Analysing the Presence of "Triple Deficit" in Turkey's Economy

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Abstract: Detailed determination and effective control of the factors causing the current account deficit is of great importance for the economies of developing countries. In the framework of the concept called "twin deficit", the imbalances in the current account arise from either a budget deficit or an investment-saving gap. Besides, budget deficits and investment-saving gap together can cause to current account imbalances. This situation is called "triple deficit" and in this case, current account imbalances can cause serious problems for the economies. Therefore, researches aiming to determine the causes of the current account deficit in developing countries have become very popular in the literature. Because the analysis of the domestic demand dynamics constituting the current account deficit is of great importance in terms of effectively identifying the policies aimed at eliminating the risks arising from these deficits. From this point of view, the aim of our study is, by using quarterly data between 2003 and 2018, to analyze the presence of "triple deficit" in Turkey. Accordingly, the effects of both the public budget deficit and the private sector investment-saving gap on the current account imbalance have been examined within the framework of the ARDL Model. Empirical results show the presence of the triple deficit for Turkey's economy. Moreover, the negative effect of the private investment-savings gap on the current account deficit is much greater compared to the public budget deficit. From the point of policy implication, these results indicate that applications aiming to compensate for the savings inability are more effective to close the current account deficit in Turkey. In other words, a policy strategy aiming at eliminating the lack of savings should be adopted in order to solve the current deficit problem.

Keywords: Triple Deficit, Turkey, ARDL Model.

1. Introduction

The balance of payments is an important economic document that records the commercial and financial relations that a country makes with other countries. With the rapid globalization experienced today, international trade and especially financial relations have reached great dimensions. In parallel, keeping track of the commercial and financial relations of countries with other countries has gained great importance. Thus, examining the changes in the balance of payments for all countries has gained huge significance for measuring macroeconomic performance. As a result, the information kept in the sub-items of the balance of payments has become the most important data used by economists in economic analysis.

One of the most important sub-accounts in the foreign trade balance sheet is the current account. The developments in the current account have very important information about the economic structure and functioning of a country. For example, if the production structure of a country does not work with high technology that provides a competitive advantage, it becomes disadvantageous in foreign trade, thus deficit occurs in the current account. On the other hand, if domestic demand is higher than the aggregate supply in a country, there will be a deficit in the foreign trade account since it has to import than export. Thus, the imbalances in the domestic demand components are deteriorating the current account balance, which leads to important macroeconomic problems causing crises in the economy. When a deficit occurs in the current account of an economy, this deficit is mainly financed by the excess obtained from the capital account. In other words, the current account deficit is mostly financed with foreign capital inflows to the country. However, in the process of financing the current account deficit by foreign capital inflows, significant risks arise. For example, the foreign capital inflows used in financing the current account deficit may lead to the appreciation of the domestic currency, thus causing the current account deficit to grow further. On the other hand, the financial capital inflows towards the country increase the foreign debt stock of the country. In this way, the deficits that arise in the current account and the financing process of these deficits trigger many different

risks and result in economic crises. Therefore, it is very important to analyze the current account deficit dynamics effectively and determine their dynamics. Because only in this way, the risks arising from the current account deficit can be controlled and prevented from causing crises.

The aim of this study is to determine the sources of imbalances occurring in the current account in Turkey's economy. Thus, it is aimed to contribute to the process of designing economic policies to control the deficits in the current account. Accordingly, in the first part of the study, the theoretical framework regarding the sources of deficits occurred in the current account is determined. In the second part, it has been revised empirical literature on the triple deficit. In the third part, information is given about the data used in the study, the econometric method and the results achieved. In the last section, some policy implications have been made by interpreting the empirical findings.

