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

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In this paper we investigate the determinants of short-term foreign capital inflows for Turkey following its capital account liberalization in 1989. We identify capital inflows exclusively with the portfolio investments of residents and non-residents abroad, and, using time-series econometrics, we search for the macro economic variables that best explain the behavior of capital inflows over 1992 to 2002. We 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.

Our results suggest that financial capital inflows have a significant negative correlation with the industrial production index, and are positively correlated with real currency appreciation and trade openness. We also found that the capital inflows have a positive relationship with the stock market index and with the one-month lagged value of inflows themselves.

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. Real wage costs were observed to carry a significant negative relationship with private investment, indicating 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..

Key words: *financial capital flows, speculative-led growth, Turkey, private investments*

I. 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, Leiderman, and Reinhart, 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, 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. Furthermore, in such a world of volatile exchange rates, the traditional dictum regarding the global equalization of 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 (1995); 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.

This paper 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. We identify capital inflows exclusively with the portfolio investments of residents and non-residents abroad, and, using time-series econometrics, we search for the macro economic variables that best explain the behavior of capital inflows over 1992 to 2002. We 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 paper is as follows: in the next section we study the historically observed features of foreign (financial) capital inflows in Turkey during the 1990s. The econometric methodology is introduced in section III. Here we use time series econometrics to study the behavior of financial capital flows and private fixed investments against key macro economic indicators. We conclude in section IV.

II. Financial Capital Inflows and Key Macro Economic Indicators of Turkey

Turkey liberalized its capital account in 1989. The maneuver paved the way for injection of liquidity into the domestic asset markets in terms of short-term foreign capital (flows of "hot money"). Net portfolio investments fluctuated abruptly through the 1990s between $3.9 billion (1993) and $-6.7 billion (1998) and $-4.5 (2001). 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. Table 1 summarizes the salient features of the capital flows and the key macro aggregates as affected from such flows.

<Table 1 here>

We focus on three aspects of short-term capital (hot money) inflows; viz., (i) short-term foreign credits obtained by the banking sector, and inflows (ii) due to security sales of residents abroad, and (iii) due to the security purchases of non-residents in Turkey. Data available for the Turkish banking sector's short-term foreign credits date to 1991, and for portfolio investments of residents and non-residents to 1992. It is interesting to note that *net* flows of securities by residents yield a negative figure almost throughout the 1990s, with the exception of 1994. On the liability side, *net* flows of security purchases of non-residents in Turkey yield positive –yet modest- magnitudes until 1997. In 1998 and then again in the aftermath of the November 2000 and February 2001 crises, the *net* balance on non-residents' security purchases item turns severely negative. Thus, summing over 1992 to end-of-2001 one finds that the *cumulative* net flows of securities

by residents and non-residents combined reach to $-15.9 billion. The extend of the net transfer of liquid funds from Turkey to the global financial centers has indeed been substantial.

As for short-term foreign credits received by the banking sector, we note the particular importance of *gross* flows, rather than the *net* acquisitions. *Net* flows are dwarfed by the massive turnover of banking credits in the short-term. Gross inflows of foreign credits obtained by banks reached to $122 billion in 1993 and to $209 billion in 2000. Both of these years were followed by the severe crisis episodes of 1994 and 2001.

We 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.

<Figures 1a, 1b, 1c here>

One of the significant consequences of the hot money flows as identified, pertains to the appreciation of the domestic currency, the Turkish Lira. After the inception of capital account liberalization, the TL is observed to be mostly on an appreciation trend (see Figure 2). Özlale and Yeldan (2002), for instance, report that extend of appreciation of the TL reached to 18% over 1989 to-May 2002.[1]

<Figure 2 here>

Equally important in this regard is the extend of volatility of the real exchange rate movements. Figure 3 discloses this information. It is interesting to note that, except for abrupt spikes during the post-April 1994 and post-February 2001 currency crisis episodes, the band of the exchange rate volatility has been rather small. Especially from may 1995 till February 2001, Turkish economy is observed to operate within a relatively tranquil movement of the real exchange rate.

<Figure 3 here>

According to standard open economy models, increases in consumption and investment are associated with appreciation of the real exchange rates. If the capital flows mostly leak to financing of consumption rather than investment expenditures, it makes real exchange rate appreciation more likely. On the other hand, excessive increase of aggregate demand generates inflationary pressures with real exchange rate appreciation and a 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.

Real 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

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[1] Based on PPP comparison of the TL against the US$, and using the whole sale price index (1989 = 100).

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, Leiderman and Reinhart, 1996; Sarno and Taylor, 1999). 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 exchange rate (Stiglitz, 2000; Taylor, 1998; Calvo, 1998; Diaz-Alejandro, 1985) We portray the path of the real interest rate[2] in post-1990 Turkey in Figure 4.

<Figure 4 here>

In Table 1 we also provide key macro economic aggregates. We 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. 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.

The public sector borrowing requirement (PSBR) constituted another source of fragility. As a ratio to the GNP, the PSBR has been on a continued upward spiral –except for the brief periods of deceleration in 1994/1995 and 1997. Consequently, the stock of domestic debt outstanding rose sharply. In fact, Turkey was already trapped in a Ponzi-situation with net new borrowings reaching to 50% of the existing stock of securitized debt over the decade (Boratav, Yeldan and Köse, 2002; Voyvoda and Yeldan, 2002).

Under these conditions, it is no surprise to witness that the public securities dominated the domestic asset markets, with the share of private sector securities remaining below 1% to the GNP until late in the decade. In contrast, new assets issued by the public sector rose secularly throughout the 1990s, and as a ratio to the GNP reached to 37.5% in 2000. Thus, the observed upward trend of the proportion of direct securities to GNP originated from the direct new issues of public sector securities and Treasury bills. Since the commercial banking system has been the major customer of such securities, however, the share of aggregate security instruments fell in private portfolios. In fact, with the implementation of positive interest rates, and the new possibility of foreign exchange accounts, the advance of financial deepening for the private households has meant increased foreign exchange deposits with vigorous currency substitution. 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. As Akyüz (1990) attests based on this observation, 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.

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[2] Three-month compounded rate of interest on government debt instruments (GDIs) deflated by the wholesale price index (1987=100).

The behavior of banking credits complement this picture. One observes from Table 1 that following the completion of financial liberalization in 1989, the structure of credit financing did not reveal any significant change. Indeed, throughout the course of these events Turkish banks became detached from their conventional functions, and started to act as institutional rentiers. They were able to make huge arbitrage gains when conditions were appropriate (Boratav, Yeldan and Köse, 2002; Öniş and Aysan, 2000; Yentürk, 1999), but became extremely vulnerable to exchange rate risks and to sudden changes in the inflation rate. Total banking credits as a percentage of GNP, actually declined over the initial phase of capital account deregulation, and could have reached the pre-liberalization share only seven years later, in 1996.

Given this structure, Turkey is observed to fit quite closely to the pattern of "speculation-led economic development" which, in Grabel's words, "coupled with the ensuing investor euphoria, (leads) to a general speculative appreciation of asset prices, extremely high real interest rates, and an overall shift in aggregate economic activity towards financial trading and away from industrial activities" (Grabel, 1995: 128).

In the next section, we turn to the econometric investigation of the determinants of hot money flows and their relationship with the private fixed investment behavior in the Turkish context.

III. Econometric Investigation

In this section we study econometrically two related issues: first, we 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, we 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.

III-1. The Relationship Between Financial Capital Inflows and Macro Economic Varables

The time series investigated in the first model are the monthly data of the index of the Istanbul Stock Exchange National-100 (STOCK), the real exchange rate (RER), the real interest rate (REINTWPI), ratio of the public sector borrowing requirement to GNP (PSBRGNP), industrial production index (IP), the degree of trade-openness (OPENNESS), and the ratio of short-term debt to central Bank`s foreign reserves (FRAGILITY). The dependent variable is the gross inflows of short-term foreign financial capital (GROSSINF). It is the sum of portfolio investments by residents' security sales abroad and non-residents' security purchases in Turkey.

All of the variables are monthly observations covering 1992:01 to 2001:12 (120 observations in all). Data on all variables are obtained from the Central Bank of Turkey, except for the interest rate series which is obtained from the State Planning Organization, and the investment series which is obtained from the Undersecretariat of Treasury.

