Capital Flight, Capital Account Liberalization and Investment: The Case of Turkey

A. Yasemin YALTA

Fordham University, New York

December, 2006

Abstract

One of the challenges for developing countries is to attract foreign capital flows in order to finance investment or rising debt flows. However, the phenomenon of capital flight observed in many developing countries indicates that the scarce capital in these countries is constantly fleeing to the other countries, worsening financing problems. In this paper, I present capital flight estimates for Turkey for the period between 1970-2001 by using the so-called residual method after proposing some modifications. Capital flight estimates calculated by this method shows that capital flight as a share of GDP has been between -7 and 12 per cent, which is higher than foreign direct investment inflows to Turkey during the same period. Afterwards, I examine the effect of capital flight on gross domestic investment by applying the error correction method. The estimation results suggest that capital flight has a negative impact on capital flight, which implies an adverse impact on growth potential and increases in external debt to maintain the level of investment.
(JEL Classification: F29, F40)

Keywords: Capital flight, investment, capital flows

1   Introduction

Economic theory suggests that freely moving capital flows can promote investment and growth, improve the allocation of resources globally and promote financial development. It is, therefore, very important for emerging markets to attract capital flows from developed countries. However, capital flight observed in many developing countries indicates that scarce capital in these countries is fleeing to the developed countries, worsening their financing problems and making debt servicing more difficult and costly. Capital flight is a concern for capital-scarce developing countries as capital loss usually reduce investment. It is also assumed that if these funds can be held at home, they can be utilized to reduce the level of external indebtedness and the inherent liquidity constraints in bridging the foreign-exchange gap. Furthermore, it is feared that the flight of capital from developing countries may send a signal to foreign private investors about the risks involved and lead to a decline in, or even cessation of, private capital flows (Schneider,

2003). The loss of capital through capital flight erodes the domestic tax base in developing countries. Capital flight is also likely to have adverse impacts on equality, as it enables wealthy citizens to evade higher taxation, or lower after tax returns at home, while the poorer citizens face higher tax rates and cuts in social services. Moreover, with the existence of capital flight financial crises become more costly due to higher unemployment and slower economic growth. Because of these adverse effects, capital flight has come to be seen as a major problem especially for the highly indebted developing countries.

Turkey is a highly indebted country, which relies on capital flows to finance this debt. Therefore, it is important to analyze the magnitude and burden of capital flight as well as the impacts of it on the real economy. Most of the existing research on capital flight focuses on the Latin American countries, which experienced severe capital flight during the 1980s. On the other hand, there are only a few studies specifically done to identify the capital flight problem in Turkey and most of these studies investigate the determinants of capital flight rather than the effect of capital flight on the real economy. McDonald (1999) reviews the major definitions and the determinants of capital flight and finds that capital controls in the country, deficit to GNP ratio, overvaluation of the Turkish lira and interest rate differentials between Turkey and Germany are the key determinants of capital flight from Turkey. Duman et al. (2005) also investigate the determinants of capital flight from Turkey between 1971 and 2000 and conclude that macroeconomic imbalances and political instability are the main determinants of capital flight. They also point out that capital flight has surged along with financial crises and capital flight increased after financial liberalization. Demir (2004) shows that there exists a bi-directional relation between external debt flows and capital flight in Turkey and argues that increasing external wealth of the few people has been made possible by the increasing external indebtedness.

I explore two issues related to capital flight. First of all, I present revised capital flight estimates for Turkey for the period 1975 and 2001. I define capital flight as the "unrecorded capital outflows by the residents of the country" and measure it by using the residual method, which views capital flight as the discrepancy between the sources and uses of capital flows. Capital flight estimates calculated by this method show that amount of capital flight from Turkey has been of moderate size, changing between -7 and 12 per cent. However, looking at these numbers can be misleading without comparing these capital flight estimates with key economic indicators. For example, capital flight in 2000 is seven times the total flows of foreign direct investment into Turkey, and ten times of portfolio investment in the same year. Turkey is one of the emerging market economies trying to attract more capital flows to finance investment and debt. Yet, its residents hold more money abroad than the amount of capital that flows in. Thus, this analysis has important policy implications. Provided that necessary policy measures are taken to prevent capital flight, the dependency on foreign financing, which is proven to be volatile and unsustainable, could decrease. Furthermore, the funds which could otherwise leave the country in the form of capital flight could be used to enhance domestic investment.

The second issue I consider is the impact of capital flight on the level of investment. Capital flight reduces investment by constraining domestic savings. Therefore, it represents foregone investment in manufacturing plants, infrastructure, and other productive capacity and impedes economic growth and development. For this reason, it is crucial

to examine the relation between capital flight and investment.

The remainder of this paper is organized in six parts. Section two presents estimates of capital flight by using the residual method. Section three reviews recent Turkish economic history and liberalization experience to shed light on the trends of capital flight. Section four describes the data sources as well as the methodology adopted followed for examining the relationship between capital flight and investment. Section six concludes.

2   Capital Flight Estimates from Turkey

This section reviews the definition and measurement issues related with capital flight and presents estimates of capital flight from Turkey.

