

Many of these credits are dollar denominated, which impose additional risks on the borrowers in the advent of a ROL depreciation (firms in the non-tradable sector and households are the most exposed to such risk given that their income is denominated in the local currency).

Therefore, some banks, which may have weaker internal prudential regulations, might face difficulties in the period to come; in such a scenario, the banking system as a whole may go in trouble waters. Another worry is the one mentioned above, that the current account deficit has been approaching some critical threshold level, which may trigger a loss of trust of international investors in Romania financial stance and a reversal in capital flows. Unless FDI finances the deficit to a larger extent and the inflows of

portfolio capital become less speculative, a deficit which goes beyond 6.5% of GDP would undermine policy credibility and pave the way for unpleasant surprises³³. This would be quite ironic in view of the series of upgrades Romania got from the main rating agencies lately.

In the light of these developments in the markets for credits, given the efforts of the NBR to prevent excessive ROL appreciation, capping internal credit, in particular the dollar-denominated consumption credit, may be a useful variant of capital controls, which will support a weak ROL and oppose financial instability.

6.3 Economic growth and sustainable disinflation

The elementary economics textbook suggests that economic growth could come from changes in the productivity of either capital or labour, technology, or a combination of these. Given that Romania is a small open economy with a low level of technical development and productivity (compared to the EU countries) the transfers of capital and technology should lead to faster growth. As capital comes in, increasing productivity would drive up wages, and eventually prices, leading to an appreciation of the real exchange rate.

The question that arises in this context is how fast Romania should bring down inflation to the EU benchmark without incurring an excessive output loss. Disinflation will clearly affect the state-owned loss-making enterprises which, so far, have systematically seen their real debts erased by inflation. Left without this degree of freedom, these are likely to be pulled out of the market. But such costs have arguably been foreseen by both the NBR and the Ministry of Finance when they agreed upon the inflation targets. A cautious approach to disinflation and a credible monetary policy are needed in order to avoid the wave of massive failure that occurred in the Czech Republic, Hungary, and Poland where central banks and governments did not spare the tensions over the trade off between the speed of disinflation and slow economic growth.

³³ In our view it would be a mistake to use privatization receipts for financing large current account deficits, unless the latter involve extraordinary events or expenditure related to key infrastructure projects.

The relatively rapid economic growth of domestic demand, the increase in import prices (due mainly to a strong euro), and the monopolistic structure of some industries, especially the energy sector ones, could undermine the NBR disinflation policy. Alternately, a return of a strong USD would help disinflation.

At times, rapid disinflation could come as a consequence of temporary external shocks like large decline in the price of commodities. Any attempt to lock in permanently such disinflation would be a mistake as the reversal in commodities' prices is set to happen when the global demand recovers. By the same token the NBR would risk offsetting temporary supply shocks that derail the disinflation from its projected path.

However, excessive concerns regarding the sacrifice ratio do not seem to be validated for transition economies, wherever efficiency reserves are high (Cottarelli and Doyle, 1999). In Romania, the disinflation of recent years has occurred with no (apparent) loss in output. It remains to be seen what happens in the period to come, as a one digit level inflation no longer diminishes arrears in real terms, as it used to do.

6.4 EU-specific fiscal pressures and the risk of deficit monetization

It should be remarked that compliance with EU regulations and standards is going to require substantial budgetary outlays and large public sector investments in infrastructure, agriculture, environment protection and other sectors. Here for example, the requirement is to update, extend or build wastewater treatment and waste incineration plants, drinking-water networks or landfills, etc.³⁴ Apart from these, other costs will arise from the sheer payment of contributions to the EU budget after Romania joins the EU (about 800 million euro). On the other hand, on its way to accession, Romania can access the usual set of Structural and Cohesion Funds; it also benefits from transfers of the pre-Accession mechanisms, like PHARE and SAPARD programmes.

³⁴ It is true that some EU financing instruments require co-financing, for example, for infrastructure and environmental related-projects. However, usually this is limited to 75% of public spending on a project.