The performance of the stock exchange markets is regarded as one of the key variables in relation with the short-term capital inflows, and the hot money-led speculative stock market bubbles is common parlance in the literature.[3] We use the index of the Istanbul Stock Exchange National-100 as a proxy for capturing this relationship. Real interest rate variable is estimated from the three-month compounded nominal interest rates of T-bills deflated by the whoe sale price index (WPI). To measure the effectiveness of fiscal policy and the effects of fiscal balances, we used the lagged value of the ratio of the public sector-borrowing requirement to GNP. Since the original data was annually, we used seasonal adjustment for this ratio to convert to monthly. We also tried an alternative model with the consolidated budget balance, yet the results showed that the ratio of public sector borrowing to the GNP serves a better explanatory variable than the budget balance. The industrial production index is used to measure whether capital flows are correlated with increase in industrial production. We further 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 GNP.

The ratio of the stock of short-term external debt to the gross international reserves of the central bank (FRAGILITY) is used as a fragility indicator to examine the indebtedness of the country in attracting financial capital flows. Rodrik and Velasco (2000), in their analysis of the causes and consequences of short-term foreign debt in thirty two emerging market economies, report this ratio as a robust predictor of financial crises. They further note that exposure to short-term debt is also likely to affect the severity of a shock once a crisis erupts.

Finally, three dummies were used to capture the effects of the three crises experienced, *viz.* 1994, 1998, and 2001, on the real exchange rate.

The first step in the econometric investigation is to select the appropriate model to estimate financial capital inflows. Akaike Information Criteria (AIC) and Schwarz Information Criteria (SIC) were used for this purpose. We have found that, rather than working with the level-magnitudes, the log-values of the variables improved both the AIC and SIC, and also the R^2. This approach further eliminated the multi-collinearity problem detected for the FRAGILITY and OPENNESS variables. The implementation of the dummy variables in product form was also important in solving the multi-collinearity problem.

As for specification of the short-term financial capital variable, we have also studied two alternatives: the behavior of *net* short-term capital flows and the gross inflows of the banking sector credits. Although these alternative portrayals generated comparable qualitative results with the same signs of the estimated coefficients, we found that both the R^2 and the adjusted-R^2 of the model were rather low, and the AIC and SIC values wre quite high.

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[3] See Balkan and Yeldan (1998) for an analysis of the gross short-term capital inflows and the index of the Istanbul Stock Exchange Market.

Thus, among many alternative specifications, the best model (in terms of the lowest AIC and SIC values) is found as:

$$GROSSINF_t = C + \beta_1 STOCK_{t-2} + \beta_2 REALINTWPI_{t-6} + \beta_3 RER_{t-2} + \beta_4 PSBRGNP_{t-2}$$
$$+ \beta_5 IP_{t-1} + \beta_6 OPENNESS_{t-1} + \beta_7 FRAGILITY_{t-6} + \beta_8 GROSSINF_{t-1}$$
$$+ \beta_9 DUM94 \cdot RER_{t-2} + \beta_{10} DUM98 \cdot RER_{t-2} + \beta_{11} DUM2001 \cdot RER_{t-2} + \varepsilon_t$$

As a further step in diagnostics, we applied heteroskedasticity and unit root tests. With the aim of examining whether the variance of error is affected by any of the regressors, their squares or their cross-products, we performed White Heteroskedasticity Test for the OLS regression. The test for heteroskedasticity is resulted with homoskedasticity of the equation for the hot money model at the 0.05 significance level. Furthermore, we performed Augmented Dickey- Fuller (ADF) Unit Root Test to check the stationarity of the series (see Appendix 1.A). For the overall model, we found a set of I(1) variables. Since such kind of sets produce I(0) disturbance term, we could regress the model without considering further differentiation for the variables to eliminate problems related with non-stationarity.

The simple OLS estimates for the capital inflow equation along with the test statistics are reported in Table 2.

TABLE 2. FINANCIAL CAPITAL INFLOWS: ECONOMETRIC RESULTS

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(FRAGILITY(-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 WP.

The model estimation generates an R^2 of 0.71. Most variables are found significant at 1% level; yet the real rate of interest (lagged 6 months) (REALINTWPI) and the PSBR to GNP ratio (lagged 7 months) (PSBRGNP) fail to be significant even at the 10% threshold.

As expected, both the stock valuation and the real exchange rates are significant and their coefficients have positive sign.[4] A rise in the value of the stock market index can be interpreted as an improvement in the perceived economic and politic conditions of Turkey so it reveals a positive correlation with the capital inflows. Although the estimation result for the real interest rate was not found significant, it has the expected positive sign. The loss of significance here, however, seems to be mostly due to the specification of the model in log-linear form. The rapid escalation of the rate of inflation over certain months cause negative valued real interest rates, and elimination of those data points seem to have reduced the explanatory power of the REALINTWPI variable. In fact a re-run of the model using the consumer prices rather than the WPI as deflator (with more rapid escalation in the former), has produced even lower t-statistics, supporting our intuition.

Likewise, we found that the PSBR fails to be a significant explanatory variable as well. Conceptually, one might argue that the PSBR and capital inflows carry a two-way

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[4] Note that a numerical increase in real exchange rate indicates *appreciation* of the TL. Theoretically, this would enable speculative gains for arbiters of foreign financial capital, hence a positive correlation coefficient is expected.

effect. *On the one hand*, capital inflows in the Turkish context is closely linked with the public sector borrowing requirement, and the eventual increase of public external debt ultimately raises the cost of servicing this debt. The consequent rise of the debt burden increases the public sector deficit, which in turn is securitized with issues of GDIs. Hence, the domestic interest rates tend to rise, attracting a new round of capital inflows. Elements of this vicious cycle are well known and are studied extensively in the Turkish literature.[5] This chain of events would tend to generate a positive relationship between capital inflows and borrowing requirements of the public sector. Yet, *on the other hand,* the size of the PSBR is itself regarded as a fiscal fragility indicator (see e.g. Kaminsky, Lizondo and Reinhart, 1998) and as such, any increase of PSBR is unwelcome news for the international arbiters. In addition to the lack of significance, the rather low elasticity coefficient of the PSBRGNP variable can be taken as suggestion of the presence of these two conflicting effects at work.

Another observation of particular interest is the negative estimate of the industrial production index. With a statistically significant coefficient of –2.06, this result reinforces the notion that in the aftermath of financial liberalization, the expanded capital inflows failed to serve the financing demands of the Turkish industrial sector. Per contra, by inducing the industrialists to engage into rentier type non-industrial activities, the Turkish post-financial liberalization serves as a typical example of the DUP (directly unproductive profit seeking) activities of the so-called rent seeking literature *viz.* Bhagwati, 1987; Krueger, 1974) which, paradoxically, associates such activities with corruption and venality of an excessive bureaucracy.

As a fragility indicator, an increase in the ratio of short-term external debt to the gross international reserves of the central bank is expected to be negatively related with financial capital inflows. The observation that the ratio of short-term debt to international reserves is a robust predictor of financial crises is regarded as an empirical regularity of the recent crisis-prone emerging markets. In the words of Rodrik and Velasco (2000:59), "(a)lmost all countries that suffered financial turmoil in recent years had one thing in common: large ratios of short-term foreign debt to international reserves".

The observed path of the short-term external debt-central bank reserves ratio is given in Figure 5. Note that in the Turkish case, despite the significant improvement of this ratio since the onset of liberalization of the capital account in 1989, it has never fallen below the 100% mark throughout the decade. Thus, the Turkish financial system has been operating constantly in the danger zone for the past twelve ears as far as this indicator is concerned.[6]

<Figure 5 here>

We found the lagged value of the trade openness variable (import plus exports as a ratio to the GNP) to be statistically significant and positive. As a measure of commercial

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[5] See e.g., Boratav, Yeldan and Köse (2002), Özatay (1999), Türel (1999), Selcuk and Rantanen (1996), Atiyas (1995), and Zaim and Taskin (1997).
[6] For comparison, at the outbreak of the financial crisis in Asia in 1997, this ratio was 60% in Malaysia; 90% in Philippines; 150% in Thailand; and 170% in Indonesia.

integration and globalization, any increase in this ratio has a positive relationship with capital inflows, confining our a priori expectations.

The lagged value of the capital inflows itself is also found significant with a positive sign. The dummies for the 1994 and 1998 crisis episodes were significant, yet that of 2001 turned out to be insignificant. A priori, though, one would expect a negative relationship with the crisis dummies and financial capital inflows. The reported positive association seems to be the consequence of the lag-structure of the exchange rate variable. Both the 1994 and 1998 crisis episodes were quite short-lived and the recovery was rather quick. Thus, the implemented 2-month lag on the 1994 and 1998 dummies seems to refer rather to the recovery side of the post-crisis adjustment. This interpretation would as well apply to the reported negative coefficient with regards to the 2001 crisis dummy, in that, the post-2001 crisis conditions were prolonged and the warranted recovery was rather delayed. Yet, the insignificance of the related coefficient gives less confidence for this line of thinking for 2001.

