Relationship Causality between Budget Deficit and Current: The Case of Turkey

Y. Koray Duman¹

University of Akdeniz, Department of Economics 07058, Antalya, Turkey

Mehmet Mert²

University of Akdeniz, Department of Econometrics 07058, Antalya, Turkey

Abstract

This paper examines the causal relationship between budget deficit and current account deficit, and the direction of causality for Turkey. Keynesian view accepts the possible relationship between the budget deficit and current account deficit, while Ricardian Equivalance Hypothesis rejects this relationship. The validity of these hypothesis examined between 1994-2010 period using monthly data and Granger causality test. The Granger causality test indicates one-way causality that runs from current account deficit to budget deficit. The empirical analysis in this paper supports the Keynesian view that there is a linkage between budget deficit and current account deficit.

Keywords: Budget deficit, current account deficit, Twin deficit, Unit root, Causality, VAR model

JEL Classification codes: C22

1 Introduction

After the oil crises of the 1970s, profoundly affecting the world economy in the USA, many of the country, in the early 1980s a large budget deficit and current account deficit to remain faced with the problem, has led to intensification of research on twins explains. Twin defined as an open relationship between budget deficit and current account deficit, particularly in attempts to maintain macroeconomic stability in the process of economic growth for the economies of developing countries has been an important policy issue. In recent years, especially in developing countries with current account and budget deficits increased rapidly in the debate and many studies have been conducted on this issue.

In the literature on the twin hypothesis, the relationship between budget deficit and current account deficit, which the Keynesian approach and the relationship between these two there is an open advocate of Ricardian equivalence hypothesis is discussed in the context. Empirical studies focusing on the twin on the budget deficit and current account deficit (trade deficit) by examining the relationship between the Keynesian vision, or tried to test the validity of Ricardian Equivalence Hypothesis. However, studies of this relationship very different results were obtained in the presence and direction. The findings, examined the country, the research period, the method used and the data set that shows sensitivity.

¹ **Y. Koray Duman** is associate professor at University of Akdeniz, faculty of Economics and Administrative Science, department of Economics, Antalya, Turkey.

² Mehmet Mert is an assistant professor at University of Akdeniz, faculty of Economics and Administrative Science, department of Econometrics, Antalya, Turkey. He is also postdoctoral researcher at university of Beira Interior (UBI), faculty of Engineering, department of Electromechanical Engineering, Portugal. He holds a PhD in Statistics (2006: University of Hacettepe, Ankara, Turkey). His main topics are applied statistics, applied econometrics, panel models and time series analysis. Contact: mmert@akdeniz.edu.tr.

In addition, in countries where the macroeconomic conditions, especially the fragility of the country's economy and the most important elements in determining the direction of this relationship is prone to crisis. Turkey is a developing country in the 1980s began the process of structural transformation of the problems with the budget deficit and current account deficit continues to exist for a long time. Especially in the large budget deficits during the 1990s and 2000s, despite high growth rates in the high current account deficits azaltılamayan, who lived in the crises of 1994 and 2001 and 2008 financial crisis, the negative effects of the Earth deeply felt in Turkey's economy more questioning of the relationship between budget deficits and current account deficit essential. This study, therefore, during the period 1994:1-2010:8 using monthly data and the VAR model underlying the Granger causality test, in Turkey, and the validity of the twin budget and current account deficit hypothesis explains the causal relationship between the studied explored. Working in two parts. In the first part of the study, the twin dimensions of theoretical and empirical literature on approaches to open the hypothesis are mentioned. In the second part, the findings obtained after the application of econometric methods are introduced and evaluated.

Section 2 concerns relevant theoretical and empirical researches of Section 3 outlines the econometric approach which includes data and variables, unit root tests, causality tests and vector autoregressive model. Section 4 outlines empirical results of our models. Finally, section 5 concludes.

2 Literature Review

In developed countries, and particularly among developing countries in attempts to maintain macroeconomic stability, rising budget deficits and current account deficits that accompany it, the last two decades, the twin on the issue of increased interest and many empirical studies done on this issue has been a pioneer.

In the literature, in order to explain the relationship between budget deficit and current account deficit are two basic approaches. The first approach, Keynesian Mundell-Fleming model, associated with (traditional) approach. According to the Keynesian approach, there is a positive relationship between budget deficit and current account deficit and budget deficit, foreign trade deficit of causality is correct. Twin clear hypothesis, that is, caused by an increase in budget deficits, current account deficit thesis is based on the Keynesian view. According to the Keynesian view, the occurrence of an increase in budget deficits, public sector borrowing and an increase in demand on the rise in domestic interest rates lead foreign interest rate. Flows of capital flows in response to higher interest rate domestically, leads to the appreciation of national currency (the relative prices of foreign goods is getting cheaper and increased propensity to import) and foreign trade deficit in the final of this situation (the current account deficit) results (Islam, 1998:122-123; Arize and Malindretos, 2008:4; Erdogan and Booth, 2009:138).

The second approach to the relationship between the two on the current account deficit could lead to budget deficits in the Keynesian approach, proposed by rejecting the hypothesis is based on the Ricardian equivalence hypothesis. For the first time in Barro (1974) proposed by the Ricardian equivalence hypothesis, according to a causal relationship between budget deficit and current account deficit is not. According to this approach, which reduces public revenues and public savings, and an expanding budget deficit, tax cuts, tax increases in coming years to meet an expected increase private savings, the same amount. Giving a positive response to changes in savings in the budget deficit, causing the trade deficit unchanged. Similarly, public expenditures to be financed by borrowing, the economic future for individuals to finance the public budget deficit, taxes will increase the waiting, so that individuals increase their savings to meet future tax increases. As a result, a change in the composition of public financing (debt or taxes) and real interest rates, aggregate demand, private spending, foreign exchange or has no effect on the current account balance. In other words, the causal relationship between the two on the lack of support of Ricardian equivalence hypothesis (Arize and Malindretos, 2008:4; Erdogan and Booth, 2009:138; Vyshnyak, 2000:16-17).

