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The Analysis of the Short-term Capital Movements by Using the VAR Model: The Case of Turkey

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This paper investigates the relations among short-term capital inflows, government deficit, interest rate differentials, real exchange rate and some accounts of the balance of payments in Turkey in 1990s by using the vector autoregression (VAR) technique. The dynamic behaviours of each variable due to random shocks given to short-term foreign liabilities are captured by impulse response functions, and the portion of variance in the prediction for each variable in the system that is attributable to its own innovations and to shocks to other variables in the system is analysed by variance decomposition method. It is found that the policy of high interest-low exchange rate (hot money) is the main reason for the short-term capital inflows in Turkey, and we propose some main controls on capital inflows to limit some of the macroeconomic repercussions of these inflows.

1. INTRODUCTION

In recent years there have been many macroeconomic studies on the reasons and effects of capital flows such as Corbo and Hernandez (1993, 1996); Calvo, *et al.* (1993); Dooley and Kletzer (1994); Arias (1996) and Montiel and Reinhart (1999). The ratio of bank credits to total capital flows was 78 percent in the period between 1977 and 1982 [Altinkemer (1996)] when the 1982 debt crisis for developing countries occurred. After this debt crisis, total capital inflows to the developing countries decreased continuously till 1990. However, after 1990, there was a major difference in the amount and quality of capital flows in these countries as well as in transition economies, and during the period of 1990–1995 the capital flows increased 207 percent. These flows generally occurred in the name of short-term capital movements, portfolio investments, and foreign direct investment. Thus, during this period, these countries reduced the effects of foreign shocks by drawing in external resources from foreign direct investment, and portfolio investment, instead of bank credits.

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Examining the regional allocation of capital flows among the developing countries, we see that Asian countries had the biggest share of the total capital inflows (44 percent and 50 percent in 1990 and in 1995, respectively), and Latin American countries had the second biggest share (30 percent and 24 percent). Asian countries also had 51 percent and 63 percent of the foreign direct investments in 1990 and in 1995, respectively. During the 1990 to 1995 period, other capital movements also increased in Asian countries. For example, the ratio of portfolio investment to capital flows rose from –4.9 percent (i.e., there was an increase in capital outflows) to 43 percent. In contrast, the portion of both foreign direct investment and portfolio investments in the share of total inflows decreased from 95 percent to 21 percent in Latin American countries in that period [IMF (1996)].

As Schadler, Carkovic, Bannett and Khan (1993) reported, the macroeconomic effects of short-term capital inflows strongly influence the national economy in many ways. The most important impact of international capital inflows is that they augment domestic savings which can be used to finance consumption or investment. The analysis of the financial crisis experience of the developing countries, including Turkey,[1] shows that these flows finance consumption. In addition, international capital inflows lead to appreciation of domestic currency and cause an unsustainable current account deficit.

The main purpose of this study is to explain the interaction between the short-term capital movements and their main determinants, such as interest rate differentials and exchange rates, and to explain the effects of the short-term capital movements on government budget deficit, current account balance, bank reserves, and exchange deposit accounts of residents in the period 1990–1997 in Turkey, following the liberalisation of the market movements. We use the Keynesian approach, and vector autoregression method.

2. THE FINANCIAL LIBERALISATION PROCESS OF THE TURKISH ECONOMY

The first stage of the economic liberalisation period leading to the integration of Turkey's economy with the world markets started with the stability programme of January 24, 1980. Although this stability programme and the financial liberalisation process satisfied the McKinnon (1973)[2] sequencing, which says that the controls and

[1]For detailed information, see Esen (2000).

[2]The McKinnon (1973) hypothesis points out that as a result of financial liberalisation and deepening, the efficiency of financial activity increases and the level of saving-investment in economy rises. The expansion of the financial assets is expected to raise the level of productive investment so that the financial deepening can increase the efficiency in economy. However, Dornbusch and Reynoso (1989) and Uygur (1990) determined that in many developing countries, including Turkey, there is no tendency to move from unproductive assets to productive investments because of the financial deepening. Thus the expectations of an increase in economic growth rate by the financial deepening are not satisfied with this application, for 84 countries in the Dornbusch and Reynoso (1989) paper.

the restrictions on capital movements should be relaxed after increasing the domestic interest rates, many deviations from this sequencing have occurred in the application. As Edwards (1987) reported, according to this sequencing, after providing the financial discipline, interest rates should be increased.

