



Why Does Turkey Have a Chronic Current Account Deficit?

An Empirical Analysis

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Abstract

Turkey faces a significant current account deficit since beginning of the first half of 2000s. The main objective of this study is to investigate the factors which affects the current account balance of Turkey for the period from September 2005 to November 2017. The required monthly data have been collected from Republic of Turkey's central bank, Turkey statistical institute, U.S energy information administration websites and investing.com websites. Autoregressive distributed lag(ARDL) approach and Error correction model(ECM) was used for data analysis. The ARDL regression findings show that industrial production index(IPI) statistically and positively affects the current account balance; CDS and the real effective exchange rate statistically and negatively affects the current account balance of Turkey. When investigating the long run impact of these three factors, all of them have a negative and statistically significant impact on current account. However, in the short run only industrial production index has a negative and statistically significant impact on the current account balance.

Key words

CDS, Current Account Deficit, Industrial Production Index, Real Effective Exchange Rate, Turkey

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1. Introduction

Following the oil price shocks of 1973, there was a large moves in the current account balance of many countries. When the oil price shock coincides with a new floating exchange rate system, the large swing in current account balance of many countries raised an important concern among policy makers and analysts which promotes a number of experts to analyze carefully factors that determine the current account balance. Throughout the 1980s most of the developing countries cut off from international capital markets and experienced either current account surpluses or small deficits. Beginning from 1990, large number of emerging countries were able to attract significant amount of foreign equity capital. However, this fund results a big current account deficit and rapid accumulation of foreign reserves. During the first half of 1990, forexample, Mexico was able to attract significant amount of foreign capital and was able to finance a huge current accout deficit between 1992 and 1994. Even if some analysts argued that Mexico's current account deficit is so large, authorities responded that current account deficit is under control and it is harmless. Unfortunately, the country experienced a curency crisis in 1994 and 1995; and rising interest rate even did not stop currency out flow (Edwards, 2002).

In 1990s Southeast Asian countries deregulated the financial markets and the goal of this liberalization was to provide a large quantity of low cost funds to local financial institutions and corporate sectors. This policy was corresponded with huge capital inflow to the region; and low cost of borrowing results excessive borrowing and an excessive investment (Corsetti *et al.*, 1998; Radelet and Sachs, 1998). The deregulation of Eastasian market also coincides with 1990s financial market liberalization in developed countries which increases the capital flow from industrialized world to emerging markets throughout the world. The low interest rate in the US and Japan also accelerates the flow of foreign capital to emerging economies and Southeast Asian countries (Radelet and Sachs, 1998). The 1990s financial market liberalization increases moral hazards and fragility of the region. One of the main corporate level moral hazard was that government provided subsidies and guarantees to some favored firms and industries in order to accelerate economic growth (Corsetti *et al.*, 1998; Radelet and Sachs, 1998). Due to government guarantees, the production plans and corporate strategies overlooked the costs as well as the riskness of an underlying investment projects. Evidences from the region in the mid 1990s proved that the profitability of new projects was so low. Thus, the adverse effect of it was a persistant and sizable amount of current account deficit. The moral hazard of both financial and current account deficit resulted the 1997 Southeast Asian financial crisis (Corsetti *et al.*, 1998). This analysis shows that current account deficit has some contribution to the 1997 Asian crisis.

The Southeast Asian (sometimes called Asian) financial crisis was the sharpest financial crisis to hit developing countries since the 1982 debt crisis. One of the important aspect of the Asian crisis is that it was not predicted by market participants and market analysts. Although very few analysts were able to predict it, such warnings were rare (Radelet and Sachs, 1998). The currency crisis of 1990s shocked investors, academics, international civil servants and policy makers alike. Most analysts had missed the financial weakness in Mexico and Southeast Asian countries and when the crisis erupted almost every observer was surprised by their intensity (ability). This inability to predict major financial collapses is viewed as an embarrassment of sorts by the economics profession. For this reason, macroeconomists in academia, in the multinational institutions and in the investment banks have developed crisis 'early warning' models. These models have focused on a number of macroeconomic variables like, the level and currency composition of foreign debt, debt maturity, the weakness of domestic financial sectors, the country's fiscal position, its level of international reserves, political instability, real exchange rate overvaluation etc. After the development of crisis early warning models, the 1998 Russian crisis and the 1999 Brazilian crisis were widely anticipated (Edwards, 2002).

