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PATTERNS OF FINANCIAL CAPITAL FLOWS AND ACCUMULATION IN
THE POST-1990 TURKISH ECONOMY

The Institute of Economics and Social Sciences
of
Bilkent University

by

F. GÜL BİÇER

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I certify that I have read this thesis and found that it is fully adequate, in scope and in quality, as a thesis for a degree of Master of Economics.

Prof. Dr. Erinç Yeldan
Supervisor

I certify that I have read this thesis and found that it is fully adequate, in scope and in quality, as a thesis for a degree of Master of Economics.

Assistant Prof. Dr. Ümit Özlale
Examining Committee Member

I certify that I have read this thesis and found that it is fully adequate, in scope and in quality, as a thesis for a degree of Master of Economics.

Assistant Prof. Dr. A. M. Cem Somel
Examining Committee Member

Approval of the Institute of Economics and Social Sciences

Prof. Dr. Kürşat Aydoğan
Director

ABSTRACT

PATTERNS OF FINANCIAL CAPITAL FLOWS AND ACCUMULATION IN THE POST-

1990 TURKISH ECONOMY

Biçer, F. Gül

M.A., Department of Economics

Supervisor: Erinç Yeldan

July 2003

Decreasing investment opportunities in the industrialized countries and arbitrage seeking approach of the developed countries has caused to surge of capital inflows to the developing countries in 1990s. After capital account liberalization in 1989, Turkey has also exposed the capital flows and faced with the negative impacts due to the lack of capital controls and the early timing of capital account liberalization before providing economic, political and legal requirements.The thesis analyse the impacts of macroeconomic variables with capital inflows and the behaviour of investment with macroeconomic prices and capital inflows for Turkey using econometric techniques.

Keywords and phrases: Capital Inflows, Capital Account Liberalization, Developing Countries, Arbitrage Seeking, Investment, Turkey.

ÖZET

1990 SONRASI TÜRKİYE EKONOMİSİ' NDE FİNANSAL SERMAYE HAREKETLERİ

Biçer, F. Gül

Yüksek Lisans, İktisat Bölümü

Tez Yöneticisi: Erinç Yeldan

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Doksanlı yıllarda endüstrileşmiş ülkelerdeki yatırım olanaklarının azalması ve gelişmekte olan ülkelerdeki arbitraj fırsatları, kısa vadeli sermaye hareketlerinin gelişmiş ülkelerden gelişmekte olan ülkelere yönelmesini sağlamıştır. 1989'da sermaye hareketlerinin serbestleşmesi sonucu, Türkiye ekonomisi de diğer gelişmekte olan ülkeler gibi kısa vadeli sermaye hareketlerinin sebep olduğu negatif etkilere maruz kalmıştır. Bunda sermaye hareketlerinin girişinin kontrol edilmemesinin ve gerekli ekonomik, politik ve hukuki düzenlemeler yapılmaksızın sermaye hareketlerinin serbestleştirilmesinin önemli bir etkisi olmuştur. Bu tez sermaye girişlerinin makro değişkenlerle etkisini ve yatırım davranışlarının makro fiyatlardan ve sermaye girişlerinden nasıl etkilendiğini Türkiye için ekonometrik tekniklerle incelemektedir.

Anahtar Kelimeler: Sermaye Girişleri, Sermaye Hareketlerinin Liberalleştirilmesi, Arbitraj , Yatırım, Türkiye.

ACKNOWLEDGMENTS

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1 Introduction

The 1990s witnessed a surge in capital flows to the developing countries. As measured by the surplus on the capital account, the developing countries of Latin America and Asia alone have received a sum of $670 billion of foreign capital from 1990 to 1994 (Calvo, et al., 1996). Net flows diminished significantly in 1995 in the aftermath of the Mexican crisis, but in most cases surged once again to reach high levels by the end of the decade. Furthermore, a structural shift was observed in the composition of the private flows, with portfolio and other short-term capital flows gaining importance (UNCTAD, 1998).

The rise of foreign capital inflows has initially been a welcome development. The foreign exchange constraint which seemed binding during the 1970s and 80s seem to have been suddenly relaxed with positive effects on consumption and investment. In fact, theory suggests that inflows of capital would complement national savings and that financial liberalization would improve the allocation of scarce funds both internationally and intertemporally. Accordingly, in a world of freely mobile capital, investable funds would flow from high-saving to low-saving countries. This process would tend to equalize interest rates across the global

financial markets, North and South, and as such, it would enable the indigenous countries to escape the size constraints on their domestic asset markets.

This benign view of international capital mobility has been challenged by the crisis episodes of the last two decades. Both the numerous empirical case studies and the policy lessons of the Mexican, Turkish, Argentina, and more recently East Asian experiences revealed that the expected beneficial effects of capital inflows have been overshadowed by the adverse impacts of excessive stock market volatility and the persistence of exchange rate risk against unforeseen fluctuations in the exchange rates. Furthermore, in such a world of volatile exchange rates, the traditional dictum regarding the global equalization of real interest rates failed to take place. In such a world, it is clearly observed that the free mobility of international capital flows does not suffice to equalize real interest rates that are denominated in different currencies. The persistent diverging nature of the real rates of return across countries have been studied and documented in Frankel (1991, and 1993); Marston (1993); Halwood and MacDonald (1994); Blecker (1998) and Eatwell (1996).

Finally it is also to be noted that while the post-financial liberalization episodes are characterized by very large *gross* capital flows, they have generated rather small *net* transfers. As is also remarked by Tobin (2000), net capital flows from the developed to the underdeveloped economies had been only on the order of $150 billions per annum during the 1990s. One can contrast this figure with the *daily* volume of speculative foreign exchange transactions reaching to $1.5

trillions. It is now a well-known fact that the gross volume of international capital flows across the national boundaries is far in excess of the financing needs of commodity trade flows or investments on physical capital, and is mostly driven by speculative considerations of risk hedging and currency speculation. For instance, using data of thirty two emerging markets for 1988-98, Rodrik and Velasco (2000: 61) report that "… there does not appear to be any relationship between the volume of international trade and the level of short term debt –suggesting that trade credit has played little or no role in driving short-term capital flows during the 1990s".

Thus, under this characterization of the post-financial liberalization episodes, large capital inflows as witnessed in recent years have posed serious dilemmas and created significant policy challenges. Indeed, the recent history of the financial crises in the "successful emerging markets" have clearly disclosed the undesirable macroeconomic effects of the large, uncontrolled capital inflows, such as persistence of high real interest rates, inflationary pressures, limitation of the power of the central banks to contain the pressures of monetary expansion and of the threat of currency substitution, real exchange rate appreciation, and widening current account deficits. Nevertheless, the type of capital inflows is important to determine severity of results. While short-term capital flows (hot money) are more volatile than long-term capital flows due to their high sensitivity to changes, they also result with much more severe disturbances. The detailed study of capital flows and their different impacts on economy is pursued in Chuhan, Perez-Quiros and Popper (1996) and by Claessens, Dooley and Warner (1995).

This thesis attempts to address these issues and investigates the determinants of short-term foreign capital inflows for Turkey following its capital account liberalization in 1989. Turkey's post-financial liberalization history of macroeconomic and political developments remains as an enigmatic deepening of its crisis-prone fragility with persistent price inflation, persistent and rapidly expanding fiscal deficits, and increased volatility of its gross domestic product. In this study, I will identify capital inflows exclusively with the portfolio investments of residents and non-residents abroad, and, using time-series econometrics, I aim to search for the macro economic variables that best explain the behavior of capital inflows over 1992 to 2002. I will further investigate the changing nature of the private investment function under post-capital account liberalization and deduce hypotheses on its correlation with capital flows and the key macro economic prices, such as the exchange rate, the real rate of interest, and real wages.

The plan of the thesis is as follows: in the next chapter I study the historical background of the Turkish economy. The historical evoluation of Turkey's capital account liberalization is explained in chapter 3. In chapter 4, I focus on how the macro economic balances for Turkey are affected by capital inflows. Observed features of foreign (financial) capital inflows in Turkey during the 1990s take place in chapter 5. The econometric methodology is introduced in section 6. Here I use time series econometrics to study the behavior of financial capital flows and that of private fixed investments against key macro economic indicators. I conclude the thesis in chapter 7.

2 Historical Background of The Turkish Economy

Turkey has experienced serious current account deficits during 1960s and 1970s with a serious foreign exchange gap at the end of the 1970s. All of these problems led the economic authorities to introduce a set of stabilization policies that aimed to maintain an external balance. During 1970s, low level of the interest rates to reduce the cost of borrowing led to the diversion of money in circulation from the banking sector to unproductive foreign exchange hoarding, and also to the unorganized financial market. Furthermore, the interest rates are reduced to negative levels by the end of 1970s. The industrial policy of the period was import substitution. At the same time, economic autorities implemented a public investment program which aimed to expand the domestic production capacity in heavy manufacturing and capital goods.

After a foreign exchange bottleneck in 1978-1979, Turkish economy has been liberalized by the implementation of a structural change program on January 24, 1980. In the first stage of the program, interest rates on time deposits and credits were set free to provide financial deepening and increased saving.However, the financial liberalization between 1980 and 1982 was not successful because there was a need for a supervision of the financial system after setting free interest rates (Binay and Kunter, 1998). Another critical point of the early 1980s was the

financial scandal of 1982, when many money brokers collected deposits of the savers by offering very high interest rates and than collapsed together with a number of smaller banks. An unstable economic environment and inefficient banking system led to the bankrupcy of five banks (İstanbul Bankası, Hisarbank, Odibank, Bağbank and İşçi Kredi Bankası) and the intervention of the Turkish Central Bank to regulate the interest rates.

In order to promote and develop the securities market, the Capital Market Board (CMB) was established in 1982 and started its operations in 1983. Within the framework of the secondary market regulations by a decree in 1983, the Istanbul Stock Exchange was reopened in 1985 and started its operations in 1986 (Atiyas and Ersel, 1992). Furthermore, Turkish residents were allowed to open foreign accounts in banks in 1984 to increase product variety and services in the Turkish financial system (Denizer, 2000). Other targets of this reform were to bring the foreign reserves of banks that were abroad and to stop capital outflow. However, the underestimation of the inflationary environment during the application of the policy led the substitution of TL with a more acceptable currency (foreign exchange substitution). The best policy against the substitution could have been to increase the return on TL assets.