2. Theoretical Framework

In order to analyze the deficits in the current account, first of all, the items under this account should be defined. The current account consists of four sub-accounts: foreign trade, services, income balance and current transfer account. In foreign trade sub-item, goods are exported and recorded. In the services sub-item, the export and import of services, called invisible trade, are recorded. The income account shows the difference between the income of foreign assets invested abroad and the income that foreign countries receive through their own assets in that country. The current transfer sub-item consists of the difference between private and official transfer revenues and expenses. In addition, workers' income from abroad is also included in this account (Central Bank, 2009: 22-26). As can be seen, the main sub-items of the current account is the trade of goods and services. Therefore, this account contains important information that shows a country's foreign trade relations with other countries. Accordingly, analysis can be made on the foreign economic relations of a country by following the developments in the current account. Developments in the current account mainly show not only the foreign trade relations of a country with other countries but also indicate the domestic demand dynamics in the economy. Because changes in the current account balance

are mainly depending on the developments in the domestic demand factors in the economy. With the help of national income identity, which shows the definition of national income through the expenditure approach, the interaction between the developments in the current account and the changes in total demand can be clearly revealed (IMF, 2009: 222-223). Accordingly, as indicated Equality -1, national income (Y) equals the sum of the consumption (C) that expresses household expenditures, investment (I) as firm expenditure, public expenditure (G) and net export which represents the difference between export (X) and imports (M).

$$Y = C + I + G + (X - M) \quad (1)$$

If we put household consumption (C), investment (I) of firms and public expenditure (G) to the left side of equality, and expressed all of them as aggregate demand (AD), equations in Equations 2 and 3 below can be achieved.

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

$$Y - (AD) = (X - M) \quad (3)$$

The deficit that occurs in a current account in a country, as determined in Equation -3, that is, the fact that import (M) is more than exports (X) occurs when the expansion in the domestic total demand (AD) exceeds the national income level. In fact, if the domestic total demand increases and is higher than the national income produced in the country, a deficit occurs in the foreign trade account. The imbalances caused by the increase in domestic total demand items in the current account due to foreign trade are clearly defined above. On the other hand, it is important to determine whether the increase in the current account is caused by the private or public sector. In order to demonstrate this situation, macroeconomic sizes should be expressed as injections and leaks (Higgins and Klitgaard, 1998: 3). Here, the factors that increase domestic total demand with the term injection, and the elements that decrease the domestic total demand with the term leak are specified. On left side of Equation -4, three leak factors such as savings (S), tax (T), and imports (M) have been shown while injection elements such as investment (I),

public expenditures (G) and exports (X) have been indicated on the right side of Equation-4.

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

If investment (I) and public spending (G) are to the left of equality and imports (M) to the right of equality, then Equality-5 is achieved.

$$(S - I) + (T - G) = (X - M)$$
$$(5)$$

Thus, Equality-5 clearly indicates that sources of the expansion in the domestic total demand that lead to the deficit in the current account, namely that the import (M) is more than the export (X). Accordingly, the expansion in domestic aggregate demand results from either the private sector imbalance (S - I) or the public sector imbalance (T - G).

The increase in total demand in the private sector means a decrease in savings (S) due to the increase in household consumption expenditures (C). On the other hand, the increase in investment expenditures (I) of firms increases the demand in the private sector. In this case, the increase in demand in the private sector caused by the decrease of savings (S) and the increase of investments (I) leads to the increase in the savings-investment difference (S - I) and also causes a deficit in the current account (M-X). On the other hand, the increase in total demand in the public sector may lead to a deficit in the current account (M-X) by increasing the difference between taxes (T) and public expenditures (G) as a result of the increase in public expenditures (G). Thus, there is a close relationship between the expansion in total demand from the private or public sector and the current account.

The term "twin deficit" is used to describe the situations in which the deficits in the current account are caused only by the budget deficit or private sector investment-savings deficit. On the other hand, when budget deficits and investment-saving deficits lead to current account deficit, this situation is defined by the concept of "triple deficit". In the theoretical analysis of the previous periods, twin deficits were emphasized due to the current imbalances caused by the budget deficit. Thus, in this process, the importance of fiscal discipline was emphasized in order to eliminate the open and related risks caused by the

imbalance in the public budget in current transactions. However, especially with the increase in international capital movements in the last decades, the decline in savings as a result of the rising liquidity in financial markets caused the private sector investment-savings balance to deteriorate. As a result, the phenomenon of "triple deficit" started to be at the centre of theoretical analysis.