Assuming various inflows of EU funds³⁵ – the commitments, which form an upper level, amount to about 5% of Romanian GDP – the net impact on the budget is also variable.³⁶ The estimated impact for accession countries varies between –0.5% to –1.8% of GDP. However, the current state of agricultural sector and the need for large-scale public investment in the area of infrastructure and environment suggest the pessimistic scenario would be more appropriate in the case of Romania.. In addition a large cost to the budget will be representing by transitional financing costs from the change in the PAYG system. A recent study by Fultz (2003) on a sample of economies shows that the requirements needed to achieve this goal would strain the budget deficit, for several decades, in the range of 0.5-2.5% of GDP per year. In the light of this it becomes essential that the volume of arrears be drastically reduced as soon as possible. The strain of these costs to the budget will be too much to bear. (Since the current-account balance equals the net saving of the private and public sectors, a budget deficit is going to boost the external deficit, which is undesirable). The quasi-fiscal deficits absent, the size of the budget deficit would be substantially easier to manage.

The failure to bring down the stock of arrears by 2007 is likely to pose a real danger to the macroeconomic stability. As current account deficits are likely to persist – and be large – over the next years, a situation of twin sizeable deficits could jeopardise the recovery and throw the economy into recession.

7. POLICY RECOMMANDATIONS

Successful monetary policy entailing a credible disinflation path can be implemented provided the Romanian financial system advances in its modernisation process and structural reforms deepen. In the financial area, this requires to carry the reform of the banking sector a step further and to enforce corporate financial discipline (in particular, arrears must come down decisively in real terms).

³⁵ Which is based on a limited ability to absorb funds.

³⁶ There is also the issue of Romania's capacity to assimilate these funds.

Efficient monetary policy leading to successful disinflation requires not only a sound financial system but also a clever coordination between, on the one hand, fiscal policy and monetary policy, and, on the other hand, between exchange rate policy and monetary policy.

In order to enforce the NBR autonomy and credibility, quasi-fiscal deficits (debt issued by non-government organisations but benefiting from government guarantee) have to be cut in a significant way; in particular, a sustainable solution to the social security crisis needs to be found out; likewise, public utilities must improve their economic efficiency.

Over the medium run, a main challenge for the NBR and for the Romanian government is to reverse the credit relationship between the central bank and commercial banks, that is, to obtain a structure specific to all the developed countries, where the central bank is the net creditor of the banking sector and not the reverse. This implies that the NBR should first cease increasing the stock of borrowed resources from commercial banks and then reduce it gradually. The gradual reduction would come with an increase in the monetary base, which may be inflationary if the output growth is not strong enough and money velocity does not go down. If growth in Romania continues at the high pace of the late years (over 4%) and money velocity decelerates, the decline in borrowed resources should not lead to excessive inflation.

7.1 Inflation targeting

Some economists asked whether the NBR should shift as soon as possible to “inflation targeting”, like Poland, Hungary or the Czech Republic did (or said so – given the very poor precision of their inflation forecasts). Two years ago, a group of NBR economists thought that IT may be adopted by the National Bank by 2004³⁷. Section 3 recalls the basic principles of this system. Of course, under such a system, the Bank should focus on inflation only and, first of all, choose an inflation target. But genuine inflation targeting can be implemented by an independent central bank if:

a/ the policymaker is able to get a reliable conditional inflation forecast; and if

³⁷ Popa et. Al, 2002

b/ the policymaker knows how to adapt the main instruments so as to bring the forecast close to the target over the decision horizon.

All the benefits which derive from IT in terms of accountability and credibility stem from these conditions. Obtaining a reliable conditional forecast is a very difficult task. What if the forecast is wrong? The relationship between the instruments is in general assumed to be known; but is this relationship carved in stone for a developing economy, featuring important structural fragility?

In practice, the IT central banks need one (several) stable macro-econometric model(s), to get the inflation forecast and to allow them to simulate the impact of a change in the set of instruments over the inflation path. Is it realistic to believe that such a method could be implemented in Romania in the few years to come? Assuming that the bank is indeed independent, what would be the main NBR instrument? Probably nobody could answer this question today. Some may think that the *interest rate* on resources borrowed by the NBR from commercial banks (so-called “attracted deposits”) might become this instrument; yet, as put forward in Section 4, so far the NBR appears still to decide on the *stock* of borrowed resources, which it can get without restriction given the abnormally high interest rate they pay for these funds. True, the stock of resources may be an instrument, but, as experience shows, private agents do not interpret easily such quantitative targets.