Overall, the export-led growth model of the 1980-1988 signaled its insufficiency by the 1989 elections revealing the poor performance of the macroeconomic indicators. The next step of the liberalization act was the capital account liberalization in 1989. The targets were the liberalization of the foreign exchange system to ease the connection with the international markets, the

elimination of the obstacles of buying and selling activities of the stocks and bonds the in domestic and foreign markets, and the provision of external credit for the banking system (Binay and Kunter, 1998). However, capital account liberalization caused increased inflows of hot money, which made the economy more vulnerable to macroeconomic imbalances in the domestic economy and economic crisis. Most importantly, Turkey was not ready to the capital account liberalization because its political and financial reforms were not completed.

In the same year, the Central Bank also implemented a new monetary program which aimed to prevent the public sector from easy access to the Central Bank's credit lines. However, the government did not follow the neccessary fiscal measures and the Treasury continued to increase both external borrowing and internal borrowing which, in turn, was the main reason of the high interest rates in the 1989-1994 period.

At the end of 1993, the government reversed its policy and aimed to decrease interest rates artificially. In this direction, a higher depreciation policy and the cancellation of a set of Treasury auctions were the implemented actions to reduce the interest rates as these policies led the banks to rearrange their foreign currency denominated assets and liabilities. However, this adjustment caused a rise in the demand for foreign currency and became one of the leading factors of the 1994 crisis. In April 5, a new stabilization program was implemented. In the short-run, the program would reduce inflation and stabilize the financial markets. In the medium term, it would solve the public deficit and the external deficit problems. In the long-term, it was expected that it would provide a sustainable growth. During

the first three months of the year, the CB tried to control the money supply with open market operations and tried to halt increases in the exchange rate by means of direct sales of foreign currency. After three months, the CB aimed to actualize the targets of the stabilization program and applied a tight monetary policy. The program and high devaluation have created some positive results during the remaining part of 1994 and 1995 such as improving the current account balance, decreasing budget deficit, and creating a short -term decrease in hot money flows. After the 1994 crisis, the government and the commercial banks turned again to short -term borrowing from abroad and lending at home due to high profit margins of the Treasury bills and the government bonds, i.e. they became arbitrage seekers without considering market risk, exchange rate risk and proper management of the their assets and liabilities. Therefore, Turkish economy became more vulnerable even to small crises.

During 1995-1999, there was a no real improvement in the economy and the economic and political disabilities that caused the 1994 crisis have not been stabilized. In the first ten months of 1995, the CB followed the stabilization program of the 1994 and exchange rates have been used in line with inflation. In the same year, Turkey signed a stand-by agreement with IMF. However, the economic instability increased due to the end of the implication of the stand-by agreement, the changes of government, the early elections and the entrance to the Custom Union.

In July 1998, Turkey initiated a new disinflation program with the guidance of IMF. The Staff Monitored Program (SMF) targeted to improve the fiscal balance and reduce price inflation. Although the program was successful in improving the fiscal balances and reducing inflation slightly, it could not solve the interest rate problem. The disinflation program has been broken down by the effects of August 1998 Russian crisis, the general elections in April 1999, and two highly destructive earthquakes in August and October 1999. Increasing government expenditures deteriorated the fiscal balance and the pressures on the financial market raised the real interest rates. The currency crisis caused the reversal of capital flows in 1998 and the outcome of the crisis was the bankruptcy of eight banks as they are taken over formally by the Saving Deposit Insurance Fund (SDIS). All of these events worsened the fiscal balance and increased the debt-GDP ratio so another IMF directed disinflation program was implemented in December 1999. The requirements and the obligations of the program were imposed by the first letter of intent signed in December 9, 1999. A new banking law was part of this program and the so-called Banking Regulation and Supervision Agency (BRSA) was established with this law.

The second letter of intent came with the disinflation program introduced in December 18, which was based on exchange rate policies. The program would use the nominal exchange rate as an anchor for disinflation purposes. Turkey's stabilization program with the exchange rates were based on a crawling peg against a dollar-euro basket. Monetary authorities were to use international reserves as the

instrument to create the appropriate depreciation rate which is required for the inflation targeting (Reyes, 2002). Therefore, an exchange rate band that serves as a nominal anchor can be accepted as a supplement to the inflation targeting framework. The second letter of intent stressed the importance of the policies and the date of each acts of the program was also specified.

In November 2000, Turkey has experienced a severe financial crisis. The Supplementary Reserve Facility granted with $7.5 billions in December 22 was requested from the IMF to restore confidence. Furthermore, the monetary program was revised and the continued implementation of the program reduced the tension in the financial markets. Due to increased credibility which was a result of the monetary help by the IMF, capital flows were reversed. Central Bank`s reserves returned to their precrisis levels and the interest rates decreased by the beginning of 2001. The program achieved reducing inflation but it was not adequate to prevent currency appreciation, the increase of fragility of banking system and the vulnerability to external impacts. Additionally, the political dispute between the Prime Minister and the President on February 19, 2001 triggered the reemergence of the financial market crisis creating a reduction in the monetary base and a rise in the interest rates (short-term interest rates jumped up to above 5000%). As a result, Turkey experienced economic and currency crises simultaneously (twin crises) in November 2000 and February 2001. The response of the government was to let free float of exchange rates, let the Turkish lira to depreciate ferociously and a new agreement with the IMF (a new letter of intent). Imposibility of an open capital

account, a pegged exchange rate and independent monetary policy together were observed once more (Fischer, 2002).

3 Capital Account Liberalization: Theory and The Turkish Experience

Financial liberalization has become one of the main economic concerns for most of the countries for the last twenty years due to the fact that the constraints on the financial resources were distracting the efficient distribution of the economic resources and potential growth rates (McKinnon ,1973 and Shaw, 1973). Basic targets of the financial liberalization are increasing the savings, attracting foreign capital and increasing efficiency in the usage of financial resources. However, the economic and political stability, efficiency in a well controled banking system and the level of interest rates are the important factors to determine a good liberalization policy (Binay and Kunter, 1998).

In fact, the implementation of positive interest rates, the new possibility of foreign exchange accounts, the advance of financial deepening for the private households have meant increased foreign exchange deposits with vigorous currency substitution (Guncavdi and Bleaney, 1996a). Thus, it can be stated that the "pioneers of financial deepening" in Turkey in the 1980's have been the public sector securities and the forex deposits. Furthermore, Turkey's stabilization and adjustment program of 1980 aimed to change the pattern of the development strategy and the domestic resources to channel for investment through more efficient intermediation in financial markets along with Mckinnon-Shaw

hypothesis (Guncavdi and Bleaney, 1996b). However, as Akyüz (1990) attests, Turkish experience did not conform to the McKinnon-Shaw hypothesis of financial deepening with a shift of portfolio selection from "unproductive" assets to those favoring fixed capital formation.

During 1990`s, industrialized countries turned towards emerging markets for investment and so capital flows leaked to the developing countries. The main reasons behind this movement were the reduction of investment opportunities in the industrialized countries and arbitrage seeking. However, the capital flows carried significant risk factors together with their expended positive effects such as providing additional finance and enhancing investment opportunities. On the other hand, equity liabilities such as FDIs are less likely to cause any crisis, as oposed to debt liabilities because they are not under the pressure of either currency or maturity mismatches (Fernandez, and Hausmann, 2000). Additionally, the foreign direct investments (FDI) bring new technology, better investment and management opportunities and they cannot be revered easily. However, most of the capital flows take the form of hot money and portfolio investments because capital inflows from the developed countries search for a politically and economically safe market for long-term investments. Yet, this is not the case for most of the developing countries, and short-term capital flows destabilize the macroeconomic balances and increases the fragility of the country against crisis.

FDI has low sensitivity to international interest rate differentials and the aim of this type of investment is long-term profitability (Lopez-Mejia, 1999). On the

other hand, the short-term capital flows are more short-term oriented and have greater volatility because reversing them is less costly than reversing FDIs.

Globalization of an economy spreads the effects of the economic outcomes throughout the countries and these outcomes may bring positive or negative externalities. Rising capital flows to the larger countries stimulates capital inflows to the smaller countries in the same region. Therefore, a successful stabilization program in one or more of the larger countries which increases capital inflows to these countries may have positive externalities on the smaller countries in the region (Calvo and Reinhart, 1996). Furthermore, the investors face with the problem of imperfect information because the available time is very short to transform the information for the investments that is made by short-term capital flows. The imperfect information causes inflows of capital to the countries with the same characteristics in the case of positive effects and causes outflows of capital from the same type of countries in the case of negative effects such as crisis. Tequila Crisis in 1995, the 1997 East Asian Crisis and the 1998 Russian Crisis are the typical examples of negative externalities.

With its capital account liberalization in 1989, Turkish domestic market was exposed to the volatile movements of the short- term capital flows (flows of "hot money"). The observed volatility was due to high arbitrage opportunities in the market and the insecure economic and political environment such as high inflation rate, low growth rate and the continuum of early elections. Net portfolio investments fluctuated abruptly through the 1990s between $3.9 billion (1993) and

$-6.7 billion (1998) and $-4.5 (2001). In particular, Turkey's crisis experiences in 1994, the 1998 Russian Crisis, and the 2000 crisis were the accelerator of these huge jumps. Flight of capital is easy and as it takes very short time because of the composition of capital flows in Turkey, and any negative factor may drive away the capital flows. These experiences showed the importance of domestic factors for attracting and holding capital flows in Turkey. Such inflows enabled, on the one hand, financing of the accelerated public expenditures, and also provided temporary relief of the increased pressures of aggregate demand on the domestic goods markets through cheapening costs of imports. By contrast, long-term foreign direct investment (FDI) performance was meager, never crossing the $1 billion mark, save for the exceptional period of 2001. Due to low share of FDI with respect to hot money in the total capital flows, Turkey faced with the risks and the negative effects of the capital flows.
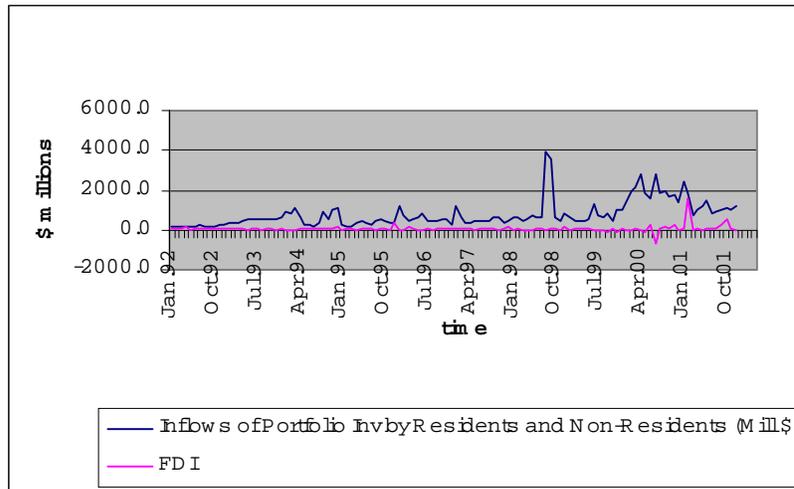
Figure.1. Short-term Capital Flows and FDIs.

