Monetary Policy Challenges for Turkey in European Union Accession Process

Fatih ÖZATAY

May 2005

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I. Introduction

After being officially recognized as a candidate state at the Helsinki European Council, the Turkish government announced its own National Program for the adoption of the *Acquis Communautaire* on March 19, 2001. The seventeenth of December 2004 was a turning point towards full membership, on when a date for starting the membership negotiations was given to Turkey.

According to the Treaty on European Union (EU), the economic and monetary integration process consists of three phases. The first phase covers the period of candidacy for the EU. In this phase, the candidate countries choose their own monetary policy and exchange rate policy. However, they have to make necessary changes in their legislation to ensure central bank independence. The second is the accession phase and starts with EU membership. This phase consists of two stages: the period before joining the Exchange Rate Mechanism of the European Monetary System (ERM II) and the ERM II period. There are no formal criteria to be met to join ERM II and participation is voluntary. ERM II membership can take place any time after EU accession. It is an exchange rate arrangement with fixed but adjustable central parities and a fluctuation band of ± 15 percent. The minimum period of ERM II membership is two years prior to the convergence assessment. In the final phase, member countries are expected to join to the European Monetary Union and adopt the euro.[1]

In this paper, the EU accession process is analyzed from the perspective of monetary policy. Problems that can be faced by the monetary authorities after becoming a member (the second and third phases) are not discussed. Since May 2001 Turkey has been implementing a rather ambitious stabilization and structural change program to address the accumulated problems of more than three decades of imprudent policies and the eventual 2000-2001 crisis. Due to this fact, the accession process cannot be analyzed in isolation to the process of the "normalization" of the Turkish economy.

In the aftermath of the 2000-2001 crisis the banking sector was in turbulence requiring immediate action. The rescue operation increased the public debt-to-GDP ratio sharply to almost 100 percent. In mid-May 2001, just three months after the

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[1] For further details see ECB (2003).

February crisis, Turkey started to implement a new program. Monetary authorities found themselves conducting monetary policy under fiscal dominance. Since then, fiscal dominance has put severe constraints on the implementation of monetary policy. With the strong implementation of the program the fiscal dominance has begun to lose its power. However, it is an open question whether the fiscal dominance period has come to an end or even close to the end.

While sound macroeconomic policies and structural reforms, like those Turkey has been implementing since May 2001, are necessary for improving economic fundamentals and creating a positive trend in macroeconomic variables, a considerable amount of time is needed to reduce the vulnerability of an economy that has accumulated problems to changes in international and domestic risk factors over the years. This points to the fact that challenges to monetary policy over the medium term will not only arise from the EU accession process, but fiscal dominance and the transition period to monetary dominance will also create problems.

This paper aims to analyze how monetary policy authorities can address such problems arising from two different sources. In order to achieve this aim, the importance of fiscal dominance for the conduct of monetary policy should be analyzed. This is the subject matter of the second section. The problems that may arise in the normalization period and the EU accession process and possible answers to them are discussed in the third section. The current structure of the balance sheet of the Central Bank is a clear reflection of the macro economic imbalances of the past. This structure is briefly analyzed in the same section and some future policy implications are underlined. This section also briefly compares the Central Bank law with that of the European Central Bank and identifies the necessary amendments to the former. The final section concludes the paper.

II. The Fiscal Dominance and the Monetary Policy: May 2001 - 2004

Firstly, this section, presents a model of debt repudiation to show the importance of default risk as the main deriving force of the economy under the fiscal dominance regime. Secondly, it gives brief information regarding the post-crisis economic policies and outcomes. The outcome of the program has been impressive. However, there have been occasional deviations from this main trend throughout the post-crisis period. The positive main trend and deviations from this trend are

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documented and their reasons are discussed in the light of the model. Thirdly, challenges to monetary policy are analyzed.

II.1 The model

We consider a two-period Barro-Gordon (1983) model with two types of agents: the government and the private sector composed of many atomistic agents. The government can borrow in the first period with a (gross) interest factor R. There is no borrowing in the second period as it is the "end of the world". The government collects taxes (x) to pay its liabilities in the second period:

$$x = (1-\theta)Rb + u ,\tag{1}$$

where θ ($0 \leq \theta \leq 1$) is the proportion of total debt (Rb) that is going to be repudiated by the government and u is a shock. It is assumed as in Obstfeld (1996) that it is uniformly distributed on the interval $[-\lambda, \lambda]$. A negative political development is represented by a positive value of u and it either necessitates a rise in x or θ. Note that, for expositional simplicity, the exogenous value of government non-interest expenditures is assumed to be zero.

The private sector is risk neutral and does not observe political shocks at the time of purchasing government bonds (b). It simply decides what the probability of debt repudiation is in the second period, and requires an interest factor accordingly:

$$R = \frac{R*}{1-\theta^e} .\tag{2}$$

In this equation, $R*$ is the risk free interest factor and θ^e is the expected proportion of total bonds that is going to be repudiated by the government ($0 \leq \theta^e \leq 1$).

Taking θ^e as given, the government chooses an optimal level for θ by minimizing a loss function subject to its budget constraint given by Eq. (1). The loss function is quadratic and has two items. The first cost is incurred due to taxation as, for example, in Calvo (1988), Missale and Blanchard (1994), and Sachs et al. (1996). The second cost arises due to repudiation. Calvo (1988) states that this can be considered as transaction costs (as legal fees, etc.) associated with debt repudiation. There is no incentive for inflation for the government in our model. This may arise, for example, due to inflation-indexed debt. This assumption simplifies the model and makes it analytically more

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tractable. This fact is known by the private sector and expected inflation is zero. The loss function is as follows:

$$l = \frac{1}{2}\alpha x^2 + \frac{1}{2}(\beta \theta R b)^2 , \tag{3}$$

where α is the relative importance given to taxation by the government and β stands for the cost per unit of repudiated debt ($0 \le \beta < 1$).

Using Eqs. (1) and (2) in Eq. (3), the minimization problem of the policy-maker acting at his/her discretion reduces to setting θ optimally by minimizing the following loss function, taking θ^e as given:

$$l = \frac{1}{2}\alpha \left[\frac{R*b(1-\theta)}{(1-\theta^e)} + u \right]^2 + \frac{1}{2} \left[\beta \frac{R*b\theta}{(1-\theta^e)} \right]^2 . \tag{4}$$

The solution to this problem gives

$$\theta = \frac{\alpha}{(\alpha + \beta^2)} \left[1 + \frac{(1-\theta^e)}{R*b} u \right] . \tag{5}$$

If the government fully honors its obligations, then $\theta=0$. Using this in Eq. (4), the loss the government incurs is found to be

$$l^h = \frac{1}{2}\alpha \left(\frac{R*b}{1-\theta^e} + u \right)^2 . \tag{6}$$

The government loses credibility due to not honoring its debt and this represents a cost for the government, as in Sachs et al. (1996).[2] Denoting this loss by c ($c>0$) and substituting Eq. (5) in Eq. (4) for θ, the loss incurred under repudiation is given as

$$l^r = \frac{1}{2}\frac{\alpha\beta^2}{(\alpha + \beta^2)} \left(\frac{R*b}{1-\theta^e} + u \right)^2 + c . \tag{7}$$

The condition for repudiation is given by

$$l^r < l^h . \tag{8}$$

Note that this condition always holds when $c=0$. That is, if there were no costs stemming from credibility losses due to repudiation, then the government would always

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[2] This is a credibility cost to the government and different than transaction costs associated with debt repudiation that are considered in Eq. (3).

repudiate its debt. Plugging f^h from Eq. (6) and f from Eq. (7) into Eq. (8) gives the critical value of shock u^* such that $u > u^*$ triggers a repudiation.

$$u^* = \frac{\sqrt{2c(\alpha + \beta^2)}}{\alpha} - \frac{R^*b}{1 - \theta^e} . \tag{9}$$

Note that as the level of the inherited debt stock or expected repudiation increases, the critical level of shock that triggers repudiation decreases which, obviously, increases the probability of repudiation.

The analysis up to now assumes the public's expectations as given. However, private sector agents are rational and aware of the government's optimization problem. They have all the information, except they do not observe political shock at the time of purchasing bonds. They rationally form their expectations for θ as:

$$\theta^e = E(\theta) = \Pr(u < u^*)E(\theta|u < u^*) + \Pr(u \geq u^*)E(\theta|u \geq u^*) , \tag{10}$$

where E is the expectation operator and $Pr(.)$ is the probability of the event (.). Using Eq. (5) for θ, taking into consideration the fact that if $u < u^*$ then $\theta = 0$, and remembering that u is uniformly distributed at the interval [-λ, λ], Eq. (10) further gives

$$\theta^e = \frac{2R^*b\alpha(\lambda - u^*) + \alpha(\lambda^2 - u^{*2})}{4\lambda R^*b(\alpha + \beta^2) + \alpha(\lambda^2 - u^{*2})} . \tag{11}$$

The important thing to note from Eqs. (9) and (11) is that $\dfrac{du^*}{d\theta^e} < 0$. That is, the expectations are self-fulfilling. On the one hand, as the private sector expects that the government to increase the portion of debt that it is going to repudiate in the second period, the maximum level of shock necessary to trigger repudiation decreases. On the other hand, as this critical level of shock decreases, θ^e increases. And, note from Eq. (2) that, as θ^e increases, private sector demands a higher interest rate to purchase government securities.