In the period 1984–1989, the average ratio of public sector borrowing requirement (PSBR) to gross national product (GNP) was 4.8 percent and this shows that the domestic interest rates were raised without providing for the financial discipline in Turkey. In 1989, the capital account was thoroughly liberalised in the second stage of the economic liberalisation. This liberalisation plays an important role to loosen the constraints for the public to borrow [Ersel (1996)]. Sak (1995) explained the reason for high domestic interest rates in Turkey by saying that "the reason behind these high real rates of interest, in the case of Turkey, could be specified as the rise in government budget deficits and the high borrowing requirement of the government when compared to the size of the financial sector".

When we analyse the types of capital flows in Turkey, we see that foreign direct investment was at a low level, approximately 700 million dollars per year between the years of 1989 and 1997. However, when the capital account liberalisation was provided in 1989, the portfolio investment was 1.5 billion dollars, and in the first 9 months of 1997 Turkey had 1.99 billion dollars of inflow. On the other hand, the short-term capital inflow was 3 billion in 1989, and 2.01 billion dollars in 1997. Only in 1991 and 1994, the capital outflows increased (3.02 billion and 5.1 billion dollars, respectively) because of the financial crisis. Besides, the properties of policy instruments on the capital movements can be obtained by applying the statistical analysis on them. In other words, the political strategies change depending on the qualities of the capital movements. Therefore, it is very important to specify the statistical properties[3] of these movements for the developing countries. Çeviş (1998) calculated variance coefficients to determine the volatility level of capital movements, and found the highest volatility level of short-term capital movements in Turkey. In addition, the persistence levels of these flows were obtained by analysing the autocorrelations of the variables. This analysis showed that the short-term capital movements had the lowest persistence level in Turkey.

After 1990, as a result of the capital account liberalisation, the increase in budget deficits was financed by short-term capital inflows. The public sector is very important in the financial markets in Turkey and public budget deficits put great pressure on interest rates. This causes capital inflows and appreciation of the exchange rate. When the Turkish lira appreciates, the prices of import goods decrease and the prices of export goods increase. It is clear that this causes the current account deficits. When this deficit increases in this way, the net foreign debt and the exchange rate risk increase. When the exchange rate finally depreciates, the domestic interest rate rises and short-term capital inflows occur. Using domestic interest rates as an instrument to

[3]For detailed information, see Claessens, Dooley and Warner (1993, 1995).

finance the increasing foreign debt of economic agencies makes the cyclical process, which is described above, faster. The 1994 currency crisis of Turkey, which is an example of this process, resulted from policy mistakes in the sequencing of economic liberalisation. The external financial liberalisation without achieving stabilisation and fiscal discipline caused the currency crisis.

Agenor, McDermott, and Ucer (1997) state that the interest rate differential plays an important role in the short-term capital inflows in Turkey. Because of the difference between domestic interest rates and foreign interest rates, the net return advantage occurs. When this return increases (decreases), short-term capital inflows (outflows) also increase. Because of this interest differential, capital inflows in Turkey were 1.4 billion dollars in 1992, and 3.05 billion dollars in 1993. However, in 1994, the interest rate differential decreased and this decrease resulted in outflows in short-term capital movements (5.1 billion dollars). Also, the same event happened in 1991 and short-term capital outflows became 3.02 billion dollars in that year. On the other hand, in the period of 1995–1997, there was oscillation in these flows.

3. MODEL, DATA, ESTIMATION, AND VAR RESULTS

3.1. Model

The Keynesian approach describes the internal and external balance in an open economy as

$$(I - S) + (G - T) = (M - X) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3.1)$$

where $(I - S)$ is private sector gap;[4] $(G - T)$ is government deficit and $(M - X)$ is current account deficit. It is clear that the left side of Equation (3.1) shows the national investment saving gap. It is known that

$$\text{Current Account Balance (CAB)} = f\left(Y, \frac{e\,P_f}{P}, CA\right)$$

where CAB is a function of national income (Y), real exchange rate (eP_f / P) and capital account (CA). Here

$$CA = f(UIP)$$

where UIP is uncovered interest parity. Our theoretical analysis is based on the assumption that capital flows internationally in response to nominal interest