One of the main reasons for the uepredictability of the SouthEast Asian financial crisis by rating agencies, international lenders and most market observers was due to most of the fundamental macroeconomics variables were sound throughout the early 1990s. For example, inflation was below 10% in the region, fairly budgetary position, sovereign debt was at prudent level, domestic savings and investment were high, both capital inflows and foreign reserves were high. Therefore, the macroeconomic variables seemed healthy and the crisis was not easily predictable. However, there were several signs of financial vulnerability of the regioin in early 1990s and specially in 1996 and early 1997. These were growing current account deficit, overvalued currency, slowing export growth, much of the foreign credits were used for speculative investment in real estate markets rather than using to increase the productive capacity of manufacturing sector which again hinders export significantly, sharp increase in foreign borrowing by domestic banks and private corporation, and high ratio of short term debt to foreign reserve (Radelet and Sachs, 1998).

Even if different authors do not agree on the role of current account deficits in the 1990s financial crisis, some analysts have argued that large current account deficit have been behind the major financial and currency crisis (Edwards, 2002). Corsetti, Peseti and Roubini (1998) argued that current account deficit has a contribution to the 1997 Asian crisis. In the 21st century, also a group of industrialized nations and emerging market economies were experiencing a persistent rise in the size of current account imbalances (Clower and Ito, 2011). For this reason the concept of a chronic current account deficit became an important theoretical, political and economic issue (Aristovnik, 2006). Thus, the above empirical findings stress the significance of a balanced current account for a healthy economy; specially for emerging markets which are more dependent to foreign capital to support economic growth.

According to the monthly data on current account balance (see graph 1), Turkey has been facing a big current account deficit since 2003 and it become a subject of debate by economists, academicians and politicians. So, for a long period of time plenty of researchs were done in relation to Turkey's current account deficit. However, the following researchers focused only on investigating the factors which affects the current account balance: Altunöz (2014), Atış and Saygılı (2014), Canıdemir *et al.* (2011), Çiftci (2014), Erdoğan and Bozkurt (2009), Genç *et al.* (2017), Göçer (2013), Ozdamar (2015), Peker and Hotunluoğlu (2009), Şahin (2011) and Telatar (2011).

When analyzing all of these researches it is observed that they can be classified into three classes. The first class focuses on a simple description of possible factors using graphs and tables and they concentrate on historical changes. These researches are conducted by Altunöz (2014), Erdoğan and Bozkurt (2009), Genç *et al.* (2017), Göçer (2013), Telatar (2011), Şahin (2011). The second group are characterised by identification of causal relationship between some factors and current account using cointegration tests and Granger causality tests and this group of researches did not use a further emperical analysis. The example researches for this group can be given by Atış and Saygılı (2014), Çiftci (2014) and Göçer (2013). The final group are relatively better than the other two and try to identify factor which can explain the changes in current account using emprical (statistically proved) evidences. But this group has a big limitation in identifying an appropriate independent variables. These researches are performed by Canıdemir *et al.* (2011), Ozdamar (2015) and Peker and Hotunluoğlu (2009).

Except Peker and Hotunluoğlu (2009), the other researchers used export, import, merchandise trade balance and terms of trade as an independent variable to investigate their effect on current account. Basically, these variables should not be used as an independent variable. Because in one way or the other they are elements of current account. And rather than using them as an independent variable the question should be asked why and for which reasons do these variables increase and decrease? Therefore, the main objective of this study is to investigate emprically the fundamental macroeconomic variables which affect the current account of Turkey.

2. Literature review

One of the big problem of running huge current account deficit is that it must be financed by selling foreign reserves or the required amount of finance must be obtained from foreigners (through debt, portfolio investment and foreign direct investment). Due to different reasons, if the foreigners stop providing finance and if there is also limited domestic resources to finance the deficit, then current account adjust through a collapse in domestic demand. In short, huge current account deficit makes a country to be dependent on foreign finance. However, this is not the case for a country which runs current account surplus (Obstfeld, 2012). Even if running very large deficits have a cost, it is wrong to think countries with large current account deficit almost inevitably face a crisis. It does not also mean when there is a large current account deficit, crisis can takes place. But large deficit should be a concern (Edwards, 2002).

Chinn and Prasad (2000) investigated the medium term determinants of current account for a large sample of developing countries from 1971 to 1995. Cross section and panel regression model was used to investigate the role of fundamental macroeconomic determinants of saving and investment on current account. The finding showed that government budget deficit, terms of trade volatility and financial deepening are positively associated with current account.