Now, we have two unknowns (θ^e, u^*) and two equations (Eqs. (9) and (11)) to solve them. Defining $m = \sqrt{2c(\alpha + \beta^2)}$ and substituting Eq. (11) for θ^e in Eq. (9), a quadratic equation is obtained for u^*, which yields two values for u*:

$$u*_{1,2} = \frac{1}{\alpha}\left[-\lambda(\alpha + 2\beta^2) + m \mp \sqrt{4\lambda(\alpha + \beta^2)(\lambda\beta^2 - \alpha R*b) + m^2}\right]. \quad (12)$$

Substituting these values for $u*$ in Eq. (11) corresponding values for θ^e can be obtained. Using Eq. (2), this will further give two values for R. In Table 1, results of a simulation analysis that is performed to obtain these values for different values of credibility cost (c) are provided. Values of the credibility cost, minimum level of shock that is necessary to trigger repudiation $(u*)$, upper limit of this shock (λ), and real debt stock (b) can all be thought of as percentage of the GDP. The following parameter values are chosen: $\lambda=0.5$, $b=0.1$, $R*=1.03$, $\beta=0.2$, and $c\in[0.03, 0.06]$. The value of the real debt stock may seem low at first glance. Note, however, that we consider the average annual debt burden of the government in the period analyzed rather than its total commitments, which makes this specific value a realistic one. Given that the magnitude of the immediate cost of the 2001 crisis to the government was an amount comprising 30 percent of the GDP, this cost increased in the subsequent months, and in the post-crisis period, any shock that forced the government to halt the implementation of the IMF supported program would have had a similar burden on the budget, the upper limit of political shock (λ) is taken as 50 percent of the GDP. We assume that the government cares more about repudiation than about taxes $(\alpha=0.4)$. For these reasonable parameter values, this model yields multiple equilibria. For example, with c=0.05, the minimum level of shock to trigger debt repudiation is 32.2 percent of the GDP, and the corresponding expected debt repudiation ratio is 0.49. However, despite no change in the fundamentals, a sudden change in markets' sentiment lowers this minimum level of shock sharply and increases the debt repudiation ratio to 0.90.

These results are similar to the results obtained from second-generation crises models in the sense that they give rise to multiple equilibria. However, our results are obtained from a model that focuses mainly on the financing alternatives of the inherited debt stock for the government and analyzes the impact of expectations of debt repudiation on interest rates. In this sense, it deviates from this literature. Our model is an extension of Calvo (1988) by introducing uncertainty, but the methodology used is different and more akin to Obstfeld (1996).

[Table 1 here]

II.2 Policy framework of the post-crisis period and the outcome: May 2001-2004

The model presented in the preceding section shows the importance of fiscal discipline and market expectations in the continuation of sound policies for attaining a good equilibrium. Note that the effect of fiscal discipline on market expectations can be analyzed in two alternative ways in the model presented. First, fiscal discipline means a lower level of inherited debt stock at the beginning of the second period; hence a higher threshold value for u* (the critical level of shock above which debt repudiation realizes) and lower values for expected debt repudiation ratio and real interest rate. Alternatively, for the second period, one can introduce real government expenditures on the right hand side of Equation 1. An increase in government expenditures (fiscal laxity) then reduces the threshold level of u*.

II.2.1 Policy framework of the post-crisis period:

Throughout the post-crisis period, the primary budget surplus-to-GNP ratio targets were rather ambitious. Despite a temporary deviation due to political chaos in the second half of 2002, the realizations were almost in line with the targets: 5.5% in 2001, 4.1% in 2002, 6.3% in 2003, and 6.5% in 2004 versus a 6.5% target. Simultaneously, the public sector reduced its deficit from 15.1% of the GDP in 2001 to 7.1% last year. Additionally, the risk exposure of public debt stock has decreased through a successful debt management policy: the share of foreign exchange denominated (or indexed) debt in the total public debt has also been reduced considerably. Similarly, the floating rate part of domestic debt stock has shrunk significantly.

There has been substantial progress in structural reforms. Just after the crisis the Central Bank of Turkey (CBT) gained instrument independence. State banks were restructured; the number of branches and employees were reduced sharply. Problematic banks were removed from the system. The regulatory and supervisory framework was reinforced. The capital adequacy ratios of banks were increased. Vulnerability to various mismatches was minimized. Blanket guarantees were eliminated. A new comprehensive law on credit institutions in line with EU standards was passed. The public sector has also been undergoing a reform process. Redundant positions (more than 10% of total state economic enterprises' employment) were eliminated. A hiring limit was implemented. The agricultural support system was re-

designed. Independent regulatory and supervisory agencies were formed. Steps were taken to enhance transparency, budget discipline and accountability in the public sector. Various laws were enacted to improve the investment environment.

At the beginning of 2002, the CBT announced that it was going to implement implicit inflation targeting, which is still the current monetary policy framework. The core of formal inflation targeting is included in this framework. That is, firstly, given that the main aim of the CBT is to achieve price stability, short-term interest rates (the main policy tool of the CBT) have been changed based purely on the inflation outlook. Secondly, whenever a decision was taken on interest rates, the rationale behind that decision was explained to the public in press releases. However, up to the beginning of 2005, some elements of formal inflation targeting were missing: for example, the public did not know the meeting dates of the monetary policy committee.

One of the most important elements of the program that was implemented after the crisis is the floating exchange rate system. The exchange rate policy of the CBT was made more transparent at the beginning of 2002. In the meantime, the main principle has been that market conditions would determine exchange rates. That is, the CBT stressed that it would not interfere with the level or trend of the exchange rate. It also announced that it could intervene in case of excess volatility. Based on the main principle, however, the CBT has also pledged to limit the incidence of such intervention. In addition, at the beginning of 2002, the CBT explicitly instructed the markets that; first, on condition of strict implementation of the program and in the absence of large external shocks, the dollarization process would lose its importance, eventually leading to a reverse dollarization process. Second, favorable balance of payments conditions would probably arise. Third, although the exchange rate regime was floating, the level of foreign exchange reserves was important due to three main reasons. Turkey had debt repayments forthcoming to the IMF. International investors gave a special emphasize to the level of reserves. The CBT wanted to clear its balance sheet of some types of foreign exchange liabilities, such as deposits of workers abroad. Fourth, given the importance of the level of reserves (in this case, regardless of the exchange rate system), provided that at least one of the conditions stated in the first two items materialized, it was going to build-up reserves through rule based, transparent, and pre-announced purchase auctions.

II.2.2 The outcome

At the end of 2001, the program started to show its strength; inflation expectations have followed a downward trend, the inflation rate has almost continuously declined, the public debt-to-GDP ratio has been significantly reduced. The Turkish economy first started to recover and then to grow a considerable amount despite the extremely tight fiscal policy. There is no doubt that this phenomenon is not unique to Turkey; it was observed in some other countries in the 80s, leading to the development of so-called "expansionary fiscal contractions" in economic literature.[3] The main negative development was the deterioration of the current account deficit (Table 2).

[Table 2 here]

Through foreign exchange purchase auctions, the CBT purchased 0.8 billion dollars in 2002, 5.7 billion dollars in 2003, and 4.1 billion dollars in 2004. Since at least one of the conditions stated in the first two items above were absent, the CBT did not open purchase auctions in 9 months in 2002, 6 months in 2003, and 7 months in 2004.[4]

However, one should also note that there were temporary deviations from the main trend. As discussed above, the main reason is, despite sound policies and

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[3] Sustainability of public debt is the keyword here. The evolution of the debt-to-GDP ratio is a function of the real growth rate, the real interest rate, and the primary budget surplus-to-GDP ratio. Leaving monetary policy aside, a government can only control its budget and affect real interest rates through this channel. A tight fiscal policy will increase confidence in debt sustainability and hence curb the default premium, provided that it is held credible by the private sector. While this would reduce real interest rates, there is a high probability that, fiscal discipline, on the other hand, would increase consumer and business confidence. In a nutshell, fiscal discipline may be conducive to growth, despite its negative impact on growth through a decline in government demand in such economies. It may more than offset the contractionary effect of a decline in government demand through two main channels: First, through a decline in real interest rates, as discussed above. Second, a reduction in default risk and a following increase in consumer confidence in the initial phase and business confidence in the following periods would stimulate private demand. In the initial phase of the post-crisis period the fear of loss of jobs would cease, hence pent-up demand would increase, which would naturally be followed by an overall increase in private consumption and private investment. Another significant point to note is that a stronger financial sector, as a result of structural reforms and a stable currency (especially in highly dollarized economies), would reinforce such offsetting effects.

[4] The important point to note is that these auctions, unlike volatility interventions, were not discretionary. They were rule-based, known to the public. Provided that the aforementioned conditions were satisfied, the CBT announced how much and via which mechanism it was going to buy foreign exchange in these daily auctions at the beginning of each month. Finally, the CBT revised its auction procedure effective from 22 December 2004. A yearly program was announced to minimize the distortionary effects of possible changes in daily purchase amounts at the beginning of each month on the operation of the foreign exchange market.

reforms, economies that have inherited a host of problems due to imprudent policies of the past need a considerable period of time to overcome these problems. During this period, such economies remain vulnerable to shifts in market sentiment due to changes in international and domestic risk factors. Any development that increases concerns about the viability of fiscal discipline has the potential to move the economy into a bad equilibrium. For instance, negative domestic political news releases, sovereign rate cuts, bad news from the IMF or an upward cycle in interest rates in the developed world could trigger such concerns. However, one should note that as time evolves such vulnerability decreases.