We now turn our attention to the behavior of private fixed investment expenditures in relation to the financial capital flows and other key macro economic variables.

III-2. The Relationship Between Private Investment, Financial Capital Flows and Macroeconomic Prices

Using the same econometric methodology as above, we now test the collienarity of private fixed investments with financial capital flows along with the selected macro variables in the Turkish context. Such an investigation is certainly not limited to a mere theoretical curiosum, as the behavior of private fixed investments over the financial liberalization era is to be regarded as the ultimate object of analysis.

Capital flows are expected to have a positive impact on capital accumulation and growth in three ways: (i) they aid financing trade gaps, (ii) they enhance productivity growth through transfer of foreign technology, and (iii) they are expected to improve allocation of scarce funds. The validity of these channels was highlighted in a recent empirical study by the World Bank (2001). In a large sample of developing countries, the World Bank report a significant positive relationship between aggregate foreign capital inflows and long-term growth. Even so, the Report cautions against the detrimental effects of excessive volatility and highlights capital inflow volatility as a control variable having significant negative impact on growth. The volatility aspect was also stressed in a study by Soto (2000). Soto analyzed a sample of 44 developing countries over 1986-1997, and reported that while FDI and portfolio inflows are significantly positively correlated with growth, bank loans display a negative correlation.

These findings on the potential detrimental effects of the volatility of short term capital flows were already hinted by the analytics in Grabel (1995), Stiglitz (2000), Taylor (1998), Velasco (1987), Bachetta and Wincoop (1998), and the empirical case studies narrated in a series of UNCTAD Reports (see, in particular UNCTAD, 1998 and 2000) and in collected volumes such as Ffrench-Davis (2000), Fanelli and Medhora (1998), Larrain, Laban, and Chumacero (2000), and Caprio, Honohan and Stiglitz (2001).

In the Turkish context, the most recent study on the impact of capital inflows on aggregate spending categories is provided by Ülengin and Yentürk (2001) while Uygur (1999) studied the patterns of aggregate private investments over the post-1989 Turkish economy using time series econometrics. Onaran and Yentürk (2001), on the other hand, focus on the behavior of private manufacturing investments in response to wages and profitability.

Using time series quarterly data from 1987 to 1997, Ülengin and Yentürk ran a series of Granger causality tests and VAR impulse functions, and found that foreign savings had a positive effect on private consumption rather than creating additional resources for investment. Even though Ülengin and Yentürk's results corroborate with the hypotheses of the "volatility machine" literature, the fact that they use the current account deficit as synonymous to foreign savings, restricts their results only to the *net* effects of capital flows. Yet, this approach has the disadvantage of net capital flows having lower significance in relation to the aggregate macro categories in the Turkish context.[7] As such, we argue that the explanatory power embedded in the gross value of capital inflows, rather than their net transfers would be richer (see also Tobin (2000) for a technical appraisal of this issue).

In the construction of our model, we have used the lagged value of the gross domestic product (GDP), the lagged value of the gross inflows of the portfolio investments by the residents and non-residents (the time series of the dependent variable, GROSSINF of the previous section), the lagged value of the real interest rate (REINTWPI), and the lagged value of the real wage rate in private manufacturing (WAGES).

Since data on the investment and wages series were available only in quarterly fashion, we have conducted our analysis using quarterly series of the above variables over 1992.I to 2001.IV. Data on the GROSSINF and REINTWPI are as in the model used in section III-1 above. As for the real wage rate we have used the State planning Organization quarterly data on unit wage index in private manufacturing industry based on the index (1997=100) of the production workers' hourly wages, seasonally adjusted.

We performed White Heteroskedasticity Test and ADF unit root test for an initial examination of the diagnostic properties of the time series involved (see Appendix 1.B) . The result of the White Test was homoskedasticity of the model with the 0.01 significance level. In the end of unit root test, we found an I (1) series of explanatory variables. Since we had the set of I(1) variables that are cointegrated, we regressed private investment on the other variables and the result would produce residuals that are I(0).

The econometric results and the implications of the model are tabulated in Table 3.

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[7] The ratio of the current account deficit to GNP has been on the order of 1% except for the pre-crisis years of 1993 and 2000. As such the size of the current account deficit (net foreign savings) does not stand as an important magnitude within the aggregate macro indicators.

TABLE 3. REAL PRIVATE FIXED INVESTMENTS AND FINANCIAL CAPITAL FLOWS: ECONOMETRIC RESULTS

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.

Our estimation results indicate that, except for the real interest rate, all variables are significant at 1% and above. Portfolio inflows are found to have an elasticity of 0.93 with respect to the private fixed investments, suggesting a positive relationship between the two. A closer look at the composition of private investments, however, disclose the underlying virulent structure of the post-1990 capital accumulation patterns of the Turkish economy. Examining over 1989-2000, one observes that the share of private investments destined to the non-traded sectors such as housing, energy, and transportation outpace those destined for the traded sectors, especially manufacturing. The share of private manufacturing investments, in particular, is observed to suffer from the long-term decline from its peak of 42% in 1972, to 31% in 1982, and to 22% in 2001. Per contra, private housing investment expenditures, after increasing their share from 25% in 1972, to 48% in 1989, seem to stabilize at 40% throughout the 1990s.[8]

The level and composition of private fixed investment expenditures are portrayed in Figure 6. The deceleration of the manufacturing investments against the expansion of non-traded sectors (housing, energy, and transportation) is clearly visible. It was this aspect of the Turkish investment patterns that led Metin-Özcan, Voyvoda and Yeldan (2001) to comment that the main trade off in the post-1980 Turkish economy did not originate from the crowding-out effects of the public over private investments; but occurred at the sectoral level, between the non-traded housing investments and investments in manufacturing.

<Figure 6 here>

Thus, our econometric results while suggest a positive association between financial capital flows and private fixed investments, nevertheless corroborate with

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[8] See Yeldan (2001) for further sectoral detail on private investment behavior. Metin_Özcan, Voyvoda and Yeldan (2001) argue that the shift of emphasis from traded to non-traded fixed investments constitute one of the main anomalies of the post-1980 export-oriented growth strategy of the Turkish economy, leading eventually the demise of the export surge by 1989.

Ülengin and Yentürk's (2001) view that the increase of investments seem to have risen from the accelerator effect of the non-traded goods consumption under currency appreciation. Note that in the previous model we have found a positive correlation between capital inflows and exchange rate appreciation. Due to appreciation of the real exchange rate, the cost of imports of intermediate and capital goods decreases, enabling a rise of private investment demand.

This chain of events, however, necessitates a continuum inflow of hot money into the domestic economy. Any "sudden stop" would lead to a rapid turnover in investments, and a volatile boom-bust cycle is initiated. Thus, the positive effect of the financial capital flows in the Turkish context seems to originate not from an expansion of the loanable funds, but is realized indirectly through short term speculative appreciation of the TL leading to cheapening of import costs. When conditions change and financial capital flows are distracted, however, the major burden of adjustment falls over the investment demand. This dependence of private investment over currency appreciation places the Turkish growth patterns onto the category of "speculative-led growth" a la Grabel (1995).

A striking finding from our econometric investigation pertains to the significant and sizable negative correlation of private fixed investments with the real wage costs. With an elasticity coefficient of –6.18, the globalized private investors seem to have left the *Kaleckian* wage-led investment patterns as argued to be prevalent in Turkey over 1975-1995 by Onaran and Yentürk (2001). Our results suggest that at a time of currency appreciation, in order to keep their export competitiveness, investors had to rely on declining wage costs. 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.

Finally, we have found that real GDP has a positive relationship with investment expenditures, indicating that accelerator principles are at work. Interest rate carries the a priori expected negative coefficient, yet fails to be statistically significant.

IV. Concluding Comments

The neo-liberal contemplation over financial liberalization is that an open and unregulated capital account is growth-induce, 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 paper we attempted to address to these concerns within the realm of the Turkish experience following its capital account liberalization in 1989. We identified capital inflows exclusively with the portfolio investments of residents and non-residents abroad, and using time-series econometrics, we search for the macro economic variables that best explain the behavior of capital inflows over 1992 to 2002. We 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.

Our results suggest that the financial capital inflows have a significant negative correlation wit the industrial production index, and are positively correlated with real currency appreciation and trade openness. We 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. Our 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.

REFERENCES

***Agenor, P., Mcdermott, C. and Ucer, M. (1997) "Fiscal Imbalances, Capital Inflows, and the Real Exchange Rate: The Case of Turkey" IMF Working Paper

Akyüz, Y. (1990) "Financial System and Policies in Turkey in the 1980's" in Aricanli and Rodrik(eds.) *The Political Economy of Turkey*, London and New York, Macmillan.

