

THE TWIN DEFICITS HYPOTHESIS (THE TURKISH CASE)

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Key Words:

Budget Deficits, Trade Deficits, Internal Balance, External Balance, Twin Deficits, Deficits

Abstract

The objective of this study is to identify historical relationships between trade and budget deficits for Turkey. Specially, the causal ordering of the variables within the linkages is tested in a vector autoregressive model (VAR). In addition, the moving average representation of the VAR is used to generate variance decompositions and impulse - response function. The evidence from the eight - variable VAR system supports the twin deficit notion that budget deficits influence trade balance. This system employs posterior probability bounds generated to assess significance

1. Introduction

The twin deficits hypothesis asserts that a reduction in the budget deficit causes a reduction in the trade deficit. In recent years, the Turkish Economy has been characterized by soaring budget deficits and deteriorating trade balances. The trade deficit rose from \$ 3.9 billion in 1987 to \$ 14.4 billion in 1999. During the same period, the budget deficit soared from \$3.5 billion in 1987 to \$ 21.5 billion in 1999. Many analysts suspect that these features are closely, and perhaps even causally, related. Indeed, national income accounting identities guarantee that budget deficits must create either an excess of private saving over investment or an excess of imports over exports. Standard economic reasoning suggests that government borrowing lowers the domestic supply of funds available to finance new investment, which leads to an inflow of funds from overseas. An offsetting adjustment to the current account is then required to reestablish international account balance. In short, internal imbalance may well produce external imbalance.

The empirical test of the role of the budget deficits in causing the trade deficits has been a subject of controversy. Do the budget deficits affect the trade deficits? If so, to what extent and through which channels do budget deficits affect the trade deficits? The issues involved have important policy implications. Suppose that the basic reason for rising trade deficits is indeed the escalating budget deficits. In this case, policy makers may focus on

curtailing the budget deficits in order to resolve the trade deficit problem. This policy adversely affects several sectors such as manufacturing industries and agriculture. However, if such a view concerning the “causal” role of the budget deficits is incorrect, then reductions in the budget deficits may not resolve the trade deficits dilemma and, moreover, attention will be diverted from more relevant and urgently needed policy options.

Theoretical work on the relationship that exists between variations in the stance of fiscal policy and the trade balance has been based upon two types of models. The traditional approach has employed macroeconomic models that are constructed from postulated behavioral relations that purport to describe how the economy works in aggregate without explaining the behavior of the agents who make up the economy (Kearney and Monadjemi, 1990). Examples of this approach are to be found in the work of Mundell (1963), Branson (1976), Dornbusch (1976), Kawai (1985), and Marston (1985). The Second type of model, which has become more popular in recent years, derives the important macroeconomic relationship from the microeconomic foundations of individual optimizing behavior. Examples of this approach have been reported by Dixit (1978), Neary (1980), Obstfeld (1981), Persson (1982), Kimbrough (1985), Frenkel and Razin (1986), Cuddington and Vinals (1986a, 1986b) and Moore (1989). Both of these approaches to explaining the trade balance response to variations in the stance of fiscal policy have yielded divergent results.

Particularly in recent years, budget and trade deficits have been closely correlated in Turkey. Of course, a close correlation between any two variables has no bearing on the nature of the causal linkage between them. The correlation analysis is inadequate to identify the cause - and effect relationship between two time series. In fact, high correlation between budget and trade deficits is consistent with four alternative causal hypothesis. Namely that, (1) budget deficits cause trade deficits, (2) trade deficits cause budget deficits, (3) the two variables are causally independent, and (4) that the two variables are mutually causal.

Therefore, the appropriate test to discriminate between the four alternative hypotheses for the Turkish Economy should focus on the direction of the causality relationship between the budget and trade deficits instead of their correlations.

The growth in empirical evidence, however, has not kept pace with these theoretical advancements. The purpose of this paper is to contribute toward redressing these imbalances. This article seeks to empirically verify the set of macro linkages connecting domestic budget deficits and trade deficits. Especially, the causal ordering of the variables within the linkages is tested in a vector autoregressive model (VAR). In addition, the moving average representation of the VAR is used to generate variance decompositions and impulse - response function.

2. Literature

This section reviews literature on the determinants of the trade and budget balance. Factors influencing the trade and budget balance have been examined by several authors both within and outside the context of twin deficits. Empirically testing of the government deficit in causing the trade deficit has been a subject of controversy. The followings are some of the important works in this area.

Darrat (1988) shows the existence of bi - directional (Granger) causality between the government deficit and the trade balance during the period of floating exchange rates. According to Darrat this indicates that U.S. policy makers may have responded with additional government spending because of domestic hardships caused by the trade imbalance.