In Table 3, I also provide key macro economic aggregates which are affected from capital flows. I note that even though the balance on the current account has been mostly on the negative side, its size nevertheless was rather modest as a ratio to the GNP. Except for the pre-crisis years of 1993 and 2000, the size of the current account deficits has been on the order of less than 1.5% of the GNP, suggesting that the national saving-investment gap has not been severely binding (see Table 3 in Appendix A).

I portray the paths of the gross in- and out-flows of short term speculative foreign capital along with their net magnitudes in Figures 1a, 1b, and 1c. The "volatility engine" (Bello, et.al., 2000) of short-term capital flows with significant hot components is clearly visible.
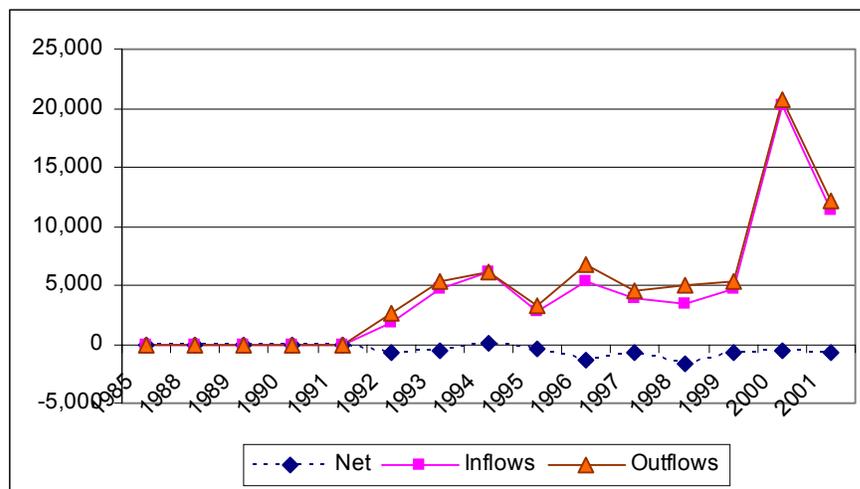
Figure.2.a. Portfolio Investments: Securities Sales (Inflows) and Purchases (Outflows) by Residents, Abroad (Millions US $)
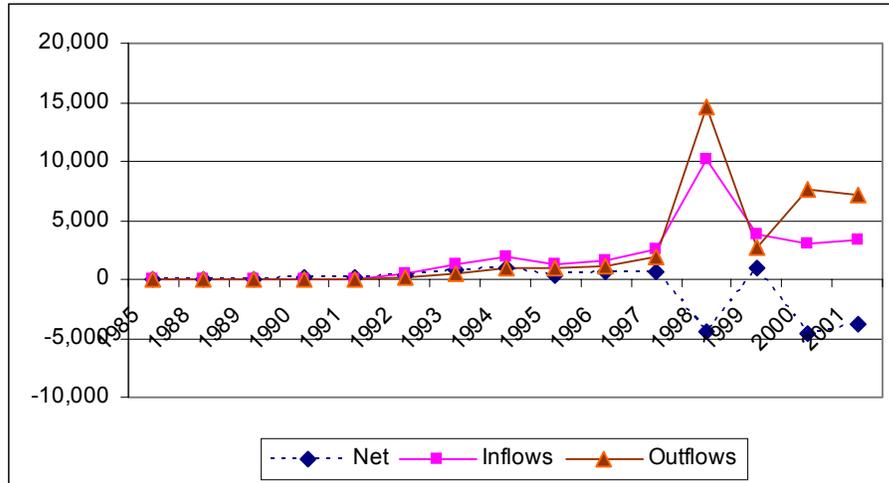
Figure.2.b. Portfolio Investments: Securities Purchases (Inflows) and Sales (Outflows) by Non-Residents in Turkey (Millions US $)
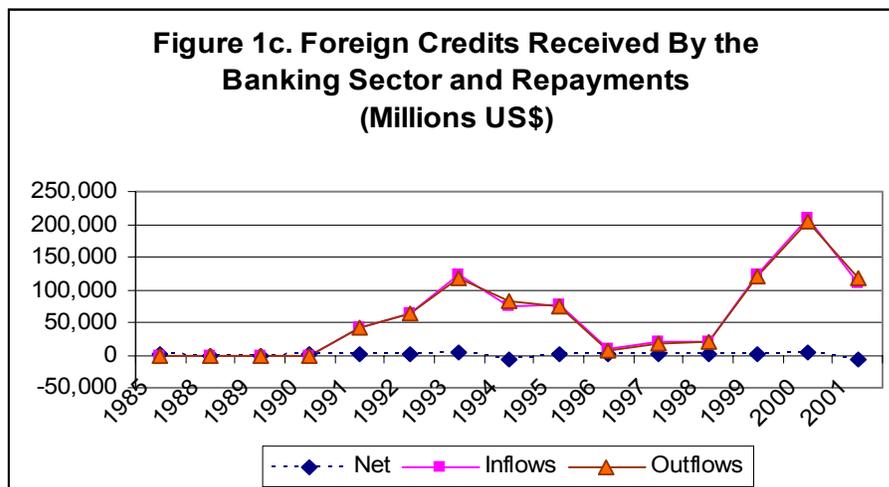
Figure.2.c. Foreign Credits Received By The Banking Sector and Repayments (Millions $)

The exchange rate based disinflation and stabilisation program that is designed and monitored by IMF in 2000, led to appreciation of the nominal exchange rate. As a result of the appreciation of exchange rate, an extremely high increase of capital inflows was observed. It is generally known that, such type of programs that use the exchange rates as an anchor for inflationary expectations,

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relying on capital inflows to finance growing external deficit, cause the appreciation of currency due to attracted arbitrage seeking capital inflows (UNCTAD, 2001). Although the real interest rates decreased on government debt instruments (GDIs) in 2000, the capital inflows have continued due to continued strict commitment of nominal exchange targets and arbitrage rate expectations of banks. The inflows were high during the first ten months of 2000. However, there was a sudden reversal of capital inflows such that non-residents liquidated their treasury bills by external agents in November of that year due to the unsustainability of Turkish domestic market.

4 Impacts of The Capital Flows on Macroeconomic Balances

Capital account liberalization made the Turkish economy to be highly dependent on capital flows and caused the emergence of financial cycles. Substantial leakages from net inflows constituted a linkage between growth, current account balance, and capital flows. The rising amount of hot money inflows and outflows exacerbated external and domestic instability (Boratav and Yeldan, 2001).

Turkey's attempt for integration with the global markets was not timed well due to the fact that its local market was not ready yet for such an act. Since the countries in Latin America also made the same mistake, it became one of the most important reasons that destroyed their economy and led them to economic crises. Capital account liberalization requires some economic and legal adjustments in the beginning such as improvement and regulation of the banking sector, transparency, strong healthy fiscal and monetary policies, stable politics, and improvements of macroeconomic balances (i.e. GDP growth, trade balance, moderate inflation, etc.). On the other hand, creating requirements for capital account liberalization is not easy. Therefore, making the reforms as much as possible, countries should also apply capital controls, which Turkey failed to implement.

The recent studies imply the association of capital inflows with the appreciation of exchange rates (Calvo, et al., 1996; Fernandez-Arias and Montiel, 1995). Choosing nominal exchange rate as an implicit anchor with no fiscal adjustment and the persistent high inflation was the reason of this appreciation by coupling with capital inflows (Celasun, et al., 1999). If the borrowing by the fiscal sector follows a continuum path during the exchange rate based policies (ERBSP) applied, the result becomes the higher appreciation of the exchange rates because higher internal borrowing leads to higher interest rates causing an increase in the capital inflows. Therefore, pursuing the existing ERBSP becomes impossible and the result becomes deterioration of the macro economic balances such as GDP growth and current account. Through the end of the ERBSP, a recession is inevitable. The study by Celasun (2001) suggests two results for the ERBSP: a sustained real exchange rate appreciation and a boom-recession cycle such that an increase in the consumption and aggregate demand in early stages and a recession later is expected. The studies by Rodriguez (1982) and Dornbusch (1982) suggested the inflation stickiness as the reason for the boom and recession in ERBSPs. Since Turkey had backward looking price settings especially in the non-tradeable goods sector (Celasun, 2001), the stabilisation program based on ERBSP which was started on December 1999 is abandoned by the February 2001. Turkey's macroeconomic policies were not adequate and efficient to support the applied ERBSP.

In the figure below, I outline the movements for the real GDP growth. Since Turkey is not a strong net capital importer, the growth of real GDP has been mostly dependent on the capital inflows. Furthermore, depending on short-term

capital inflows rather than FDIs. Turkey's economic growth rate increases with the capital inflows and decreases with the flight of capital inflows. However, the observed impacts of the portfolio inflows, especially by residents abroad, are stronger than the foreign credits by the banking sector due to the way followed by the banking sector credits (see also Figure 1a, 1b and 1c). The high level of interest rates in Turkey makes harder to invest with the banking credits and also produces a high return with low risk for the banking sector by means of investing in Treasury Bills. Therefore, the foreign credit by banking sector flows heavily on T-bills and weak inclination for investment and consumption leads lower level of real GDP growth. Econometric results in the next parts of the thesis also prove the importance of the portfolio investments rather than the foreign credits by the banking sector by finding significant results for the portfolio investments and insignificant results for the other.