Akyüz, Y. and Boratav, K. (2002) "The Making of the Turkish Crisis" mimeo. Downloadable from:
http://www.bagimsizsosyalbilimciler.org/yazilar/AkyuzBoratav.htm

Altınkemer, M. (1998) "Capital Inflows and Central Bank's Policy Response" The Central Bank of The Republic of Turkey , Research Department.

Atiyas, I. (1995) "Uneven Governance and Fiscal Failure: The Adjustment Experience of Turkey" chp 9 in L. Frischtak and I. Atiyas (eds) *Governance, Leadership, and Communication: Building Constitutiences for Economic Reform* Washington D.C.: The World Bank.

Bacchetta, P. and Wincoop, E. (1998) "Capital Flows to emerging Markets: Liberalization, Overshooting, and Volatility", NBER Working Paper No.w6530.

Balkan, E. and Yeldan, E. (2002) 'Peripheral development under financial liberalization: The Turkish experience', in N. Balkan (ed) *The Ravages of Neo-Liberalism: Economy, Society and Gender in Turkey*, New York: Nova Science Pub.

Balkan, E. and Yeldan, E. (1998) "Financial Liberalization in Developing Countries: The Turkish Experience" in Medhora, R. and J. Fanelli (ed.s) *Financial Liberalization in Developing Countries* Macmillan Press.

Boratav, K., Yeldan, E and Köse, A. (2002) "Globalization, Distribution And Social Policy: Turkey: 1980-1998" in L. Taylor (ed) *External Liberalization and Social Policy*, London and New York: Oxford University Press

Bello, W., Malhotra, K., Bullard, N. and Mezzera, M. (2000) "Notes on the Ascendancy and Regulation of Speculative Capital" in Bello, W., Malhotra, K., Bullard, N (eds) *Global Finance, New Thinking on Regulating Speculative Capital Markets*, London and New York: Zed Books.

Bhagwati, J. (1987) "Directly Unproductive Profit Seeking (DUP) Activities" *Journal of Political Economy*

Blecker, R. A. (1998) "International Capital Mobility, Macroeconomic Imbalances, and the Risk of Global Contraction" Center for Policy Analysis, New School for Social Research, Working Paper Series III No 5, June.

Calvo, G. (1998) "Capital Flows and Capital-Market Crises: The Simple Economics of Sudden Stops" *Journal of Applied Economics* I(1), November: 35-54.

Calvo, G., Leiderman, L. and Reinhart, C. (1996) "Inflows of Capital to Developing Countries in the 1990s" *The Journal of Economic Perspectives*, 10(2): 123-139.

Calvo, S. and Reinhart, C. (1996) "Capital Flows to Latin America: Is There Evidence of Contagion Effect?", Policy Research Working Paper, the World Bank and IMF.

***Celasun, O., Denizer, C. and He, D. (1999)" Capital Flows, Macroeconomic Management, and Financial System: The Turkish Case, 1989-1997" mimeo.

***Chuhan, P., Perez-Quiros, G. and Popper, H. "International Capital Inflows: Do Short-Term Investment and Direct Investment Differ?" International Economics Department of the World Bank.

***Claessens, S., Dooley, M. and Warner, A. (1995) " Portfolio Capital Flows: Hot or Cold?" World Bank Economic Review, Vol. 9, No. 1.

Caprio, G., Honohan, P. and Stiglitz, J (2001) *Financial Liberalization, How Far? How Fast?* London: Cambridge University Press.

Diaz-Alejandro, Carlos F. (1985) "Good-Bye Financial Repression, Hello Financial Crash" *Journal of Development Economics*, 19:1-24.

Eatwell, John (1996) "International Capital Liberalisation: The Record" Center for Policy Analysis, New School for Social Research, Working Paper Series I, No 1, August.

Fanelli, JM. And Medhora, R. (1998) (ed.s) *Financial Liberalization in Developing Countries* London and New York: Macmillan Press.

Fernandez-Arias, E. and Montiel, P. (1995) " The Surge in Capital Inflows to Developing Countries- Prospect and Policy Response" Policy research Working Paper, The World Bank, 1473.

Ffrench-Davis (2000) (ed) *Financial Crises in 'Successful' Emerging Market Economies*, Washington D.C. Brooking Institute Press

Frankel, Jeffrey A. (1991) "Quantifying International Capital Mobility in the 1980s" in D. Bernheim and J. Shoven (eds) *National saving and Economic Performance*, Chicago: The University of Chicago Press.

Frankel, Jeffrey (1993) "International Financial Integration: Relations between Interest Rates and Exchange Rates" in D. Das (ed) *International Finance: Contemporary Issues*, London: Routledge.

Grabel, Ilene (1995) "Speculation-Led Economic Development: A Post-Keynesian Interpretation of Financial Liberalization Programmes in The Third World" *International Review of Applied Economics* 9(2): 127-249.

*****Günçavdı, Ö. and Bleaney, M. (1996) " Private Investment and Structural Adjustment-A Case Study of Turkey" University of Nottingham, U.K

*****Günçavdı, Ö. and Bleaney, M. (1996) "Finacial Liberalisation and Private Investment: Evidence from Turkey" University of Nottingham, U.K.

Halwood, C. Paul and Ronald MacDonals (1994) *International Money and Finance*, 2nd Edition, London: Blackwell.

Kaminsky, G., Lizondo, L. and Reinhart, C (1998) "Leading Indicators of Currency Crises" *IMF Staff Papers*, 45 (March): 1-48.

Kruger, A. (1974) "The Political Economy of the Rent Seeking Society" *American Economic Review*,

Larrain, F., Laban, M. and Chumacero, R.(2000) " What Determines Capital Flows? An Empirical Analysis for Chile", in Larrain, F. (ed) *Capital Flows, Capital Controls and Currency Crises,* Ann Arbor: The University of Michigan Press.

Marston, R.C. (1993) "Interest Differentials under Bretton Woods and the post-Bretton Woods Float: The Effects of Capital Controls and Exchange Risk" in M. Bordo and B. Eichengreen (eds) *A Retrospective on the Bretton Woods System*, Chicago: The University of Chicago Press.

Metin-Özcan, K., Voyvoda, E. and Yeldan, E. (2001) 'Dynamics of macroeconomic adjustment in a globalized developing economy: growth, accumulation and distribution, Turkey 1969--1998', *Canadian Journal of Development Studies* 22(1): 217--253.

Onaran and Yentürk (2001) "Do Low Wages Stiulate Investment? An Analysis of the Relationship Between Distribution and Investment in Turkish Manufacturing Industry" *International Review of Applied Economics* 15(4):359-374.

Oxfam America (2002) " Global Finance Hurts the Poor" An Oxfam America Report, Washington, D.C.

Öniş, Z. and Aysan, A. (2000) "Neoliberal Globalization, the Nation State and Financial Crises in the Semi-Periphery: A Comparative Analysis" *Third World Quarterly*, 29(1): 119-139.

Özatay, Fatih (1999) "The 1994 Currency Crisis in Turkey," *Policy Reform*, 1(1): 1-26.

Özlale, Ü. And Yeldan, E. (2002) "Measuring Exchange Rate Misalignment in Turkey" Bilkent University, Department of Economics, mimeo.

Rodrik, D. and Velasco, A. (2000) "Short-Term Capital Flows" *Annual World Bank Confference on Development Economics, 1999*, December: 59-90.

Sarno, L. and Taylor, M. (1999) " Hot money, accounting labels and the permanence of capital flows to developing countries: an empirical investigation" Journal of Development Economics, 59: 337-364.

Selçuk, F. and A. Rantanen (1996) *Türkiye'de Kamu Harcamaları ve İç Borç Stoku Üzerine Gözlemler ve Mali Disiplin Üzerine Öneriler*, Istanbul: TUSIAD Publications.

Stiglitz, Joseph (2000) "Capital Market Liberalization, Economic Growth and Instability" *World Development*, 28(6): 1075-1086.

Soto, M. (2000) "Capital Flows and Growth in Developing Countries: Recent Empirical Evidence" Development Center Technical papers, No 160, Paris.

Taylor, Lance (1998) "Lax Public Sector, Destabilizing Private Sector: Origins of Capital Market Crises" Center for Policy Analysis, New School for Social Research, Working Paper Series III No 6 July.

Tobin, J. (2000) "Financial Globalization" *World Development*, vol. 28: 1101-1104.