[4]During the sample period, private sector's annual savings-investment balances were in surpluses, while those balances for the government were in deficit. The aggregate share of the savings-investment deficits of the consolidated budget and the state economic enterprises accounted for approximately 80 percent of the government total, and the share of the consolidated budget deficit in the total was the highest. For detailed information, see S.P.O.

differentials. These interest differentials are computed by uncovered interest parity.[5] This parity condition can be defined as

$$i = (i^* + x)$$

where i and i^* represent domestic and foreign interest rates on comparable assets, and x is the anticipated rate of depreciation of the domestic currency, as follows:

$$x = (\bar{e} - e)/e$$

Here e is current exchange rate and $\bar{e}$ is anticipated future exchange rate. The return of domestic assets is $(1+i)$; on the other hand, the return of foreign assets is $(1+i^*)x$. In equilibrium, return of both assets must be equal to each other: $(1+i) = (1+i^*)x$ [Batiz and Batiz (1994)]. It is clear that if $(1+i) > (1+i^*)x$, there will be capital inflow, but if $(1+i) < (1+i^*)x$ there will be capital outflow. As a result, capital inflow is a function of interest rates differentials:

$$CA = FEX - BR = f(UIP) = SNFL$$

where *FEX* is foreign exchange deposit, *BR* is bank reserves, and *SNFL* represents short-term net foreign liabilities.

As we are interested in short-term capital movements, we take short-term net foreign liabilities, instead of *CA* in Section 3.1. The growth of public sector deficit increases domestic interest rate in Turkey. The main reason for the increasing gap between the return on domestic assets and the return on foreign assets in the base of Turkish lira is the capital inflows and open foreign exchange position of the residents [Ozatay (1996)]. Besides, the commercial bank reserves have great impact on short-term capital account in many countries, providing for the liberalisation of capital movements.[6] Thus, this paper investigates the relations between short-term capital inflow and bank reserves, public budget deficit, and foreign exchange deposits of resident.

3.2. Data

The *VAR* technique,[7] originally introduced by Sims (1980), is applied on the monthly data[8] in the period 1989:10—1997:09, and on seven key macroeconomic

[5]While measuring international capital mobility, there are four distinct definitions:

(i) The *Feldstein-Horioka condition:* exogenous changes in national saving rates have no effect on investment rates;
(ii) *Real interest parity*: international capital flows equalise real interest rates across countries;
(iii) *Uncovered interest parity:* capital flows equalise expected rates of return on countries' bonds, regardless of exposure to exchange risk; and
(iv) *Covered interest parity:* capital flows equalise interest rates across countries when contracted in a common currency [Frankel (1992)].

[6]For details, see Rodriguez (1993).

[7]For details, see Enders (1995).

[8]The data can be given by the authors on request. The sources are I.F.S. and C.B.R.T.

variables that are indicator factors for the short-term capital flows and that have macroeconomic effects on these flows, as described at the beginning of the paper. These variables are: short-term net foreign liabilities which are the values of the net short-term liabilities excluding bank reserves, bank reserves which are the values of the changes in bank reserves and which are recorded in the short-term capital account of the balance of payments, foreign exchange deposits in Turkish banking system (*FEX*), the cash deficit of the consolidated budget (*CD*), real exchange rate index (*IEX*), interest rate differential (*IRD*), and the values of current account of the balance (*CAB*). *SNFL* is calculated by subtracting bank reserves from foreign exchange deposits, and *IRD* is computed by the formula, mentioned in Section 3.1, as follows:

$$IRD = \frac{1 + DIR}{(1 + FIR) * NFEXI} - 1 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3.2)$$

where *DIR* (i in (3.1)) is the domestic interest rate, *FIR* (i^* in Section 3.1) is the foreign interest rate, and *NFEXI* (x in Section 3.1) is the change of nominal foreign exchange index. We use average interest rates of auctioned government securities for *DIR*, and London interbank offer rates (*LIBOR*) for *FIR*. The graphs of the series are shown in Figure 1.

3.3. Estimation

Before applying the VAR model, we should know the series are stationary. Therefore, stationarity tests, based on the Augmented Dickey-Fuller (ADF) test (1981) and the Phillips-Perron (PP) test (1988), have been performed on all the series mentioned in Section 3.2. The results of ADF test and PP test are given in Tables 1 and 2, respectively. These tables show that all series are stationary, except foreign exchange deposits. However, the first difference of this variable (*DFEX*) is stationary. Therefore, *DFEX* replaced *FEX* in the *VAR* model.