B. Douglas Bernheim (1988), using annual data from the Organization for Economic Cooperation and Development for the United States and several of its major trading partners, investigates the possibility that fiscal deficits lead to trade deficits. The data sample spans the period from 1960 to 1984, and the estimations employ broad measures of the deficits relative to the relevant nominal gross domestic product (GNP) measures for each country. Bernheim explicitly estimates a regression in which the government deficit affects the trade deficit, but not the reserve, an assumption that restricts his specification.

The effect of budget deficits on trade deficits is likely to be less in the presence of unemployed resources, according to Bernheim. He argues that under weakened economic conditions, it is possible for additional government expenditures or a tax cut - both of which may increase the fiscal deficit - to increase private income and private savings, thereby minimizing the effects of the increased government deficit on the trade deficit. To account for business - cycle effects, Bernheim uses the current as well as last period's growth rate in GNP. The estimation results for the United States suggest that the fiscal deficit does significantly affect the trade deficit. Evidence from the trading partners - except for Japan, (The countries he studies are Canada, Japan, Mexico, West Germany, The United Kingdom, and the United States) where no relationship appears to exist - is also consistent with the twin deficits story. While it provides some evidence for the existence of a twin deficits relationship across nations, the Bernheim study is limited by the absence of additional potentially important variables, namely the real exchange rate and the real interest rate. Because they are not included as explanatory variables in Bernheim's estimations, some aspects of a twin deficit investigation remain unresolved.

Stephen M. Miller and Frank S. Russek's (1989) empirical work is concentrated on two sub-periods of post - world war II U.S. data - one sub sample associated with the fixed exchange rate period (1946:i to 1971:ii) and the other generated during years of flexible exchange rates (1971:iii to 1987:ii). The researchers use measures of the trade and government deficits in nominal levels as well as in ratios to nominal GNP. Only in the flexible exchange rate period do their results support the twin deficit notion for both deficit levels and deficit ratios. Thus, Miller and Russek present evidence suggesting a causal impact of government deficits on trade deficits during the floating rate era.

Paul Evans (1989) uses an abstract model economy in which people (agents) make decisions rationally and over a lifetime horizon. His model and theoretical framework provide a more rigorous structure for empirical estimation than has been seen in previous research. Primarily, the model generates a testable hypothesis about the relationship between fiscal deficits and trade deficits - specifically, that in a world incorporating a Ricardian view of taxes and deficits no clear relationship between the deficits should be observed.

Evans (1989) estimates an empirical model that is specified in first - difference form (variables measured as changes from the previous period) and that includes a real (inflation-adjusted) interest rate, real government debt as explanatory variables. The empirical results using data from Canada, France, West Germany, Italy, Japan, the United Kingdom, and the United States suggest that Ricardian equivalence is a reasonable abstraction in the real world.

While Evans's study is more rigorous than earlier work, it is open to criticism on certain empirical grounds that may hinder interpreting the results. For the purposes of this discussion, the most relevant criticisms are that there are no variable to account for the effect of real exchange rate variability and that the estimations employ data measures in first difference form. Evans estimates the model in first differences because his theoretical model specifies data in that form. (Tallman, 1991)

Walter Enders and Bong - Soo Lee (1990) follow Evans in modeling more rigorously the economic behavior underlying the observed relationship between the trade and government deficits. Using quarterly data on the United States from 1947:iii to 1987:i for real consumption, real government spending, real public debt, real interest rate, the external current account, and the exchange rate, the researchers apply an estimation methodology known as vector autoregression (VAR). Despite what appears to be an important effect of the changes in the real public debt on the current account, the model suggests no direct relationship. An explicit test of the Ricardian equivalence proposition with the data cannot reject the hypothesis that budget deficits do not affect the current account.

The criticism of Enders and Lee's (1990) research is similar to that lodged against Evans (1989). First, the estimates are performed on data specified in first differences. The specification in first differences is only a criticism if statistics suggest that such a transformation is inappropriate for the data. However, Enders and Lee do not provide statistical evidence to support the first differences transformation. An additional shortcoming is that, their measures of this variable exhibits no movement for the fixed exchange rate period from 1947:iii until 1973, although the national exchange rate is among the explanatory variables included in Enders and Lee's work.

Rosensweig and Tallman (1991) examine the empirical relationship between the U.S. government and trade deficits using a data set that includes a real interest rate measure as well as a real exchange rate measure. The additional variables capture common movements in trade and government deficits that result from these two variables. Like Enders and Lee (1990) and John D. Abell (1990), Rosensweig and Tallman employ vector autoregression methodology. The research focuses on the idea that movements in the government deficit have a causal impact on the trade deficit. Despite contrasting evidence from typical Dickey - Fuller tests for stationarity, the Rosensweig and Tallman (1991) study shows that there is statistical support for estimating the VAR in level form rather than as differences. Hence, in the research reported their studies, levels of the four variables (with the deficit series as ratios to GNP) in a VAR with eight lagged quarterly values of each series have been used.