Peker and Hotunluoğlu (2009) also studied factors which affect Turkey's current account deficit using VAR model and monthly data from 1992:01 to 2007:12. The factors which are used in the study includes: oil price, real effective exchange rate, IMKB 100 index, overnight interest rate, real national income and wholesale price index. The finding shows that current account deficit is sensitive to changes in exchange rate, interest rate and IMKB 100 index.

Erdoğan and Bozkurt (2009) analyzed factors which can affect Turkey's current account deficit using monthly data from 1990 to 2008. They simply used a correlation analysis to identify factor(s) from the following lists: oil price, money supply(M2), export import oranı, inflation, exchange rate and the ratio of foreign direct investment to GDP. Accordingly, export import ratio and oil price had maximum correlation with current account deficit.

Canıdemir *et al.* (2011) investigated structural and periodic determinants of Turkey's current account deficit using a quarterly data from 1989 to 2010. The following factors were used for analyzing the subject: budget balance, import, export, real exchange rate, inflation, interest rate and oil price. The finding showed that budget deficit, import and overvaluation of Turkish Lira increase the current account deficit but an increase in export and interest rate reduce current account deficit.

Atış and Saygılı (2014) investigated the determinants of Turkey's current account deficit using a quarterly data from 1998:1 to 2013:1. These researchers took the following variables as a determining factor to current account: banking sector total credit to GDP ratio, budget deficit to GDP ratio, terms of trade, money supply to GDP ratio, real exchange rate, real interest rate and GDP growth rate. The empirical finding of Atış and Saygılı (2014) proved that economic growth and terms of trade statistically (positively) and significantly affects current account balance of Turkey.

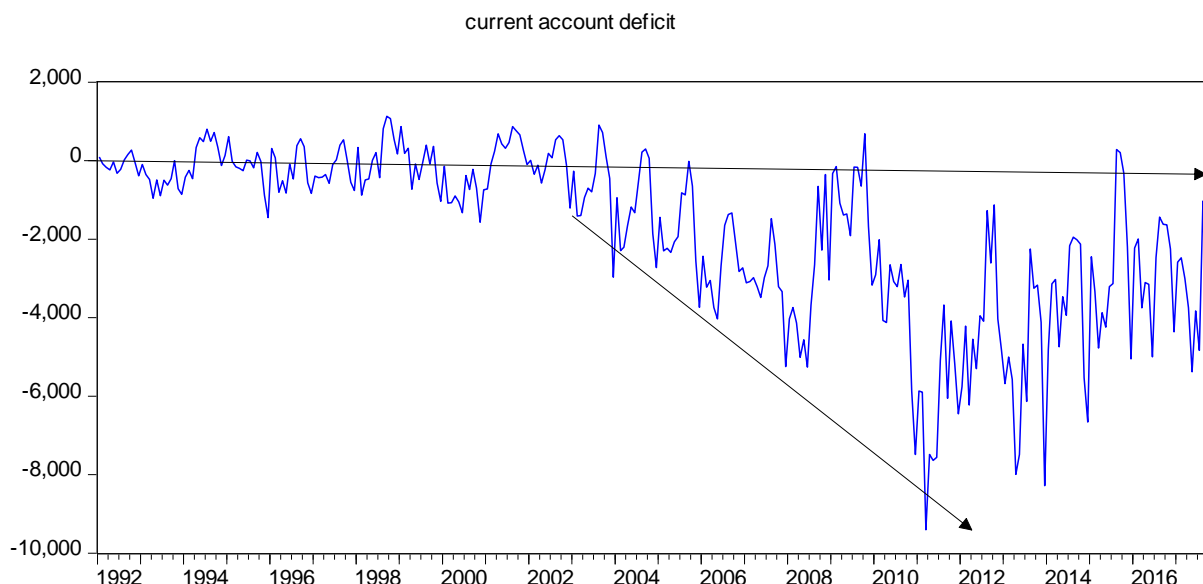
Çiftçi (2014) studied the relationship of both economic growth and real effective exchange rate with current account deficit of Turkey using a quarterly data from 2001:1 to 2012:3. The researcher used cointegration and Granger causality tests to achieve the stated objective. Çiftçi concluded that current account deficit is the cause for change in GDP and real effective exchange rate.

Ozdamar (2015) empirically analyzed the relationship of current account balance with foreign trade balance, GDP, terms of trade, domestic interest rate and real effective exchange rate in Turkish economy using a quarterly data from 1994:1 to 2014:4. The finding shows that foreign trade balance, GDP and terms of trade are found statistically significant. However, domestic interest rate and real effective exchange rate are found statistically insignificant factors to determine current account deficit.