Applied studies in the literature, for the Keynesian or the economies of countries consists of studies to demonstrate the validity of Ricardian equivalence Hipotezleri'nin. Empirical studies in the context of a causal relationship between budget and trade deficit, likely to be classified according to four situation. The first case, the budget deficit, foreign trade deficit of causality is correct, Keynesian contact consists of supporting trials, the foreign trade deficit budget deficit in the second case to emphasize the existence of reverse causality works are included. According to the third situation, the trade deficit and budget deficit are two-way causality.

These three cases in the literature, the existence of a causal relationship between budget and current account deficit to demonstrate the Keynesian response. In the fourth case, the absence of causality relationship between budget deficit and current account deficit, Ricardian equivalence hypothesis consists of supporting studies.

Initial studies in the 1980s often lived experience of a large budget deficit and current account deficit on the U.S. economy, while the current account deficit of causality budget deficits have reached the correct conclusions supporting the Keynesian view (Bahmani-Oskooee, 1989; Latif-Zaman, and Dacosta, 1990; Abell, 1990; Bachman, 1992). Bahmani-Oskooee (1989), the effect on the U.S. budget deficit, current account deficit for the period 1973-1985 using quarterly data examined, restores a contribution towards the budget deficit, current account deficit has reached the evidence supports the Keynesian view. Bernheim (1988), where the five countries in trade relations with the United States and open to the twin study examined the hypothesis that the traditional horizontal-sectional regression using the technique of budget deficits and current account deficits of at least onethird part be explained by the conclusion reached (Leachman and Francis, 2002:1122). Abell (1990), twin open the hypothesis that the U.S. economy for the period 1979-85 examined using a VAR analysis. The findings support the hypothesis that the twin on the budget deficit and trade deficit have shown that the current effect is indirect, not direct. According to the results of causality and action-reaction analysis, the underlying transport mechanism between the two light takes place through interest rate and exchange rate. Latif-Zaman, and Dacosta (1990) using data from the quarterly period 1971:1-1983:3 the budget deficit and trade deficit the causal relationship between the two variables studied on the basis of Granger-causality approach, the Keynesian approach to the U.S. economy during this period suggested by the current hypothesis on twin reached the conclusion that. According to the findings of causality, while the budget deficit to trade deficit, foreign trade deficit to budget deficit, there is proof of reverse causality. Bachman (1992) study uses VAR analysis, the U.S. budget deficits, current account deficits have reached the conclusion that the most important determinant. Diboglu (1997) the relationship between the U.S. budget deficit-the current account deficit during the period 1960-1994 using monthly data and the VAR model has examined the budget deficit affects the current account deficit has reached to the evidence supporting the hypothesis that open for the twins.

Leachman and Francis (2002), using both conventional cointegration and multiple co-integration analysis II. After World War I (1948-1992) for the U.S. economy before the collapse of the twin on the hypothesis that the Bretton-Woods (1948:1-1973:4) and after (1974:1-1992:2), separated by periods examined. The results, applied to a fixed exchange rate does not apply 1948:1-1973:4 sub-period shows a long-term relationship with the twin open, flexible exchange rate regime on the twin supports the hypothesis that the period 1974:1-1992:2 is applied. According to the findings of causality is true that budget deficits current account deficits. Grier and Ye (2009) study that takes into account the structural breaks, the U.S. economy, budget deficits, a significant positive impact on the current account deficit reached only in the short term.

Twin clear whether the current hypothesis for the economy of many countries outside of the U.S. economy was also examined. This is one of the key studies Vamvoukas (1999), Greece's economy for the period 1948-1994 the validity of the Keynesian and Ricardian equivalence Hipotezleri'nin tested empirically. Using cointegration and Granger causality analysis of the study, both short-and long-term budget deficit on the trade deficit showed a strong causal effect. According to the findings support the Keynesian view of foreign trade deficit, budget deficits true one-way causality. Results, Greece's economy is contributing to reduce the budget deficit, current account deficit-reducing policies. Vyshnyak (2000), the Ukrainian economy for the long-term relationship between the budget deficit and current account deficit is valid during the period 1995-1999 using monthly data and the cointegration and Granger causality tests have shown. According to the findings as significant in explaining changes in the budget deficit past values of the current account deficit, the transfer is through the exchange rate. Piersanti (2000), 17 OECD countries during the period 1970-1997 the dynamic relationship between budget deficits and current account deficit and examined using Granger causality and the generalized method of moments. The findings are strongly associated with current account deficits show that large budget deficits. Steel & Marine (2009), including Turkey, six emerging market economy (Brazil, Mexico, Colombia, Czech Republic and South Africa), 1996O1-2006O4 period, using a twin-panel co-integration analysis has found clear results support the hypothesis. Also working in developing countries the relationship between budget deficits-current account deficit, external factors (short-term capital flows, exchange rate fluctuations and volatility in interest rates) may be affected depending on the stresses on the subject (Steel and Marine, 2009).

Studies support the Keynesian view towards the budget deficit, foreign trade deficit, one-way causality, while highlighting some of the other studies, the current account deficit is evidence that budget deficits are the correct one-way causality. According to this approach, the current account deficit increases as a result of economic growth, and indirectly leads to budget deficits. This type of study is highly dependent on capital flows, especially the small and developing countries is valid samples. For example, Latin American and Southeast Asian countries, this situation can be observed in the presence of (Baharumshah et al. 2006). Baharumshah et al. (2006), Indonesia, Malaysia, the Philippines, and Thailand-for the VAR model, using the budget deficit, current account deficit (trade deficit) of the relationship. According to the results of the analysis, the long-term relationship between the budget deficit and current account deficit is valid, but the strength of this relationship varies by country. Results for Thailand only to reveal causality, predict the current budget deficits, Indonesia, the current account deficit for the budget deficit, evidence of causality has been reached (Baharumshah et al., 2006:338). Kearney and Monadjemi (1990), Ramchander (1998), Alkswani (2000) 'The current studies aimed to test the hypothesis that the VAR method, the twin open. As a result of findings from these studies, the current account deficit is the budget deficit is that a correct causality. One of Sri Lanka from other developing countries, viewing, and Saleh Chowdhury (2007), positive and strong relationship between the 1970-2005 period, found that two open, so the results support the Keynesian view (and Saleh Chowdhury, 2007:13-18).