3. Literature Review

Twin deficit hypothesis introducing of the linkage between budget deficit and current account deficit is broadly investigated in the literature. On the other hand, Triple deficit hypothesis showing the situation in which budget deficit, current account deficit and saving investment gap are seen together has become important to explain the balance of payment imbalances of developing countries in recent years. However, studies focusing on triple deficits which advance twin deficit hypothesis by associating savings and fixed investments is quite limited. It seems that most of the studies confirmed the validity of triple deficit hypothesis. Chowdhury and Saleh (2007) have examined the relationship among the budget deficit, saving-investment gap, and current account deficit for the short and long term in Sri Lanka. They have used the ARDL method and a data set covering over the 1970–2005 period. According to empirical results, there is a meaningful linkage among the budget deficit, saving-investment gap, and current account deficit. Ali and Kakar (2017) seek to empirically examine the co-movement of a third deficit known as the current and financial account balance with the twin deficit hypothesis. The study uses annual data of Pakistan covering the period 1980 to 2014. The ARDL bound testing approach finds that the three deficits namely budget deficit, current account deficit and capital and financial account deficit are linearly correlated in the long-run. Further the study found that causality runs directly from current account to budget balance and financial balance, which is a strong evidence of triple deficit hypothesis.

Özdemir et al (2014) examined the validity of the triple deficit hypothesis for the 17 transition economies between 2003 - 2011 by means of convenient and uninterrupted data set was analyzed via panel regression models. The findings showed that the triple deficit hypothesis

for the 17 transition economies is not valid in the period among 2003-2011. However, some evidence was found that the private sector saving-investment gap was found to be the primary riser of the current account deficit rather than triple deficit. Çoban and Balıkçıoğlu (2016) analyzed the existence of triple deficit relationship for 24 transition countries in the period 2002-2013 by means of static and dynamic panel data analysis. They find that there is only an interaction between current account deficit and savings-investment deficit. This result implies that transition economies face with the budget deficit problems or vice versa in case of reducing the current account deficit. Bayramoğlu et. al (2017) aim to explore whether the twin and triple deficit hypotheses are valid in developing economies. Accordingly, the twin and triple deficit hypotheses are examined by testing Dumitrescu and Hurlin panel causality approach for 15 developing country economies for the period between 2000 and 2015. The results of panel causality test show that there is a unidirectional causality from budget deficit to current account deficit. It is concluded that hypothesis of twin deficits is valid for the country group analyzed. In the field of the triple deficit hypothesis, a strong interrelationship between domestic savings and the current account is reached, while a causal relationship between fixed capital investments and the current account balance cannot be determined. Consequently, most of the studies in the literature concluded that the theory of triple deficit is partially valid for the group of developing countries.

In the survey of literature on Turkey, it also seems that studies determining the fact of "twin deficits", in the context of the relationship between budget deficit and current account deficit, have a big share. However, in recent times, it has been observed that "triple deficit" phenomenon was intensively determined. Akıncı ve Yılmaz (2012), by using the ARDL method and focusing on data between 1975 and 2010, has tested the triple deficit hypothesis in Turkey. Econometric results revealed that the private sector saving-investment deficit and public budget deficit created an imbalance in the current account for both the short and long term. Similarly, Akbaş et al. (2014) have analyzed whether "triple deficit" is valid or not by using the Hatemi-J asymmetric causality test based on the data between 1960 and 2012. The empirical findings show that both private sector investment-savings deficit and public budget deficit lead to an

imbalance in the current account. Thus, it was emphasized that policymakers should apply fiscal and monetary policies effectively in order to balance the public budget and investment savings.