3. Turkey's current account balance and its financing source

The following graphs can give an overview on Turkey's historical current account balance and how and how much foreign capital was injected in to the economy from first month of 1992 to the eleventh month of 2017.

Graph 1. Current Account Balance of Turkey from 1992:1 to 2017:11 (\$ million)

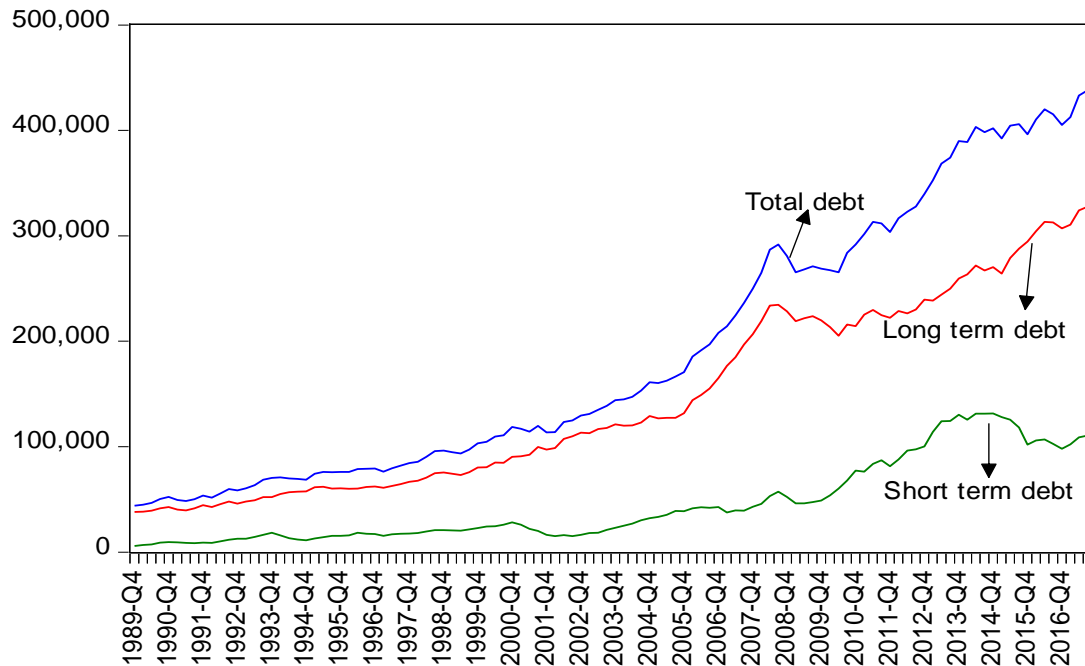


Source: Central Bank of Republic of Turkey (CBRT), <http://www.tcmb.gov.tr>

According to the data obtained from CBRT and Altunöz (2014) Turkey have been experiencing current account deficit starting from the first half of 1990s. However, throughout the 1990s and up the end of 2002 there was no serious current account deficit, but this period was full of ups and downs in the current account balance. Even if the country's current account deficit was reduced to a significant low level in the second half of 2008 and the whole months of 2009 due to the effect of 2007/08 global crisis; the problem became a chronic issue for the country in the rest of the years. In general, starting from 2003 Turkey has a significant amount of current account deficit which attracts the attention of economists,