Table 1

Augmented Dickey-Fuller Test Results

Variables	ADF Test Statistics
SNFL	–3.22
BR	–9.79
*FEX***	0.34
DFEX	–9.76
CD	–3.51
IEX	–2.96
IRD	–7.98
CAB	–4.56

** The variable is not stationary.

Table 2

Phillips-Perron Test Results

Variables	PP Test Statistics
SNFL	–9.39
BR	–15.19
*FEX***	0.16
DFEX	–16.23
CD	–4.16
IEX	–2.61
IRD	–7.27
CAB	–5.37

** The variable is not stationary.

By using the Schwarz (1978) information criteria, the order of the VAR model, with seven macroeconomic variables (as mentioned in Section 3.2), has been found as 1, and the coefficient values of this model are shown in Table 3. The significance of the *t*-test on a coefficient, estimated using the VAR method, provides a convenient summary for analysing the impact of the anticipated policies on the target variables.

When Table 3 is examined in detail, it is seen that all variables have direct delayed effects on themselves, except bank reserves. Naturally, these effects create some macroeconomic results. For example, the positive impact of the consolidated budget deficit on itself causes an increase in public debt one month later, and so on. The interpretation of Table 3, row by row, is as follows: short-term foreign liabilities have important effects on the values of the current account of the balance of payments. The negative effect on CAB shows that short-term capital inflow, which results from the high interest rates differential, leads to appreciation in the foreign exchange rate, and this causes the current account deficit. However, when dynamic effects are investigated by impulse response function, they reveal that this capital inflow finances the current account deficit. As expected, bank reserves have a positive effect on short-term foreign liabilities and a negative effect on the deficit of the consolidated budget. This implies that when bank reserves increase, there will be an abundance of foreign exchange in the economy, and this causes a low exchange rate. Therefore, short-term capital inflow depends on the low exchange rate—high domestic interest rate factors. The first difference of foreign exchange deposits has important impacts on the real exchange rate index, and the real exchange rate index influences the interest rate differential and the values of current account of the balance of payments. This shows that when the price of import goods falls with the overvalued foreign exchange rate, the price of export goods increases. Thus, the current account deficit increases. A further analysis of Table 3 indicates that the interest rate differential strongly influences the real exchange rate index. This result