Abell (1990) estimates a VAR system with several relevant explanatory variables. Using first - differenced data, he finds little support for the government deficit as a primary explanatory variable for the trade deficit measure. The results suggest the absence of the causal underpinnings of the twin deficits story. It is notable that the data sample - monthly observations from 1979 to 1985 - presents only a limited picture of the historical behavior of the two deficits and the related variables. He finds that the budget deficit influences the trade deficit indirectly rather than directly. The primary set of linkages involves causality from budget deficits to higher interest rate, to foreign capital inflows, to an appreciation of the exchange rate, and, finally, to the trade deficits. Abell's seven - variable VAR contains the inflation rate and nominal values of the money supply (M1), GDP, federal budget deficit, interest rate, 101 country trade weighted exchange rate, and the merchandise trade balance. Cointegration tests are not performed among these variables. Standard errors of the impulse responses and variance decompositions are not reported.

Kearney and Monadjemi (1990) estimate VARs for a set of seven countries including the United States. Their evidence is consistent with a temporary twin deficit relationship that varies with the government's financing decision and does not persist over time. They also find feedback from the current account to government spending in most of the countries. They do not report standard errors of the variance decompositions and impulse - responses obtained from their VARs.

Boucher (1991) employs cointegration tests and finds no evidence of a long run relationship between the current account and net national saving for the United States. In his study, Net National Saving is defined as the government deficit plus net private saving.

Miller and Russek (1992) conclude that the measured fiscal deficit is not cointegrated with the trade balance, but the structural fiscal deficit is generally cointegrated with the trade balance.

Zietz and Pemperton (1990) have analyzed the influence of both federal budget deficits and sluggish foreign income growth on the U.S. trade deficit of the early 1980s. In contrast to numerous previous studies that have relied on semi - reduced form models, the analysis has been conducted in a simultaneous equation framework. There are three main results. First, it appears that the persistence of the U.S. trade deficit of the 1980s cannot be fully explained by macroeconomic fundamentals alone, at least not as they relate to the federal budget deficit and sluggish foreign income growth. There seems to be a role also for microeconomic explanations of the trade deficit. Second, the budget deficit affects the trade deficit mainly through its impact on domestic absorption and income rather than through higher interest and exchange rates. Third, sluggish foreign income growth has contributed to the U.S. trade deficit of the eighties. But its share has most likely not been dominant.

Bhattacharya's (1997) empirical work employs a VAR model and sets out to examine the factors affecting the trade balance of the United States over the period 1976:i to 1995:iv. The main findings of his paper are: (i) the growth differential of the United States with respect to the rest of the world is not statistically significant in explaining the trade balance; (ii) neither the direct nor the indirect effect of the federal budget deficit on the trade deficit are statistically significant; and (iii) an appreciation of the real dollar leads to a deterioration of the trade balance in the medium term.

3. The Theory

According to the twin deficits notion, movements in the government deficit precede similar changes in the trade deficit, implying that past government deficits would explain a substantial portion of the movements in subsequent trade deficits.

To clarify the relationship between these two variables, it is helpful to begin with some national income accounting identities. First, individuals dispose of income (Y) either as consumption (C), saving (S), or taxes (T);

$$Y = C + S + T \quad (1)$$

Second, income must arise from either the domestic scale of consumption goods (I), governmental goods (G), or the net scale of goods to foreign agents (Exports, X , minus Imports, M)

$$Y = C + I + G + (X - M) \quad (2)$$

combining equations (1) and (2), we obtain

$$C + S + T = C + I + G + (X - M) \quad (3)$$

The following national income accounting identity is useful for analyzing the relationship between budget deficits and trade deficits:

$$T - G = (X - M) + (I - S) \quad (4)$$

In words, equation (4) states that the government budget surplus is equal to trade surplus plus the excess of investment over private saving. Suppose then that the government fixes spending (G), and cuts taxes (T), thereby creating a deficits. Equation (4) indicates that, as a result, either the trade surplus (X-M) must decline or the excess of investment over saving (I-S) must decline, or both. Note that this conclusion follows directly from accounting and does not depend on any behavioral theories.

Whether the impact of budget deficits falls on (X-M) or (I-S) is an open question. Economists trained in the traditional Keynesian theory have pointed to the budget deficits as the major cause of the trade deficits. According to the Mundell - Fleming model, changes in the budget deficits trigger changes in the real interest rate, the real exchange rate, and the level of real income, which in turn alter the trade balance. Others, believing in the real - world relevance of the Ricardian Equivalence proposition, have argued that the deficits are not really twins, but merely distant cousins, if not entirely unrelated. If Ricardian Equivalence holds, shifts between taxes and borrowing have no effect on real interest rates or aggregate demand.