In some other studies in the literature, two-way causality between the two open-work consists of providing evidence to. Islam (1998), Brazil's foreign trade and budget deficit for the period examined the causal relationship between 1973Q1-1991Q4, and concluded that two-way causality between the two open. Arize and Malindretos (2008), the trade deficit and budget deficit for the 1973:2-2005:4 period, examined the relationship between the 10 African countries.Both cointegration and causality analysis applied to both working towards a two-way causality has reached a solid evidence.Pahlavani and Saleh (2009), a small open economy, the twin to the Philippine economy during 1970-2005 Toda-Yamamoto causality test, using the hypothesis examined. Results in this country, two-way causality between budget deficits and current account deficits have reached for the existence of evidence.

In the last situation encountered in the literature, a causal relationship between budget and current account deficit, refused to support the work consists of Ricardian equivalence hypothesis. Miller and Russen (1989), Enders and Lee (1990) and Kaufman et al. (2002) studies, no causal relationship between budget deficits and current account deficit is not found.

The studies reached different findings for Turkey. Akbostancı and Bronze (2002) and Rich (2000) in studies where causality between budget deficit and trade deficit (budget deficit on foreign trade right), Faik Bilgili and Emine Bilgili (1998) not make an impact on the budget deficit, current account deficit had reached the conclusion. Akbostancı and Bronze (2002), cointegration and error correction model using the techniques of the period of 1987-2001 quarterly budget deficit, trade deficit, industrial production index, using data on narrowly defined money supply, budget deficit and trade deficit has addressed the interaction between. Results, the longterm mutual interaction exists between the two open, short-term budget deficit in the commercial release of causality show that accurate. Rich (2000), the budget deficit and foreign trade deficit for the period 1987-1998 the relationship between three-month budget deficit, current account deficit, money supply (M2) examined the relationship between the VAR model and using the findings support the hypothesis that twins reached the open. Faik Bilgili and Emine Bilgili (1998), U.S., Singapore and Turkey, data movement for the period 1975-1993 with the help of regression analysis examined the relationship between the two open. Results for each country shows that there is an impact on the budget deficit, current account deficit (Moon et al, 2004:78). Triumphant (2003), twin open the validity of the hypothesis for Turkey during 1950-2000, cointegration, error correction model, and examined using causality analysis. Implementation findings support the Keynesian hypothesis on the twin direction. According to the results, the long-term relationship between the two is two-way open (We simply provide, 2003:53-57). Moon et al. (2004), 1992-2003 period, using Granger causality analysis of the long-term relationship between two clear conclusion can be reached We simply provide two-way (2003) 's work supported. Keynesian causality test results, contact stresses are supported. On the other hand, Aksu and Basar (2005), between the years 1989-2003 using monthly data using the method of analysis had two clear relationship between the VAR and found that budget deficits affect trade deficits (Aksu and Awesome, 2005:109-114). Erdinc (2008), for the period 1950-2005 examined the relationship between the twin open for Turkey, a long-term relationship between the proposed budget and current account deficit has revealed evidence pertinent to the Keynesian approach. Findings, the budget deficit to current account deficit is one-way causality.

3 Econometric Approach

The applied data source is Turkey Statistics Institue (TÜİK) and Central Bank of Republic of Turkey (TCMB). The data contains the series between 1994 and 2010 which have the values for the first four months of each year, so each series has 68 values. We determined three variables for our models and they are the proportion of budget deficit in gross domestic products (BD), the real exchange rate (RER) and the proportion of current deficit in gross domestic products (CD).

First of all, we performed Augmented Dickey-Fuller tests for the series to check the presence of unit roots. Then, we tested causality of the series and finally designed vector autoregressive (VAR) model for the series.

3.1 Unit Root Tests

Stationary series are necessary for analyzing them in time series models. So, before modeling data, we checked presence of unit root for each series by using of Augmented Dickey-Fuller (ADF) test. As seen in Table 1, 2 and 3; the series BD has no unit root but the series RER and CD have unit root at original levels. As a result of this, we took the first difference of the series RER and CD to make them stationary. Correlograms of the series in Graph 2 support the results of ADF tests in Table 1, 2 and 3. Consequently, we use the original series BD and the first differences of the series RER and CD (D(RER) and D(CD)) in our models. See Graph 1 for the time series lines of the all original and differenced series. Also in Graph 1, it could be supported that the series we used in model are all stationary.

Table 1: ADF tests for BD

Null Hypothesis: BD has a unit root	Null Hypothesis: BD has a unit root					
Exogenous: Constant	Exogenous: Constant					
Lag Length: 0 (Automatic - based on AIC	C, maxlag=	10)				
	t	Prob.*				
	-5.95733	0.000				
Critical values 1% level	-3.53159					
5% level	-2.90552					
10% level	-2.59026					
Exogenous: Constant, Linear Trend						
Lag Length: 0 (Automatic - based on AIC	C, maxlag=	10)				
	t	Prob.*				
	-7.11107	0.000				
Critical values 1% level	-4.10094					
5% level	-3.47831					
10% level	-3.16679					
Exogenous: None						
Lag Length: 3 (Automatic - based on AIC	C, maxlag=	10)				
	t	Prob.*				
	-1.00537	0.280				
Critical values 1% level	-2.6016					
5% level	-1.94599					
10% level	-1.6135					
10,010,01	-1.0133					

^{*}MacKinnon (1996) one-sided p-values.