Figure.3. Real GDP Growth (1987=100)

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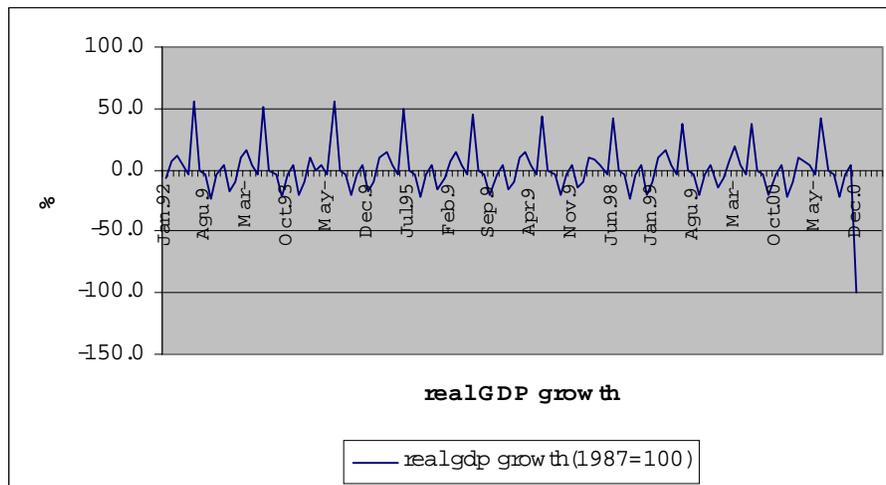
Interest rates also play a significant role on the direction of capital flows. Especially, high short-term interest rates prepare an attractive environment for speculative arbitrage seeking short-term capital flows. Regardless of the initial level of interest rates and exchange rates, capital inflows to the developing countries apt to create an arbitrage margin by increasing domestic interest rates and appreciating real exchange rates later (Calvo, et al., 1996; Sarno and Taylor, 1999). Due to the fact that short-term nature of the capital inflows is effective on increasing interest rates by the means of the internal borrowing to pay back the investment and its interest. The series of these events occur within a cycle that warrants a continuum feed of capital inflows to cover interest payments and the on-going appreciation of the real exchange rate (Stiglitz, 2000; Taylor, 1998; Calvo, 1998; Diaz-Alejandro, 1985).
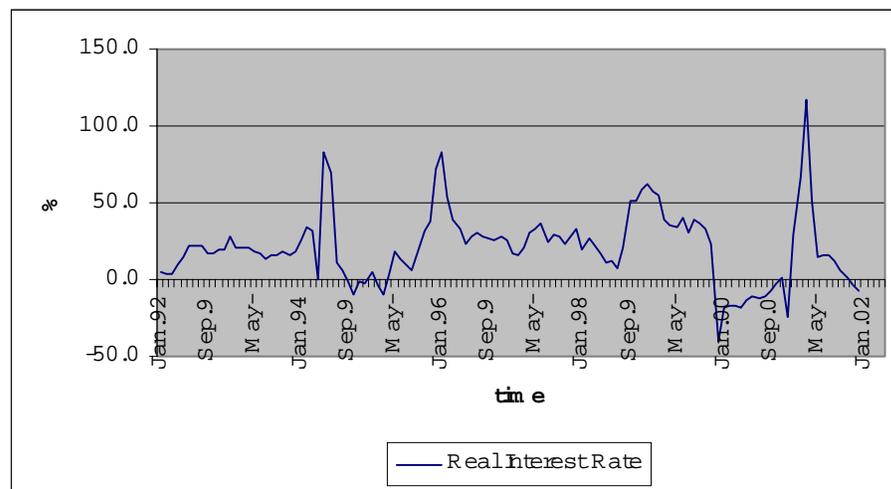

Figure.4.Real Interest Rates

The exchange rate based disinflation and stabilisation program of 2000 lead to increase of the Central Bank's foreign assets and that of monetary base by

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increasing the capital flows so real interest rates collapsed in 2000. IMF financial package of $10.5 billion improved the reserves early in January 2001. However, liquidity squeeze continued due to IMF funding through the Supplementary Reserve Facility. As a result of insistence to preserved exchange rate policy, exchange rates were stabilised temporarily but the policy worsened interest rates which increased above their pre-crisis levels. The program ended with the announcement of free float exchange rate regime on 22 February 2001, and Turkey has started a new stabilisation program that was directed by the IMF in mid-May 2001.

After the inception of capital account liberalization, the TL is observed to be mostly on an appreciation trend (see Figure 5). Özlale and Yeldan (2002), for instance, report that extend of appreciation of the TL reached to 18% over 1989 to-May 2002.[1] Combined effect of capital account liberalization with the abandonment of the real exchange rate rule led to a sharp real appreciation of 1989-1990. Even there was a moderate level of appreciation untill 1994, started control of government on interest rates of the domestic bonds caused a depreciation which has become a stabilizer of the real exchange rate for the following five years. However, the observed appreciation of the real exchange rate in 2000 crisis has deteriorated the macro economic balances, especially in trade. Due to the flight of the capital inflows by the crisis, Turkey has entered a foreign exchange bottleneck and increased demand led to depreciation of the Turkish currency.
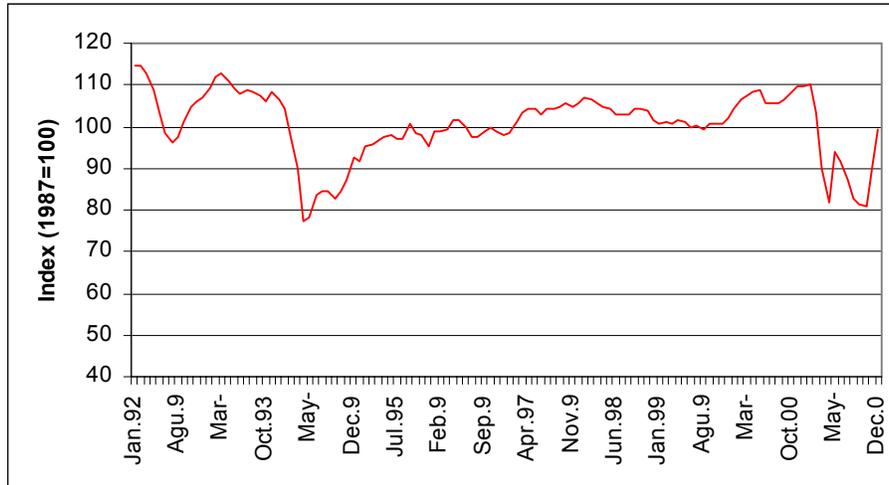
Figure.5.Real Exchange Rate, Turkey (1987=100)

A country with a sufficiently large stock of foreign currency debt, like Turkey, is vulnerable to the crisis because with the movement of the exchange rates, the balance sheet deteriorates and firms cannot service their debts and lenders and borrowers want to take their money out (Chang and Velasco, 1998; Calvo, 1998; Fernandez- Arias and Lombardo, 1998; Eichengreen and Hausmann, 1999; Krugman, 1999). This is the one of the reasons for the emergence of the crisis in Turkey. Turkey's exchange rate volatility followed a skyrocketing path during the crisis periods. Under the 1994 and 2001 crises, it shows an extreme acceleration. However, since Turkey avoided from the negative impacts of the East Asian Crisis in 1997, it did not face with exchange rate volatility. Furthermore, increased foreign exchange reserves with the escaped capital flows from the crisis countries were effective on the exchange rate balances during Russian Crisis in 1998 that was also weaker than the 1994 and 2001 crises.

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[1] Based on PPP comparison of the TL against the US$, and using the whole sale price index (1989
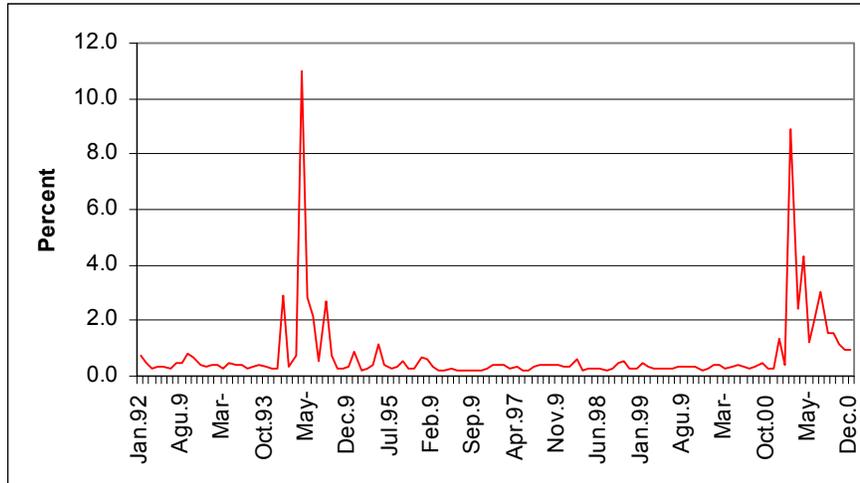
Figure.6.Exchange Rate Volatility, Turkey

The imports and consumption increase due to appreciation of exchange rates by the effects of capital flows because appreciation of exchange rates makes the real value of domestic currency relatively higher by resulting increase of demand. An increase of demand to tradeable goods increases imports by causing the deterioration of trade balance. On the other hand, a demand increase to non-tradeable goods comes into being a rise in domestic production and in the price of the non- tradeable goods. Turkey's economic history is full of severe current account deficits after capital account liberalization. During the 1992, 1993 and the first quarter of 1994, Turkey faced with current account deficit in most of the months due to higher imports compared with the exports. In 1993, the unfunded expansionary policies of the government led to an explosion of the domestic demand and worsened export performance led to the deterioration of the trade deficit. However, there was a current account balance improvement due to the huge ,epreciation in 1994. On the other hand, the severe appreciation of TL. in

= 100).

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2000 and the impact of Customs Union with EU caused to deterioration of trade balance by causing to increase of imports.
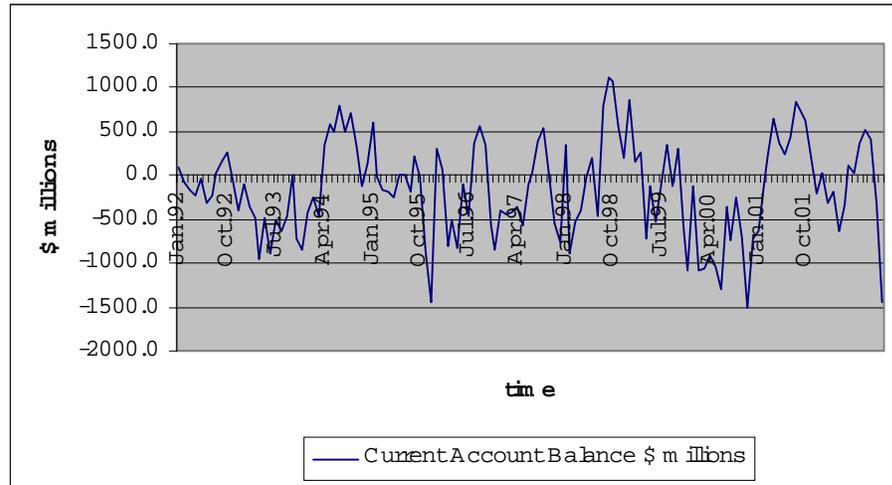
Figure.7.Current Account Balance

In the pre-crisis periods, huge capital inflows of these periods were separated on current account deficit allocation rather than reserve accumulation as opposed to current account accumulation took place to keep the real exchange rate constant that was a post-crisis policy (Celasun, et al., 1999). Yet, the high sensitivity of the financial arbiters to the balance on the current account is clearly visible in that both surges of the current account deficits in 1993 (with 3.6%) and in 2000 (with 4.8%) were associated with the sudden reversals of the hot money flows and concomitant financial crises of 1994 and 2001.