One problem a researcher would encounter while surveying the existing literature on capital flight is the lack of a single and widely accepted definition of the term. Actually, what constitutes capital flight is based on one's perspective. Brazilian economist Stephen Charles Kanitz (1984 Renegotiating the Brazilian Debt. Wall Street Journal, September 21, 1984) asked: "Why is it that when an American puts money abroad it is called foreign investment and when an Argentinian does the same it is called capital flight?" The answer lies in the fact that to differentiate capital flight from capital outflows, several criteria based on volume, motive and direction of the capital flows have been used.

Various studies distinguish capital flight from normal capital outflows and relate capital flight to the "abnormal" nature of capital outflows. (Dooley, 1986; Kindleberger, 1965). Dooley (1986) considers the intention for capital outflows and sees capital flight as all capital outflows based on the desire to place wealth beyond the control of the domestic authorities. Therefore, as long as capital outflows are reported to the authorities, they are not considered capital flight. Kindleberger (1965) also makes a distinction between normal and abnormal capital flows and defines capital flight as "an abnormal capital movement that takes place from a country with a higher rate of interest to a country with a lower rate of interest". According to this approach, capital outflows from developed countries are viewed as the result of portfolio diversification, while capital outflows undertaken by residents in the developing countries are considered to be capital flight.

Some other studies, however, argue that since it is empirically difficult to differentiate between normal and abnormal capital flows, capital flight should not be distinguished from normal capital outflows (World Bank, 1985; Morgan Guaranty Trust Company, 1986). These studies view capital flight as the "residual" between sources and uses of capital flows.

In this study I use the definition adopted by World Bank (1985) and do not distinguish normal capital flows from abnormal capital flows and define capital flight as "unrecorded capital outflows by the residents of a country." Unlike some of the previous studies, which concentrates on the general investment climate as a cause of capital flight, I stress the discriminatory treatment of residents' capital. According to this model, capital flight occurs as a result of the differential treatment of domestic and foreign capital in terms of taxation, foreign exchange guarantees and priority in the event of a crisis. [1]

---

[1]See Lessard and J.Williamson (1987) and Pastor (1990).

Several methods have been proposed in the literature to measure capital flight[2]. Among these different measures, the residual method, which is an indirect balance of payments approach received more attention because it has the advantage of reflecting macroeconomic structure by looking at the debt stock (World Bank, 1985; Cuddington, 1986; Morgan Guaranty Trust Company, 1986; Lensink et al., 2002). This method measures capital flight by comparing the sources of capital inflows (i.e., net increases in external debt and the net inflow of foreign investment) with the uses of capital flows (i.e., the current account deficit and additions to foreign reserves). In order to calculate capital flight estimates, I also adopt the "residual method". The original residual method, which was developed in 1985, has some drawbacks, and over time some modifications to this method have been proposed. However, there is still a deficiency in this measure. It does not differentiate between the change in the stock of foreign debt as is reported in the World Development Tables and the flow of debt as is reported in the Balance of Payments statistics for the country. This mixing of stock and flow concepts leads to overestimation or underestimation of the amount of the capital flight (Dilts et al., 2003). Therefore , I make a modification to provide a better estimate of capital flight. Unlike most of the previous studies which use year to year changes in debt stocks to calculate capital flight, I utilize a direct net flow measure. Most of the previous studies which used changes in external debt ignored currency valuation effects. Boyce and Ndikumana (2001) proposed a methodology to adjust the long-term debt stock for the fluctuations in the exchange rate by using currency compositions. However, even this method cannot account for fictitious flows such as debt forgiveness, new interest arrears and recently capitalized interest. Therefore, using net debt flow data reported by Global Development Finance provides a better estimate of capital flight.

Consequently, capital flight has been measured as the discrepancy between sources and uses of capital flows, as described in the following equation:

$$KF_i = D_i + FI_i + CAS_i - \Delta R_i \qquad (1)$$

where D refers to the total net debt flows, FI is net foreign investment flows (foreign direct investment and portfolio equity flows), CAS is current account surplus and ΔR is the change in foreign reserves.

According to this equation, positive estimates imply capital flight while negative estimates mean unrecorded capital inflows (capital repatriation). Capital flight estimates calculated by this method are shown in the appendix.

2.1   Adjusting Capital Flight Estimates for Trade Misinvoicing

The estimation of capital flight using residual measure relies on the balance of payment statistics and current account data, which can be inaccurately reported in some countries because of systematic faking of trade invoices. Importers are assumed to be involved in capital flight when they report higher values of imported goods as compared to the reported value of the same goods by exporters. In turn, exporters are involved in capital flight when they report lower values of exported goods as compared to the reported