Table 2: ADF tests for RER

Null Hypothesis:	RER has a unit root		
Exogenous: Const			
-	utomatic - based on AIC	. maxlag=10)	
		t	Prob.*
		-0.44648	0.894
Critical values:	1% level	-3.5421	0.034
Citical values.	5% level	-2.91002	
	10% level	-2.59265	
Exogenous: Const	tant, Linear Trend		
Lag Length: 1 (Au	utomatic - based on AIC	, maxlag=10)	
		t	Prob.*
		-5.33098	0.000
Critical values:	1% level	-4.1032	
	5% level	-3.47937	
	10% level	-3.1674	
Exogenous: None			
Lag Length: 6 (Au	utomatic - based on AIC	, maxlag=10)	
		t	Prob.*
		2.786252	0.999
Critical values:	1% level	-2.60342	
	5% level	-1.94625	
	10% level	-1.61335	
Null Hypothesis:	D(RER) has a unit root		
Exogenous: Const			
· ·	utomatic - based on AIC	, maxlag=10)	
		t	Prob.*
		-5.79907	0.000
Critical values:	1% level	-3.5421	0.000
Citical values.	5% level	-2.91002	
	10% level	-2.59265	
Exogenous: Const		-2.37203	
-	ant, Emear Trend atomatic - based on AIC	movlog=10)	
Lag Lengui. 5 (A)	nomane - based on Arc	_	Duob *
		t 5 74514	Prob.*
	10/ 1 1	-5.74514	0.000
Critical values:	1% level	-4.11568	
	5% level	-3.48522	
	10% level	-3.17079	
Exogenous: None			
Lag Length: 3 (Au	utomatic - based on AIC	, maxlag=10)	
		t	Prob.*
		-5.72745	0.000
Critical values:	1% level	-2.60219	
	5% level	-1.94607	
	10% level	-1.61345	

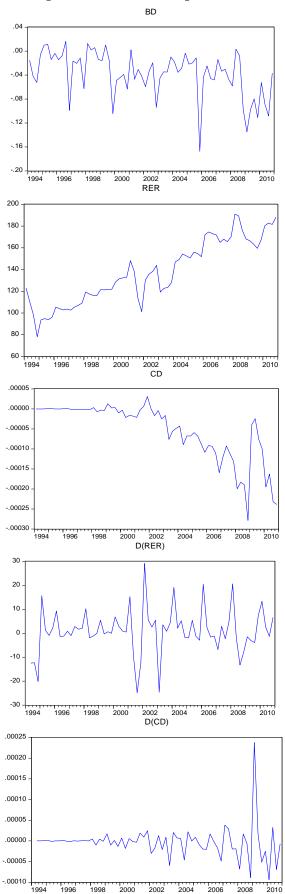
^{*}MacKinnon (1996) one-sided p-values.

Table 3: ADF tests for CD

Null Hypothesis: 0	CD has a unit root		
Exogenous: Const			
•	ntomatic - based on AIC	' maxlao=10)	
Lag Length. 6 (71)	nomane - based on the	t	Prob.*
		-0.32406	0.915
Critical values:	1% level	-3.5461	0.713
Citical values.	5% level	-2.91173	
	10% level	-2.59355	
Exogenous: Const		-2.37333	
•	itomatic - based on AIC	' maxlag-10)	
Lag Length. 6 (At	itomatic - based on Arc	t	Prob.*
		-1.95503	0.613
Critical values:	1% level	-4.1213	0.013
Citical values.	5% level	-4.1213 -3.48785	
	10% level	-3.17231	
Exogenous: None	1070 16761	-3.17231	
•	itomatic - based on AIC	' maylag=10)	
Lag Length. 8 (At	nomane - based on Arc	t	Prob.*
		0.507667	0.822
Critical values:	1% level	-2.60475	0.622
Citical values.	5% level	-1.94645	
	10% level	-1.61324	
Null Hypothesis: 1	D(CD) has a unit root	-1.01324	
Exogenous: Const			
-	ant itomatic - based on AIC	' maylag=10)	
Lag Length. 7 (710	nomane - based on the	t	Prob.*
		-3.06966	0.034
Critical values:	1% level	-3.5461	0.054
Citical values.	5% level	-2.91173	
	10% level	-2.59355	
Exogenous: Const			
•	itomatic - based on AIC	c, maxlag=10)	
		t	Prob.*
		-3.0612	0.125
Critical values:	1% level	-4.1213	
	5% level	-3.48785	
	10% level	-3.17231	
Exogenous: None			
Lag Length: 7 (Au	itomatic - based on AIC	, maxlag=10)	
		t	Prob.*
Critical values:	1% level	-2.70283 2.60475	0.008
Citucal values:	5% level	-2.60475 -1.94645	
	10% level	-1.94645 -1.61324	
	10/0 10/01	1.01327	

^{*}MacKinnon (1996) one-sided p-values.

Graph 1: Time Series Graph for Series



Graph 2: Correlograms for Series

Correlogram for BD

Autocorrelation Partial Correlation			AC	PAC	Q-Stat	Prob
1 🔳	1 🛅	1	0.296	0.296	6.2383	0.013
i 🛅t	1 11	2	0.160	0.079	8.0744	0.018
1	1 🖻	3	0.237	0.187	12.179	0.007
1 🗀	1 11	4	0.208	0.099	15.391	0.004
1.11	1111	5	0.052	-0.068	15.594	0.008
1 🗖 1	1 1 1	6	0.105	0.056	16.446	0.012
141	1回 1	7	-0.057	-0.172	16.702	0.019
1 1	1 1	8	-0.030	-0.001	16.771	0.033
1 11 1	1 11	9	0.095	0.118	17.502	0.041
1 1	1 1 1	10	-0.027	-0.070	17,562	0.063
1 1 1	1.11	11	-0.031	0.039	17.640	0.090
1	1	12	0.364	0.408	28,927	0.004
1 1 1 (1)	181	13	0.128	-0.088	30.342	0.004
1 1 1	1 1	14	0.048	-0.010	30.544	0.006
1 10 1	101	15	0.078	-0.091	31.094	0.009
1 1	1日 1	16	0.057	-0.105	31.391	0.012
(重)	1 1	17	-0.129	-0.186	32.937	0.011
1 🛊 1	1 11	18	0.059	0.089	33.264	0.016
101	1 1 1	19	-0.093	-0.020	34.109	0.018
10	1 11	20	-0.092	0.084	34,941	0.020
1 1 1	1 1	21	-0.023	-0.002	34.994	0.028
10	111	22	-0.085	-0.034	35.742	0.032
1 🛔 1	1 11	23	-0.065	0.075	36.196	0.039
1 🖻	1.11	24	0.205	0.068	40.759	0.018
1.1.1	10 1	25	0.022	-0.126	40.814	0.024
1 🛭 1	1 🛭 1	26	-0.080	-0.097	41.532	0.027
1 1	1 1 1	27	0.001	-0.076	41.532	0.037
E E	1 1	28	0.015	-0.020	41.559	0.048