Türel, Oktar (1999) "Restructuring the Public Sector in Post-1980 Turkey: An Assessment" Middle East Technical University, ERC Working Papers, No. 99/6.

Uygur, E. (1999) "Erratic Growth and Private Investment Behaviour in Turkey" Ankara University, Faculty of Political Science

Ülengin and Yentürk (2001) "Impacts of Capital Inflows on Aggregate Spending Categories: The Turkish case" *Applied Economics*, 33: 1321-1328.

Velasco, Andres (1987) "Financial Crises and Balance of Payments Crises: A Simple Model of Southern Cone Experience" *Journal of Development Economics*, 27(1-2): 263-283, October.

Voyvoda, E. and Yeldan, E. (2002) "Beyond Crisis Adjustment: Investigation of Fiscal Policy Alternatives in an OLG Model of Endogenous Growth for Turkey" paper to be presented at the VI Annual METU Conference on Economics, Sept 10-15, 2002, Ankara.
Available on line at: (www.bilkent.edu.tr/~yeldane/)

World Bank (2001) *Global Development Finance*, Washington D.C.: The World Bank.

Yeldan, Erinc (2001) *Küreselleşme Sürecinde Türkiye Ekonomisi: Bölüşüm, Birikim, Büyüme*, Istanbul: Iletişim Publications.

Yeldan, Erinc (2002) "On the IMF-Directed Disinflation Program in Turkey: A Program for Stabilization and Austerity or a Recipe for Impoverishment and Financial Chaos?" in N. Balkan (ed) *The Ravages of Neo-Liberalism: Economy, Society and Gender in Turkey*, New York: Nova Science Pub.

Yentürk, Nurhan (1999) "Short term Capital Inflows and Their Impact on Macroeconomic Structure: Turkey in the 1990s", *The Developing Economies*, 37(1): 89-113.

Zaim, Osman and Fatma Taşkın (1997) "The Comparative Performance of the Public Enterprise Sector in Turkey: A Malmquist Productivity Index" *Journal of Comparative Economics*, 25: 129-157.

APPENDIX 1.A

Variable	ADF Test	Order of Integration
LOG(GROSSINF)	-3.31	1
LOG(STOCK)	-4.00	1
LOG(REINTWPI)	-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 1.B

Variable	ADF Test	Order of Integration
LOG(INVPRI)	-5.22	1
LOG(GDP(-4))	-20.60	1
LOG(REINTWPI(-3))	-3.22	1
LOG(WAGES(-3))	-3.07	1
LOG(GROSSINF(-1))	-4.36	1

Table 1. 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
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

Figure 1a. Portfolio Investments: SecuritiesSales (Inflows) and Purchases (Outflows) by Residents, Abroad
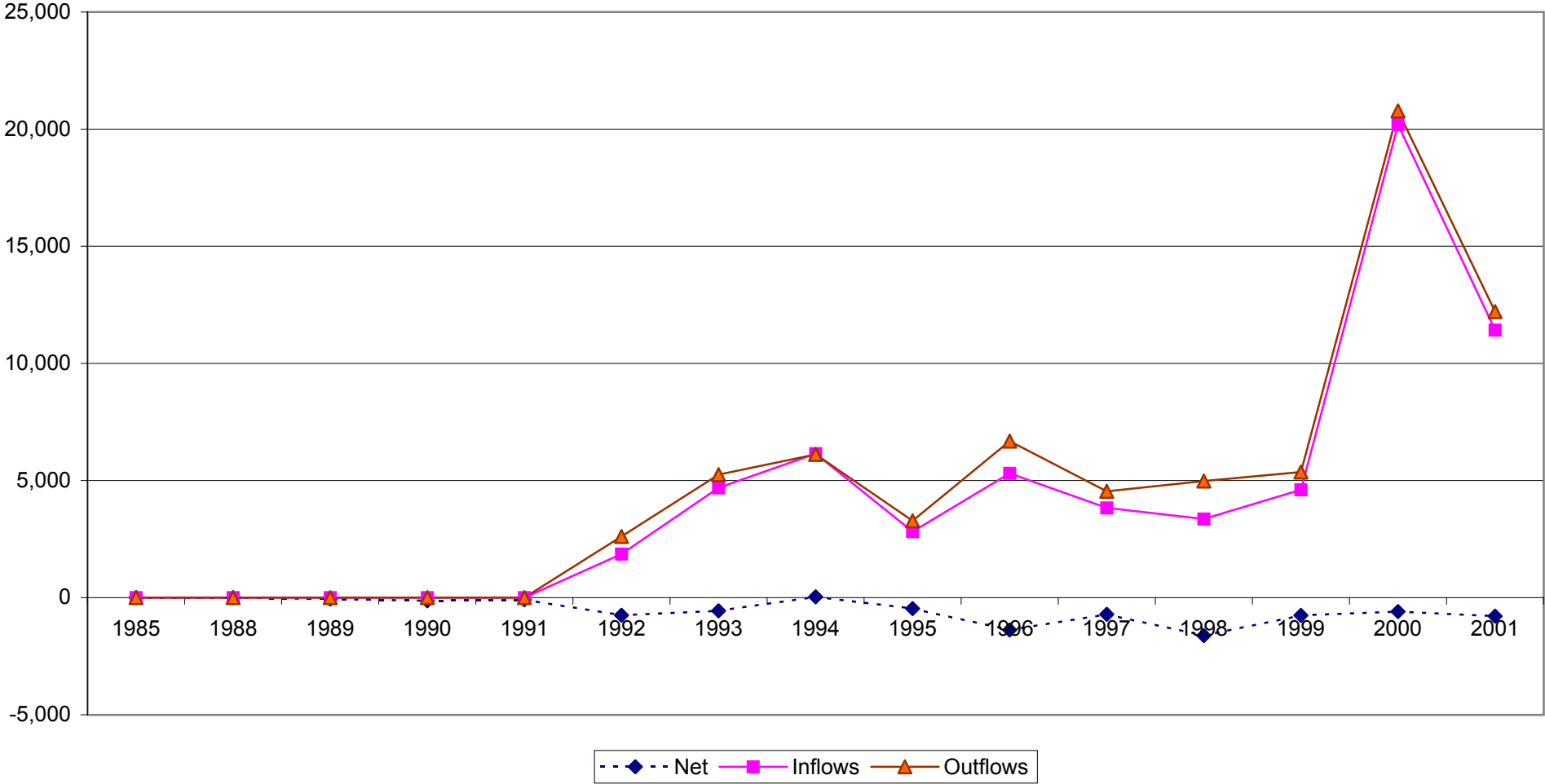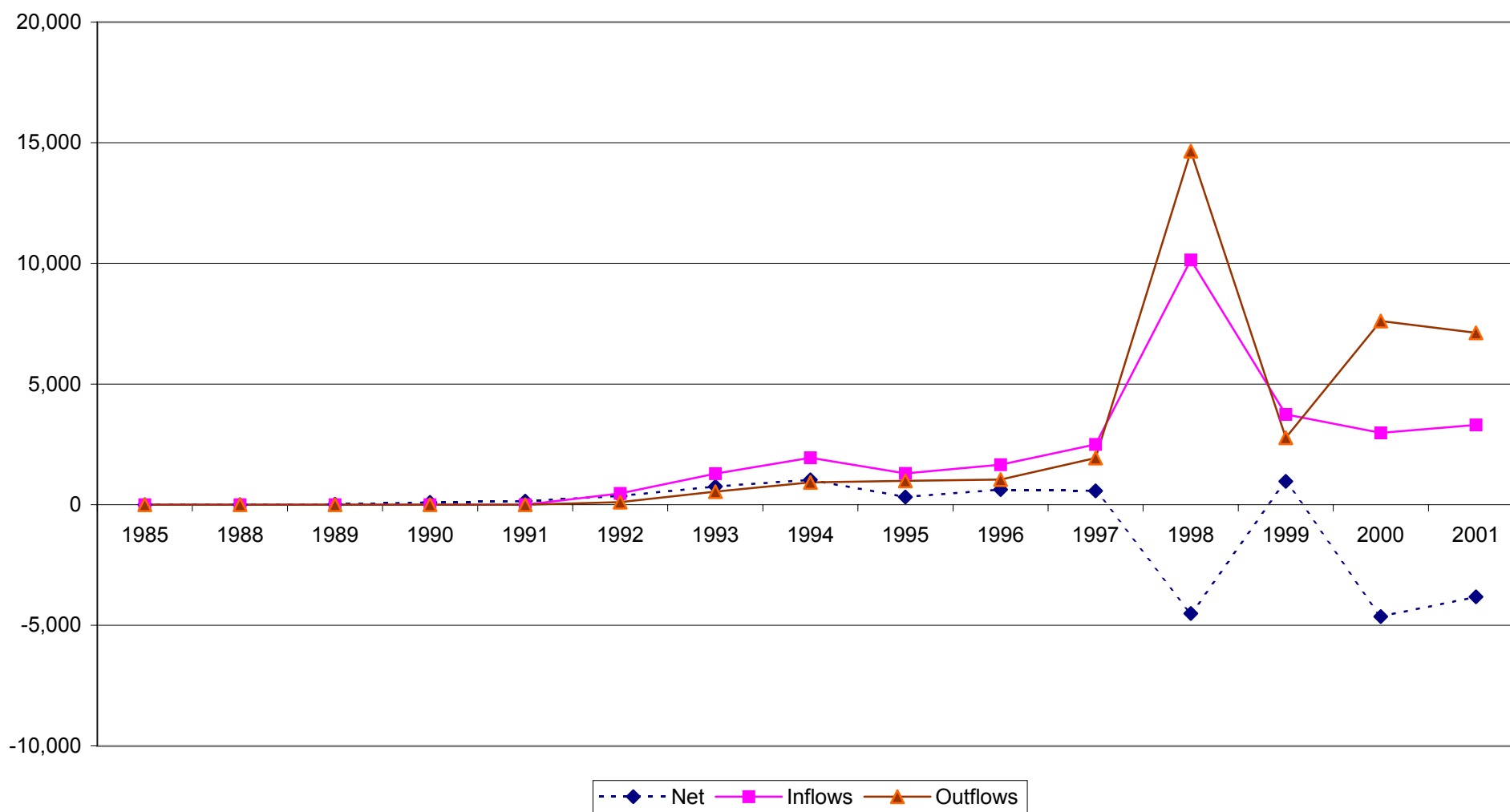**(Millions US$)**