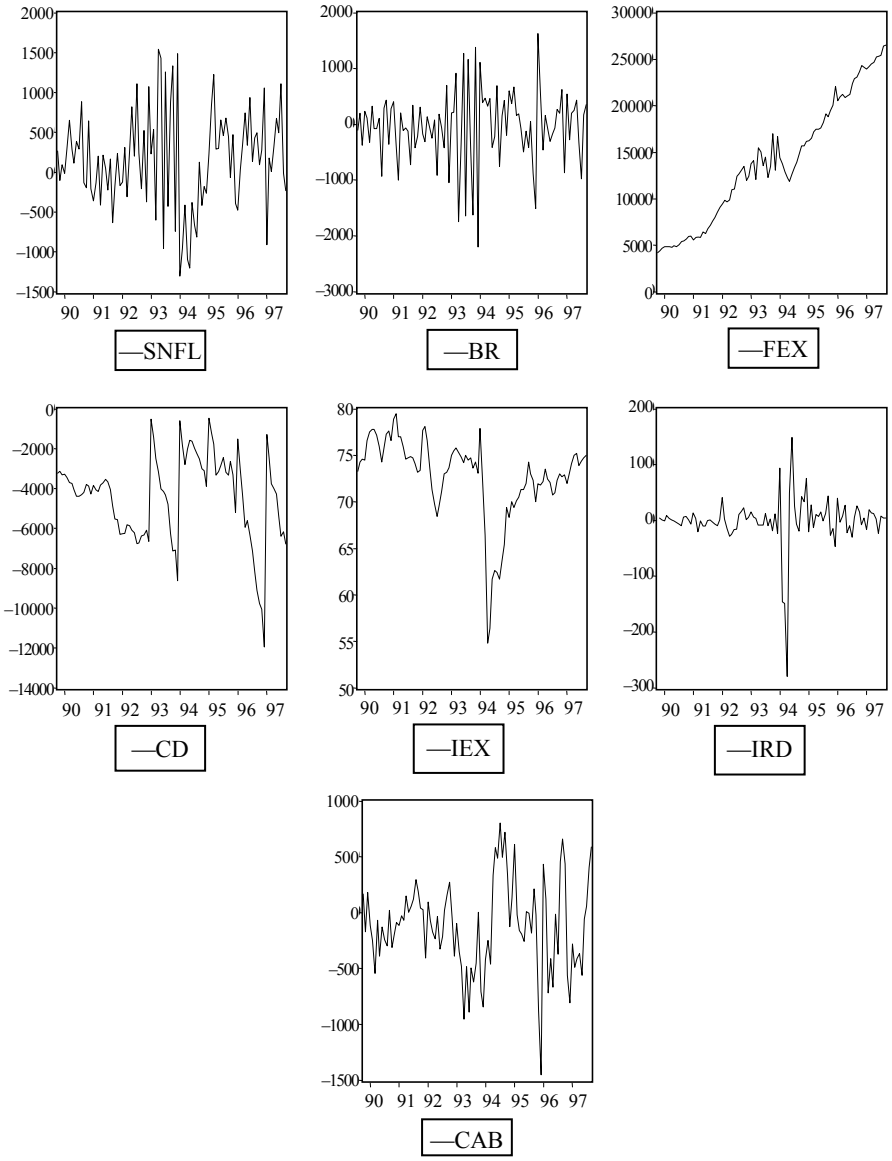

Fig. 1. The Plots of Series.

Table 3

The Coefficient Values of the VAR(1) Model

	SNFL	BR	DFEX	CD	IEX	IRD	CAB
SNFL(–1)	**0.288313**	0.134858	0.06	–0.363940	–5.61E-06	–3.14E-05	**–0.203048**
	(0.12942)	(0.14377)	(0.21391)	(0.35488)	(0.00045)	(0.00972)	**(0.07937)**
	(2.22780)	(0.93800)	(0.29762)	(–1.02554)	(–0.01232)	(–0.00323)	**(–2.55816)**
BR(–1)	**0.616400**	–0.284799	0.161740	**–1.382786**	0.000287	0.002197	–0.153013
	(0.14031)	(0.15588)	(0.23192)	**(0.38476)**	(0.00049)	(0.01054)	(0.08606)
	(4.39306)	(–1.82707)	(0.69740)	**(–3.59392)**	(0.58081)	(0.20850)	(–1.77807)
DFEX(–1)	0.078804	0.091648	**–0.443238**	–0.259451	**0.000648**	0.012283	0.028718
	(0.08574)	(0.09525)	**(0.14172)**	(0.23511)	**(0.00030)**	(0.00644)	(0.05259)
	(0.91912)	(0.96218)	**(–3.12763)**	(–1.10354)	**(2.14936)**	(1.90731)	(0.54613)
CD(–1)	–0.018675	0.038071	–0.052086	**0.735302**	–0.000105	–0.002492	–0.017847
	(0.02816)	(0.03128)	(0.04654)	**(0.07722)**	(9.9E-05)	(0.00212)	(0.01727)
	(–0.66317)	(1.21695)	(–1.11906)	**(9.52240)**	(–1.05936)	(–1.17821)	(–1.03336)
IEX(–1)	12.16823	–3.125435	–34.26715	–71.56967	**0.865570**	**–2.913937**	**–22.08749**
	(14.7731)	(16.4119)	(24.4183)	(40.5100)	**(0.05194)**	**(1.10958)**	**(9.06056)**
	(0.82368)	(–0.19044)	(–1.40334)	(–1.76672)	**(16.6657)**	**(–2.62615)**	**(–2.43776)**
IRD(–1)	1.677175	–1.301152	3.962337	2.283141	**0.013989**	**0.300967**	0.379971
	(1.32769)	(1.47498)	(2.19453)	(3.64074)	**(0.00467)**	**(0.09972)**	(0.81430)
	(1.26322)	(–0.88215)	(1.80555)	(0.62711)	**(2.99704)**	**(3.01809)**	(0.46663)
CAB(–1)	**–0.348028**	0.303459	0.019305	–0.778248	–8.60E-05	0.003419	**0.400857**
	(0.16092)	(0.17877)	(0.26598)	(0.44126)	(0.00057)	(0.01209)	**(0.09869)**
	(–2.16278)	(1.69750)	(0.07258)	(–1.76370)	(–0.15203)	(0.28289)	**(4.06167)**
Constant	–887.9267	331.4246	2608.192	3955.333	**9.190027**	**197.5442**	**1474.730**
	(1059.26)	(1176.77)	(1750.84)	(2904.65)	**(3.72401)**	**(79.5594)**	**(649.660)**
	(–0.83825)	(0.28164)	(1.48968)	(1.36173)	**(2.46778)**	**(2.48298)**	**(2.27000)**