Correlogram for RER

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
-		1	0.925	0.925	60.732	0.000
1	101	2	0.842	-0.087	111.88	0.000
1	1 11 1	3	0.777	0.078	156.11	0.000
1	1 11	4	0.723	0.025	194.94	0.000
1		5	0.702	0.208	232.14	0.000
1	1 11 1	6	0.690	0.044	268.69	0.000
	1 1 1	7	0.674	0.016	304.15	0.000
1	101	8	0.643	-0.079	336.98	0.000
ı <u>— — </u>	III 1	9	0.583	-0.166	364.42	0.000
	1111	10	0.520	-0.043	386.58	0.000
· 🗀	101	11	0.458	-0.071	404.13	0.000
· 🗀	101	12	0.399	-0.084	417.67	0.000
· 🗀	1 11 1	13	0.363	0.043	429.07	0.000
· 🗀	1 1	14	0.335	-0.013	438.94	0.000
· 🗀	1 1	15	0.308	0.021	447.48	0.000
· 🗀	1 11	16	0.285	0.034	454.90	0.000
· 🗀	III	17	0.227	-0.186	459.72	0.000
, po	1 11	18	0.171	0.026	462.50	0.000
1 b 1	1 1	19	0.125	0.007	464.02	0.000
1 🛅 1	1 1	20	0.087	0.018	464.77	0.000
1 j i 1	1 11 1	21	0.074	0.066	465.32	0.000
1 🗓 1	101	22	0.055	-0.094	465.63	0.000
1 11 1	1 1	23	0.034	0.016	465.75	0.000
1 1	1 1	24	0.014	0.014	465.77	0.000
- 10-1	10 1	25	-0.030	-0.117	465.87	0.000
1011	1 11	26	-0.066	0.037	466.37	0.000
- id -	1 10 1	27	-0.077	0.107	467.05	0.000
- td -	10	28	-0.088	-0.033	467.97	0.000

Correlogram for D(RER)

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
1 10 1	1 1	1	0.084	0.084	0.4905	0.484
	E 1	2	-0.228	-0.237	4.2007	0.122
10 1	1 1	3	-0.150	-0.114	5.8289	0.120
© 1	= 1	4	-0.189	-0.237	8.4426	0.077
111	111	5	-0.035	-0.080	8.5351	0.129
111	10 1	6	-0.009	-0.145	8.5413	0.201
(10)	1 1 1	7	0.115	0.038	9.5623	0.215
1 🖻	1 🖻	8	0.287	0.212	16.016	0.042
111	111	9	-0.054	-0.078	16.244	0.062
10 1	1 1	10	-0.159	-0.032	18.291	0.050
1 1	1 1 1	11	-0.048	0.018	18.481	0.071
110	1 1	12	-0.065	-0.033	18,840	0.092
1111	010	13	-0.038	-0.075	18.966	0.124
1 🛭 1	10 1	14	-0.050	-0.118	19.188	0.158
1 1	10 1	15	-0.006	-0.115	19.191	0.205
1 🚍	1 10	16	0.286	0.189	26.607	0.046
111	1 1	17	-0.037	-0.109	26.732	0.062
100 1	11.1	18	-0.132	-0.021	28.378	0.057
1 🛭 1	1 1	19	-0.068	-0.085	28.821	0.069
181	1 13	20	-0.068	-0.024	29.282	0.082
1111	3 3	21	0.030	-0.002	29.372	0.105
1 1	1.1	22	-0.004	-0.051	29.374	0.134
1.1.1	111	23	0.023	-0.049	29.428	0.167
(🛅	1 11	24	0.245	0.127	35,901	0.056
10 1	18 1	25	-0.106	-0.123	37.128	0.056
	1 1	26	-0.209	-0.092	42.046	0.024
1 1	1 1 1	27	0.018	0.022	42.085	0.032
ı 🛅	1 🗖	28	0.239	0.289	48.854	0.009

Correlogram for CD

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
1		1	0.794	0.794	44.818	0.000
1	1 11 1	2	0.658	0.073	76.025	0.000
1	1 11	3	0.580	0.104	100.70	0.000
1	3 [3	4	0.482	-0.057	118.01	0.000
1	1	5	0.505	0.284	137.31	0.000
1	1 1	6	0.496	0.008	156.22	0.000
1	1	7	0.587	0.396	183.08	0.000
1 20 14	1 1 1	8	0.655	0.094	217.07	0.000
1	1	9	0.529	-0.303	239.66	0.000
1	1 1	10	0.472	0.002	257.97	0.000
1	1 1 1	11	0.411	0.014	272.05	0.000
1	3 3	12	0.352	0.001	282.60	0.000
1.	1 <u>1</u>	13	0.317	-0.156	291.31	0.000
1 1	1 1	14	0.285	0.000	298.49	0.000
1 💷	E 1	15	0.272	-0.278	305.15	0.000
1 🔟	1 1	16	0.241	-0.027	310.49	0.000
1 🗀	1 1 1	17	0.185	0.027	313,70	0.000
1 11	1 1	18	0.159	0.008	316.12	0.000
1 11	16 1	19	0.109	-0.185	317.28	0.000
1.01	3 13	20	0.075	0.026	317.84	0.000
111	101	21	0.040	-0.054	318.00	0.000
1 1 1	1 1	22	0.010	0.004	318.01	0.000
111	1 1	23	-0.037	-0.041	318.15	0.000
141	1 101	24	-0.055	0.119	318.48	0.000
1 1	10 1	25	-0.080	-0.131	319.19	0.000
14 1	1 11	26	-0.091	0.090	320.13	0.000
1 🗖 1	111	27	-0.126	-0.054	321.96	0.000
1 1	1 1	28	-0.145	0.076	324.46	0.000