By the opening of capital account, the capital flows that have been associated with large public sector borrowing requirement (PSBR) constituted another source of fragility. Throughout the 1970`s and 1980`s, Turkish government financed its

deficit with Central Bank advances (monetisation) mostly. After the removal of the interest ceilings and some other serial reforms, real interest rates started to show positive values. Financial institutions and rentiers adapted to new interest rates and due to the changing economic environment, the government passed to financing of deficit with the government debt instruments (GDI). After the capital account liberalization, the PSBR financing with the issue of GDI`s to the internal market has been the major method. Therefore, the inevitable result of this method came into being as rising domestic debt that was more than 50% of the stock of the existing debt, which was trapped in a Ponzi-situation[2], during 1990`s. (Boratav, et al., 2002; Voyvoda and Yeldan, 2002).

High interest rates on GDI`s attracted capital flows. The resulting capital flows have been directed to public sector financing rather than entering to the financial system. However, the usage of capital flows in the deficit financing led to the increase of short-term borrowing for the public sector due to the fact that the composition of capital flows was short- term and mostly of the portfolio flows type. Getting into debt with shot-term maturity deepened the debt financing problems of Turkey because the government borrowed continuously to meet its increasing interest payments and payment of debts. Increases in budget deficit resulted with the increase of the public sectors' borrowing requirement (PSBR) during the long period of budget deficit of the last decade.

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[2] Ponzi-situation defines the storage case of the cash flows from assets in the near-term as compared with the cash payment commitments. In the "Ponzi Finance", the financial authorities must increase the outstanding debt to meet the previous financial obligation.
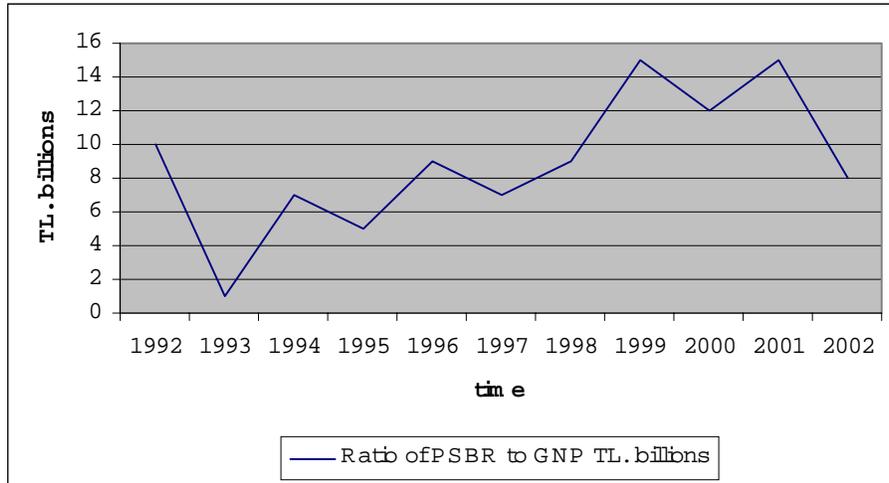
Figure.8.Ratio of PSBR to GNP

Deterioration of the macroeconomic balances of a country with capital inflows would also affect the vulnerability to the crisis. There are three indicators to measure the vulnerability to the crisis: a large appreciation of the exchange rate, a weak banking system and low levels of the foreign exchange reserves (Sachs, et al., 1996). Turkey's ratio of short-term debt to international reserves has been extremely high over the last decade. Availability of reserves with respect to short-term external debt is an indicator of the fragility of an economy against crisis because extreme outflow of capital can be compensated with reserves. However, if the ratio is high which means that reserves are used to finance short-term external debt mostly then the country cannot defend itself against the capital flight. A country with the short-term liabilities to foreign lenders which are greater than its reserves is three times more likely to experience a reversal in capital flows (Rodrik and Velasco, 2000). The case of Turkey is one of the examples of this situation because it has a weak banking system, low reserves and capital inflows cause large appreciation of the real exchange rate by exhibiting all of the indicators of

vulnerability to crisis. Debt with short-term maturity was the main indicator of the reversal of capital flows in 1997 Asian Crisis (Lopez-Mejia, 1999). Central Bank's short-term debt to international reserves ratio jumped up in December 2000.
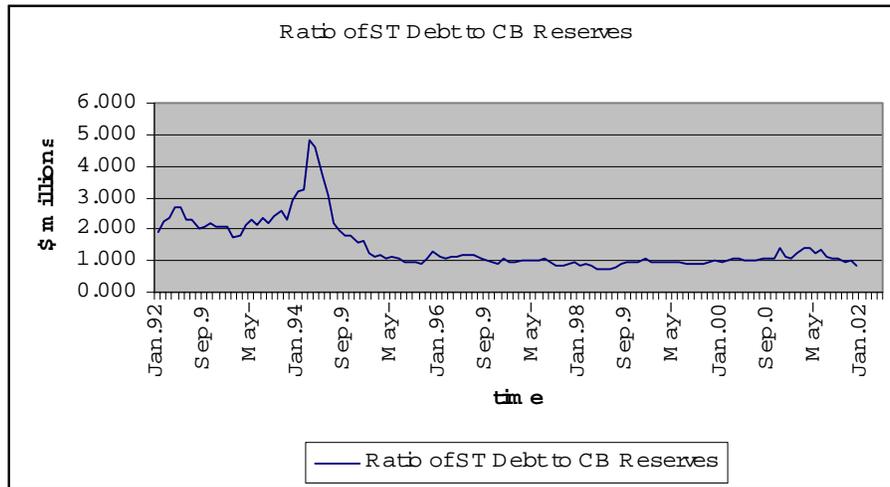
Figure.9.Ratio of Short-term Debt to CB Reserves

5 Consequences of The Capital Inflows

Turkey's case was one of the first experiences for large reversal of capital flows in the 1990s. A common reason for the countries that lived reversal of capital flows has been the lack of confidence in domestic macroeconomic policies (Lopez-Mejia, 1999). Exposition of Turkey to the portfolio flows rather than foreign direct investment widens current account balance, leads rapid monetary growth, creates inflationary pressures, causes real exchange rate appreciation so the reversal of the capital flows is riskier for financial sector.

Although some positive association between growth and capital flows has been investigated by recent studies, this is not a general case for all country studies. The literature has identified sources of diversity such as democracy level of the country, implemented economic policies, economic restrictions, and so on. World Bank studies showed that capital inflows during 1990s had a boost effect on growth, but in the longer time frame of 1970-1998, studies produced a significant negative relationship (see, e.g., Oxfam America, 2002).

Financial flows boost growth in developing countries by affecting consumption and investment. Capital inflows reduce the volatility of consumption because they provide an opportunity for risk diversification and they also allow international borrowing that prevents temporary declines in income. However,

excess expansion of the aggregate demand that is a result of capital inflows causes negative impacts on the financial sector (Lopez-Mejia, 1999). Furthermore, government guarantees on deposits encourage over lending and over borrowing in terms of both lenders and borrowers and demolishe the discipline of the market. Loss of balance in financial markets increases as capital inflows tend to rise, especially guarantees provokes moral hazard where financial transfers with short-term maturity by strengthening fragility of the shallow financial markets.

Capital inflows normally tend to increase the share of investment in GDP. However, there are two ways in which capital inflows fail to pass through investments: using resources that come with capital inflows in consumption rather than investment and failure to increase import in excess of exports whether these imports are used in consumption or investment (Oxfam America, 2002). If capital inflows are consumed rather than invested, there will be no gain to pay back foreign capital with interests. One reason for the occurrence of this case is the Central Bank's sterilisation that is the action of buying foreign exchange from the domestic financial market. Sterilisation capital flows increase the domestic interest rates due to the liquidity squeeze and therefore it may reduce investment.

In most of the countries, capital inflows were associated with current account deficits. The enlargement of the current account deficit has occurred because of both increase of investment and decrease of savings. Capital inflow increase the share of consumption and investment in GDP and decreases the share of saving in GDP so causes deterioration of current account balance.

According to standard open economy models, increase in consumption and investment causes appreciation of the real exchange rates. If the capital flows leak to the consumption rather than investment mostly, it makes real exchange rate appreciation more likely. A real exchange rate appreciation during the capital inflows shows a higher risk for domestic currency depreciation. Additionally, appreciation of real exchange rate destroys trade balance and competitiveness by increasing dependency on imports.

Lack of credibility in an exchange rate-based inflation stabilisation program comes into being as a higher level in the current nominal interest rates than expected level. Additionally, macroeconomic outcomes show the same reactions with the case, which is observed during the temporary decline in the international interest rates (Calvo and Vegh, 1993). This is the case that Turkey experienced with 2000 exchange rate based inflation stabilisation program.

Appreciation of real exchange rate also increases aggregate demand (Yenturk, 1996). If aggregate demand increases for non-tradeable goods, the only way to compensate the demand is an increase in the domestic production and the price of non-tradeable goods also increases due to increased demand. If aggregate demand increases for tradeable goods, it is satisfied with imports. Excess increase of aggregate demand indicates its effects as inflationary pressures, real exchange rate appreciation and widening current account deficit. However, the resulting effects on inflationary pressures and exchange rates will be largely determined with the exchange rate regime and the amount of the reserve accumulation. Under free float, positive shocks to the capital account creates no change on international

reserves and monetary aggregates but a real exchange rate appreciation that stimulates a current account deficit is the forthcoming result. Under fixed exchange rate regime, defending the parity requires the intervention of the monetary authorities and the intervention leads to rise of reserves and money supply, lowers the domestic interest rates and increases asset prices. Then the result is expansion of aggregate demand with a rise in domestic inflation. Actually, under the fully free movement of capital, setting the exchange rate fixed is not possible. The country under these circumstances should follow a floating exchange rate regime setting monetary policy free from controlling a fixed exchange rate or a narrow band (UNCTAD, 2001).