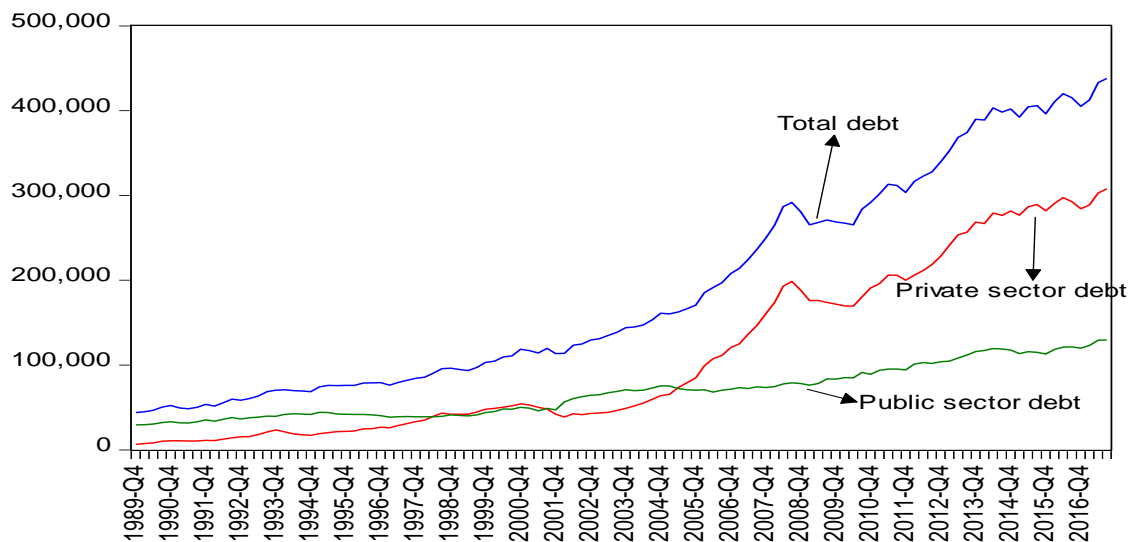
analysts, researchers and international companies (Altunöz, 2014; Atış and Saygılı, 2014; Çiftci, 2014; Erdoğan and Bozkurt, 2009; Peker and Hotunluoğlu, 2009; Şahin, 2011; Telatar, 2011).

Graph 2. Level of Debt Based on Maturity from 1992:1Q to 2017:3Q (\$million)



Source: Central Bank of Republic of Turkey(CBRT), <http://www.tcmb.gov.tr>

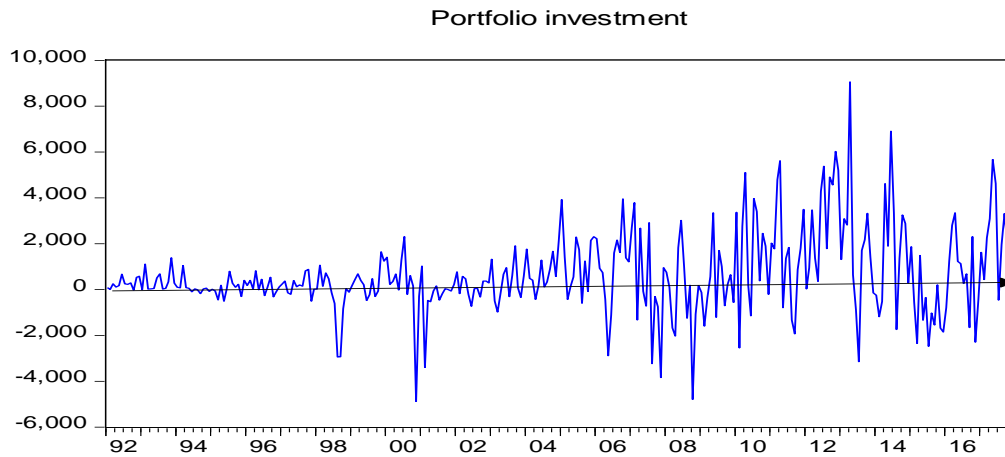
Graph 3. Level of Debt Based on Sector from 1992:1Q to 2017:3Q (\$million)



Source: Central Bank of Republic of Turkey(CBRT), <http://www.tcmb.gov.tr>

Graph 2 and 3 clearly shows the foreign capital inflow in the form of debt to the economy since 1992. Based on sector and maturity point of view, through out the 1990s level of debt was fairly stable. However, the level of credit based on maturity and sectoral level indicates a dramatical hike starting from 2000 and mainly it is rised by private sectors and in long term basis. Rising amount of debt from international financial markets coincides with low level of interest rates and ample global liquidity starting from 2001. Therefore, the data shows that Turkey was able to finance its economic growth through low cost and global available finance. But the periodic interest payment for this huge amount of debt surely affects current account balance of the country.