Evidently, Turkey was not immune to this condition. Even a brief glance at the evolution of secondary market interest rates, the exchange rate, and eurobond spreads would reveal this fact (Figures 1a, 1b, 1c). Regarding the interest rate and spread, while the main trend is downwards, there were sharp increases in both of the variables from time to time. Additionally, a similar phenomenon applies for the exchange rate. Emir *et al.* (2005) analyzed the relative importance of macroeconomic news (surprises in fundamentals), US interest rates and domestic political, EU and IMF related news releases on affecting secondary market interest rates in the period May 2001-December 2002 using daily data. They have shown that macroeconomic fundamentals (credit ratings and central bank overnight changes) were among the determinants in changing interest rates. However, both positive and negative political news (not all kinds of news, but news related to fulfilling conditions of the IMF program), adverse EU related news, and IMF announcements also had very significant influence on these rates. Note that this finding is in line with our interpretation of the developments in the post-crisis period.

[Figures 1a, 1b, 1c here]

II.3 Challenges to monetary policy under fiscal dominance: 2001-2004

II.3.1 Eurobond spreads, domestic interest rates, and the exchange rate fluctuations

The striking point in Figure 1 is the positive and close relationship between the daily evolution of Eurobond spreads, the exchange rate (value of lira against an equal weighted basket of euro and dollar), and the secondary market Treasury bill rate during the May 2001-December 2004 period. More formally, Table 3 presents the

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contemporaneous correlation coefficients between these variables for different periods. The correlation coefficients are positive and very high, with the exception of January 2 – December 31, 2004. A positive correlation between the rate of change of the exchange rate and interest rate is that which the portfolio model would not predict.

[Table 3 here]

Blanchard (2004) presents a formal model to explain this phenomenon, which is apparently at odds with the portfolio model. The positive association between the exchange rate and the interest rate arises due to default risk. A rise in interest rate due to an increase in the default risk triggers capital outflows and causes the domestic currency to depreciate (capital outflow occurs). On the contrary, in his model, a rise in interest rate without any accompanying change in the default risk (for example due to a rise in riskless rate that does not change the risk appetite of foreign investors and debt service of the country) would cause appreciation (due to a rise in capital inflows) as the portfolio model predicts. Blanchard using Brazilian data concludes that:

"When fiscal fundamentals are wrong- i.e. when debt is high, when a high proportion of debt is denominated in foreign currency, when the risk aversion of investors is high- an increase in the interest rate is more likely to lead to a depreciation than to appreciation. And fiscal conditions were indeed probably wrong, in this specific sense, in Brazil in 2002".

Favero and Giavazzi (2004) note that:

"All financial variables in Brazil fluctuate in parallel with the Embi spread, most notably the exchange rate. The channel through which fluctuations in the Embi spread are transmitted to the exchange rate are capital flows: an increase in the country risk premium leads to a sudden stop of capital flows and to a (real) depreciation which is needed to generate the trade surplus required to offset the decrease in net capital inflows. In turn, fluctuations in the exchange rate induce corresponding fluctuations in the public debt to gdp… Domestic interest rates at all maturities are also affected by fluctuations in the Embi spread. In the case of the policy rate, the Selic, the mechanism works via the exchange rate: exchange rate fluctuations move inflation expectations, and the central bank, as we shall document in this paper, looks at inflation expectations when deciding on the level of the Selic. … Domestic interest rates at longer maturities are affected by the Embi spread in two ways: indirectly, through the Selic, …. , and directly

because long term interest rate reflect term premia which are affected by default risk even at relatively short maturities".

These observations of Turkey and Brazil both have important repercussions on the conduct of monetary policy. Before turning to this issue, the impact of exchange rate fluctuations on inflation in Turkey should be discussed. Kara *et al.* (2005) analyzed the impact of exchange rates on domestic prices in Turkey. Some of their findings can be summarized as follows. First, they show that the pass-through of exchange rates to domestic prices has declined in the post-2001 period in comparison with earlier episodes. Second, despite the reduction in the pass-through, they found that the impact of the exchange rate on inflation, especially in traded goods is still notable. Third, switching to the floating exchange rate regime and implementing an ambitious disinflation policy have contributed to the reduction in the pass-through. Fourth, the pass through is stronger in periods of positive output gap than the periods of negative output gap. Moreover, the pass-through, on average, is higher during periods of depreciation.

II.3.2 Repercussions on the conduct of monetary policy

An inflation targeting central bank should respond to an increase in the probability of an upsurge in future inflation by raising its policy rate. Now, suppose that in a highly indebted economy, the pass-through effect is significant. In this economy, negative political developments that increase concerns about debt sustainability, would not only increase interest rates, but also weaken the domestic currency. The reasoning behind this is similar: As discussed above, an increase in the probability of debt repudiation, on the one hand, would cause new subscribers to ask for higher rates to compensate for an increase in default risk. On the other hand, demand for foreign currency denominated assets would increase; hence the weakening of the domestic currency would occur. Consequently, a central bank that raises its policy rate in response to a potential rise in inflation due to weakening of the currency faces two related problems in these conditions. First, a rise in its overnight rate could signal to the markets that "things are not going in the right direction", which could obviously increase the perceived default risk and hence, the real interest rate and exchange rate. Second, both indirectly with the first effect and directly by raising the cost of borrowing, such a response in policy would increase the debt burden of the treasury and jeopardize debt sustainability. The domestic currency would depreciate in these circumstances, which is inflationary given our

significant pass-through assumption. This means the plan to increase the short-term interest rate to cope with inflationary pressures would backfire.

A counter argument would be that a central bank which does its job by raising interest rates will be credible and such a credible policy decision will more than offset the negative effects on inflation stated above. Analyzing which argument is correct is not an issue that this paper addresses. However, the probability of the backfiring of raising interest rates in such circumstances is not something that can be disregarded immediately. Given this probability, the effectiveness of inflation targeting in such economies is asymmetric: Cutting policy rates does not pose such problems (provided that such a cut is warranted by the inflation outlook), whereas raising them does. The model presented in Blanchard (2004) shows in what conditions and how inflation targeting can have adverse effects. Blanchard further argues that Brazil found itself in such a situation in 2002 and 2003. Studying the recent experience of Brazil, Favero and Giavazzi (2004) show how the effectiveness of monetary policy depended on the fiscal policy regime, in the same period. Aktaş *et al.* (2005) derived a "model-based" default risk series for Turkey during the 1999-2003 period by introducing an unobserved components model with time varying parameters. They found that the arguments of Blanchard (2004) and Favero and Giavazzi (2004) are also valid for Turkey.

In the post-crisis period, the CBT raised its overnight rate just once - in July 2001- and the reactions of the markets were adverse. The interest rates in all maturities moved upwards and the lira depreciated. With a jump in debt to GDP ratio after the 2001 crisis, the CBT has taken the importance of fiscal policy regime into consideration and attached a special importance to it. In its various press releases, the CBT explicitly stated the multiple equilibria phenomenon and the importance of fiscal discipline to reduce real interest rates, fight against inflation and reach higher growth rates.[5]

III. The EU Accession and the Challenges to Monetary Policy During the Transition and the Monetary Dominance Periods

According to the Treaty on the EU the economic and monetary integration process consists of three phases. The first phase covers the period of candidacy for the EU. The second is the accession phase and starts with EU membership. In the final phase, member countries are expected to join to the European Monetary Union and

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[5] Some examples are given in Appendix A.

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adopt the euro. In the first phase, candidate countries choose their own monetary policy and exchange rate policy. However, they have to make necessary changes in their central bank laws. In this section, first, challenges to monetary end exchange rate policy in the first phase are discussed. Then, the necessary amendments to the CBT law are analyzed.

III.1 Farewell to fiscal dominance?

While the debt to GDP ratio has declined sharply in the last three years, it is still high. The question now arises whether or not fiscal dominance still continues in Turkey? Giving a proper answer to this question is highly important from the perspective of monetary policy. The discussion above implies that the impact of tightening monetary policy in a monetary dominance economy may be significantly different than that in a fiscally dominance economy.

In the last couple of years the Turkish economy faced a number of important external shocks. The first one was the Iraq war, during which real interest rates jumped and the real value of the lira dropped significantly. The second one was the announcements of the US Federal Reserve Bank (FED) and the following interpretations of a possible aggressive tightening during the first half of 2004. The terrorist bombing attacks in İstanbul reinforced the negative impact of FED announcements. Despite these shocks, the main macroeconomic indicators stayed on the right track. This points to the increased resilience of the Turkish economy.

The results of Aktaş *et al.* (2005) shed some light on this issue. They show that default risked reached a peak during the third quarter of 2001, when the debt-to-GDP ratio attained its maximum level. The first half of 2002 witnessed a significant improvement, whereas it once again picked up slightly from the beginning of 2003. They used data up to the end of 2003. The important points to note are that, first, their findings are in line with our "main positive trend with temporary deviations from the trend" argument and second, these results show also that the Turkish economy is moving towards a monetary dominance period.

The Eurobond spreads could be used as a proxy for the importance of the fiscal dominance. For new members of the EU, Eurobond spreads have generally hovered around 50 basis points throughout 2004. The lowest level of Turkish Eurobond spreads was attained on February 2005 with 280 basis points. At the time of writing the paper

(March-April), the spread was 350 basis points. To put it differently, the default risk level is much lower compared to the recent past, but the absolute value of the spread is still sizable (Figure 1c).