Real interest rates play a significant role in directing capital flows. Especially, high short-term real interest rates prepare an attractive environment for short-term capital flows that are seeking arbitrage opportunities. Regardless of the initial level of interest rates and exchange rates, capital inflows to the developing countries apt to create an arbitrage margin by increasing domestic interest rates and appreciating real exchange rates latter. The series of these events occur within a cycle that needs to a continuum feed of capital inflows to cover interest payments and an appreciation of the real exchange rate (Yenturk, 1996).

Speculative financial environment that is a result of the volatility of capital inflows raises external debt, which is held by public sector. The increase of the external debt, inturn, is the main factor behind the accumulation of the burden of interest payments and that of the rising public sector borrowing requirement

(PSBR). Since increase in PSBR is financed with the government debt instruments

(GDIs), the domestic interest rate rises and attracts new capital inflows in Turkey.

6 Econometric Investigation

In this section I study econometrically three related issues: first, I use a time series, multiple regression model to investigate the relationship between short-term financial capital (hot money) inflows and the key macroeconomic variables. Next, I use the same methodology to infer about the relationship between private fixed investments and the hot money inflows, together with the key macro economic prices.

6-1. Model And Data Specification Of The Relationship

Between Financial Capital Inflows And Macro Economic Variables

In modelling short-term capital flows, I used the least square regression as the most common method of estimating the parameters of a multiple linear regression model. Time-series analysis of data for Turkey includes the country-specific (pull) factors and the monthly data covers a period of 1992:01 to 2001:12 (120 observations in all). All series are obtained from the Central Bank of Turkey

except the interest rates, which are obtained from Turkish SPO and the investment data that is obtained from The Undersecreteriat Turkish Treasury.

The model specification is as follow

$$f_t= C+\Sigma\alpha_jX_{jt-k}+\varepsilon_t$$

where

f_t: inflow of the short-term capital to the country in period t

X_{jt-k}: explanatory variable j at time t-k, k=1,........,n

and where C and α_j are all parameters to be estimated

In this model, the variables in X are index of the Istanbul Stock Exchange National-100 (STOCK), the real exchange rate (RER), the real interest rate (REALINTWPI), the ratio of the public sector borrowing requirement to GNP (PSBRGNP), industrial production index (IP), a ratio to indicate openness (OPENNESS) and the ratio of short-term debt to central Bank's foreign reserves (RATIO). The equational form of the econometric model of the capital inflows is given below:

$$\log(GROSSINF_t)=\beta_0+\beta_1\log(STOCK_{t-2})+\beta_2\log(REALINTWPI_{t-6})+\beta_3\log(RER_{t-2})+\beta_4DUM94*\log(RER_{t-2})+\beta_5dum2001*\log(RER_{t-2})$$

$$+\beta_6dum98*\log(RER_{t-2})+\beta_7\log(PSBRGNP_{t-7})+\beta_8\log(IP_{t-1})+\beta_9\log(GROSSINF_{t-1})+\beta_{10}\log(OPENNESS_{t-1})$$

$$+\beta_{11}\log(RATIO_{t-6})+\varepsilon_t$$

6-1-A The Data Analysis With The Econometric Test Techniques

First I have performed tests for normality, autocorrelation, order of integration and cointegration.

Testing the normality of the series, the quantile-quantile method is used. After ploting the quantiles of the chosen series against a theoretical distribution, in most of the series, I have found that the QQ-plot is straight line, or approximately close to a straight line, which implies normality of the series

Correlograms are used to check the autocorrelation procedure of the series. For no serial correlation, the autocorrelations and the partial autocorrelations at all lags (it is tested for the 12 lags for the data series of the model) should be nearly zero which shows the stationarity of the series. Checking for the correlograms for the data series, one can observe autocorrelation relation at least for the first lags of the series, which implies the non-stationarity of the observations.

Although the properties of a sample correlogram are useful tools for detecting the possible presence of unit roots, the method is nearly imprecise. Therefore, Augmented Dickey Fuller (ADF) Unit Root Test was performed for the series for 12 lags. For the hot money model, I found a set of I (1) variables. Since such kind of sets produce I (0) disturbance term, I could regress the model without considering any differentiation for the variables to eliminate problems related with

non-stationarity. Order of the integration and the test results are given in Table.2 (see.Table. 4 in APPENDIX B)

Checking the validity of the claim that the residuals are zero order for the hot money model, I applied the Engle- Granger two-step method and found that the residuals are I(0) for the model. Investigation suggests that the combination of the non-stationary series may be stationary (Engle and Granger, 1987). The stationary linear combination is called the cointegration equation and may be interpreted as a lon-run equilibrium relation among the variables.

6-1-B. Econometric Modelling And Implications

The dependent variable of the model is the gross inflows of short-term capital (GROSSINF). It is the sum of portfolio investments by residents and non-residents. In the model, I used the *gross* inflows of short-term capital, and *not* the net short-term capital flow (hot money) since the hot money is highly volatile in Turkey, so the implication power of the *net* flows is not as high as that of the gross inflows. Although the net short-term capital flows gave the expected signs for parameters, the R^2 and adjusted R^2 of the model were very low and Akaike information Criterion (AIC) and Schwarz Information Criterion (SIC) were very high. Additionally, in choosing the appropriate lag levels for the models, I searched for the lowest values of AIC and SIC.

Behaviour of stock prices is one of the most important regressors for short-term capital flows. Thus, I used the lagged value of the index of the Istanbul Stock Exchange National-100 directly as a key regressor. Real interest rate is estimated from the three-month compounded nominal interest rates of T-bills by using rate of increase of WPI. Three dummies are used for the periods of the crisis that are affected Turkey mostly. In order: dum94 is used for the 1994 crisis, dum98 is used for the Russian crisis in 1998, and finally dum2001 is used for the crisis that was observed at the end of the 2000 and in the beginning of the 2001. To measure the effectiveness of fiscal policy and the effects of fiscal balances, I used the lagged value of the ratio of the public sector-borrowing requirement to GNP. Since the original data was yearly, I used seasonal adjustment for this ratio. Although I tried the model with budget balance, the results showed that the ratio of public sector borrowing to reserves of Central Bank of Turkey (CB) was a better explanatory variable than the budget balance. The lagged value of the industrial production index is used to measure whether capital flows are used to increase production and the index captures the total industry production. I used the lagged value of the dependent variable because the accelerated capital flows create an effect on itself. The ratio to measure the openness of the economy and its effect on capital inflows is estimated as the ratio of the sum of the absolute values of export and import to GDP. The lagged value of the ratio of the short-term external debt to Central Bank's foreign reserves is used to examine the effect of the indebtedness of the country in case of the capital inflows. Although I structured a model with GDP that was quarterly in original data and seasonally adjusted for the model, the estimation

for GDP was found insignificant and the industrial production index was already capturing the explanations related with production more powerfully.

The usage of log values of the variables improved R- squared, adjusted R-squared, Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC). Furthermore, it eliminated the multicollinearity problem with the RATIO and OPENNESS variables. In terms of the multicollinearity problem, the product of dummy variables and real exchange rates were also important to solve this problem.

I also tried another model, which was regression with net errors and omissions (NEO) of the Balance of Payments. I designed the sum of capital inflows and NEO as the dependent variable and run the model but the findings were insignificant for the most of the variables.

6-1-C Econometric Results And Implications Of The Model

Table. 1:

Dependent Variable: LOG(GROSSINF)

Variable	Coefficient	T-Statistic
C	-5.93	-0.52
LOG(STOCK(-2))	0.40	6.44***
LOG(REALINTWPI(-6))	0.10	1.21
LOG(RER(-2))	3.76	4.41***
DUM94*LOG(RER(-2))	0.07	1.77*
DUM2001*LOG(RER(-2))	-0.05	-0.62
DUM98*LOG(RER(-2))	0.21	4.67***
LOG(PSBRGNP(-7))	0.03	0.46
LOG(IP(-1))	-2.06	-2.86***
LOG(GROSSINF(-1))	0.21	2.38**
LOG(OPENNESS(-1))	1.34	3.25***
LOG(RATIO(-6))	1.28	5.26***

R^2=0,71 Durbin-Watson Statistic=1.81 F-Statistic=18.15 (P-value=0,00)

Note: *** : significant at 1% and more, ** :significant at 5%, * :significant at 10%

(1): Calculated as [[(1+i) / (1+p)]-1]*100 where i= compounded nominal interest rate

of three month T-bills and p= rate of increase of WPI, both expressed as proportions.

As expected, the stock valuation and the real exchange rates are significant and their coefficients have positive sign. A raise in the value of the stock market index can be interpreted as the improvement in the economic and politic situation of Turkey so increases capital inflows. Additionally, increasing public sector borrowing requirement is financed with the issue of the government debt instruments, so this finance method increases the domestic interest rates. Capital inflows lead to exchange rate appreciation and compensation of the exchange rate appreciation requires capital inflows by creating a circle of linkages.

Although the estimation result for real interest rates is found insignificant, it has the expected positive sign. The intuition behind the insignificant finding for the real interest rates can be that the model includes just the pull (domestic) factors. Even though the international real interest rates may be considered as one of the exogenous variables, Turkey's high real interest rate significantly deviates from the world real interest rate. Therefore, taking the difference between the domestic and he international interest rate does not change the high value and also the movement of the time series data of the domestic real interest rates. Actually, the high level of the domestic real interest rates is the most important reason of facing with the short-term capital inflows, which are arbitrage seeker, to Turkey. Furthermore, the very high value of inflation in Turkey causes emergence of too many negative valued real interest rates in the data to explain the effects of the real interest rates properly so I can say that inflationary pressures eliminates the power of real interest rates as a domestic factor.

Dummy of the 2001 crisis is not significant. Furthermore, except the dummy for the 2001 crisis, all of the dummies have positive sign. Negative sign of a dummy would suggest that the emergence of crisis constitutes a panic environment and investors of the short-term capital and even holders of liquid short-term liabilities convert their holdings to the foreign exchange and abandon the country immediately. Positive sign of the dummy could explain the emergence of the macro economic factors, which attract the capital inflows such as high interest rates in the crisis period. Especially Turkey's crisis history exhibits the increased level of interest rates due to the liquidity bottleneck. However, the observed results for direction of the capital flows are highly associated with the political and the other economic factors during the high level of interest rates.

Although the ratio of the public sector-borrowing requirement to GNP is insignificant, it has an expected positive sign.