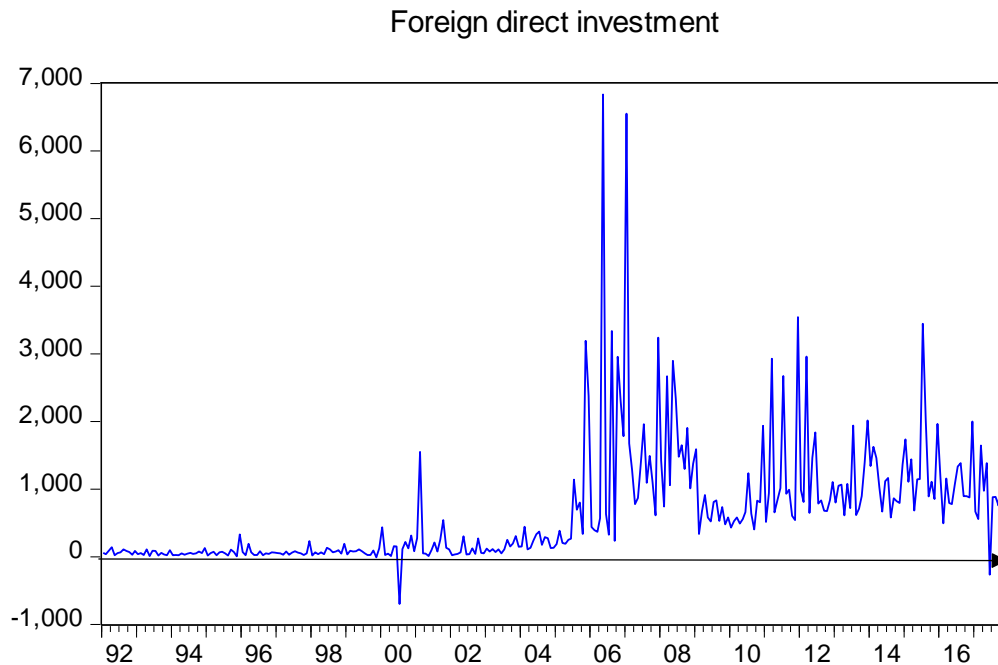
Graph 4. Portfolio investment from 1992:1 to 2017:11 (\$million)



Source: Central Bank of Republic of Turkey(CBRT), <http://www.tcmb.gov.tr>

According to Graph 4 and 5, the foreign capital inflow in the form of foreign direct investment and portfolio investment has two distinct periods. The first period is the 1990s which is characterized by a stable flow of capital from the two form. But the second period which starts from 2000 up to now is characterized by a high ups and downs of foreign money entry and exit. This significant amount of money flows into and out of Turkey is mainly caused by both local and global factors. Definitely, money flows has a prominent impact on the current account balance. Altunöz (2014) argued that net income transfers from foreign direct investment and portfolio investment increased the Turkey's current account deficit. In general, graph 2, 3, 4 and 5 clearly show how the country finance it's current account balance.

Graph 5. Foreign Direct Investment from 1992:1 to 2017:11 (\$million)



Source: Central Bank of Republic of Turkey(CBRT), <http://www.tcmb.gov.tr>

4. Possible Factors Affecting Current Account Balance

In the following paragraphs, possible factors which can affect current account balance are explained precisely.

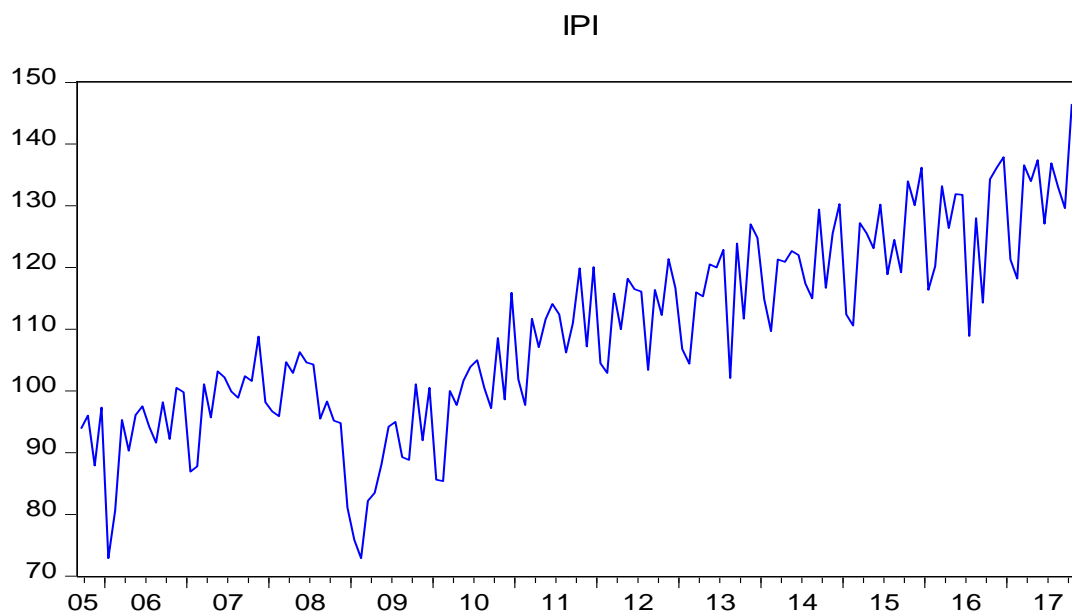
One of the factor which affect Turkey's current account is its dependence to external *energy* sources (specially oil price). An increase in price of energy has a big impact on current account (Altunöz, 2014) and (Çiftci, 2014). An increase in energy price rises production costs and which become the cause for high price of finished goods. This again negatively affects exports. In this study oil price is considered as one factor which affects current account.