---

[2]For detailed information on different definitions and methods of capital flight, the reader is referred to Lensink et al. (2002) and Schneider (2003)

value of the same goods by importers (Lensink et al., 2002). Since this mechanism was prevalent in Turkey during the 1980s, capital flight estimates should also be adjusted for systematic over and underinvoicing of exports or imports by using the techniques introduced by Bhagwati (1964) and used by Bhagwati et al. (1974). Trade misinvoicing is estimated by comparing country's export and import data to those of its trading partners by using IMFs Direction of Trade Statistics Yearbook. The difference between Turkey's trade data and its trading partners is considered to be an evidence of trade misinvoicing. To adjust for trade misinvoicing, export discrepancies with the trading partners are computed in the following way:

$$XD_t = PX_t - (X_t * CIF_t) \tag{2}$$

where PX is the value of partner countries' imports from Turkey as reported by partner countries, X is Turkey's exports to the other countries as reported by Turkey and CIF is the c.i.f/f.o.b. factor, representing the cost of freight and insurance. A positive sign on XD indicates export underinvoicing. Import discrepancies with the trading partners (DIM) are computed as:

$$DM_t = IM_t - (PM_t * CIF_t) \tag{3}$$

where IM is the Turkey's imports from other countries as reported by Turkey and PM is the other countries' exports to Turkey as reported by those countries. A positive sign on DM indicates net overinvoicing of imports, while a negative sign indicates net underinvoicing.

The total trade misinvoicing is obtained as the sum of export discrepancies and import discrepancies.

Adding trade misinvoicing to the estimate of capital flight from equation (1) we obtain capital flight adjusted for trade misinvoicing ($ADJKF_t$):

$$ADJKF_t = KF_t + MISINV_t \tag{4}$$

2.2   Adjusting Capital Flight Estimates for Inflation

Capital flight estimates are adjusted for inflation by using the U.S. consumer price index to make them comparable across periods. Therefore, real capital flight (RKF_t) is calculated as:

$$RKF_{it} = KF_{it}/CPI_t \tag{5}$$

3   Turkish Economy and Determinants of Capital Flight

Recent Turkish economic history can be divided into three phases reflecting diverse macroeconomic policies implemented. The policies applied at each stage affected the magnitude of capital flight differently. The first stage started in late 1960s with import substitution policies and ended in 1980 with the military coup. The second stage is

marked with trade liberalization and export-led growth strategies, which came to a halt in 1989. In 1989, Turkey fully liberalized its capital account and this led to the third stage, which is characterized by financial openness.

3.1   Import Substitution Phase

The first stage between the 1960s and the 1980s is characterized with import substitution policies. Quantitative restrictions, overvalued exchange rates, rationing on foreign exchange and bank credit characterize this period. During the 1950s and the 1960s, import shortages, public debt, balance of payments problems, high inflation, high unemployment, increasing disparity in the distribution of income and wealth, and high budget deficits were the main economic problems. Together with repressive political measures, these economic problems caused political demonstrations and violence, followed by a military coup in May 1960. The military government devalued Turkish lira, abolished export premiums, increased the importance of central economic planning and embarked on an even stronger policy of import substitution. Cheap state credit, limited export subsidies and the overvalued lira spurred strong growth in domestic industries, but only at the expense of large public sector losses and constrained deficit financing (McDonald, 1999).

The Turkish economy performed better during the 1970s. In 1970, the government implemented a stabilization program, which included the devaluation of TL and increasing the autonomy of central bank. Economic policies were aimed at expanding domestic production capacity to foster industrialization. These policies were implemented via SEEs and the government controlled the price of goods produced by SEEs. However, these price controls together with the additional pressure created by the oil crisis led to increases in budget deficit, which had been financed via resorting heavily to the Central Bank and external short-term borrowing. During 1972-78, the budget deficit increased from -1.67 per cent to -3.34 per cent.

The inflation rate also increased because of the increase in exports and remittances. Devaluation helped boost Turkey's foreign currency reserves through increased remittances and exports (Uyar, 1996). These increased reserves helped the government to meet the first international oil crisis of 1973-74 initially. However, as the government started to back away from the key aspects of the economic program, the situation reversed and Turkey had to increase borrowing and deplete its foreign currency reserves.

The import substitution strategy relied on imported raw materials, which led to the deterioration of terms of trade. Current account balance deteriorated from 0.11 per cent in 1972 to -4.57 per cent in 1978. This deterioration caused a huge burden on the balance of payments, while the additional burden was compensated by short term borrowing (Central Bank, 2001). This severe deterioration resulted in payments crisis and required suspension of foreign exchange transfers for imports. The current account deficit was no longer sustainable by 1976 and the deficit doubled in 1977. By 1977, foreign currency reserves had been severely depleted and the Lira overvalued again. From 1977 onwards, since the required amount of imports could not be realized in due time, there appeared problems in the labor market and important difficulties emerged on the supply side. On the demand side, expansionary fiscal policy was maintained. Imbalances in aggregate supply and aggregate demand accelerated the already increasing inflation (Central Bank,

2001). Measures taken to solve these problems were inadequate.

Import-substitution policies reached the limit beginning 1976, when keeping up the investment drive and financing the consequent current account deficits became increasingly difficult. The second oil crisis also affected Turkey harshly. Exports and foreign exchange earnings decreased and imports increased, leading to inflationary pressures. By 1980, unemployment surpassed 15 per cent, inflation was running above 100 per cent, the industrial capacity utilization was below 50 per cent and the Turkish government was unable to meet foreign interest payments (McDonald, 1999). The high inflation and other economic problems eroded the confidence in the government and eventually contributed to civil unrest. The government tried to solve these problems with an orthodox stabilization package in 1980. The program designed by IMF-WB aimed at stabilizing and liberalizing the closed, inward oriented economic structure in Turkey and shifting it to an outward oriented path of development. The main policy objectives of the program were controlling high inflation rates, improving the distribution of income, opening the economy and implementation of an export oriented growth strategy instead of import substitution. The program included devaluation of TL, adoption of a flexible exchange rate policy, reduction of quantitative restrictions and gradual import liberalization.