Further contradictory examples can be provided, however, the important point to note is that the Turkish economy is in a transition period and day by day getting closer to a "normal economy" (monetary dominance stage). The continuation of fiscal discipline and the restructuring of the institutional setup play a vital role in not halting this normalization process.

III.2 The new 3-year program, the EU accession, and risks

The discussion above implies that, in the short-run, the main driving force of economic prospects will be the new program for the period 2005-2007, which is supported by a stand-by agreement with the IMF. Fiscal and monetary discipline is again at the core of the program; it has already been announced that the CBT will start the implementation of formal inflation targeting at the beginning of 2006. The primary budget surplus to GNP ratio will be kept at 6.5 percent for the extent of the new program. There will be three important structural reforms: social security reform (second phase), tax reform and financial services reform and the related laws have been submitted to Parliament. The second anchor will be the EU accession process. While the role of the EU accession is going to be more visible in the medium to long term, it will nevertheless reinforce the positive impact of the new program.

Based on these two anchors, it is natural to expect a positive (main) trend in macroeconomic variables. The three key reforms will help to remove structural barriers to achieving lower real interest rates, by deepening the financial sector and increasing the quality of fiscal discipline. The downward trend in real rates will be strengthened by macroeconomic discipline. Hence, further reductions in the debt-to-GNP ratio, real interest rates and inflation are going to be observed. As discussed above, this environment will again be conducive to economic growth.

More formally, consumer inflation targets are eight, five, and four percent respectively for 2005, 2006, and 2007. The ratio of public sector net debt (according to the IMF definition) to the GNP is projected to decline to 58 percent at the end of 2007 from a level of 68 percent of end-2004. The new program assumes that growth will be led by increased investment and exports and moderated to around five percent. This

should lower the current account deficit to around 4.3 percent of GNP in 2005 and subsequently lower figures for the remainder of the program.

Some risks also exist. The first one is the potential destabilizing effect of the deterioration in the current account deficit in 2004. However, this potential risk is not very high due to several reasons. First, an important factor behind this deterioration was the very high growth in 2004 (9.9 percent) and a slowdown is projected for 2005. Second, various tax incentive policies, which were a one-off type, led to a jump in demand for automotive sector products. This factor, by increasing both passenger car imports and intermediate goods imports for the manufacture of domestic automotive products, was responsible for a significant part of the widening in the current account deficit. Such incentives have been eliminated from the tax system. Third, there is no longer a currency mismatch in the banking sector.

Another source of risk is the EU accession process. While, as mentioned above, this process is shown to be one of the two powerful anchors for the Turkish economy, stressful periods can occasionally arise during the process, due to domestic discussions regarding meeting various necessary criteria and/or debates on the Turkish membership in member countries. During these instances, negative developments especially in the exchange rate, interest rate, and expectations could occur.

III.3 The first challenge to monetary policy: raising its policy rate

In July 2004 –more than three years after the start of the program, when the debt-to-GDP ratio was much lower, the inflation rate was down by 60 percentage points and at a single digit level and inflation expectations were in line with the end year target, in its quarterly monetary policy report, the CBT emphasized the positive inflationary outlook, but added that should the outlook change it would not hesitate to increase the overnight rates. The reaction of the markets was adverse: the secondary market interest rate increased and the lira depreciated.

This points to the difficulties that the monetary authorities are going to face in the transition to monetary dominance period. There is no doubt that the necessary condition to overcome this problem is the continuation of implementing sound macro economic policies. However, given the recent experience, another condition should be

met: convincing economic agents that the Turkish economy is close to a monetary dominance period. This necessitates a good communication policy.

In January 2005, the CBT made it public that formal inflation targeting would start in January 2006. Moreover, it named 2005 as a transition period and announced a plan to increase the transparency of its implicit inflation targeting framework. This shows that, based on positive developments in macroeconomic indicators and the declaration that the (ambitious) fiscal discipline is going to continue in the new program period, the CBT judges that the economy is close to a monetary dominance regime.

While the importance of fiscal dominance will decrease the closer the economy is to the monetary dominance period, this time monetary authorities will have to address significant problems arising, paradoxically, due to the implementation of sound policies towards macroeconomic stability, structural change, and EU accession. This is the challenge to monetary policy stemming from a possible reversal in dollarization and a surge in capital flows. These issues are analyzed below.

III.4 A pleasant problem: reverse dollarization

The Turkish economy is a highly "dollarized" economy. Reinhart *et al.* (2003) define a composite index to measure the degree of dollarization in a country. This index is the normalized sum of bank deposits in foreign currency as a share of broad money, total external debt as a share of the GNP, and domestic government debt denominated or linked to a foreign currency as a share of total domestic government debt. Using this measure, they classify 90 developing countries into four degrees of dollarization using data in 1996-2001: very high, high, moderate, and low. Turkey is in the high dollarization group. In addition, they determine the variety of dollarization prevalent in each country at any point in time on the basis of two separate criteria: the degree of domestic dollarization (measured by the first and third item of their composite index) and the amount of foreign borrowing by the private sector. They define four varieties. Countries where at least ten percent of broad money or of domestic public debt is denominated in a foreign currency and where the stock of private non guaranteed external debt is more than ten percent of the total debt is defined as Type I economies. Turkey is a Type I economy.

Figure 2 shows the evolution of the three elements of their composite index for Turkey for the 1996 – March 2005 period. Bank deposits in foreign currency as a share

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of broad money is included in the top panel (monthly data). The middle panel shows the evolution of total external debt a share in GNP (quarterly data). The bottom panel is for domestic government debt denominated in or linked to a foreign currency as a share of total government debt (monthly data). The evolution of the indicators of domestic dollarization (top and bottom panels) followed a declining trend after the end of 2001. However, first, this trend was not without interruptions: there were occasional reversals. Second, the current values of both of the ratios are high.

[Figure 2a, 2b, 2c here]

Starting from the one-digit levels of the 1960s, the inflation rate followed an upward trend in the second half of the 1970s and reached 107 percent in 1980. With the stabilization and structural adjustment program of 1980 it fell to a level of 25 percent in 1982, but after that it once again picked up and hovered around 80 percent in the second half of the 1990s. In 1984, partly as an element of the financial liberalization process and partly due to the high inflation levels, the Turkish government at that time gave residents the right to hold foreign currency deposits in the banks. In 1989, the capital account was liberalized. The high inflation period and the underlying imprudent policies on the one hand, and the legal developments on the other, accelerated the dollarization process in the 1980s and 1990s. Given that the disinflation process has been continuing for more than three years, the inflation rate is at one-digit levels, and the implementation of prudent policies and structural reforms are going to continue in the new three-year program, the question that arises is whether a reversal in dollarization process is going to start.

Reinhart *et al.* (2003) shed some light on this issue. They examined the evidence on successful de-dollarization. At first glance their results are not particularly encouraging for the de-dollarization prospects for Turkey. The experience of the 85 countries in their sample shows that reducing inflation is generally not sufficient to undo domestic dollarization, for at least five year-plus horizons. One of the reasons they put forward is that "a country with a poor inflationary history will need to maintain inflation at low levels for a long period before it can significantly reduce the probability of another inflation bout (Reinhart et al. (2003, pp. 31))". They conclude "Israel and Poland appear as the only two cases on record of large and lasting reversals of deposit dollarization that had minimal side effects on financial intermediation and/or capital flight. In both cases the de-dollarization started almost at the same time as the

authorities embarked on a (eventually successful) disinflation program centered around a strong exchange rate anchor, and the domestic financial system offered assets with alternative forms of indexation (Israel) or very high real interest rates (Poland)".

Will Turkey be the third country? Three points can be mentioned for an affirmative answer to this question. First, Turkey has been implementing a rather ambitious macroeconomic stability and structural reform process for almost four years and a similar program is going to be implemented for another three years. Second, the EU accession process (provided that Turkey remains on the right track) is a powerful anchor to curb expectations for de-stabilizing policies. Hence, the new program and the accession process have the potential to significantly reduce the probability of another inflation bout, the main reason that Reinhart *et al.* (2003) showed to prevent a de-dollarization process starting. Third, economic agents have increasingly held more Turkish-lira denominated financial assets in their portfolios since 2002, albeit with temporary deviations from this main trend (Figure 2a).

A reverse dollarization process means a decrease in foreign exchange demand and an increase in foreign exchange supply, which will certainly put appreciation pressure on the domestic currency. This will be a problem, but admittedly after more than three decades of high inflation and a depreciation-depreciation cycle, which ended in the last quarter of 2001, it will be a pleasant one: hence the name "pleasant problem".

III.5 Surge in capital inflows

Table 4 shows FDI inflows to Central and Eastern European (CEE) countries during the 1995-2004 period. The striking fact is that FDI inflows to Turkey have been at a very low level both in absolute terms and compared to new members of the EU and candidate countries. Doubtlessly, the main underlying reason is macroeconomic disorder of more than three decades up to May 2001. The improvement of macroeconomic fundamentals since then on the one hand and the EU accession process on the other hand provide the potential to change this picture. Of course this will not happen over night, in a base line scenario it will materialize in the medium run.

[Table 4]

The picture is entirely different regarding other types of capital inflows. While such inflows to Turkey and CEE countries have surged over the past two years, the

largest recipient of emerging market flows into the region has been Turkey (38 percent in 2004). After the positive decision from the EU in mid December 2004 and the redenomination of the lira (which allowed Euroclear to handle new lira denominated bonds) multilateral institutions, international banks and export credit agencies have started to issue new lira denominated bonds, a new phenomenon for Turkey, but was observed in new EU member countries during their accession process. The value of such bonds in the first four months of 2005 reached 3.3 billion dollars. Such issues increase demand for longer maturity Turkish Treasury securities and lead to more capital inflows.