Note: Standard errors and *t*-statistics are in parenthesis. The significance of the variable is shown in bold type.

suggests that monetary policy affects the domestic interest rate and can cause some changes in the real exchange rate. Finally, the current account of the balance of payments is an important influence on short-term foreign liabilities, and the negative effect between these variables reveals that when the current account deficit increases (i.e., an increase of domestic saving-investment deficit), short-term capital inflows also increase. In other words, this result explains that short-term capital movements finance the saving-investment deficit in Turkey. On the other hand, some expectations such as "real exchange rate index should affect short-term foreign liabilities" and "short-term foreign liabilities should affect the other variables in the model" are not valid in Turkey.

3.4. Variance Decomposition

The variance decomposition method is used in order to analyse the impact of unanticipated policy shocks on the macro variables in a more convenient and comprehensive way. This method can capture both direct and indirect effects of the variables. We have investigated only the first five periods, because after these five

periods the variance percentages have been found to be approximately steady in our application. The main focus of this study is to analyse the impact of the variables on SNFL. The results of the variance decompositions for all variables are reported in Table 4. As expected, the direct effects of the variables on themselves are important. According to Table 4, it is understood that short-term foreign liabilities are completely explained (100 percent) by their innovations in the first period, but in the third and the fifth periods the explanation percentages on itself are 78.38 percent and 76.78 percent respectively, and we see that in these two periods innovations to bank reserves are 14.82 percent and 15.35 percent respectively. This means that the variance in short-term capital movements is explained by the innovations on itself and by the innovations to bank reserves. We expected the innovations in IEX and IRD to be also important in the explanation of the variance in SNFL, but this was not so in the case of Turkey. On the other hand, innovations to the bank reserves and SNFL explain the most variations in bank reserves in all periods, and the explanation percentage of the innovations to SNFL grows rapidly over time. This shows us that after the capital account liberalisation, the innovations to short-term capital movements had important effects on bank reserves. When we analyse the variance decomposition values of foreign exchange deposits, we can easily say that short-term capital movements have impacts on the exchange deposit accounts of residents. A further analysis of Table 4 indicates that the variance of the cash deficit of the consolidated budget is explained by the innovations on itself (85.44 percent) and by the innovations to SNFL (11.11 percent) in the first period, but in the third and fifth periods, while the explanation shares of these variables are getting smaller, the shares of innovations to CAB are getting bigger. Therefore, we note that the innovations to CD, CAB, and SNFL influence the variation of CD in Turkey. Furthermore, the innovations to IRD and SNFL explain a small portion of the variance, whereas the innovations to IEX explain most of the variance in IRD. This result means that short-term capital inflows affect the interest rate differential, and that there is a strong relation between the domestic interest rate and the exchange rate. These two results were expected as a result of the capital account liberalisation in Turkey after 1989. Finally, the variance of the current account of the balance of payments is explained by the innovations on itself, and a very small portion of its variance is explained by the innovations to the real exchange rate index.