3.2   Export Led Growth

With the announcement of January 24th Decisions in 1980, the second stage started, which is considered to be a cornerstone in the modern economic history of Turkey. The main characteristics of this phase were export promotion with strong subsidy components and gradually phased import liberalization, together with the managed floating of the exchange rate and regulated capital movements (Boratav and Yeldan, 2001)). In this period, liberalization of foreign trade regime took place, which was characterized by the removal of exchange controls, expansion of export incentives and subsidies, adoption of special policies to attract FDI, liberalization of market interest rates to encourage savings, privatization of SEEs and shifting from income transfers to price mechanisms. After 1980, interest rates increased as the government deregulated financial markets.

One of the major steps to deregulate the financial system was taken on July 1, 1980 when the government removed all controls on commercial bank interest rates and allowed them to be determined by market forces. However, these initial stages of financial liberalization were not successful and resulted in an immediate crisis in 1982, when many money brokers, who engaged in financial intermediation by offering high interest rates to savers, collapsed together with a number of smaller.

This export-led growth strategy proved to be effective in improving current account balance. During 1980-87 total exports grew at an average annual rate of 22.3 per cent and current account deficit decreased to -0.89 per cent of GDP in 19881. Gross domestic product rose at annual rate of 6.5 percent. However, inflation rate continued to increase during this period because of the increasing budget deficits, expansionary monetary policy and SEE price increases. The inflation rate was 73 per cent in 1988. High unemployment rates also persisted. In 1988, the unemployment rate was 11 per cent but it increased to 15 per cent in 19852. In 1987, Ozal government has relaxed its financial discipline because of upcoming elections. Negative interest rates and inflationary pressures led to expectations of devaluation, thereby creating an incentive to flee

capital out of the country.

On February 4th, 1988, another package of economic reforms began to be implemented in order to reduce external and internal imbalances. The government adopted restrictive monetary and fiscal policies, raising bank reserve and liquidity ratios specifically to prevent capital flight. These measures produced the expected results and the demand for Turkish lira deposits increased. Also, the spread between official and black market exchange rates was almost eliminated by April, 1988 (McDonald, 1999). However, this export-led growth path, which was dependent on wage suppression, depreciation of the domestic currency, and extremely generous export subsidies reached its economic and political limits by 1988. The way out of the impasse turned out to be the liberalization of the capital account in 1989, and finally the full convertibility of the Turkish lira was realized at the beginning of 1990 (Boratav and Yeldan, 2002).

3.3   Capital Account Liberalization

Capital account liberalization in Turkey was initiated in relation with the process of economic and financial reforms that started in 1980 and was fully completed in 1989 by the liberalization of capital account. In 1990, Turkey accepted IMF article VIII and applied to the IMF for the full convertibility of the lira. This marked the completion of external financial liberalization[3]. Capital account liberalization led to appreciation of TL, which caused a deterioration in trade balance by increasing imports.

During this period, there was an increase in public sector borrowing requirement and inflation. Central Bank and Treasury came to an agreement to constrain Central Bank financing to 15 per cent of total budgetary appropriation. Therefore, domestic borrowing became the main source of borrowing. The government was financing its debt by selling T-Bills. Private banks borrowed abroad, leading to an increase in external debt. However, high rates of public deficit and public debt caused an increase on the interest rates on treasury bills. As a result, public sector borrowing requirement increased to 12 percent in 1993. Inflation rate in this year was 65 percent. Moreover, volatility of inflation rate increased. During the 1990s, the inflation rate averaged 75 percent, while its standard deviation was 13 percent. Because of volatility, Turkish residents fled from TL, and invested in foreign currency denominated assets (Sahbaz and Yeldan, 2004).

Turkey enjoyed large amount of capital inflows in the early 1990s. However, foreign capital flows did not provide significant and dependable funds since a large portion of these flows were in short term capital and there were fluctuations from year to year. Moreover, capital flows made the economy more fragile and vulnerable to the external shocks and contributed to the financial crises in 1994, 1998-99 and 2000-2001. In the January of 1994, Turkey experienced a serious foreign exchange crisis. The chief reasons of the crisis were unsustainable fiscal deficits, high demand accommodating loose monetary policy and the borrowing policy that emphasized high interest rates as well as overvalued currency and short term capital inflows. During this crisis, the TL depreciated by 60 per cent and the Turkish Central Bank lost over 3 billion US dollars of its international reserves. Three small banks collapsed triggering an extensive uncertainty in the whole economy. In order to correct the imbalances, the government

---

[3]See Cizre-Sakallioglu and Yeldan (2000) and Boratav and Yeldan (2002) for a detailed analysis of this period.

introduced a stabilization program, the so-called 5 April measures, which also involved several structural reforms. Although the structural measures proposed in the program did not materialize, the stabilization efforts, which was supported by a stand-by agreement with the IMF, had a positive impact on the economy. Between 1995 and 1997, the economy recovered and GDP increased 7 percent on average. However, 1998 East Asian financial crisis affected Turkey together with many other countries. Net capital inflows decreased and fragility of banking system previously relying on capital flows to buy T-bills increased. High interest rates caused by increasing external debt prevented inflation from going down.