Furthermore, can a satisfactory econometric model of the Romanian economy be built? The answer is, probably, not yet. 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 this is not the same thing to estimate a model for a relatively stable economy and with relatively stable policies (e.g. UK or Sweden) and an economy whose structure, and policies change. 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 macroeconomic model (in particular, given that the adoption of the euro is altering the inner structure of the EMU).

And the IT attempts in Central European countries is so ‘loose’ in reality that it questions the terminology used³⁸.

So far, the NBR does not dispose even of basic forecasting tools as a bond yield curve, so tracking inflation expectations is very hard. As a substitute, before a wide range of bonds with various maturities become available, the NBR could implement some form of survey on inflation forecast of market analysts. Notice that in Romania it is hard to forecast not only the money demand given the weight of the informal sector (which is inadequately captured by official statistics) 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).³⁹ Supply in the broad money stock is also hard to monitor since half of the money stock is in hard currency and cash in circulation holds a large portion of base money.

Given this uncertainty, risks of taking decisions on the basis of a wrong two-year forecast are quite high. In no way decisions taken on ground of poor econometric modelling could improve the central bank credibility, to the contrary. Today the NBR credibility is quite high, in view of the disinflation achieved until now. This capital of credibility can only be adversely affected if the Bank forecasts come out to be wrong systematically.

³⁸ Andrew Lewin 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. Lewin et.al also show that in the emerging economies that adopted IT (including the 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 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.

³⁹ Antohi et al. (2003) document well the difficulties the NBR staff faced to forecast the demand for money.

Several Central Banks in developed countries that adopted IT set up very high standards on the monetary policy management: in Sweden, Canada, the UK – deviations of inflation from target are quite low. So far, IT central bankers in Central Europe got very poor results – they use to miss their target by large margins (Jonas and Mishkin, 2003). Since they compare with the former group of country, their credibility can only be harmed. If a non-IT bank misses the target, private agents should be less severe in downgrading its credibility.

Other doubts about IT relates to the timing of its 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 are inconsistent with the low inflation goal, so as required by the IT regime.

Therefore, for Romania, which has an emerging economy, the central bank's credibility may be adversely affected by adoption of IT, given that the risks of getting wrong forecasts and missing inflation target, subsequently, are quite significant. By adopting a rigid framework for monetary policy management in the context where the criteria for the well functioning of this framework are not fulfilled, the central bank's credibility can only be damaged.

For all these reasons, it is quite unrealistic to believe that the NBR could and/or should adopt a genuine IT system in the near future.

But there is no drama in this conclusion. Romania is committed to join the EU by 2007 or so; it must then set its monetary institutions and policy in line with the Euro area, so as to join, at a later date, the EMU. But fortunately the 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. Probably this would be the best choice for the Romanian Central Bank.

Like the ECB, the Romanian government and the Central Bank should systematically state their commitment for stable prices (such as they are laid out today in

the main Laws: Constitution, NBR Statutes, etc). The NBR should also define an inflation target, and, eventually, revise it downwards gradually. Announcing an explicit quantitative target should foster transparency and accountability of monetary policy and the NBR must make some progress on these two counts. It may also help anchoring inflation expectations, provided that central bank credibility is strong.

Very important, the NBR has to make sure that its instruments are effective in controlling inflation. So far the Bank controls the monetary base (ROL denominated) through the stock of borrowed resources from commercial banks⁴⁰. However, in the context of a euro(dollar)ized economy, the relationship between the money stock (which includes dollars and euros) and the monetary base is much looser.

At some close moment in the future, the NBR may decide to use the same instruments as other central banks in transition economies (Poland, Hungary, the Czech Republic), and more in line with modern monetary management. In particular it may consider a shift from the monetary base quantity control to short term interest rate management, where the relevant signal for the monetary policy stance is the interest rate on borrowed resources (attracted deposits).

The ECB experience is enlightening on several other issues; as mentioned; many empirical studies have shown that the European Central Bank 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, than the credibility risk may occur at a deeper layer.

7.2 Exchange rate policy

⁴⁰ The NBR has announced that it is going to resort to central bank certificates as an additional means to mop up liquidity.

In the early months of 2004, Romania's foreign financial position appears to be sound, with a satisfactory (and improving) country risk rating, a relatively low external debt, facing no difficulties in financing the debt service. The NBR stock of foreign exchange reserve is quite normal according to international standards.