3.5. Impulse Response Function

The use of the impulse response function enables us to analyse the dynamic behaviour of a variable due to random shocks given to other variables. In fact, the graphs of the impulse response coefficients provide a better device to analyse the shocks and, therefore, the following discussion is devoted to the analysis of these graphs, shown in Figure 2. In order to capture the dynamic effects, we considered responses of each variable over 10 months to a one standard deviation shock in only

Table 4

The Values of Variance Decompositions

	Periods	SNFL	BR	DFEX	CD	IEX	IRD	CAB
SNFL	1	100	39.46	35.07	11.11	1.11	4.01	0.03
	3	78.38	41.59	32.60	9.22	5.20	7.59	2.65
	5	76.78	41.40	32.38	9.21	6.78	7.29	3.82
BR	1	0.00	60.53	18.29	2.06	0.62	0.12	2.06
	3	14.82	52.85	20.08	6.79	0.27	1.22	6.00
	5	15.35	52.54	20.14	6.80	0.35	1.17	6.03
DFEX	1	0.00	0.00	46.62	1.37	0.07	0.22	1.09
	3	0.58	1.71	45.13	1.11	1.01	2.81	1.56
	5	0.64	1.92	44.70	1.20	1.24	2.73	1.50
CD	1	0.00	0.00	0.00	85.44	0.95	1.10	2.39
	3	0.29	0.84	0.41	77.51	0.37	2.13	2.27
	5	0.29	0.90	0.51	73.36	1.00	2.59	2.55
IEX	1	0.00	0.00	0.00	0.00	97.23	84.00	0.12
	3	2.49	0.74	1.41	0.37	92.41	75.92	3.55
	5	3.43	0.98	1.85	1.78	89.49	76.30	10.54
IRD	1	0.00	0.00	0.00	0.00	0.00	10.52	0.42
	3	0.23	0.14	0.28	0.09	0.70	10.07	0.34
	5	0.27	0.15	0.29	0.08	0.89	9.42	0.45
CAB	1	0.00	0.00	0.00	0.00	0.00	0.00	93.87
	3	3.17	2.09	0.07	4.88	0.01	0.22	83.60
	5	3.20	2.09	0.10	7.54	0.20	0.47	75.07

short-term capital movements, as the aim of this study is to analyse the impacts of SNFL. In Figure 2, the dash lines show 95 percent confidence interval[9] of the response of the related variable to SNFL.

According to Figure 2, the bank reserves respond negatively for the first period, whereas the exchange deposit accounts of residents have a positive response to a one standard deviation shock in SNFL. The small fluctuations on these response levels can be seen after four periods. This reveals that when short-term capital inflows increase, bank reserves initially decrease corresponding to the increase of capital inflows, and this indicates that bank reserves become significant assets accounts by the liberalisation of the capital account. In addition, the high domestic interest rate, which encourages short-term capital inflow, causes the positive responses of the exchange deposit accounts of residents in the first period. Although the consolidated budget deficit responds in a negative way due to a given shock in the short-term foreign liabilities, it has a continuously positive response after the

[9]For detailed information, see Oliner and Rudebusch (1996).