As the new program and the EU process remain on track, these observations and the experience of new member states point to the increased probability of a surge in capital inflows to Turkey. In the short-term, capital inflows will be more in the form of portfolio and loan flows, which currently are and will continue to be sensitive to changes in the interest rates in the developed world and the risk-appetite of foreign investors. As time evolves, the importance of foreign direct investment will increase.

III.6 Handling capital inflows and a reversal in dollarization: the second challenge to monetary policy

Both a reversal in dollarization and surge in capital inflows will put appreciation pressure on the new lira. What can the CBT do to overcome this problem? In answering this question, four points should be taken into consideration. First, according to its law, the main objective of the CBT is to achieve price stability. Furthermore, the CBT has been implementing implicit inflation targeting since 2002 and will start to conduct formal inflation targeting in January 2006. Second, given the vulnerability of the economy to changes in markets sentiment in the post-crisis period, the floating exchange rate regime became one of the important stabilizing pillars of the program. The new program is also based on the floating exchange rate regime. Third, the public sector and the CBT have significant amounts of foreign debt repayments due in the period 2005—2007. Fourth, an important part of the reserves of the CBT is actually its liabilities to Turkish workers abroad. Note that since the mid 1970s the CBT has acted like a deposit bank, since the workers abroad since that time have had the right to hold

foreign exchange deposits in Turkey. The interest cost of these deposits is an important cost item for the CBT and the CBT plans to get rid of this facility.[6]

The evolution of the pass-through effect in Turkey is discussed in the second section. As stated, while there has been a significant drop in this effect in the post-crisis period, it is still high. An increase in foreign exchange supply due to a surge in capital inflows and possible reverse dollarization will contribute to the ongoing disinflation process by putting appreciation pressure on the new lira. In these circumstances, being an inflation targeting central bank, the CBT will have room for maneuver to reduce interest rates. Note that this policy response has been effectively used by the CBT since 2002 and by other countries in the region (namely, the Czech Republic, the Slovak Republic, Hungary, and Romania) during the accession process.

A second policy response that can be used jointly with rate cuts is international reserve build-up. The third and fourth items stated above point to the importance of the level of reserves for Turkey regardless of the exchange rate regime. A surge in capital flows and reverse dollarization have the potential to create an opportunity to increase the level of reserves. However, the build-up mechanism should be in line with the implemented exchange rate regime. In fact, as emphasized in the second section the CBT has followed this strategy for the last three and half years. The main principle has been that the exchange rate is determined by market forces, and the CBT does not have any exchange rate target under the floating exchange rate regime. Therefore, the CBT has purchased foreign exchange through market friendly auctions: the mechanism through which the CBT purchased foreign exchange and how much it was going to purchase daily were set in advance and announced. Whenever the reverse dollarization process and capital inflows stopped, the CBT also stopped opening purchase auctions. In other words, it has not been aggressive in reserve accumulation.[7]

While this two-pillar strategy seems to be feasible given recent experience, it has a limit. In easing monetary policy, the CBT's maneuver capability will be determined by some other factors behind the disinflation prospects brought by the pass-through effect. First of all, as discussed above, the pass-through effect itself has been losing its importance. Second, an easing cycle can jeopardize the inflation

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[6] This issue is discussed in the following section.
[7] The details are provided in the second section.

outlook from other channels. Just to give an example, a rapid credit extension can be observed due to this easing. The level of reserves cannot be increased indefinitely. Besides an optimal level of reserves can be defined and the accumulation process brings the sterilization/un-sterilization dilemma to the forefront. While an un-sterilized accumulation strategy can undermine disinflation prospects, a sterilized strategy has the well-known costs attached to it and self-fulfilling potential.

This two-pillar monetary policy strategy can first be reinforced through an appropriate debt management strategy of the Treasury, which could aim to reduce foreign exchange denominated and/or indexed portion of the public debt. Second, reducing the vulnerability of the economy to sudden stops and reversal by reducing currency mismatches in the banking and corporate sector will be a strong policy response. However, these are outside the scope of this paper and not further analyzed here.

III.7 The need to change the structure of the balance sheet of the CBT

The balance sheet of the CBT is rather a peculiar central bank balance sheet, which reflects the macroeconomic imbalances of the past. The share of foreign currency liabilities of the central bank in its total liabilities was 67 percent at the end of 2004. In other words, two-thirds of its liabilities were denominated in currencies of which the CBT is not a supplier. To give another example, the currency issued was only 18 percent of the total liabilities of the CBT in the same period. Another interesting peculiarity is that the CBT has been operating like a commercial bank since the mid 1970s was touched on above. The share of foreign exchange deposits of workers abroad in the total balance sheet was 33 percent at the end of 2004 (Table 5).

[Table 5 here]

Another challenge for the monetary authorities is to change this awkward balance sheet structure. Based on a smooth EU accession process and implementation of the new three-year program, the CBT aims to clear its balance sheet from deposits of workers abroad in a smooth manner. While this aim was made public, a detailed plan has not been yet announced. To achieve this aim, the spread between the interest rate that the CBT pays on such deposits and the rates of alternative assets has been considerably reduced in the last three years. However, the spreads still are significant. The CBT will continue to reduce these spreads in a cautious manner. Close

coordination with the Treasury can help in this respect. To this end, a team is currently working on whether the Treasury can assume these liabilities by issuing securities. A questionnaire has been applied to the holders of these deposits to find out their reaction towards such a voluntary swap operation. The second important part of total foreign exchange liabilities of the CBT is the required reserves denominated in foreign currency, which are held by commercial banks. The evolution of this portion will be determined by the reverse dollarization process.

III.8 Necessary amendments to the CBT law

The CBT law was amended on April 25, 2001. Since that date it has had instrument independence according to article 4: "The primary objective of the Bank shall be to achieve and maintain price stability. The Bank shall determine at its own discretion the monetary policy that it shall implement and the monetary policy instruments that it is going to use in order to achieve and maintain price stability." The CBT staff has continuously discussed various issues towards EU accession with the European Central Bank (ECB). One of the issues is the statute of the CBT with regard to the requirements of central bank independence. In a highly tentative assessment, several items have been identified as problematic.

The most important one is the lack of goal independence. Article 4 II b of the CBT law states "The Bank shall determine the inflation target with the government and shall in compliance with the said target adopt monetary policy. The Bank shall be the ultimate body authorized and responsible to implement monetary policy." This is criticized for not being compatible with the Treaty and Statute. Based on this criticism, the CBT law has to be amended. However, note that instrument independence is in line with central bank independence and moreover, goal independence has been criticized for being undemocratic.[8]

Article 3 states "The Bank may, by Board decision, become a member of international finance, economic and professional organizations as a shareholder with the consent of the government". This has been criticized on the grounds that the right of the government to approve the Bank's participation in international monetary institutions is not compatible with the Treaty and the Statute.

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[8] On this issue, see for example Fischer (1994).

Article 15 (3) states "The General Assembly shall have the following duties and powers: to release members of the Board and the Auditing Committee." Given that article 8 guarantees the Treasury a majority stake in the shares of the CBT, article 15 is criticized for it permitting an external political influence enabling pressure to be put on members of the Board, which is incompatible with Article 108 of the Treaty.

ECB experts also find articles 19 and 33 to be problematic. According to these articles, the salaries and remuneration of Board members and the salaries and the representation allowances of the Governor and Vice-Governors shall be determined by Council of Ministers. Instead of this, the ECB proposes an amendment to this article with the aim of clarifying that salaries and remunerations are fixed for the term of the office of these members.

An amendment to Article 24 -to ensure that members of the Audit Committee act in an independent manner and within a clearly defined mandate- also seems necessary.

Article 26 states "The Governor may, in case of his/her dissent from the decisions of the Board, postpone the execution of any decision and may demand that it be reconsidered at the net meeting. In urgent circumstances, the Board shall convene upon the instruction of the Governor and reconsider the issues under dispute. In the event of a disagreement between the Governor and the Board, the Prime Minister shall act as an arbitrator." This is considered to be incompatible with Article 18 of the Treaty.

Referring to Article 42: "The Prime Minister may have the operations and accounts of the Bank audited. The Prime Minister may request any information in this regards from the Bank." This is found to have the potential of undermining the independence of decision-making required by Article 108 of the Treaty.

Another problematic article concerns grounds for the dismissal of governors. Article 28, second paragraph, states "The Governor may be excused from office through the same procedure applied for his/her appointment, only in cases in which the prohibitions stated in Article 27 are violated and in which there is no longer any responsibility for him/her to perform the duties entrusted by this Law." This paragraph is found not to be compatible with Article 14.2 of the Statute of the European System of Central Banks (ESCB).

Article 20, first paragraph, states "The term of office of Board members shall be three years." This has been criticized on the grounds that the members of the Board are involved in the performance of ESCB related tasks ("to take decisions concerning monetary policy …") and therefore the same minimum rules for the security of tenure of office as are applicable to the governors (five years) have to apply to all members of the Board.

IV. Concluding Remarks

Turkey is a candidate country for full membership to the EU. The initial period of the EU accession process –2005-2007- will witness the implementation of the three-year IMF backed program. If the program remains on track, this period will at the same time be the transition period from fiscal dominance of the post-crisis period to a monetary dominance period.