Figure 1.b Portfolio Investments: Securities Purchases (Inflows) and Sales (Outflows) by Non-Residents in Turkey

Figure 1c. Foreign Credits Received By the Banking Sector and Repayments (Millions US$)
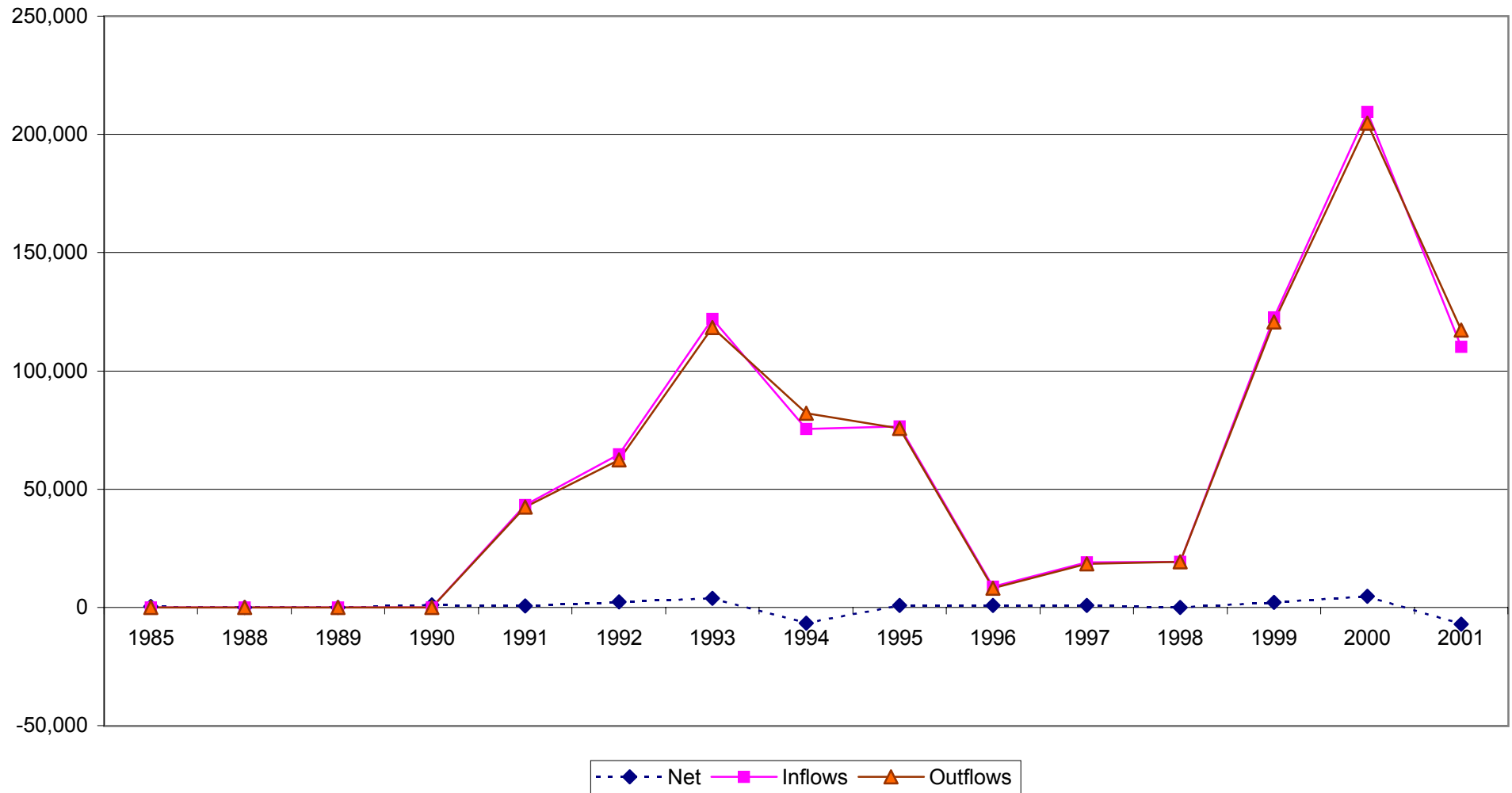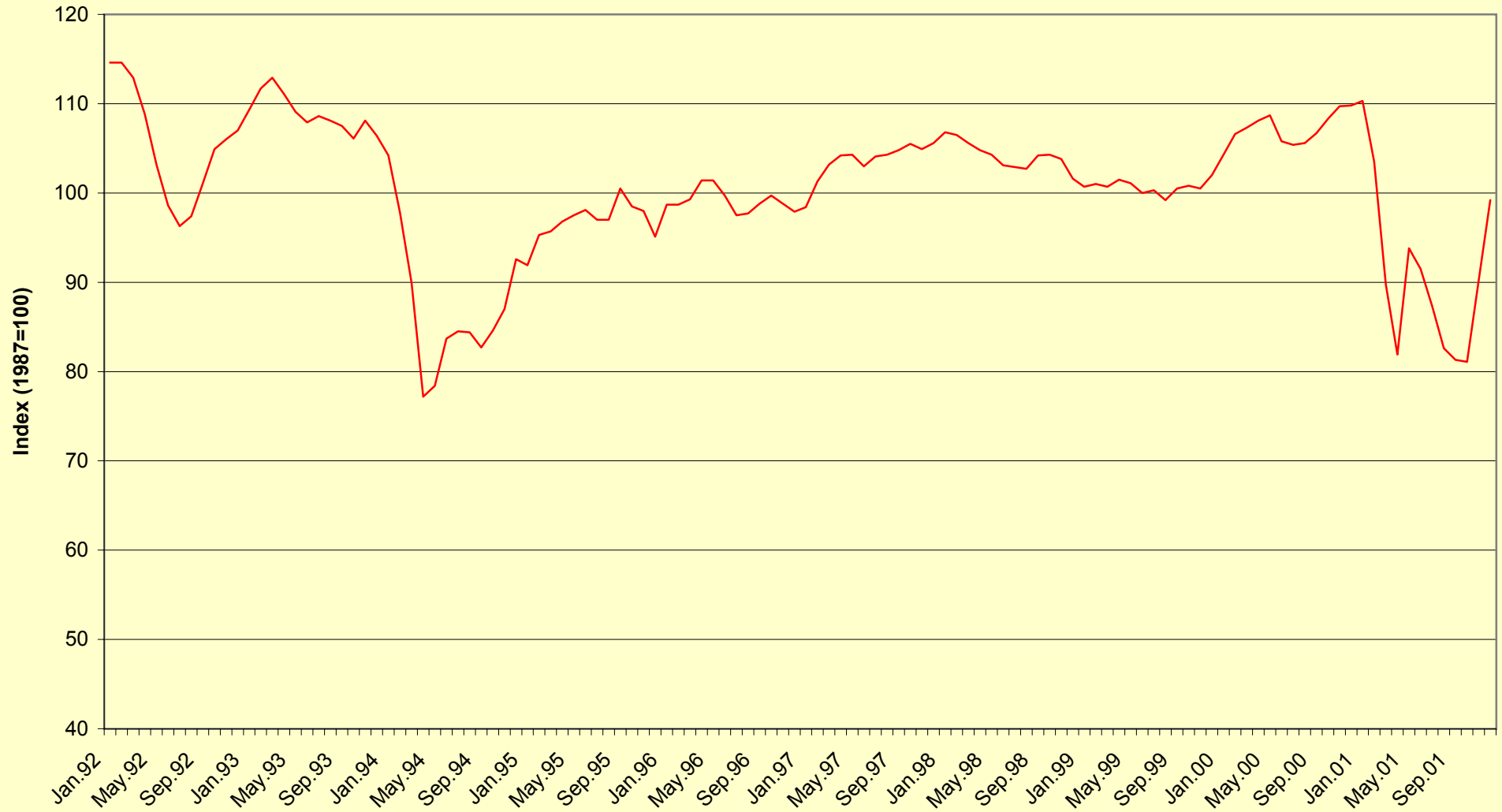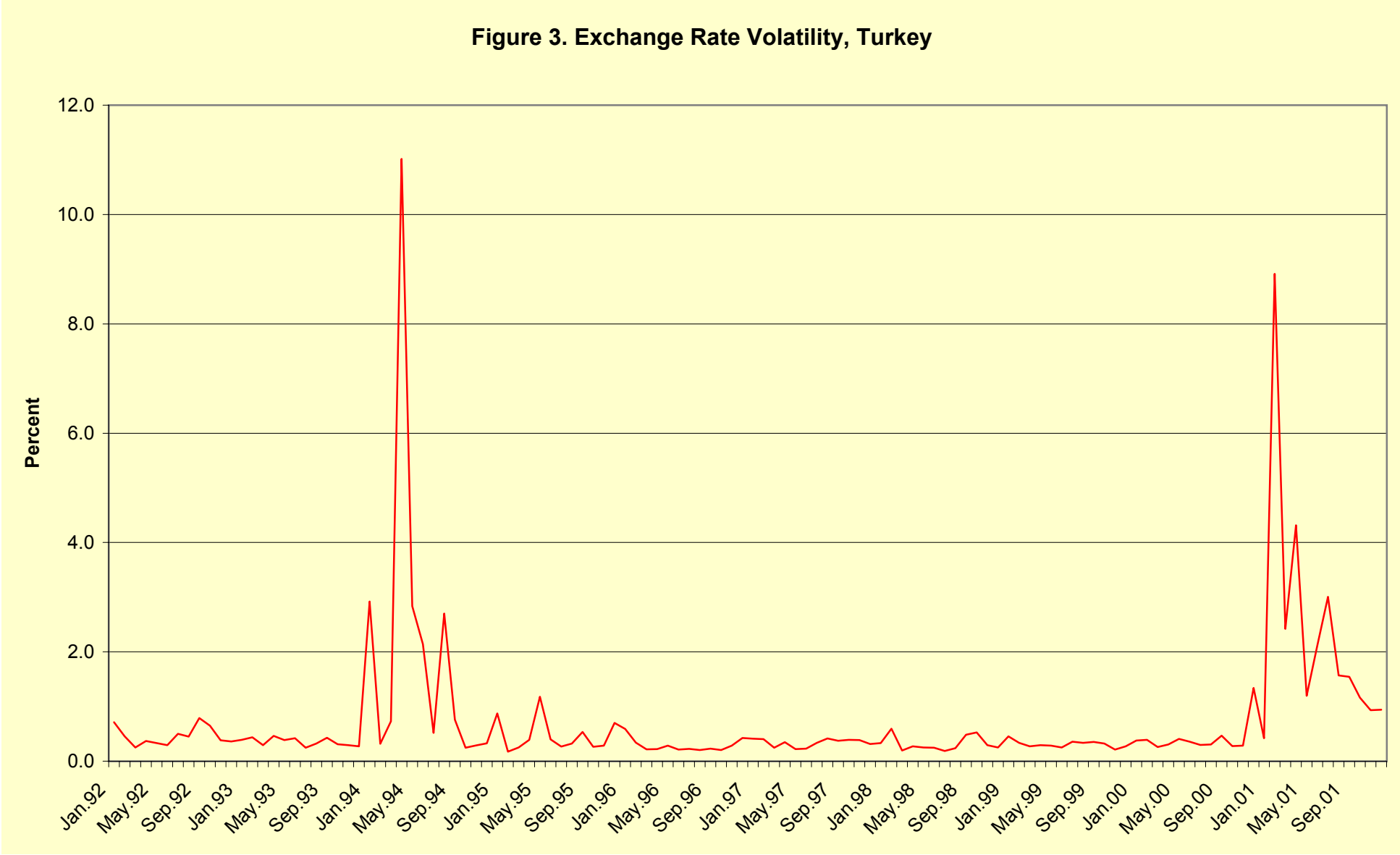
Figure 2. Real Exchange Rate, Turkey (1987=100)