4. Methodology and Data

The study uses Turkish quarterly observations covering the period 1987:I to 1998:I. The main focus of this paper is on budget deficits and trade deficits, In testing for causality between budget and trade deficits, a multivariate rather than a bivariate framework is employed here in order to avoid distorting the causality inferences due to the omission of relevant variables. Research into the twin deficits story requires explicit examination of the entire set of variables that may relate meaningfully to trade and government deficits behavior (Tallman and Rosensweig, 1991). These additional variables defining the twin deficits model are given in table 1. Various theoretical considerations suggest the potential importance of these variables in the budget / trade deficits process [(Belongia and Courtney, 1985), (Bradley and Susan, 1986), (Evans,1985, 1986)].

For the purpose of this study the VAR model can be written as a simultaneous system of equations:

$$X_t = C + a(L)X_{t-1} + U_t \quad (5)$$

With $\Sigma = uu'$, with Σ to be the covariance matrix of VAR residuals, C is a vector of constant terms (C₁, C₂, C₃, C₄, C₅, C₆, C₇, C₈), X_t is the vector of the model variables (BD, TD, DG, IG, TE, HF, M2, EN), U_t is a vector of random disturbances and a(L) is a matrix polynomial in the lag operator L.

One vein of empirical literature focuses on statistical tests that examine whether data are more appropriate for model estimation in first differences or in level form. Statistical techniques are used to determine whether data are stationary in levels - that is, whether the data series statistical properties, such as means and variances, do not changes over time. That quality is an important one to identify because nonstationary data employed in estimation

techniques produce statistics that should not be analyzed in the same way as those generated from stationary data. In many cases, estimations using nonstationary data series produce results that lead to incorrect statistical inferences. (Tallman, 1991). Sims (1980) and others, Such as Doan (1992), recommend against differencing even if the variables contain a unit root. They argue that the goal of VAR analysis is to determine the interrelationship among the variables, not the parameter estimates.(Enders,1995). In this study we employ Monte Carlo integration techniques to estimate a Bayesian posterior probability for the stationarity of the data in level form.

Table 1: Variables: Definitions and Sources

Variable	Definition	Type	Source
BD_t	the seasonal adjusted Consolidated budget deficit (as ratios to GNP)	End.	RTMF
TD_t	the seasonal adjusted trade deficit (as ratios to GNP)	End.	HDT
DG_t	the seasonal adjusted external revenue (arithmetic mean of U.S. and Germany GNP)	End.	IMF
IG_t	the seasonal adjusted Internal revenue	End.	RTMF
TE_t	Trade Weighted Effective Real Exchange Rate	End.	CBRT
HF_t	Average Interest Rates On Securities	End.	CBRT
$M2_t$	M2 Money supply (Seasonally adjusted)	End.	CBRT
EN_t	GNP Deflator	End.	SIS

Data sources; RTMF: Republic of Turkey Ministry of Finance
HDT: Republic of Turkey Prime Ministry Undersecretariat of the Treasury and Foreign Trade
IMF: International Monetary Fund, International Financial Statistics (various issues)
CBRT: Central Bank of The Republic of Turkey
SIS: Republic Ministry State Institute of Statistics
End: Endogenous

Clearly, the answer to the question of whether data used in an examination of twin deficits should be in levels or in first differences is more pertinent if estimation results using differenced data lead to inferences that are different from those drawn from data in level form. Among the empirical studies surveyed above, those that support the twin deficits notion tend to have either deficit levels or deficit ratios to GNP as the main variables under study. On the other hand, researchers who found no twin deficit relationship were more often investigating data transformed into first differences. These patterns suggest that the particular data transformation does significantly color the results of inquiry into the twin deficits phenomenon; the choice of data transformation influences whether evidence supports or contradicts the twin deficits story (Tallman, 1991).

In addition to the determinations of the set of variables in the VAR, it is important to determine the appropriate lag lengths for each variable in each equation. However, in order to preserve the symmetry of the system (and to be able to use OLS efficiently), it is common to use the same lag length for all equations. OLS estimates are consistent and asymptotically efficient. (Enders,1995). For this study, a lag length of one is appropriate on the basis of the Schwartz Bayesian Criterion and the same lag length is used for all equations in the VAR model

5. Research Findings

Recent economic research has produced a substantial body of empirical literature employing rigorous econometric estimation techniques to test the validity of the twin deficits hypothesis. Nonetheless, the current body of the evidence does not yield a consensus on the relationship between government and trade deficits. Some studies using a Mundell - Fleming framework indicate that the twin deficit notion is consistent with the data. In contrast, other studies are consistent with the predictions of Ricardian equivalence. They find no underlying relationship between government and trade deficits. The following VAR model was estimated from 1987:i - 1998:i. The evidence from the F - test statistics are given below.