This paper analyzed possible challenges that both the EU accession and transition processes pose to the monetary authorities, since one cannot be analyzed without the other. The problems that may arise and are well documented in literature for new member countries in the period following membership (pre-ERM II and the ERM II phases and the adoption of euro phase) are not discussed.

The first challenge for the monetary policy authorities will stem from the difficulties inherited from the fiscal dominance period. Given that the program that has been implemented since May 2001 is successful, this problem will lose importance in the initial phase of the EU accession process. It is argued that the main challenge to the monetary policy will stem from a surge in capital inflows and reverse dollarization process. A two-pillar monetary policy response is envisaged: a non-aggressive market-friendly reserve accumulation strategy and policy rate cuts provided that the inflation outlook looks promising. The third challenge is the need for a radical change in the balance sheet structure of the CBT, which is a mirror image of past macroeconomic imbalances. Fourth, the CBT law should be amended to comply with the Treaty.

Appendix A

In various press releases, the CBT has explicitly stated the multiple equilibria phenomenon and the importance of fiscal discipline to reduce real interest rates, fight against inflation and reach higher growth rates. The following paragraphs are taken from the press release of January 2, 2002:

"In designing monetary policy and exchange rate policy for the period ahead, it is assumed that (i) a fiscal discipline based on a high primary surplus will be attained; (ii) long-term commitments regarding fiscal discipline and public sector restructuring will be tackled; … (iv) economic reforms boosting the economic fundamentals and prospects of the Turkish economy will persist; …

However, the experience in 2001 has demonstrated once again that correcting economic fundamentals does not always guarantee success. In the period between the February 2001 crisis and August of the same year, and for a month following the attacks on September 11, interest rates remained high and the Turkish Lira continued to depreciate despite improvements in economic fundamentals. Thus, concerns were raised about Turkey's ability to roll over domestic debts. As a result, the interest rate went up further due to increased risk premium, and the exchange rate was in an upward trend. These dynamics have further increased the concerns about the sustainability of domestic debts. In other words, a self-fulfilling process, feeding on itself, was observed.

…. restoring economic fundamentals alone does not suffice for reaching the targets. Therefore, we announced on 17 August 2001 that similar economic fundamentals might generate very different results. This stems from the expectations of economic agents. With similar economic fundamentals, optimistic expectations will direct the economy towards a lower interest rate and exchange rate equilibrium, while pessimistic expectations will do the opposite. In technical terms, there can be more than one equilibrium to be attained at any time in an economy.

… the prospects of achieving fiscal discipline in 2002, the persistence in structural reforms and the impending supplemental reserve facility from the IMF have changed economic expectations into a positive mode. As a result of the change in expectations, interest rates declined substantially and the bubble in the exchange rate exploded, as we have already drawn attention to in our earlier press releases.

…. In 2002, we will begin by monetary targeting and at the same time implement a monetary policy focused on the "future inflation". … In other words, this is an "implicit inflation targeting." … We will openly initiate the inflation targeting regime whenever the necessary conditions emerge. We had to postpone the introduction of inflation targeting due to concerns about the sustainability of domestic debt. Deepening

concerns did not allow the short-term interest rates to be used against inflation. As stated above, recent positive developments have shelved discussions on the sustainability of domestic debt. With the realization of the economic environment envisaged for 2001, there will be no place for such discussions in 2002. Therefore, the continuation of an uninterrupted reform process in 2002 and the realization of primary surplus will remove one of the obstacles in the way of inflation targeting."