Turkey experienced another financial crisis in November 2000 and February 2001. This crisis actually had more severe effects on the economy. Ozatay and Sak (2002) argue that the root cause of the crisis was the combination of a fragile banking sector and a set of triggering factors. This period was characterized by increasing public sector borrowing requirement, high inflation rates, rapid depreciation of TL and current account deficits.

4   Trends in Capital Flight

The macroeconomic policies applied at each stage affected the magnitude of capital flight differently. During import substitution phase, with the exception of last two years of the decade, Turkey experienced net capital inflows. In May 1975, the Turkish government allowed nonresidents as well as residents to have accounts in Turkish banks, earning a rate 1.75 per cent higher than the equivalent Euromarket rates. The Central Bank also guaranteed the principal and interest payments against exchange rate changes. These measures attracted foreign money into the country until the 2nd half of 1976. However, in 1977 because of the worsening economic conditions, foreign funds flowing to Turkey decreased significantly.

During this first phase, the level of capital flight on average was low because of the inward looking, domestic demand-led industrialization policy (ISI). The annual average of capital flight was around 16 million US $. Real capital flight peaks in 1977 by reaching 233 million USD. Real capital flight as a percentage of GDP ranged between 13.29 per cent and -4.22 per cent. Again the share of capital flight to GDP was the highest in 1977. This represents the opportunity cost of capital flight in terms of economic activity (See figure 2).

Trade misinvoicing was not one of the important factors leading to capital flight. Importers underinvoiced their imports to avoid tariff quotas and exporters overinvoiced their exports to take advantage of government subsidies and tax breaks. It was also observed that some trading companies were reporting non-existing exports to benefit from the subsidies (See figure 3).

The stabilization package implemented in 1980, proved to be helpful in regaining the confidence of international creditors (Central Bank, 2001) and as a result capital flows to Turkey increased between 1980 and 1982. However, after 1985, negative interest rates and inflationary pressures led to expectations of devaluation, thereby creating an incentive to flee capital out of the country. Capital flight during this period averaged 2 million US dollars. Capital flight as a percentage of GDP oscillated between -2.73 per

cent and 2.24 per cent.

Trade misinvoicing contributed to capital flight during this phase. In order to encourage exports, corporate tax allowances, tax exemptions on imported goods and preferential and subsidized export credits were provided. Moreover, direct payments were made to the exporters through tax rebates and cash premia from extra budgetary funds. These generous export subsidies given during this period encouraged overinvoicing of exports and reporting non-existing exports. In 1972, 7.8 percent of all exports were overinvoiced. By 1984, this share jumped as high as 25 percent due to generous export subsidies (Duman, Erkin, Unal, 2005) Relaxation of tariffs and regulations during this period increased imports and created incentives for import underinvoicing.

During the 1990s except 1994, capital flight increased substantially as Turkish residents fled from TL because of high and volatile inflation rates, and the expectation of devaluation. However, during the 1994 crisis, there was no capital flight contrary to the expectations. The reason is that residents, especially banks acted in counter-cyclical fashion by eliminating their assets abroad and allocating the funds to cover their losses in Turkey (Boratav and Yeldan, 2002). The amount of capital flight increased during 1998 and 2000 financial crises. In this period, debt flows were used to finance reserve accumulation and capital flight. Therefore, the bidirectional link between capital flight and external debt was clearly observed[4]. External debt has been growing independent of the current account deficit and transferred to finance capital flight.

5 Data Sources and Econometric Methodology

In this paper, the main hypothesis is that capital flight decreases investment by constraining domestic savings. Therefore, in this section I explore this relationship by applying an error correction method.

The data covers the period between 1975 and 2001[5]. For capital flight measure, I use capital flight estimates presented in the previous section by using the residual method. Capital flight and gross capital formation are expressed as ratios of GDP. I also use growth rate of GDP, ratio of M2 to GDP and change in terms of trade. High rates of growth is associated with high levels of investment. It is also expected that M2 to GDP ratio, which is an indicator of the cost and availability of capital, should increase investment. Another variable that could affect investment is the change in terms of trade. Serven (1998) notes that investment in developing countries is negatively affected by terms of trade.

In line with the standard practice with time series analysis, I examine the data properties. First of all, the stationarity properties have been analyzed. Engle and Granger (1987) have shown that if variables X_t and Y_t are integrated of order one, and the stochastic term is stationary, then X_t and Y_t are said to be cointegrated. Since cointegration requires a certain stochastic structure of the time series involved, the degree of integratedness of data series should be checked by applying Augmented Dickey Fuller Test (ADF).This test is based on the estimate of the following regression:

---

[4]Demir (2004) provides a detailed analysis of the link between capital flight and external debt. He argues that the bulk of Turkey's interest bills to banks for debt service ends up as interest, rent, and profit income for Turkish residents who hold assets abroad.