Figure 1
Forecasting Matrix

$$\begin{bmatrix} BD_t \\ TD_t \\ DG_t \\ IG_t \\ TE_t \\ HF_t \\ M2_t \\ EN_t \end{bmatrix} = \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \\ C_5 \\ C_6 \\ C_7 \\ C_8 \end{bmatrix} + \begin{bmatrix} 0 & 0 & 0 & 0 & a_{15}(L) & a_{16}(L) & 0 & 0 \\ a_{21}(L) & a_{22}(L) & 0 & 0 & 0 & a_{26}(L) & 0 & 0 \\ 0 & 0 & a_{33}(L) & 0 & a_{35}(L) & a_{36}(L) & 0 & 0 \\ 0 & 0 & a_{43}(L) & 0 & 0 & 0 & a_{47}(L) & a_{48}(L) \\ 0 & 0 & 0 & a_{54}(L) & a_{55}(L) & a_{56}(L) & a_{57}(L) & 0 \\ 0 & a_{62}(L) & a_{63}(L) & 0 & 0 & a_{66}(L) & 0 & 0 \\ 0 & 0 & 0 & a_{74}(L) & a_{75}(L) & 0 & a_{77}(L) & a_{78}(L) \\ 0 & 0 & 0 & a_{84}(L) & a_{85}(L) & 0 & 0 & a_{88}(L) \end{bmatrix} \begin{bmatrix} BD_{t-1} \\ TD_{t-1} \\ DG_{t-1} \\ IG_{t-1} \\ TE_{t-1} \\ HF_{t-1} \\ M2_{t-1} \\ EN_{t-1} \end{bmatrix} + \begin{bmatrix} e_{1t} \\ e_{2t} \\ e_{3t} \\ e_{4t} \\ e_{5t} \\ e_{6t} \\ e_{7t} \\ e_{8t} \end{bmatrix}$$

An entry in the coefficient matrix such as $a_{43}(L)$ has the following interpretation. The subscript 43 identifies the equation number (in this case 4- the IG equation) and the explanatory variable (in this case 3- DG variable). And the L is a lag operator. The C_i and e_{it} represent constant and error terms, respectively. A zero in the coefficient matrix in an off-diagonal position indicates the absence of direct causality. However, in a system with more than two variables, causality among two variables may exist indirectly by the presence of other variables. For example, in those cases in the model where the zero restrictions were not appropriate, the implication is that the inclusion of past values of some variable X improves upon the prediction of a variable Y and its "own" past lags; thus one would say that X Granger - cause Y.

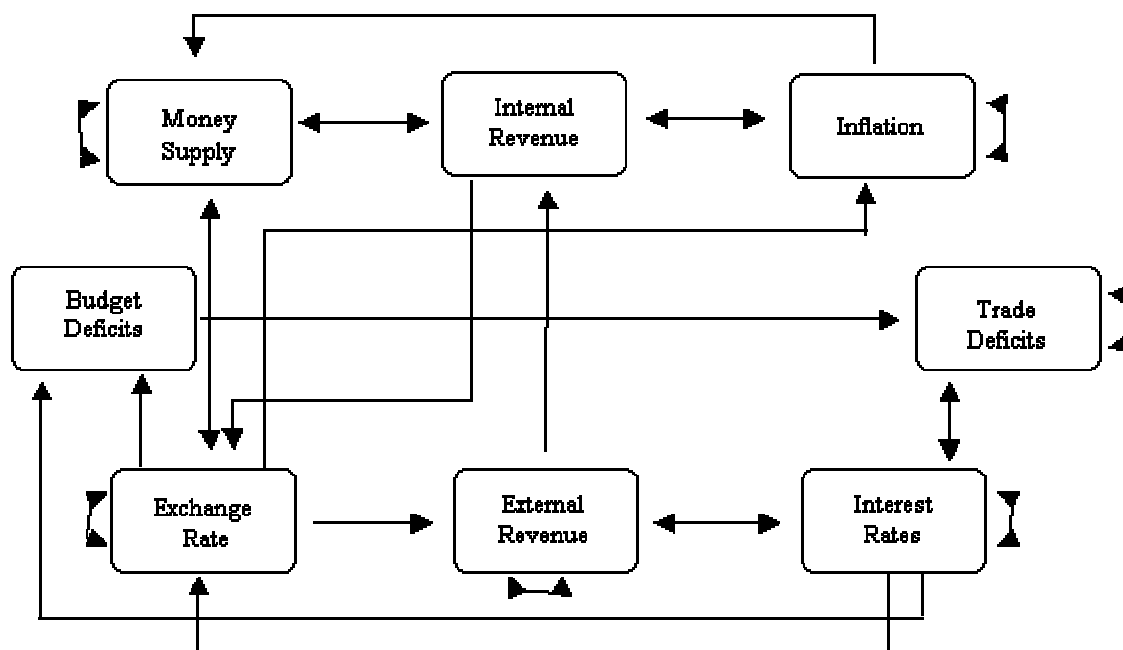
The examination of BD and TD in the coefficient matrix of the VAR model indicates that trade deficits do not directly bring about budget deficits, while on the other hand, budget deficits directly bring about trade deficits.