More recently, Karanfil and Kılıç (2015) analyzed whether the savings deficit, budget deficit and current account deficit occurred simultaneously, based on data from 1980-2013. For this, Johansen Cointegration Analysis and Granger Causality Test were used. Econometric analysis results revealed that the triplet deficit phenomenon is valid in Turkey. In order to solve this problem, it was emphasized that the total savings shortage in the country should be eliminated. On the other hand, Güder and Kılıç (2016), examines the data between 2012 and 1980, investigated the triple deficit hypothesis for Turkey. Impulse-Response Function based on the VAR model and Variance Decomposition methods demonstrated that the triple deficit problem experienced in Turkey. Thus, besides the budget deficit, the private savings-investment deficit also results in imbalances in the current account deficit. It is proposed to close the budget deficit without using private sector resources to solve the problem. In addition, it was stated that measures should be taken to increase private savings by pointing out the low level. In addition, due to the close relationship between the economic growth based on imported production input and the current account deficit, it was pointed out that domestic production should be encouraged as another solution. It is stated that economic growth is based on imported input, and it is not possible to maintain the current balance in a stable manner.

In recent times, another study carrying out by İpek and Kızılgöl (2016) revealed that the current account deficit seen together at the same time saving-investment deficit and budget deficit in Turkey. In this study, a triple deficit case was investigated by using the ARDL model and Toda-Yamamoto causality tests over the time series for the period 2004-2014. As a result of ARDL analysis, budget deficits and savings-investment deficits have been shown to affect the current account deficit in the long term. In the short term, only the current account deficit-increasing effect of the budget deficit was determined. Thus, in general, the existence of the triple deficit hypothesis in Turkey has proven. Therefore, it has been proposed to implement various policy implementations to close both the budget deficit and the savings-investment deficit. Finally, Altunöz (2018) investigated the fact of triple

deficit for Turkey's economy in the context of current account deficit, budget deficit and the savings-investment deficit. The bound test results carried out within the framework of the ARDL model showed that there was a cointegration relationship between the variables between 2001 and 2017. In addition, short- and long-term forecasts proved to be a significant relationship between the current account deficit and the savings-investment deficit and the budget deficit. In addition, Toda and Yamamoto causality tests revealed that there is a two-way relationship between variables. In this case, it proved that cases of triple deficit in Turkey evolved over the process feeding each other. Therefore, it was emphasized that it is imperative to increase the savings by reducing the consumption expenditures in order to overcome the savings-investment deficit.

Besides the above-mentioned research, though limited in number, the findings obtained in a number of studies did not confirm the presence of triplets open cases in Turkey. Sürekçi (2011) analyzed the relationship among the public budget balance, investment-savings balance and the current account deficit using quarterly data for the period 1987-2007 in Turkey. Results of the Impulse-Response Function based on the Vector Autoregressive Model (VAR) model showed that the case of the triple deficit is not valid in Turkey. However, a causal relationship has been found from public deficits to the current deficit. Altun and İnce (2014) have analyzed the interactions among the saving-investment balance, government budget balance and the foreign trade deficit by employing the ARDL method on the data between 1975 and 2010. As a result of the analysis, no long-term relationship was found between the mentioned variables. In addition, in the results of the Toda Yamamoto causality test, causality relationship was determined from the foreign trade deficit to the savings deficit, from the foreign trade deficit to the budget deficit and from the savings-investment deficit to the budget deficit. Samırkaş and Samırkaş (2015) analyzed the interaction among the balances of budget, investment- savings and current account using the Impulse-Response Functions and Variance Decomposition techniques developed within the framework of the Vector Autoregressive Model (VAR). Empirical findings did not confirm the presence of the case of triple deficit in Turkey. Instead, while the current account deficit was an important determinant of the budget deficit and savings-investment deficit, a causality

relationship from the savings deficit to the budget deficit was also identified.

4. Data, Methodology And Emprical Results

In this section, the effects of the budget deficit and investment savings deficit on the current deficit are analyzed empirically. In our study, budget deficit (BD), investment savings gap (IS) and the current account deficit (CAD) data was obtained from the Electronic Data Dissemination System (EDDS) of the Central Bank of the Republic of Turkey. Econometric analysis covers the 3-month data from 2003 and 2018, which represents the period of implementation of inflation targeting monetary policy in Turkey.