Graph 2: Continued

Correlogram for D(CD)

Autocorrelation Partial Correlation			AC	PAC	Q-Stat	Prob
d t	(E)	1	-0.225	-0.225	3.5367	0.060
10 1	16 1	2	-0.080	-0.137	3.9884	0.136
(E) E	1 (1	3	0.004	-0.051	3.9895	0.263
	1	4	-0.239	-0.282	8.1907	0.085
1 101	1 [1	5	0.149	0.012	9.8378	0.080
III 1	1	6	-0.240	-0.309	14.221	0.027
1 1	10 1	7	0.044	-0.119	14.372	0.045
1 🖻	1 1 1	8	0.210	0.060	17.820	0.023
101	1 1 1	9	-0.078	-0.021	18.302	0.032
1 1 1	1 1	10	0.021	-0.107	18.339	0.050
10	1 1	11	-0.049	-0.045	18.539	0.070
1.11	20 10	12	0.038	0.019	18.660	0.097
1.1.1	111	13	0.017	-0.022	18.686	0.133
111	1 11	14	-0.032	0.049	18.779	0.174
1 1	1.1.1	15	0.002	-0.012	18.779	0.224
1 1	111	16	0.006	-0.014	18.783	0.280
111	111	17	-0.014	-0.026	18.800	0.340
1 01	1 1	18	0.103	0.168	19.803	0.344
111	1 1	19	-0.054	0.010	20.086	0.389
111	111	20	-0.043	-0.027	20.270	0.441
1.1.1	1 1	21	0.020	0.007	20.312	0.502
1 10 1	1 31	22	0.084	0.182	21.041	0.518
101	111	23	-0.079	-0.056	21.697	0.539
1 1	1 11	24	0.003	0.071	21.698	0.597
111	111	25	-0.045	-0.047	21.916	0.641
1 1 1	1 1	26	0.035	0.006	22.053	0.686
3.10	21 21	27	0.025	-0.007	22.126	0.731
10 1	21.1	28	-0.127	-0.044	24.052	0.679

3.2 Granger Causality Test and Variable Order

We performed Granger Causality test to get pairwise causality between the series and put an order the series for VAR model.

Table 4: Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
D(RER) does not Granger Cause BD	63	1.15825	0.340
BD does not Granger Cause D(RER)		0.54084	0.706
D(CD) does not Granger Cause BD	63	0.68724	0.604
BD does not Granger Cause D(CD)		2.7606	0.037
D(CD) does not Granger Cause D(RER)	63	1.37458	0.255
D(RER) does not Granger Cause D(CD)		2.17403	0.084

Lags: 4

According to resulst of Granger causality tests, as seen in Table 4, there is no pairwise causality releationship between the series BD and D(RER). However, there is one way causality from BD to D(CD) at .05 level and also there is one way causality from D(RER) to D(CD) at .10 level. In other words, BD causes D(CD) and D(RER) causes D(CD) in respect of Granger test. As a result, we put order the series as BD \rightarrow D(RER) \rightarrow D(CD).

3.3 VAR model

We selected lag order 4 for our VAR model according to Akaike information criteria (AIC). And also, sequential modified LR test statistic determines lag order 4. Shortly, we use VAR(4) model for our series.

Table 5: VAR Serial Correlation LM Tests

Included observations: 63

Lags	LM-Stat	Prob
1	6.141065	0.726
2	12.48595	0.187
3	9.388545	0.402
4	7.953261	0.539
5	6.835709	0.654
6	15.47015	0.079
7	9.877044	0.361
8	6.973632	0.640
9	7.88739	0.546

Probs from chi-square with 9 df.

Table 6: VAR White Heteroskedasticity Test

Chi-sq	df	Prob.
154.6468	144	0.257

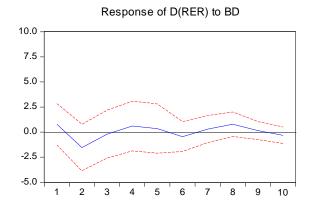
It can be seen in Table 5 that there is no autocarrelation and according to Table 6, there is no heteroskedasticity problem in our model. In addition, inverse roots of the model are welldone as seen in Graph 3.

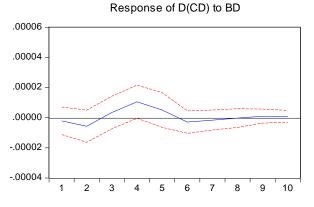
4 Empirical Results

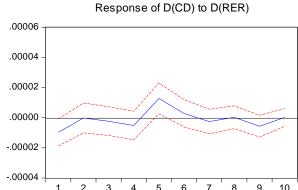
Graph 4 shows impulse-response functions of the series. Impulse-response graph show that resulting one unit shock in the one of the series is responsed by the other series.

Graph 4: Impolse- Response functions

Response to Cholesky One S.D. Innovations ± 2 S.E.







The response of D(RER) is positive to one unit shock in BD. After the period 3, this effect of D(RER) is disappearing. The response of D(CD) is negative to one unit shock in BD. After period 3, this effect of D(RER) is becoming positive and after period 6, disappearing. The response of D(CD) is negative to one unit shock in D(RER). After period 4, this effect of D(CD) is becoming positive and after period 6, disappearing.

In Table 7, 8 and 9; it can be seen the variance decomposition of BD, D(RER) and D(CD) respectively.