It appears that in the last period the NBR and Romanian allowed for more flexibility in the determination of the exchange rate (like Poland did in 2001). This trend should be continued, the flexibility of the exchange rate should increase. More in detail, the NBR should reduce its direct interventions in the foreign exchange market. Direct interventions might still be conducted in an exceptional way, to fend-off speculative attacks or terminate a bubblish 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 National Bank 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.

After the moment Romania joins the EU, it should also join the ERM2 (by 2009 or later) -- with a view of becoming a EMU member. This will shift NBR 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.

7.3 Capital account liberalization

This said, how would NBR cope with possible surges in speculative capital inflows if all restrictions on capital movements were to be lifted in the next couple of years? As already mentioned, risks of an excessive appreciation of the ROL which would harm export competitiveness, cannot be ruled out. Moreover, the moment of entry in the EU should not be accompanied by an excessive real appreciation of ROL, which would burden tremendously budget policy were balance of payments adjustments needed. The

authors of this study suggest that the NBR should proceed with a sequential liberalization of the capital account (see also Daianu et al. 2002, Daianu and Vranceanu, 2003). Short term funding should be the last to be liberalized; in particular, this step should not be taken before the financial system is fully restructured, before macroeconomic stability made significant progress and antitrust regulation is fully effective.

Related to the capital control issue, particular attention should be paid to short-term foreign currency denominated liabilities of private agents, given the bankruptcy risks that these actors may bear should the domestic currency sharply depreciate. Households and firms in the non-tradable sector are the most vulnerable to such a “balance sheet effect”, given that their assets (and income) are denominated in the local currency. In this context, the NBR might consider the case for quantitative restrictions or taxes on short-term dollar(euro)-denominated credits for the most vulnerable private agents.

The Bank should also implement pre-emptive regulation against speculative attacks (Daianu and Vranceanu, 2003). If the ROL is allowed to float more risks of speculative attacks are diminished significantly. Yet, when the Romanian currency will get into the ERM 2 (after the EU accession), there will be a strong commitment of the NBR to keep the exchange rate close to the central value. In this case (and only in this case), it may be useful to contain the capacity of non-residents to borrow ROL for short periods.

8. CONCLUSION

All in all, Romania is now on a favourable economic track: growth is back and inflation declines at rapid pace. It is true that further advance hinges with deepening structural reforms, with reducing overall economic inefficiency and quasi-fiscal deficits. The country seems poised to attract more foreign investment.

In this context, in order to support effective monetary policy management, the exchange rate flexibility should be enhanced and the central bank direct interventions should be cut to a minimum. In turn, this calls for more gradualism than currently agreed in the process of capital account opening. Extreme vigilance should be maintained with

respect to the speculative, short term international movements of capital and to foreign denominated liabilities in the non-tradable sector.

To support broad economic development, the Central Bank must accelerate the process of modernizing the banking system, and its own monetary policy management. It should rely more on market-based practices, and enhance its independence and autonomy.

It appears to us that the Romanian Central Bank does not have yet the capacity to implement a *genuine* inflation targeting regime in the near future (this regime requires a good capacity to provide reliable inflation forecasts; and the ability to adapt policy instruments so that forecasts converge swiftly to targets over the time horizon).

Though the NBR has announced its intention to introduce IT in 2005, and assuming that our assessment is correct, a policy exit does exist. We submit that an ECB-like system would likely be a more suitable regime. Under such an arrangement, the policymaker focuses on price stability too, but monetary policy management builds on the “just-do-it” principle. For a small, still fragile economy, flexibility does not clash with credibility, to the contrary, both back each other.

We emphasize that, in our view, the distinction between a flexible pursuit of an inflation target and a genuine IT regime is not merely semantic. The latter impose stringent requirements on the central bank, and may be a very efficient device in the context of the developed economies; to the contrary, pretending to behave like these countries, while in reality retaining a large degree of flexibility is no better than communicating honestly on the “imperfect IT” system that is actually implemented.

A central bank should not declare to adopt a policy regime only for a communication purpose, and should not follow policy fashion trends. A central bank should be concerned first above all by credibility. And credibility will emerge if, over a long period, agreed targets are not missed.