Within the framework of econometric analysis, firstly unit root tests are employed to the series. Stability analysis of variables is performed using ADF (Augmented Dickey-Fuller) and PP (Phillips-Perron) unit root tests developed by Dickey and Fuller (1981) and Phillips and Perron (1988). Then, the relationships between variables were investigated within the framework of the Autoregressive Distributed Lag (ARDL) method developed by Peseran and Shin (1995) and Peseran, Shin and Smith (2001). Accordingly, in the first stage, Bound Test was applied to determine the cointegration relationship between the variables. In the second and third stages, based on the ARDL model established, the coefficients of long- and short-term relationships, respectively, were estimated.

4.1 Unit Root Test

The results of the ADF (Augmented Dickey-Fuller) and PP (Phillips-Perron) unit root tests are presented in Table 1. Accordingly, investment savings gap (IS) data is stationary in terms of both unit root tests. Budget deficit (BD) and current account deficit (CAD) data have become stable only when their first differences are taken. Therefore, IS data I (0) and BD and CAD data are stationary in I (1) degrees. Thus, since the variables are stationary at different degrees, the ARDL Boundary Test should be used in the implementation of the cointegration relationship between them.

Table 1. Results of Unit Root Test

Variables	ADF		PP	
	Level	1. difference	Level	1. difference
CAD (intercept)	-1.98	-11.53*	-2.47	-12.15*
CAD (intercept+ trend)	-1.51	-12.98*	-1.69	-11.98 *
IS (intercept)	-2.68***	-8.60*	-2.20 ***	-7.90*
IS (intercept+ trend)	-2.47***	-8.96*	-2.66***	-7.87 *
BD (intercept)	-2.09	-6.19**	-1.29	-8.77**
BD (intercept+ trend)	-1.59	-10.19*	-1.61	-11.45*

Note. * ,**, *** show the critical values at the significance levels %1, %5 and %10, respectively. Optimal lag (2) for AIC.

4.2 Bound Test

In this section, the most suitable model by using Schwarz Information Criterion (SIC) was determined and Bound Test was estimated. As can be seen from the results of bound test presented in Table 2, the calculated F statistic value is higher than the lower and upper limit values at 1%, 5% and 10% significance levels. This result allows us to reject the null hypothesis, which suggests that there is no long-term relationship between the variables included in the analysis. Thus, the existence of a cointegration relationship between the budget deficit, investment savings deficit and current account deficit is revealed. Accordingly, the stages of estimating the relationships between the variables with the ARDL model for long and short terms can be realized.

Table 2. Results of Bound Test

k	F-Stat.	1 % critical value		5 % critical value		10 % critical value	
		I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
2	8.91	6.84	7.84	4.94	5.73	4.04	4.78

Note: k, the number of independent variables. The critical values bounds are taken from Table CI (iii) in Pesaran et al 2001.

4.3 Long Run Analysis

The coefficient values of the ARDL (1,3,2) model used in the estimations about the long-term relationship between the variables are presented in Table 3. The results show that the estimated coefficients for the ARDL (1,3,2) model are mostly statistically significant. When the long-term coefficient values are examined in the model where the current deficit variable (CAD) is dependent variable, it is determined that the variables of investment savings deficit (IS) and budget deficit (BD) are statistically significant at the levels of 1% and 5%, respectively. In addition, both variables positively affect the current account deficit. In other words, savings and investment deficit may lead to imbalances in both the current account deficit in Turkey together. In addition, when looking at the size of the variables, it is seen that the investment saving deficit (0.96) has a much more significant effect on the current deficit than the budget deficit (0.32). Diagnostic test results for econometric forecasts made to determine long-term relationships between variables are also given in the last section of Table 3. The high R and R2 values here determine that the fit of the model is good. In addition, Jarque-Bera Test, Breusch-Godfrey Test and Breusch-Pagan-Godfrey Test conducted within the framework of diagnostic tests show that normal distribution, autocorrelation and variance problems are not experienced in the predicted model, respectively.