Note: An increase indicates appreciation of TL.
Source: Central Bank of Turkey

Figure 3. Exchange Rate Volatility, Turkey

Note: Exchange rate volatility is estimated as the standard deviation of 22 working day of a month for each month that is included in the observations.
Source: Central Bank of Turkey
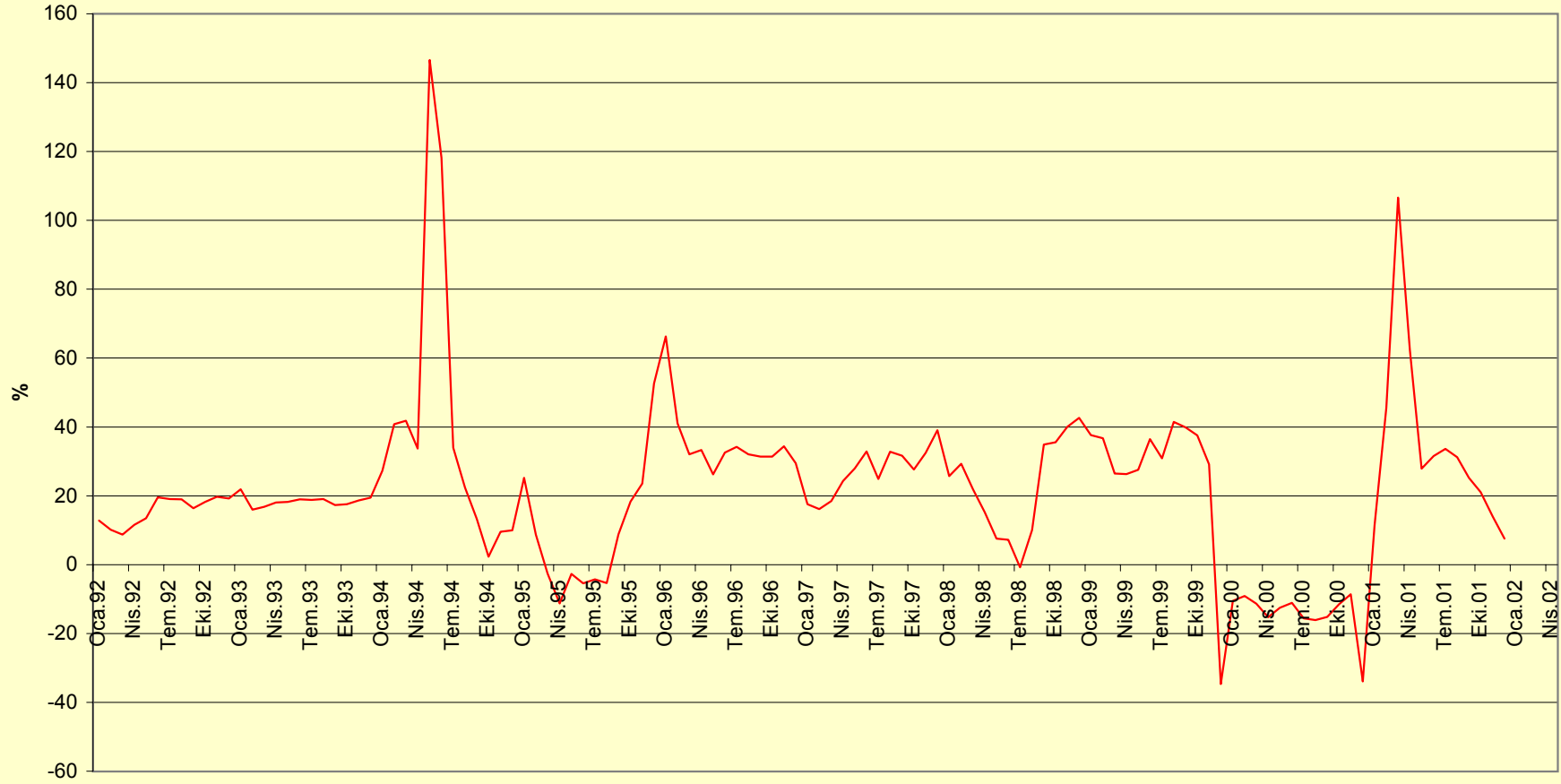