[5]Variable definitions and data sources are presented in the appendix.

$$\Delta Y_t = \alpha + \rho y_{t-1} + \Sigma \beta_j \Delta y_{t-1} + e_t \tag{6}$$

where α is a drift, t represents a time trend, and p is a lag length. If the null hypothesis, $H_o : \rho = 1$, is rejected, then Y_t is said to be stationary. Since the computed test statistics does not follow a standard t-distribution, McKinnon critical values are used. The lag length is determined by using the Schwarz criterion.

The results from ADF tests are presented in table 2. The unit root tests state that capital flight variable is stationary in its level, while investment is stationary after first differencing. We know that for time series to be cointegrated, all series must have the same order of integration. However, it should be noted that if X_t is stationary, ΔX_t should also be stationary as suggested by Enders (1995). Therefore, a cointegration test can be applied.

I use a Johansen-cointegration test to check whether the variables are cointegrated. This procedure leads to two test statistics for cointegration: Trace test and maximum eigenvalue test. The trace test tests the hypothesis that there are at most r cointegrating vectors, while the maximum eigenvalue test tests the hypothesis that there are $r + 1$ cointegrating vectors versus the hypothesis that there are r cointegrating vectors. The results of Johansen cointegration test indicate that there are two cointegrating vectors, indicating a relation between capital flight and investment.

The next step followed is applying an error correction model to detect the direction of causality between the variables. An ECM derived from Johansen test can be generalized as:

$$\Delta X_t = \alpha_1 + \alpha X_{t-1} + \Sigma \alpha_{11}(i) \Delta X_{t-i} + \Sigma \alpha_{12}(i) \Delta Y_{t-i} + \varepsilon_{Xt} \tag{7}$$

$$\Delta Y_t = \alpha_2 + \alpha Y_{t-1} + \Sigma \alpha_{21}(i) \Delta X_{t-i} + \Sigma \alpha_{22}(i) \Delta Y_{t-i} + \varepsilon_{Yt} \tag{8}$$

where e_{t-1} is the error correction term lagged one period, $\alpha_{11}(i)$ describes the effect of the lagged value of the variable X on the current value of variable Y, and ε_t are mutually uncorrelated white noise residuals.

Table 4 presents the results from the error correction model. The equation obtained is as follows:

$CF = 0.076\Delta CF_{t-2} + 0.375\Delta CF_{t-1} - 0.520\Delta CAF_{t-1} + 0.139TT + 0.020GR + 0.012M2 + 0.139$

The model has %86 explanatory power. According to this model, capital flight has a negative effect on investment,while investment in the past period and growth rate of GDP increases investment.

6   Conclusion

After conducting a detailed examination of the trends in capital flight by providing an analysis of the three different economic stages of development, I find that burden of capital flight, measured as a percentage of GDP, has been of moderate size in Turkey. While the level of capital flight has not been usually alarming, it is still an important concern that the residents of Turkey move capital abroad at the same time when it

needs the foreign exchange to cover its external liabilities and to finance investment. This reverse resource transfer has significant effects on the economy. It is well known that flight of capital reduces domestic investment by constraining savings and I test this hypothesis by employing an error correction estimation method. My results show that capital flight had a negative impact on investment in Turkey between 1970-2001.

This topic has important policy implications. If Turkey can prevent capital from fleeing, the funds that leave the country can then be used to enhance investment as well as reduce the dependency on foreign capital.

References

Bhagwati J.N., Krueger A., Wibulswasdi C., 1974. Capital flight from LCD's: A statistical analysis. In G. Epstein (Ed.), Illegal Transactions in International Trade, pp. 148–154, North Holland Publishing, Amsterdam.

Boratav K., Yeldan E., 2002. Turkey, 1980-2000: Financial liberalization, Macroeconomic (in)-stability and patterns of distribution, unpublished mimeo.

Boyce J., Ndikumana L., 2001. Is Africa net creditor: New estimates of capital flight from severely indebted Sub-Saharan countries, 1970-96. The Journal of Development Studies 38(2), 27–56.

Cizre-Sakallioglu U., Yeldan E., 2000. Politics, society, and financial liberalization: Turkey in the 1990s. Development and Change 31.

Cuddington J., 1986. Capital flight: Estimates, issues and explanations. Princeton Studies In International Finance 58.

Demir F., 2004. A Failure Story: Politics and financial liberalization in Turkey: Revisiting the revolving door hypothesis. World Development 32, 851–869.

Dilts D., Samavati H., Rahnama-Moghadam M., 2003. An analysis of capital flight from east asian emerging markets: Paradise lost. Journal of Asia Pacific Business 1, 33–49.

Dooley M., 1986. Country specific risk premiums, capital flight and net investment income in selected countries, unpublished manuscript, IMF.

Duman A., Erkin H., Unal F.G., 2005. The Determinants of Capital Flight in Turkey:1971-2000. In G. Epstein (Ed.), Capital Flight and Capital Controls in Developing Countries, chap. 5, pp. 120–141, Edward Elgar Publishing, Northampton.

Enders W., 1995. Applied Econometrics Time Series. Wiley Publishing, New York.