There are two channels through which trade deficits influence budget deficits. One is the flowing from trade deficits to interest rates, to exchange rates, and finally to budget deficits. The other is the flowing from trade deficits to interest rates, and to budget deficits.

Money supply have impact on inflation through internal revenue. Exchange rates do not have a direct Granger causal influence on trade deficit, however, its indirect effect is shown to operate through its causal relationship with budget deficit and interest rates. There are two direct causal influence on inflation, internal revenue and exchange rates.

The evidence from figure 1 shows how the causality flows between variables. The directions of the causality relations which are in the figure 2 comes from the forecasting matrix which is the result of the VAR measurement. This figure also clearly shows the direct and indirect reciprocal influence between variables.

Figure 2
Causality Flows



Source: figure 1

Additional evidence regarding these relationships is obtained by generating impulse - response functions from the moving average representation of the VAR. The moving average representation expresses each of the variables of the VAR system as a function of current and past disturbance. Using the coefficients of these disturbances or shocks, one can then trace out over time the response of any variable to a given shock to another variable. The entire time path of the affected variable is called an impulse response function.¹ I haven't reported the empirically results of impulse response functions because of the ambiguity of primary variables.

Sims (1980a, 1980b, 1982) introduced a more discerning test of causality based on the variance decomposition of a variable's forecast error variance. The decompositions are generated from a moving average representation of the VAR system and show the proportion of forecast error variance for each variable that is attributable to both its own innovations and those from the other variables. Thus, the relationship among the variables may be evaluated in terms of degree of causality. Table 2 presents the results of this procedure.²

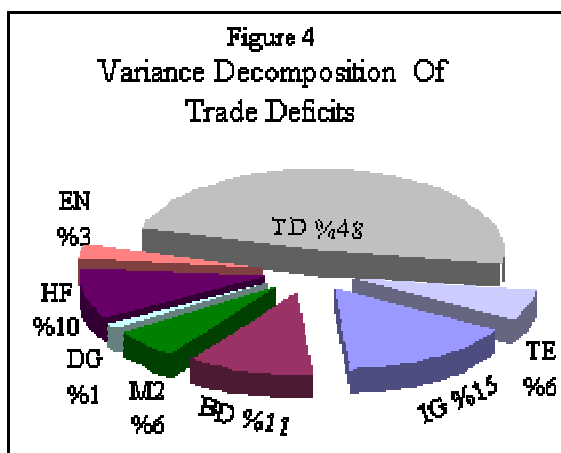
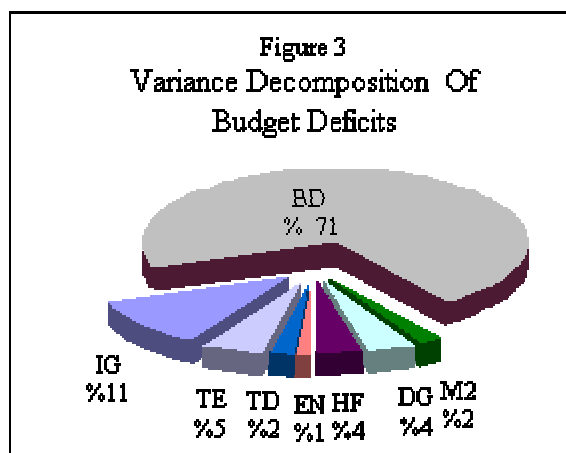
The importance of the budget deficit during this period is seen quite clearly from an examination of this table 2. In the BA equation, trade deficits explain 2 percent of the forecast error variance of budget deficits. Aside from "own lags" in the TA equation, budget deficits explain more of the forecast error variance of trade deficits (11 %) than any other variable, except for internal revenue. This percentage is five times greater than trade deficits' share to explain of the forecast error variance of budget deficits. This offers additional support for the proposal that causality really does run from budget deficits to trade deficits. Figure 3 and 4 report variance decompositions for the primary variables in the VAR system.

¹ Results from the other diagnostic tests, impulse - response functions and variance decompositions are available upon request.