The industrial production index is highly significant and model suggests a negative sign for this independent variable. Although capital inflows should be associated with the increase of the productivity of the industrial sector, the negative sign of this coefficient may show a tendency of industrial sector in Turkey to be a rentier rather than using the resources that is a result of capital inflows in production. Studies on semi-industrialized countries such as Korea, Mexico and Turkey investigated a relation between the financial liberalization and increase in the rentier activities (see Epstein and Power, 2003). However, a decrease in the rentier incomes is expected in the case of emergence of financial crisis. The graph

below shows the movement of the share of rentier income in GDP for the period

between 1983 and 1999:
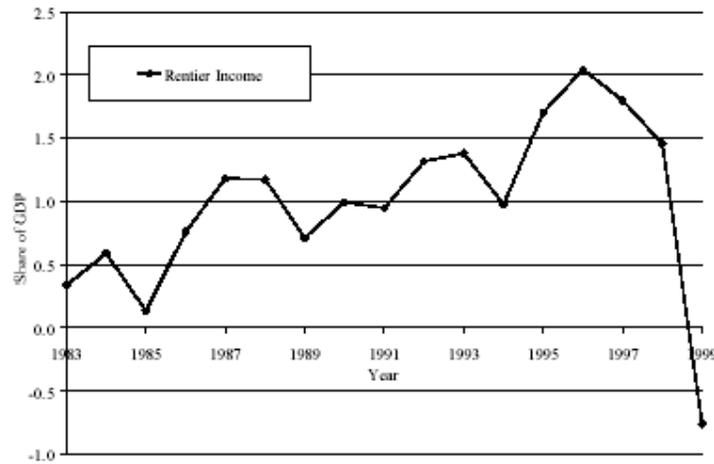
Figure.10.Rentier Income For Turkey, 1983-1999[3]

As observed from the graph, after the capital account liberalization in 1989,

there is a remarkable increase in the rentier income as a share of GDP and during

the crisis periods in 1994 and in 1998 there are decreases.

The lagged value of the dependent variable is also significant and have a

positive sign because the capital inflows are known to have characteristics of "herd

behaviour" and any reason affecting capital inflows causes positively (negatively)

further positive (negative) effects on the forthcoming capital inflows.

The lagged value of the ratio that shows openness of the Turkish economy

to trade is significant and indicates a positive relation because it is also a measure

of globalization of a country. High level of imports is an indicator of the ease of

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[3] Source: Epstein and Power (2003)

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entrance to the country by the outside investors. Especially, in terms of financial markets, the lack of capital controls is the indicator of the ease of capital movements in Turkey. Additionally, the high level of the exports shows Turkey's ability in the international markets. Since increasing trend of globalization integrated all of the economies, it is one of the most important factors for capital flows throughout the world.

As a fragility indicator, the ratio of short-term debt to reserves of the CB is expected to have a negative coefficient because the high value of a fragility indicator means a reduction in the capital inflows. However, our model end up with a positive coefficient that made me to check whether another fragility indicator was efficient. Therefore, I restructured the model with a new fragility indicator that was the ratio of M2y (an I (1) variable) to reserves of the CB (for results, see Table.6 in Appendix D). Although the new model exhibited improved value for the real interest rate, the new fragility indicator again could not explain the expected relation due to positive sign of its coefficient. Furthermore, the model failed to exhibit the expected positive sign of the ratio of public sector borrowing requirement to GNP by making it negative but the finding also did not indicate a high significance.

Due to these results, I can consider that capital inflows are not sensitive to fragility indicators because investors put together the effects of fragility indicator and the political movements that are captured by the ISE (Istanbul Stock Exchange) market index as a proxy for the political index so they may observe the movements of the politic trends rather than fragility indicators. The reasoning of

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this tendency may be the very high levels of the fragility indicators in the past and investors may follow political trends as the measure of the state of the economy.

6-1-D. The Model Analysis With The Econometric Test Techniques

The model test procedure includes the tests for heteroscedasticity, autocorrelation and constancy of the model.

Choosing the best model and considering alternative models, one should use the method of general-to-specific. In this method starting from a general congruent model, standard testing procedures eliminate statistically insignificant variables, with diagnostic tests checking the validity of reductions, reaching the final congruent selection (Krolzig and Hendry, 2001).

In the step of checking validity of the model, I applied White Heteroskedasticity Test, the correlogram method checking autocorrelation and Chow Test for the constancy of the model are performed. With the aim of examining whether the variance of error is affected by any of the regressors, their squares or their cross products, I performed White Heteroskedasticity Test for the OLS regression. The test for heteroskedasticity is resulted with homoskedasticity of the equation for the hot money model with 0.05 significance level. Furthermore, the autocorrelation test shows no autocorrelation due to the values of autocorrelation and partial autocorrelation which are nearly zero so the model is stationary. Testing whether there is a structural change in the relationship i.e.

constancy of the model, Chow's Breakpoint Test has been performed dividing the total period into two (Chow, 1960). The break point is selected to be the 8th month of 1998 when a serious earthquake lived and produced significant detrimental effects on the macroeconomic balances. The year is also important in terms of emerged Russian Crisis. Since the F-statistic exhibits the constancy of the model with 0.51 probability (about 5% significance level), the hypothesis that the coefficient vectors are the same in the two periods will not be rejected so the model is constant.

With high values of R^2 and the adjusted R^2 and the low values of standard error of the regression and Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC), the model seems reliable and highly explanatory for the capital inflows. Furthermore, the close value of the Durbin-Watson statistic to 2 is also another indicator for the non-existence of the autocorrelation in the model.

6.2. The Relationship Among Private Investment, Financial Capital Flows And Macroeconomic Prices

Capital inflows are expected to increase investment throughout two ways by the increasing demand to non-tradeable goods and increasing demand to tradeable goods. Increasing demand to non-tradeable goods provokes the domestic production in this area and also raises the price of the non-tradeable goods. On the other hand, demand for the import of the intermediate goods may increase.

On the other hand, increase in the capital inflow release the credit constraints and provide funds for the investment. Importance of the borrowing constraints is studied by Chhibber and van Wijnbergen (1992), Conway (1990), Rittenberg (1991) and Uygur (1993). However, except the study by Rittenberg, the other studies fail to consider the effects of the policy changes. Even tough the capital inflows are important in terms of the availability of the funds for investment; they may also cause fluctuations depending on whether they are foreign direct investment or short-term capital inflows in the form of portfolio investments and/or borrowing. Therefore, setting controls on the short-term capital inflows is necessary to avoid economic instability in the home country and even to prevent the possibility of financial crisis (Feldstein, 2002).

Capital flows do not lead to increased investments if they are used in consumption or they increase the demand for the tradeable goods that are directly consumable by raising imports for that type of goods. Furthermore, since capital inflows to developing countries are mostly short term, innature, and they are highly sensitive to the economic fundamentals, they just create a boom-bust cycle creating an easy access of credit for the investment and excessively optimistic expectations.

Accumulation of physical capital is regarded in the empirical literature as one of the important determinant of the economic growth (Levine and Renelt, 1992). Since accumulation of capital provides resources for investment even at a lower cost, it also stimulates the increase of aggregate demand. Nevertheless, observations for the developing countries show that the private investment is more effective on growth than the public investment (Khan and Reinhart, 1990). On the

other hand, the stimulating effect of the real GDP growth on investment for developing countries is an observed empirical result (Ghura and Goodwin, 2000).

Using the same econometric methodology with the previous model for quarterly data of the period 1992:1 to 2001:4, I constructed the following model for investment

$$h_t = B + \Sigma \gamma_i Z_{it-k} + \eta_t$$

where

h_t: investment of the private sector in time t

Z_{it-k}: independent variable i at time t-k, k=1...n

and where B and γ_i are all parameters to be estimated.

In this model, the variables in Z are the current and lagged values of the gross domestic product level of Turkey (GDP), the lagged value of the gross inflows of the portfolio investments by the residents and non-residents (GROSSINF)-i.e. short-term capital inflows-, the lagged value of real interest rates (REINTWPI) given by the compounded nominal interest rate of three-month T bills, deflated by WPI inflation, the lagged value of the real wages (WAGES). Since the original data of short-term capital inflows and real interest rates are monthly, I take the average of the months for each quarter. The equation for the econometric modelling of the private investment is given below:

$$\log(INVPRI_t)=\beta_0+\beta_1\log(GDP_{t-4})+\beta_2\log(REINTWPI_{t-1})+\beta_3\log(WAGES_{t-5})$$

$$+\beta_4\log(GROSSINF_{t-3})+\varepsilon_t$$

Analysing the data of the model, I applied quantile-quantile method to check the normality of the series, used correlograms to check autocorrelation, ADF unit root test to check the stationarity of the series and Engle-Granger two step method to check the cointegration.

Since the quantile-quantile graphs exhibit approximately straight lines, I can say that the quarterly data for the investment model consist of normal series. Furthermore, autocorrelation analysis with the correlograms for 4 lags show no autocorrelation, i.e. the autocorrelations and partial autocorrelations at all lags are nearly zero. In the end of unit root test, I found an I (1) series of explanatory variables (see Table. 5 in Appendix C). Since I had the set of I (1) variables that are cointegrated, I regressed private investment on the other variables and the result would produce residuals that are I (0). Since the results of Engle-Granger two-step test produce I(0) residuals, I have a long-term relationship among the variables.

Checking the validity of the private investment model, I performed White Heteroskedasticity Test, correlogram method and Chow Test. The result of the White Test was homoskedasticity of the model with the 0.01 significance level. Correlograms show nearly zero autocorrelation and partial correlation for the all lags. Choosing the 3rd quartile of 1998 for the break point of the model, I investigated the constancy of the model with 0.049 probability.

6.2.A. Econometric Results And The Implications Of The Model

Table. 2:

Dependent Variable: LOG(INVPRI)

Variable	Coefficient	T-Statistic
C	15.99	2.15**
LOG(GDP(-4))	2,00	3.49***
LOG(REINTWPI[1](-1))	-0.32	-1,42
LOG(WAGES(-5))	-6,18	-6.79***
LOG(GROSSINF(-3))	0,93	5.16***

R^2=0,82 Durbin-Watson Statistic=1.16 F-Statistic=28.03 (P-value=0,00)

Note: *** ;significant at 1% and more, ** :significant at 5%, * :significant at 10%

(1): Calculated as $[[(1+i)/(1+p)]-1]*100$ where i= compounded nominal interest rate of three month T-bills and p= rate of increase of WPI, both expressed as proportions.

I found all of the independent variables significant except the real interest rates. In the previous model I found a positive relation between the capital inflows and the real exchange rate which suggests that capital inflow cause the appreciation of real exchange rates. Due to appreciation of the real exchange rates,

the price of imports for the intermediate goods decreases so this raise in the imports seem to cause to an increase of the private investment.

The coefficient of GDP exhibits a positive sign because the increase in the level of GDP increases the capital sources for investment so it provokes investment. On the other hand, I observed a negative sign for the real interest rates. Yet, this relation fails to be significant.