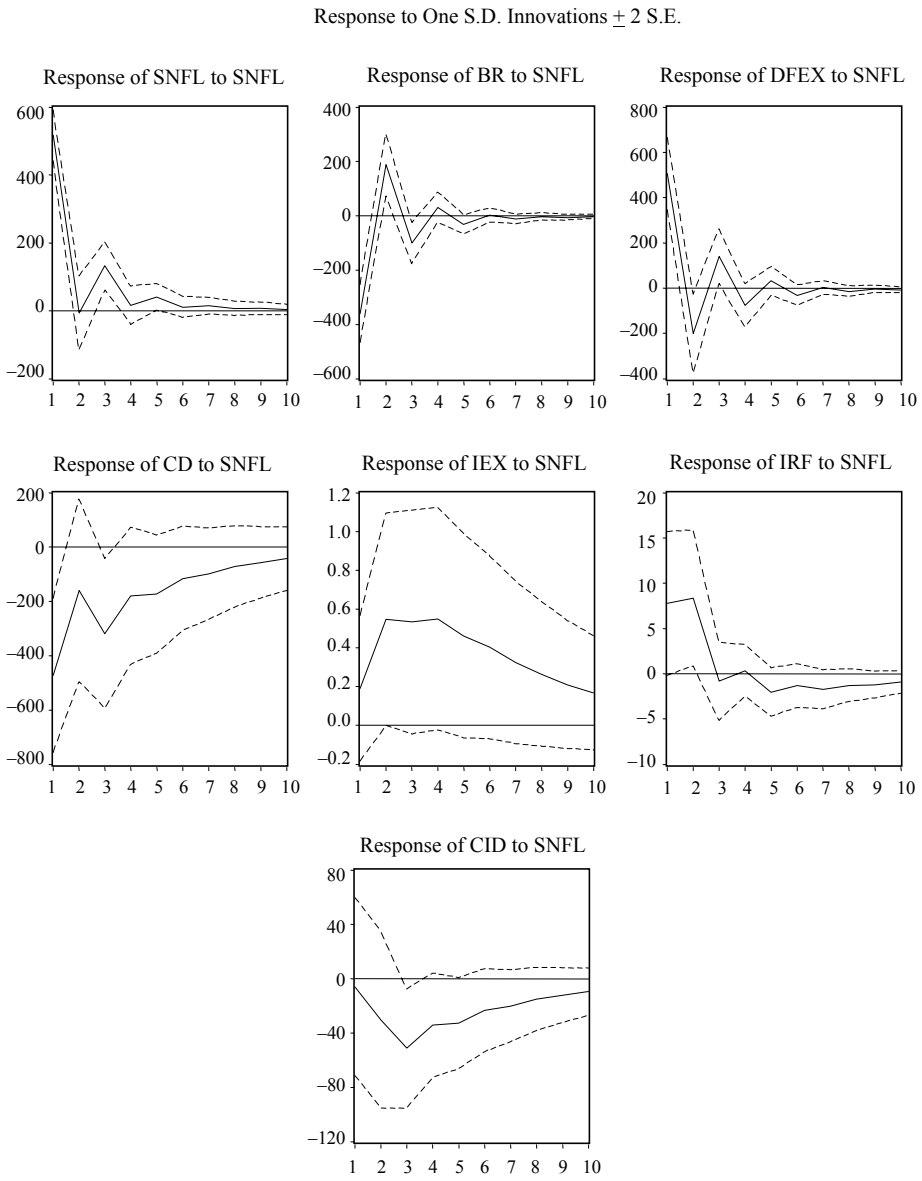

Fig. 2. The Graphs of Impulse Response Function.

third period. This result shows that the public budget deficit is financed by the short-term capital inflows in Turkey. Moreover, the initial impact of the current account balance on SNFL appears to be negative, and CAB gradually starts to rise only after three months. This result supports the observation that after the short-term capital inflow causes appreciation of the exchange rate, the current account deficit increases, and this current account deficit is financed by the short-term capital inflows. In other words, the deficit of the public budget and the deficit of the current account are financed by these flows. Consequently, the response of the real exchange rate index emphasises that short-term capital inflows initially cause appreciation of the exchange rate, and this appreciation starts to decline gradually after four months. Concurrently, the continuous negative response of the interest rate differential after the second period suggests that when short-term capital inflows increase, the interest rate differential decreases step by step after reaching the peak.

4. CONCLUSION

By using VAR methodology, we deduce that in the period after the capital account liberalisation the changes in short-term capital movements strongly influence bank reserves and foreign deposit accounts of resident, and this way bank reserves become important account assets in Turkey. In addition, as expected, we conclude that when short-term capital inflow increases, the interest rate differential gradually decreases, and that there is a strong relation between the interest rates and the exchange rate, which has a significant impact on the current account balance.

Finally, it is found that the high interest-low exchange rate (hot money) policy is the main reason for the short-term capital inflows in Turkey. As a result, when the Turkish lira appreciates, imports increase and exports decrease, and current account deficit reaches an unsustainable level. Additionally, financial discipline deteriorates due to the high domestic interest rates and increasing public-sector debt. In other words, the current account and budget deficits are financed by the short-term capital inflows. Furthermore, both the sudden outflows of the short-term capital and the macroeconomic instability start the economic crises in the financial sector, which then affects the real sectors. This explains what occured in 1991 and 1994 in Turkey.

As Edwards (1999) reported, controls on capital outflows have been largely ineffective. On the other hand, controls on capital inflows are expected to protect emerging countries from international speculation and, at the same time, allow them to undertake an independent monetary policy. These controls are generally tax on capital imports, the sterilisation policy, the tight fiscal policy, trade policy, and non-sterilised interventions. Finally, if nonsterilised interventions are applied in Turkey, short-term inflows will decrease and this way foreign direct investment flows will increase and go to real sector. In addition, if fiscal policy is applied, according to the VAR technique results we can say that the interest rate will decrease, and financial stability will be achieved in the government sector in Turkey.

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