Table 7: Variance Decomposition of BD

Period	S.E.	BD	D(RER)	D(CD)
1	0.037225	100.0000	0.000000	0.000000
2	0.038733	97.29198	2.691735	0.016286
3	0.039373	95.51990	4.448579	0.031521
4	0.040385	94.07299	4.772825	1.154187
5	0.04189	91.14064	4.442805	4.416558
6	0.042077	91.17857	4.410331	4.411102
7	0.042209	91.15295	4.392257	4.454793
8	0.042443	91.19037	4.357191	4.452441
9	0.042732	91.09920	4.431983	4.468822
10	0.042816	91.01810	4.507097	4.474803

Table 8: Variance Decomposition of D(RER)

Period	S.E.	BD	D(RER)	D(CD)
1	8.196719	0.910846	99.08915	0.000000
2	8.566847	4.057401	90.75210	5.190496
3	8.939959	3.778140	91.34376	4.878099
4	9.182003	4.014027	87.09309	8.892887
5	9.425406	3.947437	85.69832	10.35424
6	9.458187	4.149974	85.28432	10.56571
7	9.519031	4.193345	84.89711	10.90955
8	9.579058	4.805488	83.84853	11.34598
9	9.615649	4.792540	83.94732	11.26014
10	9.627357	4.890412	83.74328	11.36631

Table 9: Variance Decomposition of D(CD)

Period	S.E.	BD	D(RER)	D(CD)
1	3.62E-05	0.328247	7.213868	92.45788
2	3.95E-05	2.348760	6.056786	91.59445
3	3.99E-05	3.081337	6.295379	90.62328
4	4.16E-05	9.318532	7.343478	83.33799
5	4.44E-05	9.538785	14.78685	75.67436
6	4.49E-05	9.739358	14.84504	75.41560
7	4.51E-05	9.780662	15.03516	75.18418
8	4.51E-05	9.761460	15.00402	75.23452
9	4.57E-05	9.574942	16.17657	74.24849
10	4.58E-05	9.575270	16.10736	74.31737

According to Table 7, while the series BD is first effected by own lagged values amoung ten periods, the effectives of the other series are not considerable. The effective of D(CD) picks up after period 5 and after that it has equal effective with D(RER) in the other periods.

In Table 8, the series D(RER) is effected by own lagged values amoung ten periods. The series D(CD) is more effective than the series BD. The effect of D(CD) is higher than 10 percent after period 5 while the effect of BD is almost same for all ten periods.

In Table 9, the series D(CD) is effected by own lagged values amoung ten periods. The series D(RER) is more effective than the series BD. The effect of D(RER) is higher than 14 percent after period 5 and growing up while the effect of BD is picks up after period 4 and goes on equal amoung 10 period.

5 Conlusion

While the Keynesian approach emphasizes that internal deficit would co-exist with external deficit and would be equal to it; the Ricardian Equivilence that came to the fore with Barro's 1974 paper, argues that above mentioned Keynesian result may not be obtained due to the Ricardian Equivilence that came to the fore with Barro's 1974 paper, argues that above mentioned Keynesian result may not be obtained due to an alteration in household saving behaviour.

In this study, the relationship between budget deficits and current account deficits in Turkey for 1994-2010 periodis examined with annual data by using recently developed time series econometric tecniques such as the cointegration analysis and Granger Causality Test. In cointegration analysis, it is found that there is along run relationship between budget deficits and current account deficits. This conclusion supports the Conventional Keynesian Theory. Moreover, according to Granger causality tests results, the causality runs from budget deficits to current account deficit

KAYNAKÇA

Kaynakça

- Abell, John D. (1990), Twin Deficits During the 1980s: An Empirical Investigation, Journal of Macroeconomics, 12 (1), 81-96.
- Akbostancı, Elif, Tunç, Gül İpek (2002), Turkish Twin Deficits: An Error Correction Model of Trade Balance, Economic Research Center Working Papers in Economics 01/06.
- Aksu, Hayati ve Başar, Selim (2005), İkiz Açıklar Hipotezi'nin Türkiye Açısından Araştırılması, İktisat İşletme ve Finans, Yıl.20, Sayı 234, 109-114.
- Alkswani, Mamdouh A. (2000), The Twin Deficits Phenomenon in Petroleum Economy: Evidence from Saudi Arabia, Seventh Annual Conference, Economic Research Forum (ERF), 26-29 October, Amman, Jordan.
- Anoruo, Emmanuel ve Ramchander, Sanjay (1998), Current Account and Fiscal Deficits: Evidence from Five Developing Economies of Asia, Journal of Asian Economics, 9 (3), 487-501.
- Arize, Augustine C. ve Malindretos, John (2008), Dynamic Linkages and Granger Causality Between Trade and Budget Deficits: Evidence from Africa, African Journal of Accounting, Economics, Finance and Banking Research, Vol.2, No.2, 1-19.
- Asteriou, Dimitrios (2006), Applied Econometrics: A Modern Approach Using Eviews and Microfit, Pall Grave MacMillan, New York.
- Ay, Ahmet, Karaçor, Zeynep, Mucuk, Mehmet ve Erdoğan, Savaş (2004), Bütçe Açığı-Cari İşlemler Açığı Arasındaki İlişki: Türkiye Örneği (1992-2003), Selçuk Üniversitesi SBE Dergisi, 12, 75-82.
- Bachman, Daniel David (1992), Why Is the US Current Account Deficit So Large? Evidence from Vector Autoregressions, Southern Economic Journal, 59 (2), 232-240.
- Baharumshah, Ahmad Zubaidi, Lau, Evan, Khalid Ahmed M. (2006), "Testing Twin Deficits Hypothesis Using VARs and Variance Decomposition", Journal of the Asia Pacific Economy, Vol.11, No.3, 331-354.
- Bahmani-Oskooee, Mohsen (1989), Effects of the U.S. Government Budget on Its Current Account: An Empirical Inquiry, Quarterly Review of Economics and Business, 29 (4), 76-91.
- Bilgili, Faik ve Bilgili, Emine (1998), Bütçe Açığının Cari İşlemler Dengesi Üzerindeki Etkileri: Teori ve Uygulama, İktisat İsletme ve Finans, Yıl.13, Sayı.146, 4-16.
- Chowdhury, Khorshed ve Saleh, Ali Salman (2007), Testing the Keynesian Proposition of Twin Deficits in the Presence of Trade Liberalisation: Evidence from Sri Lanka, University of Wollongong Economics Working Paper Series, WP 07-09, 1-33.