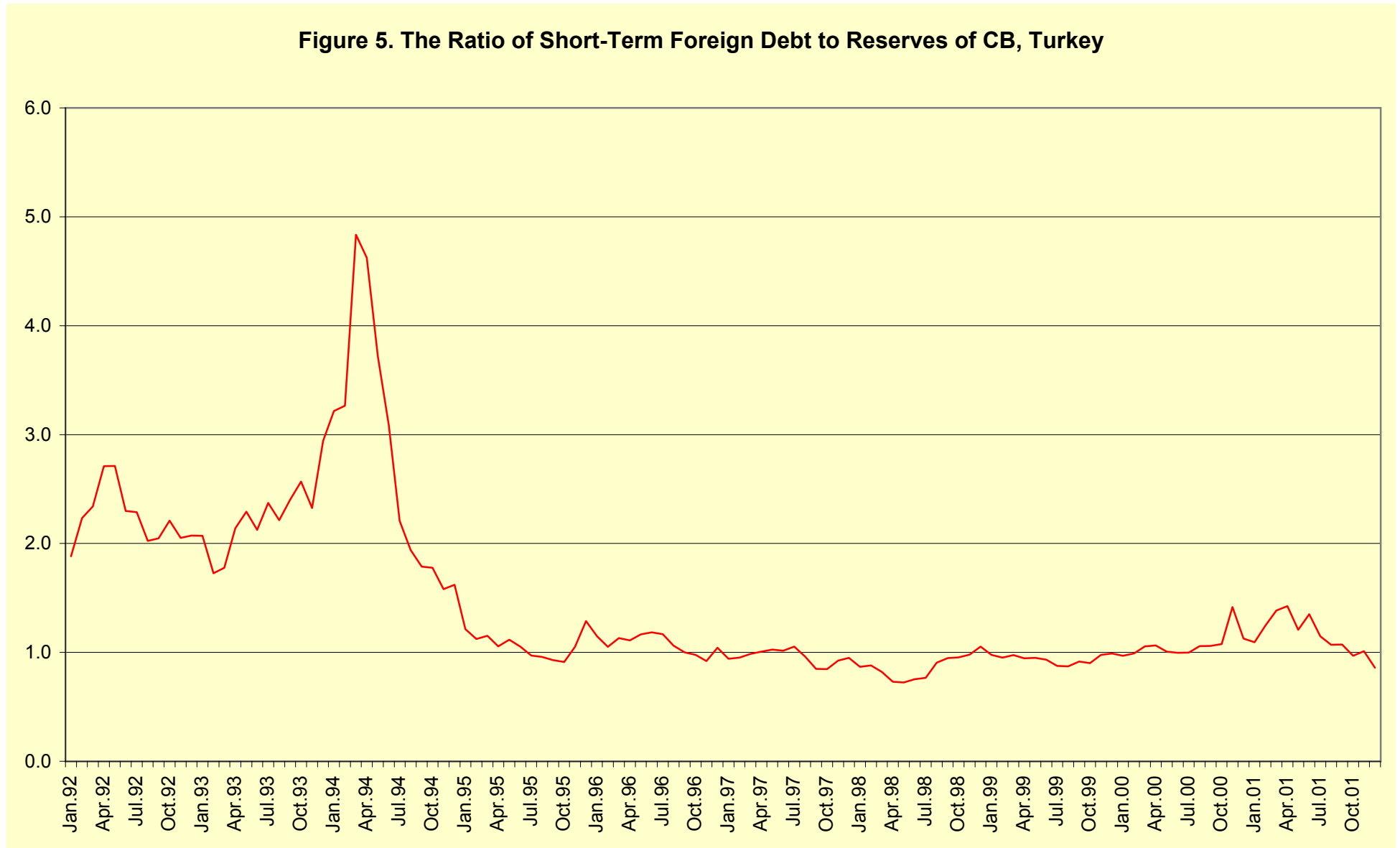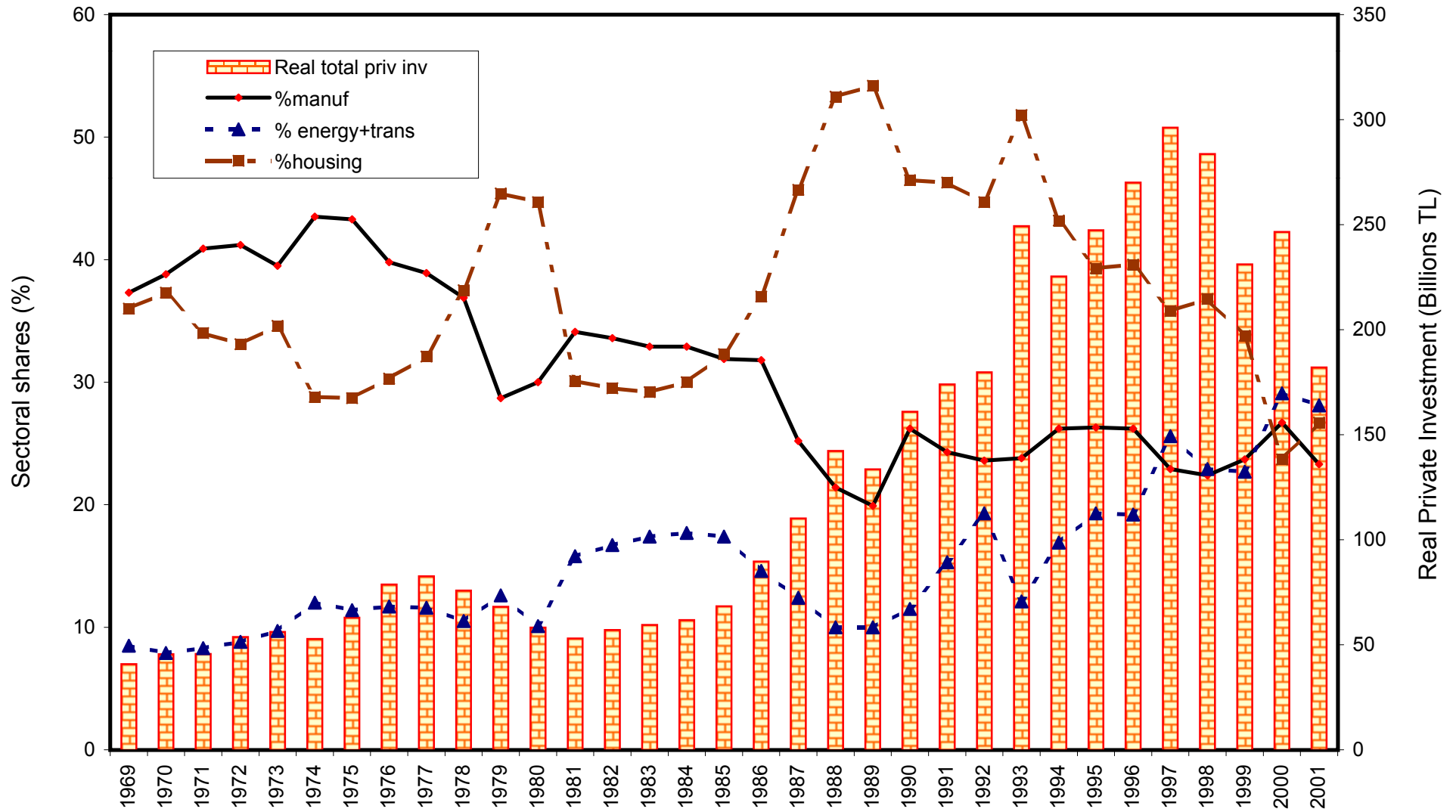**Figure 4. Real Interest Rates, Turkey**

Figure. 5

Figure 5. The Ratio of Short-Term Foreign Debt to Reserves of CB, Turkey

Source: Central Bank of Turkey

Figure 6. Real Private Fixed Investments by Sectors

Source: State Planning Organization. Nominal values are deflated by the WPI (1987=100)