The coincidence of starting a floating exchange rate system in 2001 with an entrance of a huge amount of foreign capital resulted an *overvaluation of Turk Lira* for a long period. Accordingly, overvalued Turk Lira makes imported goods and services cheap; and export goods expensive. Finally, it causes high current account deficit (Atış and Saygılı, 2014; Çiftci, 2014, Ozdamar, 2015; Şahin, 2011). Consumer price index based real effective exchange rate is used to represent the value of Turk Lira and the country's competitiveness with its trading partners.

According to Atış and Saygılı (2014) and Şahin (2011) there is a positive relationship between current account and *supply of money*. When the global supply of money increases with a low cost; borrowing and capital inflow to Turkey increases. This becomes one of the cause for an overvaluation of the currency and negatively affects the country's export. The end result of money supply is an increase in current account deficit. At the same time, a higher interest rate in Turkey in the 2000s increases a foreign capital inflow. In order to represent the global money supply, the 10-year USA government bond reference rate is used and the 2-year Turkey government bond rate is used as a reference rate for local interest rate. The difference between the two rate is used as a factor which affects the current account balance.

Çiftci (2014) and Şahin (2011) argued that the rise in current account deficit of Turkey comes with the *economic growth* that is recorded after 2001 crisis. Economic growth basically measured using GDP rates but the GDP data is available infrequently, i.e. it is either reported in quarterly or yearly basis. Currently, many countries in the world uses industrial production index as a leading indicator of economic performance of a country. Unlike GDP rate, the data on this index available on a mothly basis. An increase in industrial production index means an increase in production by the industrial sector and an increase in production means an economic growth¹.

Graph 6. Turkey Industrial Production Index



Source: Eviews

¹ See graph 6. The industrial production index clearly shows economic performance of Turkey in the study period. During the 2007/08 global financial crisis, the index was plummeted seriously and the economy also performs identically. Starting from 2009, the index has a dramatic improvements.

For this reason, industrial production index can be used to represent economic growth (economic performance) of a country. In this study, this index is used as a reference to show the economic condition of the country.

Country risk is one of the most important factor that investors mostly considered when doing business abroad and it is widely used starting from the 1970s. Country risk includes any risk specific to a given country (Bouchet *et al.*, 2003; Damodaran, 2015). Country risk is one of the important risk which affects foreign direct investment and portfolio investments; it also affects the country's current account balance. For a long period of time the credit rating that is measured by credit agencies like S&P, Moody's and Fitch was used as a means to know a country risk level. But after 2008 global crisis, credit default swaps (CDS) became another option to measure countries risks. One best features of CDS is that it reflects any information and risks related to market. For this study country risk is measured by credit default swaps (CDS).

Starting from the mid of 1990s, CDSs become a widely and deeply traded instrument which reflects both local and global market information about the credit risk of underlying financial obligation. A bundle of studies proved that CDS markets reflect valuable information. Change in CDS spreads reflect information promptly than changes in credit rating in the 2008 global financial crisis. Therefore, CDS spreads are a viable alternative to credit rating (Ersan and Günay, 2009; Flannery *et al.*, 2010; Rodriguez *et al.*, 2016).

5. Methodology of research and econometric models

The study period spans from September 2005 to November 2017 using a monthly data. The data for these research have been collected from Republic of Turkey's Central Bank, Turkey Statistical Institute, U.S Energy Information Administration websites and investing.com website. The variables of the study are: current account balance, CDS, interest rate differential, oil price, industrial production index and consumer price index based real effective exchange rate. The dependent variable is current account balance and the rest are independent variables. The following regression equation shows relationship of variables in this study.

$$CA = \alpha + \beta_1(CDS) + \beta_2(intdiff) + \beta_3(Oil) + \beta_4(IPI) + \beta_5(REER) + \epsilon \quad (1)$$

Where:

CA – current account;

CDS - credit default swaps;

Intdiff – interest rate difference (Turkey interest rate - USA interest rate);

Oil – oil price;

IPI – Industrial production index;

REER – real effective exchange rate;

α – constant;

β_s –coefficient of independent variables;

ϵ - error term.