- Çelik, Sadullah ve Deniz, Pınar (2009), An Empirical Investigation of Twin Deficit Hypothesis for Six Emerging Countries, 1. Uluslararası Avrasya İsletme ve Ekonomi Kurumu Konferansı, Kadir Has Üniversitesi, İstanbul, Türkiye.
- Dickey, David A.ve Fuller, Wayne A. (1979), Distribution of The Estimators for Autoregressive Time Series with A Unit Root, Journal of the American Statistical Association, 74 (366), 427-431.
- Dickey, David A.ve Fuller, Wayne A. (1981), Likelihood Ratio Statistics for Autoregressive Time Series with A Unit Root, Econometrica, 49, 1057-1072.
- Enders, Walter ve Lee, Bong-Soo (1990), Current Account and Budget Deficits: Twins or Distant Cousins, Review of Economics and Statistics, 72 (3), 373-381.
- Erdinç, Zeynep (2008), İkiz Açıklar Hipotezinin Türkiye'de 1950-2005 Yılları Arasında Eşbütünleşme Analizi ve Granger Nedensellik Testi ile Încelenmesi, Anadolu Üniversitesi Sosyal Bilimler Dergisi, Cilt:8, Sayı:1, 209-222.
- Erdoğan, Seyfettin ve Bozkurt, Hilal (2009), Türkiye'de Cari Açığın Belirleyicileri: Mgarch Modelleri ile Bir İnceleme, Maliye Finans Yazıları, Yıl:23, Sayı:84, 135-172.
- Gomez, Victor ve Maravall, Agustin (1994), Estimation, Prediction and Interpolation for Nonstationary Series with the Kalman Fitler, Journal of the American Statistical Association, 89 (426), 611-624.
- Gomez, Victor ve Maravall, Agustin (1996), Programs TRAMO (Time Series Regression with ARIMA Noise, Missing Obsarvations and Outliers) and SEATS (Signal Extraction in ARIMA Time Series)", Instructions for User, Banca de Espana Working Paper, No. 9628.
- Granger, Clive W.J. (1969), Investigating Casual Relations by Econometric Models and Cross-Spectral Methods, Econometrica, 37, 424-438.
- Islam, M. Faizul (1998), Brazil's Twin Deficits: An Empirical Examination, Atlantic Economic Journal, 26 (2), 121-28.
- Kaufman, Sylvia, Scharler, Johann, Winckler, Georg (2002), The Austrian Current Account Deficit: Driven by Twin Deficits or by Intertemporal Expenditure Allocation?, Empirical Economics, 27, 529-542.
- Kearney, Colm ve Monadjemi, Mehdi (1990), Fiscal Policy and Current Account Performance: International Evidence on the Twin Deficits, Journal of Macroeconomics, 12 (2), 197-219.
- Kwiatkowski, Denis, Phillips, Peter, Schmidt, Peter ve Shin, Yongcheol (1992), Testing the Null Hypothesis of Stationarity Against the Alternative of a Unit Root, Journal of Econometrics, 54, 159-178.
- Latif-Zaman, Nazma ve DaCosta, Maria N. (1990), The Budget Deficit and Trade Deficit: Insights into This Relationship, Eastern Economic Journal, 16 (4), 349-354.
- Leachman, Lori ve Francis, Bill (2002), Twin Deficits: Apparition or Reality?, Applied Economics, 34 (9), 1121-1132.
- MacKinnon, James G. (1991), Critical Values for Cointegration Tests, Long Run Economic Relationships: Reading in Cointegration içinde, Engle, Robert F. ve Granger, Clive W.J., Oxford University Press, Oxford, 267-276.
- Miller, Stephen M. ve Russek, Frank S. (1989), Are Twin Deficits Really Related?, Contemporary Policy Issues, 7 (4), 91-115.
- Pahlavani, Mosayeb ve Saleh, Ali Salman (2009), Budget Deficits and Current Account Deficits in the Philippines: A Causal Relationship?, American Journal of Applied Sciences, 6 (8), 1515-1520.
- Phillips, Peter ve Perron, Pierre (1988), Testing for a Unit Root in Time Series Regression, Biometrica, 75, 335-
- Piersanti, Giovanni (2000), Current Account Dynamics and Expected Future Budget Deficits: Some International Evidenve, Journal of International Money and Finance, 19 (2), 255-271.
- Sever, Erşan, Demir, Murat (2007), Türkiye'de Bütçe Açığı ile Cari Açık Arasındaki İlişkilerin VAR Analizi ile İncelenmesi, Eskişehir Osmangazi Üniversitesi İİBF Dergisi, 2 (1), 47-63.
- Utkulu, Utku (2003), Türkiye'de Bütçe Açıkları ve Dış Ticaret Açıkları Gerçekten İkiz mi? Koentegrasyon ve Nedensellik Bulguları, Dokuz Eylül Üniversitesi İİBF Dergisi, 18 (1), 45-61.
- Vyshnyak, Olga (2000), Twin Deficit Hypothesis: The Case of Ukraine, s.1-54, http://www.kse.org.ua/uploads/file/library/2000/Vyshnyak.pdf, (Erişim tarihi: 01.11.2010).
- Vamvoukas, George A. (1999), The Twin Deficits Phenomenon: Evidence from
- Greece, Applied Economics, 31 (9), 1093-1100.
- Zengin, Ahmet (2000), İkiz Açıklar Hipotezi (Türkiye Uygulaması), Ekonomik Yaklaşım, Gazi Üniversitesi, C.2, S.35, 37-67.