Engle R.F., Granger C.W.J., 1987. Cointegration and error correction: Representation, estimation and testing. Econometrica 55, 251–276.

Kindleberger C., 1965. International short-term capital movements. Sentry Press, New York.

Lensink R., Hermes N., Murinde V., 2002. Flight capital and its reversal for development financing. Discussion Paper 29, United Nations University, WIDER.

Lessard D.R., J.Williamson, 1987. Capital flight and third world debt. Institute for International Economics, Washington, DC.

McDonald G.T., 1999. International Capital Flows: An evaluation of Turkish capital flight. Dissertation.

Morgan Guaranty Trust Company, 1986. LDC capital flight.

Ozatay F., Sak G., 2002. The 2000-2001 financial crisis in Turkey. Conference Proceedings.

Pastor M., 1990. Capital Flight from Latin America. World Development 18(1), 1–18.

Sahbaz U., Yeldan E., 2004. An alternative look at the balance of payments puzzle: Structural decomposition of accounts of 16 Emerging Markets. Conference Proceedings.

Schneider B., 2003. Measuring capital flight:Estimates and interpretations. Overseas Development Institute,Working Paper (194).

Serven L., 1998. Macroeconomic uncertainty and private investment in developing countries-an empirical investigation. Policy Research Working Paper Series 1998, The World Bank, URL http://ideas.repec.org/p/wbk/wbrwps/2035.html.

Uyar B., 1996. Economy and public financing in Turkey in the 1980s. In S. Abizzadeh, M. Yousefi (Eds.), The fiscal system and economic development, Nowa Science Publishing.

World Bank, 1985. World development report.

Appendix A

Table 1: Description of Variables and Data Sources

Variable	Description
Investment (CF)	Gross capital formation divided by GDP. Source: World Development Indicators CD ROM (2004)
GDP Growth (GR)	Change in GDP. Source: World Development Indicators CD ROM (2004)
Broad Money (M2)	M2 as a share of GDP. Source: World Development Indicators CD ROM (2004)
Terms of Trade (TT)	Log difference in net barter terms of trade.Source: World Development Indicators CD ROM (2004)
Capital Flight (CF)	Author's calculation. Capital flight is calculated according to residual method. See text. Debt flows data is from Global Development Finance CD ROM (2004), other data is from World Development Indicators CD ROM (2004)
Trade Misinvoicing (TM)	Author's calculations. Sources: IMF Direction of Trade Statistics and International Financial Statistics.

Table 2: Trade Misinvoicing in Turkey, 1970-2001 (millions of dollars)

Year	Export Misinvoicing	Import Misinvoicing	Total Trade Misinvoicing
1970	-65	-265	-330
1971	-100	-178	-278
1972	-149	-145	-294
1973	-178	-249	-427
1974	-207	206	-2
1975	-23	629	607
1976	-138	418	280
1977	-12	1260	1248
1978	-174	673	499
1979	111	512	623
1980	-166	1887	1721
1981	-357	295	-62
1982	-298	261	-37
1983	-257	308	52
1984	-882	115	-767
1985	-511	-197	-708
1986	-11	-140	-151
1987	-970	-778	-1748
1988	-734	-488	-1222
1989	1481	1236	2718
1990	281	970	1251
1991	1235	276	1511
1992	628	-728	-100
1993	814	1651	2465
1994	-590	631	41
1995	-706	2441	1735
1996	-783	2844	2061
1997	-3079	2526	-553
1998	-1738	2090	352
1999	-1637	-73	-1710
2000	-74	775	701
2001	-975	271	-704

Table 3. Augmented Dickey Fuller Test Results

	Level			
	Intercept		Trend & Intercept	
	Test Statistic	Critical Value	Test Statistic	Critical Value
CF	-2.4464 (0)	-2.9511	-2.0925 (0)	-3.5875
CAF	-6.6327 (0)	-2.9540	-4.0236 (1)	-3.5875
GR	-2.3792 (0)	-2.9918	-2.1853 (0)	-3.6450
M2	-0.0791 (0)	-2.9484	-0.6833 (0)	-3.5875
TT	-6.6327 (0)	-2.9484	-5.1847 (0)	-3.5875

First Differences

Variables	Test Statistic	Critical Value
CF	-7.7024 (0)	-2.9540
CAF	-7.3179 (1)	-2.9604
GR	-4.2367 (1)	-2.9511
M2	-4.7643 (0)	-2.9511
TT	-6.7374 (1)	-2.9540

Notes: (1)Lags are determined by Schwarz Bayesion criterion, and are in parantheses.

(2)The critical values are based on McKinnon critical values.

(3)Unit root test for the first differences of the series are carried out with only constant.

Table 4: Johansen Cointegration Test

Eigenvalue	Max. Eigenvalue	Trace	Critical value(5%)	Vectors
0	0	0	0	none
0.76	28.63	61.93	47.86	at most 1
0.6	18.26	33.29	29.8	at most 2
0.52	14.54	15.03	15.49	at most 3
0.02	0.49	0.49	3.84	at most 4

Notes: Johansen's maximum eigenvalue and trace tests are used for testing cointegration. The null hypothesis is number of cointegrating vectors is zero. Rejection of the null hypothesis indicates that there is a cointegrating vector.