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Figure 1a. Evolution of interest rates (%; May 1, 2001 - March 31, 2005)
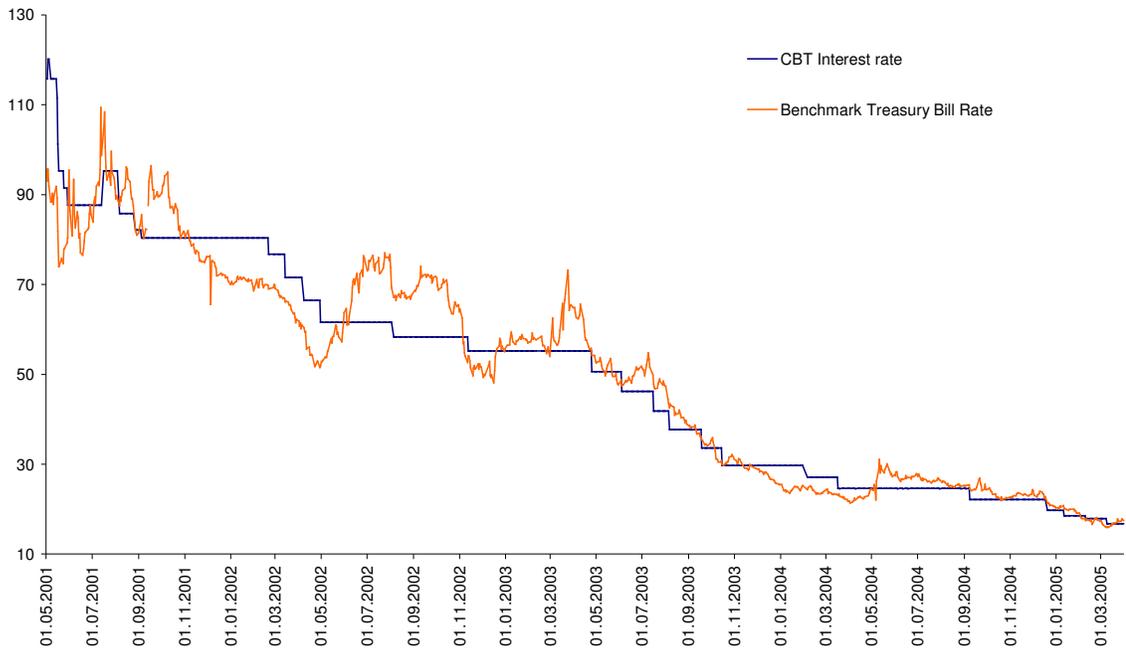
Figure 1b. Evolution of exchange rates (NTL; May 1, 2001 - April 22, 2005)
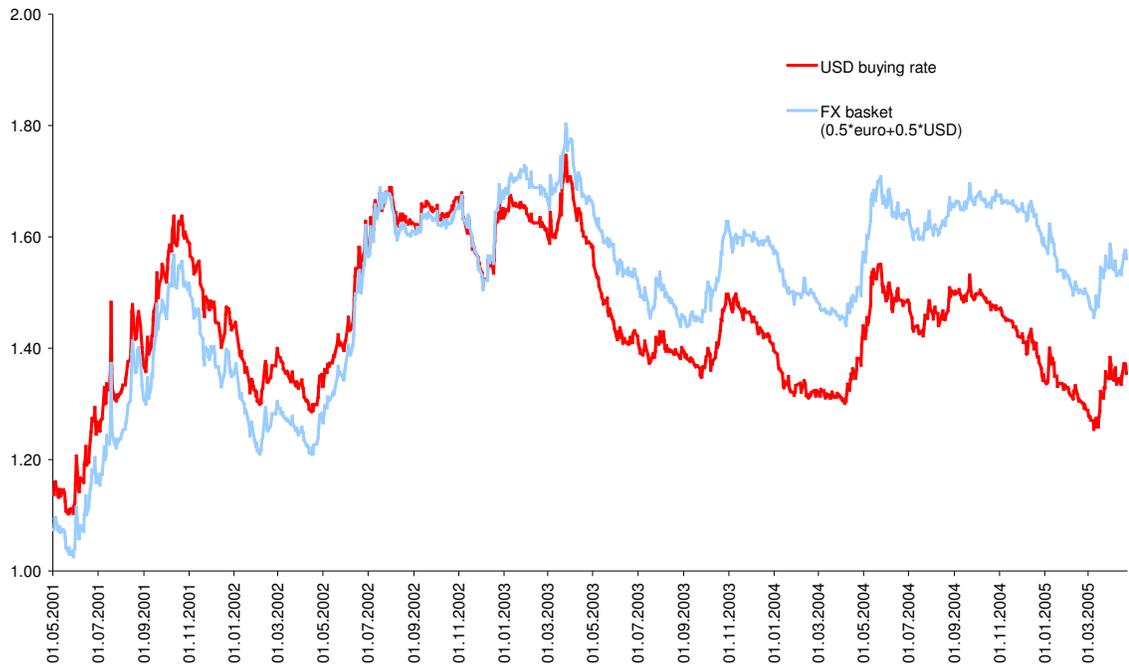
Figure 1c. Eurobond spread (EMBI-Turkey; May 1, 2001 - March 31, 2005)
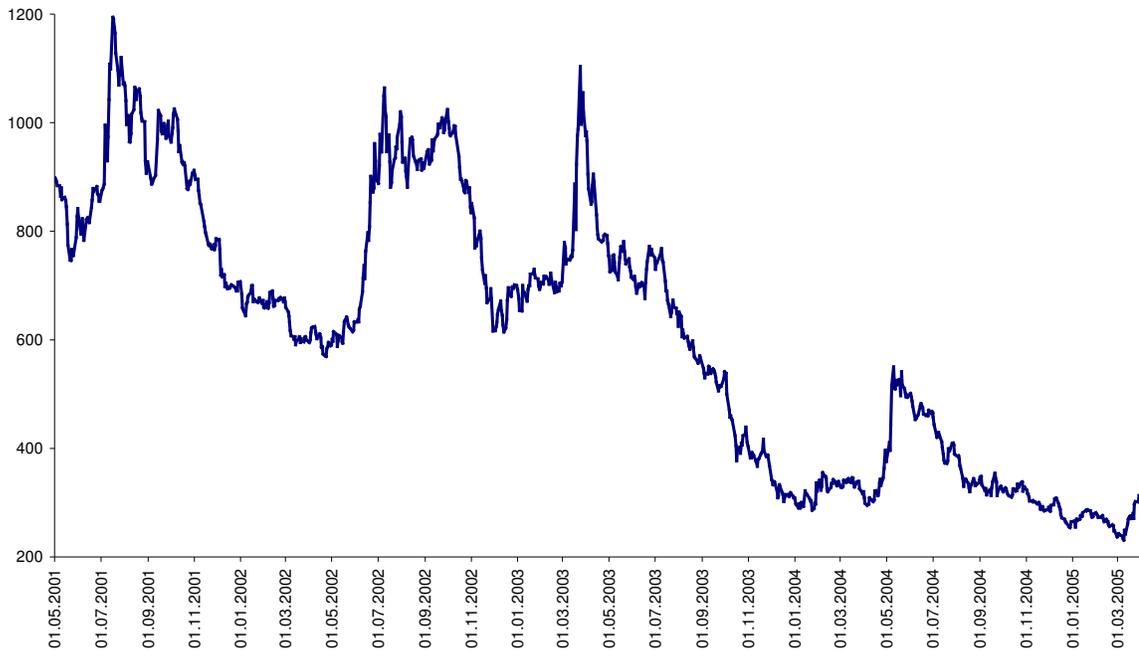
Figure 2a. Bank deposits in foreign currency as a share of broad money
(Broad money=M2+foreign currency deposits, %; June 1996 - April 2005)
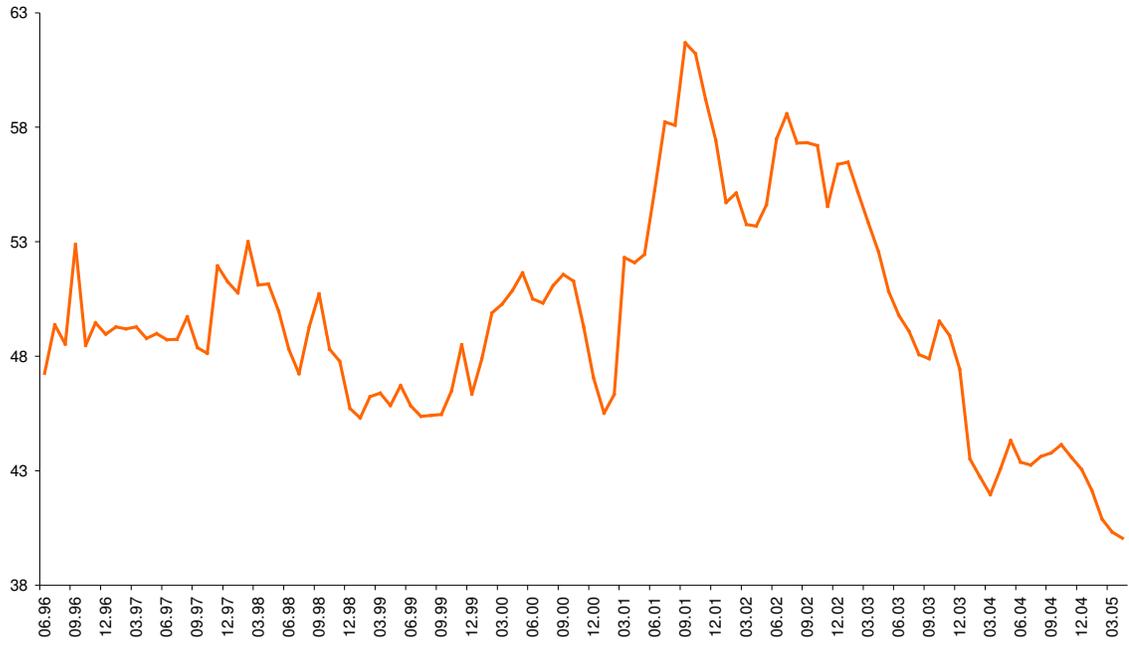
Figure 2b. Total external debt / GNP (%; 1996 - 2004Q4)
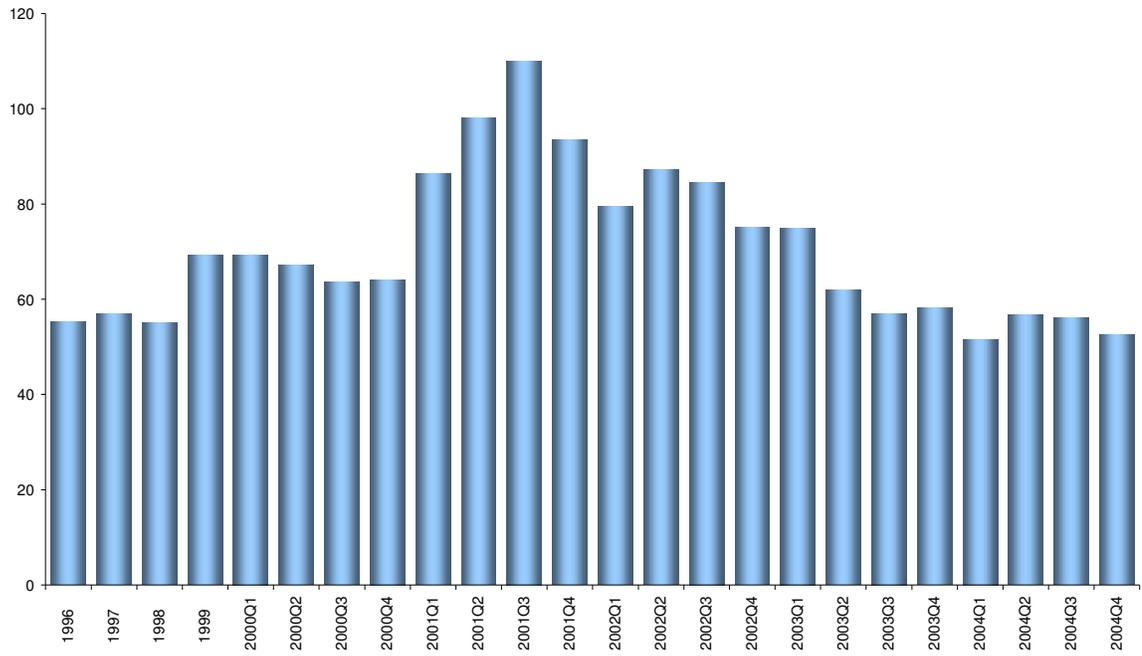
Figure 2c. Foreign currency denominated and linked domestic public debt as a share of total domestic public debt
(%; December 2001 - March 2005)
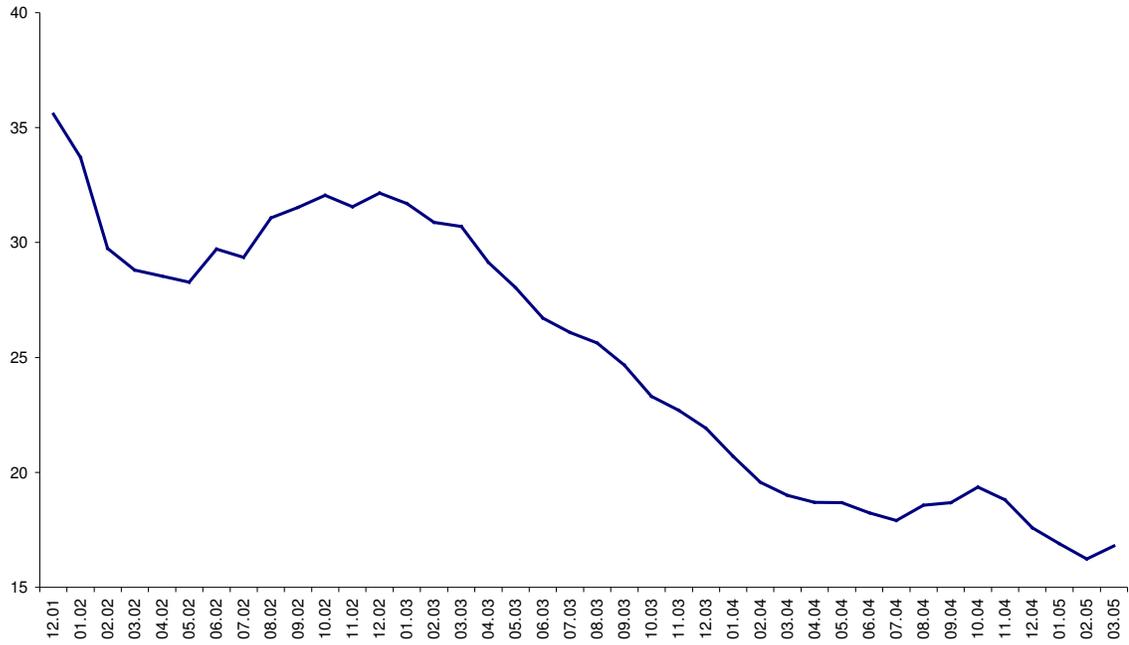
Table 1
Multiple equilibria and credibility cost of repudiation[a]

|	Credibility cost of repudiation (c)			
	0.03	0.04	0.05	0.06
Minumum level of shock that is necessary to trigger repudiation (u^*_1)	0.026	0.191	0.322	0.436
Expected repudiation ratio (η^e_1)	0.729	0.630	0.490	0.254
Minumum level of shock that is necessary to trigger repudiation (u^*_2)	-0.414	-0.453	-0.474	-0.487
Expected repudiation ratio (η^e_2)	0.874	0.888	0.897	0.903

[a] Credibility cost (c), level of shock (u*), upper limit of shock (κ), and real debt stock (b) can all be thought as percentage of GDP. Parameter values chosen are as follows:
Repudiation costs except credibility costs as a percentage of total amount of debt repudiated: $\beta=0.2$.
Relative importance attached to taxation in the loss function: $\alpha=0.4$.
Risk free real interest rate factor: $R^*=1.03; \kappa=0.5; b=0.1$.