Table 3. Estimation Results of ARDL (1,3,2)

Variables	Coefficient	t-statistics	Probability
C	-0.6932	-2.5110	0.0110
CAD (-1)	0.9447	1.2711	0.0173
IS	0.1700	0.3867	0.0001
IS (-1)	0.2610	0.1750	0.0982
IS (-2)	-0.7236	-1.1730	0.0021
IS (-3)	0.5941	1.1750	0.0811
BD	0.4850	0.0861	0.0125
BD (-1)	-0.3018	0.7651	0.0192
BD (-2)	0.2835	0.1731	0.0271
The Estimation Results of Long-Run Coefficients			
Variables	Coefficient	t-statistics	Probability
Sabit	2.9861	4.9311	0.0011*
IS	0.9612	9.212	0.0000*
BD	0.3210	2.387	0.0100**
Diagnostic Tests			
R	0.76	JB Normality	1.6712 (0.3981)
R^2	0.69	BG Autocorrelation	1.2149 (0.5957)
Schwarz Criteria	-1,6189	White Heteroscedas.	7.6543 (0.2155)
F Statistics	27.6410 (0.00) *	Ramsey RESET	0.8351 (0.3851)

Note. * and ** show the critical values at the significance levels %1, and %5, respectively.

4.4 Short Run Analysis

The short-term effects of the investment savings gap and the budget deficit on the current account deficit have been calculated within the framework of the Error Correction Model (ECM) and the results are presented in Table 4. Error correction model is a model that shows how the imbalance between the short- and long-term relationship of the variables is eliminated. In this way, it provides information about short-term dynamics between variables with cointegration relations, and is also used to test causality between these variables. Here, the error correction coefficient gives information about how the imbalance between the short- and long-term relationship is resolved. In the estimates made in our study, error correction coefficient (ECM) was found to be negative and statistically significant as expected. Accordingly, the error correction mechanism works in the model and the imbalance in the face of a shock to the system is directed towards the long-term balance at a rate of 68.44% in each quarter. In addition, just like the long-term forecast, the impact of the investment savings deficit (IS) lagged values on the current account deficit (CAD) is greater than that of the budget deficit lagged values (BD).

Table 4. Estimation Results of Error Correction Model

Variables	Coefficient	t-statistics	Probability
C	6.6139	2.6712	0.0210**
ΔCAD (-1)	1.2319	2.8912	0.0398**
ΔIS	0.8716	-2.9820	0.0010*
ΔIS (-1)	1.9125	2.4512	0.0467**
ΔIS (-2)	0.8798	-1.9861	0.0321**
ΔIS (-3)	1.1281	-2.1692	0.1458
ΔBD	0.7712	1.8912	0.0376**
ΔBD (-1)	0.6425	2.7512	0.0398**
ΔBD (-2)	0.3791	1.9237	0.0465**
ΔBD (-3)	-0.4431	1.7912	0.1179
ECM (-1)	-0.6844	-2.0912	0.0015*

Note. * ,**, show the critical values at the significance levels %1, and %5, respectively.

5. Conclusion

As a result of the increase in international economic integration, changes in the foreign trade balance and especially the developments in the current account have gained great importance. In this process, deficits in the current account created serious risks in the economy and caused serious crises. Thus, current account deficits have been used as an important variable in the explanation of many negative economic facts, especially crisis theories. Therefore, understanding the dynamics of current account deficits and designing policies that can control these dynamics has become a popular research topic among economists. Hence our study determines the current account deficit in Turkey factors were analyzed in the public and private sector investment savings gap and the budget deficit axis. For this, quarterly data for the period 2003-2018 were analyzed using the ARDL model.

Empirical findings showed a long-term interaction between variables. Short- and long-term coefficient estimates made upon this also gave meaningful results. The findings obtained in this way shows that the current open cases of triplets for Turkey's economy. In addition, data on the role played by the public and the private sector regarding the current account deficit in Turkey has allowed dynamic comparative evaluation. Accordingly, the negative impact of the investment savings imbalance on the current account deficit in both the short and long term is greater than the effect of the public budget deficit. Accordingly, policymakers should prioritize policies aimed at solving private sector savings shortages in order to close the current account deficit.

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