Table 5: Error Correction Model

Dependent variable CF			
Variable	Coefficient	Standard error	t-statistic
ΔCF_{t-1}	0.076	-0.190	0.3993
ΔCF_{t-2}	0.375	-0.176	2.1332
ΔCAF_{t-1}	-0.520	-0.157	-3.3096
TT	0.139	-0.055	2.5162
GR	0.420	-0.095	4.4305
M2	0.012	-0.040	0.3012
C	0.139	-0.055	2.5162
R-squared	0.86		
Adj. R-squared	0.77		
F-statistic	9.8		

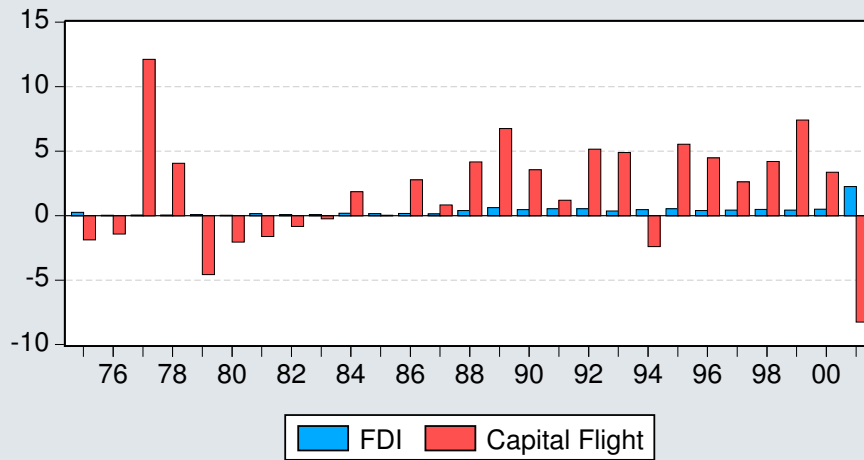Figure 1: Capital Flight and FDI, 1975-2001
(percent of GDP)

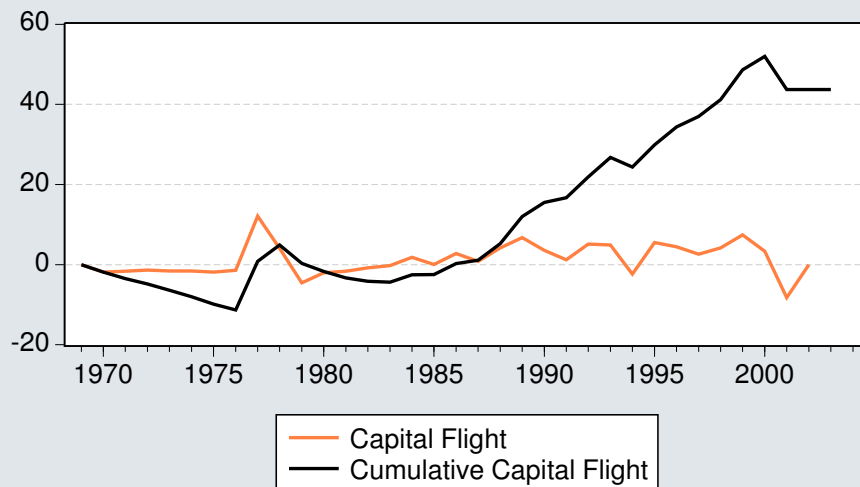Figure 2: Capital Flight from Turkey, 1970-2001
(percent of GDP)

18

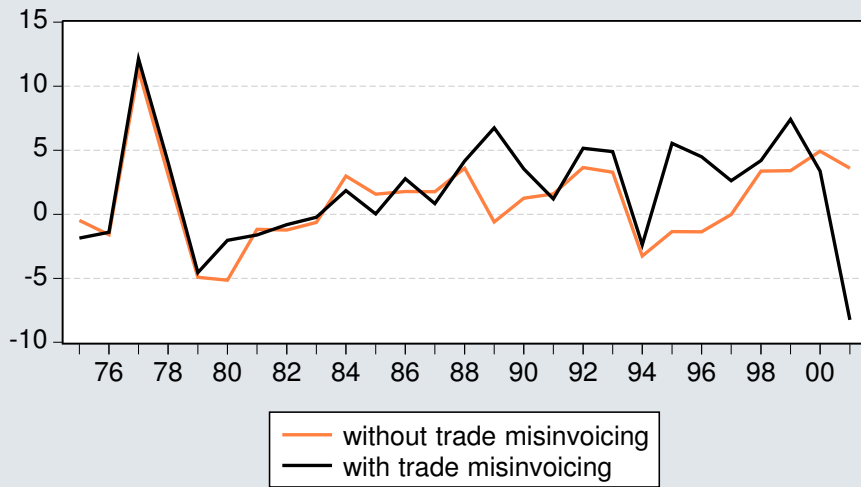Figure 3: Capital Flight From Turkey, 1975-2001
(percent of GDP)

Figure 4: Debt Flows and Capital Flight, 1975-2001
(percent of GDP)