Our findings show that there is a negative relation between wages and investment and it has a very high coefficient for our model so it implies a high impact on investment. Appreciation of the real exchange rate reduces the competitiveness of Turkey so the reduction of cost by the decrease of wages is the only remedy of the investors to keep their position in the international markets.

Since capital inflows in Turkey come through the banking sector and they are mostly in the form of portfolio investments, efficient distribution of the funds for investment requires an efficient banking system. However, besides its weaknesses, Turkish banking system mostly focus on investing in government securities rather than providing credit to the private sector investments because of the safe and high returns of these securities. Therefore, the empirical estimation for the investment model gives a positive but small coefficient, which shows the weak positive effect of the capital inflows on the private investment and proves the inefficiency of the credit distribution system for Turkey. Furthermore, I observed that funds for investment leak mostly to the non-tradeable goods rather than

tradeable intermediate goods making the impact of the capital inflows to be weak on the private investment.

7 Concluding Comments

The neo-liberal contemplation over financial liberalization is that an open and unregulated capital account is growth-inducive, leading to increased availability of loanable funds and enabling transfer of foreign technology. Accordingly, freed from the strangulation of "financial repression", financial intermediaries would be able to work more efficiently, bringing savers and investors together at lower cost.

These expectations, however, have been challenged by the crisis episodes of the last two decades. Both the numerous empirical case studies and the policy lessons of the Mexican, Turkish, Argentinean, and more recently East Asian experiences revealed that the expected beneficial effects of capital inflows have been overshadowed by the adverse impacts of excessive stock market volatility and the persistence of exchange rate risk against unforeseen fluctuations in the exchange rates. In fact, large capital inflows as witnessed in recent years have posed serious dilemmas and created significant policy challenges. The recent history of the financial crises in the "successful emerging markets" have clearly disclosed the undesirable macroeconomic effects of the large, uncontrolled capital inflows, such as persistence of high real interest rates, inflationary pressures, limitation of the power of the central banks to contain the pressures of monetary

expansion and of the threat of currency substitution, real exchange rate appreciation, and widening current account deficits.

In this thesis, I attempted to address to these concerns within the realm of the Turkish experience following its capital account liberalization in 1989. I identified capital inflows exclusively with the portfolio investments of residents and non-residents abroad, and using time-series econometrics, I searched for the macro economic variables that best explain the behavior of capital inflows over 1992 to 2002. I further investigated the changing nature of the private investment function under post-capital account liberalization and studied its correlation with capital flows and the key macro economic prices, such as the exchange rate, the real rate of interest, and real wages.

My results suggest that the financial capital inflows have a significant negative correlation with the industrial production index, and are positively correlated with real currency appreciation and trade openness. I also found that the capital inflows have a positive relationship with the stock exchange index and with the one-month lagged value of inflows themselves. The rate of interest and the PSBR failed to display statistically significant results, even though their coefficients were of the expected sign.

Fixed private investment was found to have a positive relationship with financial capital inflows, but this was observed to be mostly due to an accumulation pattern towards non-traded sectors via currency appreciation. The dependence of investments over exchange rate appreciation via speculative

financial flows highlights the speculative-led growth path of the Turkish economy over the 1990s.

Finally, real wage costs were observed to carry a significant negative relationship with private investment. My interpretation of this result was that at a time of currency appreciation, investors had to rely on declining wage costs in order to keep their export competitiveness. Under the volatile and uncertain conditions of speculation-driven investment patterns, the downward flexibility of real wages has to be seen as a concomitant factor of the post-financial liberalization episodes. This finding also led us to hypothesize that in order to combat the detrimental consequences of the volatile patterns of aggregate demand, financial globalization would directly warrant suppression of the remunerations of wage-labor, since under conditions of currency appreciation and increasingly high real rates of interest, the whole burden of adjustment would necessarily fall on the downward flexibility of labor costs. The detailed pursuit of this theme across other emerging market economies has to be seen as an agenda of future research.

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APPENDIX A

Table. 3:

Characteristics of Capital Flows in Turkey

	1985	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1- FOREIGN DIRECT INVESTMENT (NET)	**99**	**354**	**663**	**700**	**783**	**779**	**622**	**559**	**772**	**612**	**554**	**573**	**138**	**112**	**2769**
2- PORTFOLIO INVESTMENT (NET)	**0**	**1178**	**1386**	**547**	**623**	**2411**	**3917**	**1158**	**237**	**570**	**1634**	**-6711**	**3429**	**1022**	**-4515**
a- ASSETS	**0**	**-6**	**-59**	**-134**	**-91**	**-754**	**-563**	**35**	**-466**	**-1380**	**-710**	**-1622**	**-759**	**-593**	**-788**
SECURITIES	**0**	**-6**	**-59**	**-134**	**-91**	**-754**	**-563**	**35**	**-466**	**-1380**	**-710**	**-1622**	**-759**	**-593**	**-788**
INFLOW (Security sales of residents abroad)	0	0	0	0	0	1859	4686	6147	2815	5304	3828	3356	4605	20188	11423
OUTFLOW (Security purchases of residents abroad)	0	0	0	0	0	-2613	-5249	-6112	-3281	-6684	-4538	-4978	-5364	-20781	-12211
b-LIABILITIES	**0**	**1184**	**1445**	**681**	**714**	**3165**	**4480**	**1123**	**703**	**1950**	**2344**	**-5089**	**4188**	**1615**	**-3727**
SECURITIES	**0**	**0**	**17**	**89**	**147**	**359**	**753**	**1024**	**317**	**619**	**570**	**-4510**	**968**	**-4637**	**-3823**
INFLOW(Securities purchases of nonresidents in Turkey)	0	0	0	0	0	463	1287	1942	1298	1653	2499	10137	3738	2971	3300
OUTFLOW(Securities sales of nonresidents in Turkey)	0	0	0	0	0	-104	-534	-918	-981	-1034	-1929	-14647	-2770	-7608	-7123

Table. 3 (cont'd):

3- SHORT-TERM CAPITAL MOVEMENTS	**1479**	**-2281**	**-584**	**3000**	**-3020**	**1396**	**2994**	**-5190**	**3635**	**2665**	**-7**	**1313**	**1024**	**4200**	**-11321**
BANKS	296	-43	-29	1014	663	2404	3782	-6601	801	769	724	63	2070	4741	-7052
Loans Received	0	0	0	0	43186	64767	122053	75439	76427	8824	19110	19288	122673	209432	110270
Repayments	0	0	0	0	-42523	-62363	-118271	-82040	-75626	-8055	-18386	-19225	-120603	-204691	-117322
4. NET ERRORS AND OMISSIONS	**-837**	**515**	**971**	**-468**	**948**	**-1190**	**-2162**	**1832**	**2432**	**1499**	**-987**	**-697**	**1631**	**-2788**	**-2122**

MEMO ITEMS *(As a Percentage of the GNP)*

CURRENT ACCOUNT BALANCE	-1.9	1.8	0.9	-1.7	0.2	-0.6	-3.6	2.0	-1.4	-1.3	-1.4	1.0	-0.7	-4.8	1.4
PSBR	3.6	4.8	5.3	7.4	10.2	10.6	12.0	7.9	5.0	8.6	7.7	9.4	15.6	12.5	16.4
OUTSTANDING DOMESTIC DEBT	3.5	5.7	6.3	7.0	8.1	11.7	12.8	14.0	14.6	18.8	21.4	22.5	29.3	28.7	68.1[1]
TOTAL ASSETS ISSUED	5.5	7.8	8.7	6.5	8.5	17.6	20.6	24.8	21.9	36.3	23.9	30.4	39.8	42.1	74.3
Public Sector	5.1	6.9	7.7	5.5	7.4	15.9	16.8	22.7	19.8	35.3	22.9	29.4	38.7	37.5	68.5
Private Sector	0.4	0.9	1.0	1.0	1.0	1.7	3.8	2.1	2.1	1.0	1.0	1.0	1.1	4.6	5.8
BANKING SECTOR CREDITS	10.9	17.6	16.1	16.5	12.4	12.7	14.0	13.3	16.5	18.5	21.7	19.4	20.1	20.4	20.1
Real rate of growth of GNP (%)	4.3	1.5	1.6	9.4	0.3	6.4	8.1	-6.1	8.0	7.1	8.3	3.9	-6.1	6.3	-9.4

Sources: State Planning Organization, The Central Bank of the Turkish Republic

(1) Estimated

APPENDIX B

Table. 4:

Variable	ADF Test	Order of Integration
LOG(GROSSINF)	-3.31	1
LOG(STOCK)	-4.00	1
LOG(REALINTWPI)	-2.62	1
LOG(RER)	-4.92	1
DUM94*LOG(RER)	-3.45	1
DUM2001*LOG(RER)	-3.88	1
DUM98*LOG(RER)	-3.75	1
LOG(PSBRGNP)	-8.33	1
LOG(IP)	-2.63	1
LOG(GROSSINF)	-3.20	1
LOG(OPENNESS)	-2.12	1
LOG(RATIO)	-3.39	1

APPENDIX C

Table. 5:

Variable	ADF Test	Order of Integration
LOG(INVPRI)	-5.22	1
LOG(GDP(-4))	-20.60	1
LOG(REINTWPI[1](-3))	-3.55	1
LOG(WAGES(-3))	-3.07	1
LOG(GROSSINF(-1))	-4.36	1

APPENDIX D

Table. 6:

Dependent Variable: LOG(GROSSINF)

Variable	Coefficient	T-Statistic
C	3.65	1.00
LOG(STOCK(-2))	0.32	5.77***
LOG(REALINTWPI(-6))	0.20	2.43**
LOG(RER(-2))	1.88	2.81***
DUM94*LOG(RER(-2))	0.05	1.44
DUM2001*LOG(RER(-2))	0.03	-0.36
DUM98*LOG(RER(-2))	0.22	4.53***
LOG(PSBRGNP(-3))	-0.13	-1.68*
LOG(IP(-1))	-1.90	-2.59***
LOG(GROSSINF(-1))	0.24	2.67***
LOG(OPENNESS(-1))	1.22	2.80***
LOG(M2yRE(-6))	0.97	4.34***

R^2=0.69 Durbin-Watson Statistic=1.80 F-Statistic=17,01 (P-value=0,00)

Note: *** ;significant at 1% and more, ** :significant at 5%, * :significant at 10%

(1): Calculated as $[[(1+i)/(1+p)]-1]*100$ where i= nominal compounded interest rate

of three month T-bills and p= rate of increase of WPI, both expressed as proportions.