² The variance decomposition results as well as those of the impulse response functions are often sensitive to the ordering of the variables. The variance decomposition results in this study are the arithmetic mean of the six different orderings of the variables.

Table 2: Variance Decompositions: Proportion of 12 quarter Variance Explained 1987:1 - 1998:1

Percent Variation in:	Due to innovations in:							
	IG	BA	M2	DG	HF	EN	TA	DK
IG	68	4	5	4	2	5	6	6
BA	11	70	2	4	4	1	2	5
M2	16	4	47	1	8	13	6	4
DG	2	2	3	69	5	3	2	13
HF	5	8	6	8	46	2	16	9
EN	9	2	19	3	19	28	7	14
TA	15	11	6	1	10	3	47	6
DK	6	4	5	3	25	3	5	49



In sum, the variance decompositions from the VAR provide consistent support for the basic predictive role of budget deficits in the typical twin deficits explanation.

6. Concluding Comments

Theoretical macroeconomic models of recent vintage yield divergent predictions about the relationship that exists between the stance of fiscal policy and the economy's performance on trade deficits. In view of the considerable uncertainty that continues to pervade appropriate specification of open economy macromodels, the empirical analysis of this paper utilizes the VAR technique to investigate the extent of evidence in support of the twin deficits proposition. This technique is particularly appropriate for this problem because a VAR model constitutes an unrestricted reduced form of some unknown structural model.

The evidence that is obtained through causality testing and variance decompositions corroborate the view that fiscal deficits significantly contribute to a deterioration of the trade balance.

According to achieved empirical results, the followings are the main conclusions: (1) a direct causal relation exists from budget deficits to trade deficits as expected in conventional theory. This causality has also feedback; (2) the relations among exchange rate, inflation and money supply indicate a vicious circle explanation; (3) treasury interest rates have direct impact on both the trade balance and budget balance. Financing method of budget deficits caused interest rates to be the most important variable within the economy; (4) there is a

sensitive balance among real domestic income, money supply and inflation; (5) There is no direct connection between exchange rates and foreign trade balance. Exchange rates have impact on the trade balance only through budget balance.

According to variance decomposition test results, budget deficits shocks explain 11 percent of trade deficits variance at a 12 - quarter horizon. These result also supports the twin deficits story, implying a significant impact of fiscal shocks on the trade balance. In contrast, shocks associated with trade deficits explain only about 2 percent of trade deficits variance. Thus, the evidence suggest that the direction of causality runs from budget deficits to trade deficits.

An important implication of this study is that the fundamental problem of Turkish economy stems from internal imbalances. For this reason, a stabilization program should begin with correcting the internal aspect of the issue. An improvement in internal balance would have a positive effect on the external balance as well.

References

- [1] Abell, J. D., "Twin Deficits during the 1980s: An Empirical Investigation", **Journal of Macroeconomics**, no: 12, no. 1 (Winter 1990), pp. 81-96.
- [2] Adams, C. and Gross, D., "The Consequences of Real Exchange Rate: Rules for Inflation", **IMF Staff Papers**, no: 33, (1986), pp. 439-476.
- [3] Barro, R. J., "Are Government Bonds Net Wealth?" **Journal of Political Economy**, no: 82, (1974), pp. 1095-1117.
- [4] Bernheim, B. Douglas., "Budget Deficits and The Balance Of Trade", **NBER**, 1988 (2)
- [5] Bhattacharya R., "The Trade Balance and the Real Exchange Rate: Evidence from a VAR for the United States." **The Journal of Economics**, XXIII. No. I. 1997
- [6] Blecker, R.A.: Beyond the Twin Deficits, A Trade Strategy for the 1990s **Armonk**, New York, London, England, 1997.
- [7] Boucher, J. L. (1991): "The U.S. Current Account: A Long and Short Run Empirical Perspective", **Southern Economic Journal**, July, vol. 58, number 1, 93-111
- [8] Branson, William H., "Asset Markets and Relative Prices in Exchange Rate Determination." **Socialwissenschaftliche Annalen I** (1976): 69-89.
- [9] Cuddington, John T., and Jose M. Vinals. "Budget Deficits and the Current Account in the Presence of Classical Unemployment." **Economic Journal** 96 (1986): 101-19.
- [10] "Budget Deficits and the Current Account: An intertemporal Disequilibrium Approach." **Journal of international Economics** 21 (1986): 1-24
- [11] Darrat, A. F., "Have Large Budget Deficits Caused Rising Trade Deficits?", **Southern Economic Journal**, no: 54 (April 1988), pp. 879-87.
- [12] Dixit, Avinesh K., "The Balance of Trade in a model of temporary equilibrium with Rationing." **Review of Economic Studies** 45 (1978): 393-4-4
- [13] Doan, T. RATS User's Manual. Evanston, III.: **Estima**, 1992
- [14] Dornbusch, Rudiger., "Expectations and Exchange Rate Dynamics." **Journal of Political Economy** 84 (1976): 101-19.
- [15] Enders, W.: Applied Econometric Time Series, **Iowa State University**, New York, 1995.
- [16] Enders, Walter, and Bong - Soo Lee., "Current Account and Budget Deficits: Twins or Distant Cousins?" **Review of Economics and Statistics** 72, no. 3 (1990): 373-81.
- [17] Engle, R. And C. J. Granger (1987): "Cointegration and Error - Correction: Representation, Estimation, and Testing", **Econometrica**, 55, March, 251-276.