In Romania, the central bank must, in the medium run, bring inflation down to a reasonable limit, then keep this inflation low. The pursuit of simple economic principles suffices to bring about this outcome.

Sophistication required by a genuine IT regime would introduce unnecessary risks, and additional noise in the economy, deemed to accentuate, not to dampen fluctuations.

Appendix: a simple econometric model

This appendix estimates a very simple model describing essential macroeconomic relationships in Romania, which can provide some hints for monetary policy management. Monthly data cover the 1998m1-2003m12 period.⁴¹ The basic equations are:

$$y_t = a_{11} + a_{12}(R_t^B - \pi_t) + a_{13}e_t^{US} + a_{14}y_{t-1} + a_{15}wt_t + \varepsilon_{1t} \quad (\text{A.1})$$

$$\pi_t = a_{21} + a_{22}(y_t - y^*) + a_{23}(0.3 * e_t^{US} + 0.7 * e_t^{EU}) + a_{24}\pi_{t-1} + \varepsilon_{2t} \quad (\text{A.2})$$

$$\chi = a_{31} + a_{32}(\pi_t / 4) + a_{33}(0.3 * E_t^{US} + 0.7 * E_t^{EU}) \quad (\text{A.3})$$

The inflation rate, π_t , and the central bank's nominal interest rate on borrowed resources (or "attracted deposits"), R_t^B , are in percentages. All other variables are in logs; y_t is industrial production, taken to be a proxy for real output, e_t^{US} and e_t^{EU} are the real ROL/USD and ROL/Euro exchange rate respectively while the E_t^{US} and E_t^{EU} are their nominal counterparts. $y_t - y^*$ stands for the output gap, χ is the stock of deposits attracted by the central bank, $\pi_t/4$ is the average inflation over the last four months. The wt_t variable is a proxy for the world trade (taken here as an index of the G7 countries' volumes of imports and exports) intended to capture foreign demand; $\varepsilon_{1t}, \varepsilon_{2t}$ could be any demand and supply shocks respectively.

Equation (A.1) is an IS curve for an open economy in which real output depends on its lagged value, the real interest and exchange rates, and foreign demand.

⁴¹ Quarterly data would have been probably more appropriate to be used in the context of building a macro model, however, the limited number of observations in this case forced us to resort to using monthly data instead.

Equation (A.2) is a Phillips curve where inflation is a function of its lagged value, output gap and a currency basket of real exchange rates composed in proportion of 30% of US dollars and 70% Euros. The equilibrium real output has been determined using the Hodrick-Prescott filter.

The NBR's reaction function is given by equation (A.3) where the instrument the BNR has been using so far, the stock of borrowed resources, is a function of the average inflation rate over the last four months and a weighted average of nominal exchange rates. Usually open economy models include an interest parity condition equation, most of the time taken to be the uncovered interest parity (UIP). However, we do not include this here the reason being that the capital account in Romania is not fully liberalized and, for modeling purposes, the standard UIP condition would require the inclusion of a risk premium (RP) term. The interpretation of this could be rather ambiguous as it is not so clear to what extent the RP term would reflect the currency risk and to what extent the effects owed to capital account restrictions. Moreover, the RP term could also include an additional noise. This happens because the NBR would have to pay a certain interest rate required to attract the desired stock of deposits and, given its policy of managed floating, this is bound to inflict an additional (artificial) source of variability between the interest rate and exchange rate.

The estimation results are presented below. The method of estimation is Ordinary Least Squares (OLS), t-statistics in parentheses.

$$y_t = 0.163_{(1.44)} - 0.003_{(-1.93)}(R_{t-3}^B - \pi_{t-3}) + 0.087_{(3.06)}e_t^{US} + 0.877_{(30.73)}y_{t-1} + 0.110_{(2.80)}wt_t + \varepsilon_{1t}, \quad (A.1)$$

$$DW: 2.23, R^2: 0.97$$

$$\pi_t = -30.65_{(-3.28)} + 3.386_{(3.37)}(y_t - y^*) + 7.232_{(3.53)}(0.3 * e_t^{US} + 0.7 * e_t^{EU}) + 0.232_{(2.43)}\pi_{t-1} + \varepsilon_{2t},$$