Table 2. Selected macroeconomic indicators: 2001.03 - 2005.03 (%)

	Growth rate[a]	Expected inflation[b]	Consumer inflation[a]	Interest rate[c]	Public debt stock/GDP	Current account deficit/GDP	Budget deficit/GDP[d]
2001.03	-1.0	n.a.	37.5	193.7	72.1	4.2	7.0
2001.06	-9.8	n.a.	56.1	88.4	98.2	1.9	9.2
2001.09	-7.5	64.8	61.8	87.6	105.1	0.1	13.4
2001.12	-10.3	69.8	68.5	74.1	99.7	-2.4	16.0
2002.03	2.3	43.6	65.1	68.4	91.1	-2.2	20.3
2002.06	8.9	35.2	42.6	72.2	95.0	-0.7	17.3
2002.09	8.0	34.3	37.0	62.2	92.2	-0.1	13.9
2002.12	11.7	31.0	29.7	49.8	87.4	0.8	14.1
2003.03	8.1	27.3	29.4	59.9	87.6	2.1	12.6
2003.06	3.9	25.4	29.8	46.0	81.7	2.9	14.4
2003.09	5.5	20.5	23.0	32.2	76.3	2.5	12.8
2003.12	6.1	19.1	18.4	27.9	78.6	3.3	11.1
2004.03	11.8	11.8	11.8	24.4	76.8	3.9	9.7
2004.06	14.4	11.5	8.9	27.5	78.2	4.4	7.6
2004.09	5.3	10.5	9.0	25.4	77.1	4.9	7.6
2004.12	6.3	10.0	9.3	23.1	73.5	5.1	7.0
2005.03[d]	5.9	7.6	8.7	17.0	73.7	n.a	n.a

Source: Central Bank, SIS, Treasury, SPO.

[a] Percentage change with respect to the same period of the previous year

[b] Expectations Survey of the Cntral Bank, expected year-end consumer price inflation.

[c] Average compounded interest rate realized in Traesury auctions, weighted by net sales.

[d] Real GDP estimate of the first quarter of 2005 is consistent with the 5% growth rate expectation for the whole year.

Table 3. Contemporaneous correlation coefficients between
the exchange rate, and the Treasury

May 1, 2001 - December 31,	Treasury bill	Eurobond	Exchange
Treasury bill	1.00	0.86	0.85
Eurobond	0.86	1.00	0.63
Exchange	0.85	0.63	1.00

January 2, 2002 - December	Treasury bill	Eurobond	Exchange
Treasury bill	1.00	0.73	0.83
Eurobond	0.73	1.00	0.46
Exchange	0.83	0.46	1.00

January 2, 2003 - December	Treasury bill	Eurobond	Exchange
Treasury bill	1.00	0.68	0.93
Eurobond	0.68	1.00	0.62
Exchange	0.93	0.62	1.00

January 2, 2004 - December	Treasury bill	Eurobond	Exchange
Treasury bill	1.00	-	0.52
Eurobond	-	1.00	0.29
Exchange	0.52	0.29	1.00

April 1, 2004 - June 30,	Treasury bill	Eurobond	Exchange
Treasury bill	1.00	0.93	0.89
Eurobond	0.93	1.00	0.92
Exchange	0.89	0.92	1.00

Table 4. Capital inflows to some of the CEE countries (% of GNP)

Czech Republic

	1999	2000	2001	2002	2003	2004
Current Account	-2.5	-4.9	-5.4	-5.6	-6.3	-5.2
Net Errors and Omissions	0.1	-0.5	0.8	0.2	0.6	-0.6
Total Financing Requirement	-2.4	-5.4	-4.6	-5.4	-5.6	-5.8
Total İnflows	2.4	5.4	4.6	5.4	5.6	5.8
FDI (net)	10.6	8.9	9.0	11.2	2.1	3.7
Portfolio (net)	-2.4	-3.2	1.4	-2.1	-1.2	2.2
Credits and others	-3.0	1.2	-2.9	5.3	5.3	0.2
Reserve Assets	-2.8	-1.5	-2.9	-9.0	-0.5	-0.2

Hungary

	1999	2000	2001	2002	2003	2004
Current Account	-7.9	-8.6	-6.2	-7.3	-9.0	-8.9
Net Errors and Omissions	-0.8	-0.3	0.1	0.3	0.4	0.0
Total Financing Requirement	-8.7	-9.0	-6.1	-7.0	-8.6	-8.9
Total İnflows	8.7	9.0	6.1	7.0	8.6	8.9
FDI (net)	6.4	4.7	6.9	4.2	0.8	3.7
Portfolio (net)	4.0	-0.8	2.9	2.4	3.5	7.5
Credits and others	3.1	7.4	-3.8	-2.4	4.7	-0.3
Reserve Assets	-4.9	-2.3	0.2	2.8	-0.4	-2.0

Poland

	1999	2000	2001	2002	2003	2004
Current Account	-7.7	-6.0	-2.9	-2.6	-2.2	-1.6
Net Errors and Omissions	1.3	0.2	0.9	-0.8	1.1	1.3
Total Financing Requirement	-6.4	-5.8	-2.0	-3.4	-1.1	-0.3
Total İnflows	6.4	5.8	2.0	3.4	1.1	0.3
FDI (net)	4.5	5.6	3.1	2.0	1.9	2.4
Portfolio (net)	0.4	2.2	0.4	0.5	0.8	4.4
Credits and others	1.6	-1.6	-1.8	1.2	-1.0	-6.1
Reserve Assets	-0.1	-0.4	0.2	-0.3	-0.6	-0.3

Slovak Republic

	1999	2000	2001	2002	2003	2004
Current Account	-5.7	-3.4	-8.4	-8.1	-0.9	-3.5
Net Errors and Omissions	-0.1	0.2	0.5	1.2	0.1	0.4
Total Financing Requirement	-5.7	-3.2	-7.8	-6.8	-0.8	-3.1
Total İnflows	5.7	3.2	7.8	6.8	0.8	3.1
FDI (net)	3.6	10.0	7.4	16.9	1.6	3.1
Portfolio (net)	3.2	4.1	-1.2	2.3	-1.7	2.0
Credits and others	2.8	-6.4	2.3	2.8	5.5	2.1
Reserve Assets	-3.8	-4.5	-0.7	-15.2	-4.6	-4.1

Romania

	1999	2000	2001	2002	2003	2004
Current Account	-3.6	-3.7	-5.5	-3.3	-5.8	*n.a.*
Net Errors and Omissions	2.2	0.3	1.8	-1.9	-0.5	*n.a.*
Total Financing Requirement	-1.4	-3.3	-3.7	-5.2	-6.3	*n.a.*
Total İnflows	1.4	3.3	3.7	5.2	6.3	*n.a.*
FDI (net)	2.9	2.8	2.9	2.5	3.2	*n.a.*
Portfolio (net)	-2.0	0.3	1.4	0.8	1.0	*n.a.*
Credits and others	1.2	2.7	3.2	5.8	3.9	*n.a.*
Reserve Assets	-0.7	-2.5	-3.8	-3.9	-1.8	*n.a.*

Turkey

	1999	2000	2001	2002	2003	2004
Current Account	-0.7	-4.9	2.3	-0.8	-3.3	-5.1
Net Errors and Omissions	0.9	-1.4	-1.1	0.1	2.1	0.9
Total Financing Requirement	0.2	-6.3	1.2	-0.7	-1.2	-4.2
Total İnflows	-0.2	6.3	-1.2	0.7	1.2	4.2
FDI (net)	0.1	0.1	1.9	0.5	0.5	0.6
Portfolio (net)	1.9	0.5	-3.1	-0.3	1.1	2.7
Credits and others	0.6	4.2	-8.9	0.5	1.4	2.4
Reserve Assets	-2.8	1.5	8.9	0.1	-1.7	-1.4

Source: IMF IFS, indiviual countries' official web sites.

Table 5. Balance sheet structure of the CBT (%)

	1999	2000	2001	2002	2003	2004
FX[1] liabilities / Total liabilities	87.8	94.2	83.6	72.3	68.5	66.9
Non-residents' deposits / Total liabilities	44.7	41.8	25.9	31.1	31.5	33.4
Banks' FX reserves / Total liabilities	23.1	25.4	17.2	14.5	13.3	17.8
TL liabilities / Total liabilities	12.2	5.8	16.4	27.7	31.5	33.1
Currency issued / Total liabilities	18.4	22.3	8.8	10.3	14.0	18.0
OMO[2] / Total liabilities	-18.5	-30.9	2.1	12.9	10.8	4.9
Memo items (million NTL)						
Net domestic assets	-938	2485	20475	7520	7819	9094
Net foreign assets	4818	3303	-12672	2907	7048	12042
Base Money (NDA+NFA)	3879	5788	7803	10427	14867	21136

1. FX denotes foreign currency.
2. OMO denotes net open market operations.