- [18] Evans, P.: "Do Budget Deficits Affect the Current Account?" Paper, **Ohio State University**, 1988.
- [19] Feldstein, M. S.: "Government Deficits and Aggregate Demand" **Journal of Monetary Economics**, (Jan.1982), pp. 1-20.
- [20] Frenkel, Jacob A., and Assaf Razin. "Fiscal Policies in the World Economy." **Journal of Political Economy** 94 (1986): 564-94.
- [21] Johansen, S. And K. Juselius (1990): "Maximum Likelihood Estimation and Inference on Cointegration with Application to the Demand for Money." **Oxford Bulletin of Economics and Statistics**, 52, 169-209.
- [22] Laney, L. O.: "The Strong Dollar, the Current Account and Federal Deficits: Cause and Effects", **Federal Reserve Bank of Dallas Economic Review**, (January 1984), pp. 1-14.
- [23] Kawai, Masahiro., "Exchange Rates, the Current Account and Monetary - Fiscal Policies in the Short Run and in the Long Run." **Oxford Economic Papers** 37 (1985): 391-425
- [24] Kearney, C. And M. Monadjemi (1990): "Fiscal Policy and Current Account Performance: International Evidence on the Twin Deficits", **Journal of Macroeconomics**, Spring, 197-218.
- [25] Kimbrough, Kent P. "An Examination of the Effects of Government Purchases in an open Economy." **Journal of International Money and Finance** I (1985): 113-33.
- [26] Marston, Richard C., "Stabilization Policy in Open Economies." In vol. 2 of Handbook of International Economics, Edited by Ronald W. Jones and Peter B. Kenen, 859-916. **Amsterdam: Elsevier Science Publishers B. V.**, 1985
- [27] Miller, Stephen M., and Frank s. Russek. "Are the Deficits Really Related" **Contemporary policy Issues** 7, no. 4 (1989): 91-115.
- [28] "Are the Deficits Really Related? Further Comments", **Contemporary Policy Issues**, January, 112-113
- [29] Mohammadi H. And Skaggs T. N. "U.S. Fiscal Policy and Trade Deficits: A Broad Perspective" **Illinois State University**, Normal, Illinois, 1992
- [30] Moore, Michael J. "Inventories in the Open Economy Macromodel: A Disequilibrium Analysis." **Review of Economic Studies** 56 (1989): forthcoming
- [31] Mundell, Robert A. "Capital Mobility and Stabilization Policy under Fixed and Flexible Exchange Rates", **Canadian Journal of Economics and Political Science** 29 (1963): 475-85.
- [32] Neary, J. Peter., "Nontraded Goods and the Balance of Trade in a Neo Keynesian Temporary Equilibrium." **Quarterly Journal of Economics** 95 (1980): 403-29.
- [33] Obstfeld, Maurice. "Macroeconomic Policy Exchange Rate Dynamics and Optimal Asset Accumulation." **Journal of Political Economy** 89 (1981): 1142-61.
- [34] Persson, Torsten. "Global Effects of National Stabilization Policies under Fixed and Floating Exchange Rates." **Scandinavian Journal of Economics** 84 (1982): 165-92.
- [35] Rosensweig J, A., and Tallman, E, W.: "Fiscal Policy and Trade Adjustment: Are The Deficits Really Twins?" **Federal Reserve Bank Of Atlanta Working Paper** 91-2, March 1991.
- [36] Sims, C. "Macroeconomics and Reality" **Econometrica** 48 (Jan. 1980), 1-49.
- [37] Volcker, P. A.: "Facing Up to the Twin Deficits" **Challenge** (March/April 1984), pp. 4-9.
- [38] Winner, L, E.: "The Relationship of The Current Account Balance And The Budget Balance", **The American Economist**, 37, (2) (Fall 1993).
- [39] Zietz, J. And D.K. Pemperton: "The U.S. Budget and Trade Deficits: A Simultaneous Equation Model" **Southern Economic Journal**, (July 1990), pp. 23-35.