(A.2)

$$DW: 2.18, R^2: 0.52$$

$$\chi = -19.298_{(-5.63)} - 0.528_{(-4.04)}(\pi_t / 4) + 2.928_{(9.09)}(0.3 * E_t^{US} + 0.7 * E_t^{EU}) \quad (A.3)$$

$$DW: 0.72, R^2: 0.78$$

Several points are worth noting. In equation (A.1) the third lag of the real interest rate is considered instead of the current value because the former is marginally significant at the 5% level. With monthly data this approach is also theoretically more plausible since last quarter's real interest rate is more likely to have an impact on the current industrial production output. However, the coefficient, although negative, is small and it seems to reinforce the idea that the real interest rate has had a rather weak explanatory power for the industrial output behavior over the period. The large coefficient, 0.88, on lagged output implies a strong output persistence. The coefficient on foreign demand has the right sign and suggests that a 1% increase in this pushes up domestic industrial production by 0.11%.

Equation (A.2) shows that inflation persistence is not very important. In the NBR's reaction function the inflation coefficient has a negative sign confirming the fact that the NBR has been controlling the liquidity by attracting deposits and thus helping the disinflation process.

The coefficient on the index of nominal exchange rate is significant and suggests that the NBR has also attempted to sterilize its interventions in the exchange rate market (aiming at preventing the ROL appreciation).

By defining a relationship between the nominal and real exchange rates one can make assumptions about the driving processes (the US and Euro-area price levels, world trade and the NBR's nominal interest rate) and obtain various scenarios for the behavior of endogenous variables.

Of course, the model is extremely simplistic and the fact that the NBR's interest rate is exogenous together with the absence of an UIP condition seriously limits the model's applicability in exercises that would entail forecasting, for example. But these restrictions are rather consequences imposed on the theoretical model structure by the actual context in which monetary policy has been operating and the choice of the NBR's instrument.

One way to endogenise the interest rate would be by assuming that the NBR chooses this as an instrument instead of the stock of attracted deposits. Thus, under the assumption of a simple switch from using the stock of attracted deposits to using the

interest rate, a possible alternative specification for the central banks' reaction function could be:

$$R_t^B = 23.807 + 1.045(\pi_t / 4) - 2.229(0.3 * E_t^{US} + 0.7 * E_t^{EU}) \quad (A.4)$$

(3.59) (4.13) (-3.58)

DW: 0.67, R²: 0.54

The coefficients in (A.4) are only indicative as this has not been the rule followed by the NBR (although, the NBR's response to inflation developments would have been strikingly close to what the theory suggests, a 1% increase in inflation would have resulted in a 1.04% rise in the nominal interest rate). Moreover, such a specification would require the inclusion of an UIP condition, possibly expressing the expected depreciation of the real exchange rate as a function of the real interest rate, expected inflation and a risk premium. When simulating the model with a central bank reaction function of the form presented in (A.4) a useful addition to the model would be a money demand equation. At the moment however, it is rather uncertain if the NBR could use the interest rate as an instrument. If the NBR decides to continue to exert some degree of control over the exchange rate it would have to absorb the extra liquidity which might exist at any point in time in the money market, in effect controlling M0. But the degrees of volatility between the NBR's deposit interest rate and M0 are rather different. One way to assess volatility is by computing the coefficient of variation (CV) – given by the ratio of standard deviation and the mean of the time series in question. The CV for the NBR's deposit interest rate has been –13.08 for the 1998m1-2003m12 period and -1.68 for the 2001m1-2003m12 period while the CV for the percentage change in M0 has been 3.25 and 4.78 respectively. Thus, over the last two years the fall in the volatility of the interest rates has been accompanied by a rise in the volatility of the percentage change in monetary base. (The period 2001m1-2003m12 has been chosen because since 2001 the volume of attracted deposits by the NBR has increased drastically).

If the NBR decides to target inflation it is likely that it could change its instrument sometime in the near future and use, probably, the interest rate (there is also the point that current sterilisation operations cannot continue indefinitely as it would become too expensive given the expected volume of capital inflows). But, under such circumstances, the relationships given by equations (A.1) – (A.3) are likely to change to some extent and the magnitude of these changes would be an important factor in the successful

implementation of monetary policy with the new instrument – the interest rate or whatever it may be. In any case, the macro model presented here could be used as a starting point in future exercises.

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