In time series data analysis regular regression methods and cointegration based techniques can be used to estimate the parameters in a regression. If all the variables are stationary at level (i.e without taking lag value), regular regression method results in an appropriate estimation. But most macroeconomic variables are non-stationary at level. For this reason estimations based on regular regression method will leads to spurious regression results.

In order to avoid the problem of spurious regression, the variables are tested for stationarity by using Augmented Dickey-Fuller (ADF) test before running any sort of regression analysis. A time series is stationary if its mean and variance do not vary systematically over time (Gujarati, 2004). After testing for stationarity, the presence of long run relationship between dependent and independent variable is investigated by using ARDL bound test. According to Saeed et al. (2012) ARDL bounds testing approach to co-integration involves two steps procedure. In the first step, existence of co-integration is tested by comparing the calculated value of F-test with the critical bounds value. $I(0)$ is the critical value for the lower bound and $I(1)$ is a critical value for the upper bound. The second step is making a decision based on

calculated F-statistics and critical values. If the value of the F-statistics exceeds the upper bound, then it is an evidence for the existence of long run relationship between the explanatory variables and dependent variable. If the F-statistics value is smaller than the lower critical bound, it is an evidence of no long run relationship. If calculated value of F-statistic lies between the upper and lower bounds, then it is inconclusive.

Autoregressive Distributed lag model (ARDL) is used for two reasons. The first reason is that the data is a time series data and the second reason is, two of the variables are stationary at level but the other variables are not stationary at level. The ARDL cointegration approach has some advantages over other cointegration approach like Johansen cointegration techniques (which requires all variables to be order of one or $I(1)$). This techniques can be used for data with different order i.e $I(0)$ and $I(1)$ (Saeed *et al.*, 2012;Tsen, 2014). Therefore, the long run relationship between dependent and independent variables is estimated using ARDL bound test; whereas, error correction model (ECM) is used to investigate the short run dynamics of the variables.

The optimal lag order is selected using Akaike info criterion(AIC) model selection criteria. The best model with a lower AIC value is selected from different available model options using AIC model selection criteria. Parameter stability is also tested by applying Cumulative Sum (CUSUM).

6. Results and discussions

This section of the study provides a detail views on the descriptive statistics of the variables, test of stationarity, ARDL regression results, ARDL bound tests and an emperical results of short run and long run relationship of variables.

Table 1. Descriptive statistics

	CA	CDS	INTDIFF	OIL	IPI	REER
Mean	-3432.531	216.5869	9.000884	79.20265	109.5830	108.5850
Median	-3212.000	199.6970	7.701000	74.46000	108.8000	109.8400
Maximum	683.0000	522.1730	19.94000	132.7200	146.4000	127.9400
Minimum	-9407.000	116.9420	2.918000	30.07000	72.90000	84.19000
Std. Dev.	1907.422	66.13288	4.119016	26.50258	15.73085	10.01949
Skewness	-0.414123	1.646968	1.006254	0.165194	0.048065	-0.188528
Kurtosis	3.254744	7.182205	2.968483	1.698517	2.417699	2.435895
Jarque-Bera	4.599171	173.5877	24.81350	11.04347	2.133430	2.819858
Probability	0.100300	0.000000	0.000004	0.003999	0.344137	0.244161

Source: Eviews

According to results of Table 1, all variables have a normal distribution except CDS, interest rate differential and oil price. In order to make these three variables normally distributed, the following methods are used. CDS has a normal distribution with a reciprocal of itself, interest rate differential and oil price have a normal distribution after log transformation is made.

Table 2. ADF test results with intercept

Variable	p-value@ level	Stationarity	p-value@ first difference	Stationarity
Current account	0.0282	Stationary	-	-
CDS	0.0183	Stationary	-	-
Interest rate diff.	0.4342	Non stationary	0.0000	Stationary
Oil	0.1378	Non stationary	0.0000	Stationary
IPI	0.9066	Non stationary	0.0155*	Stationary
Real effective exchange rate	0.4181	Non stationary	0.0000	Stationary

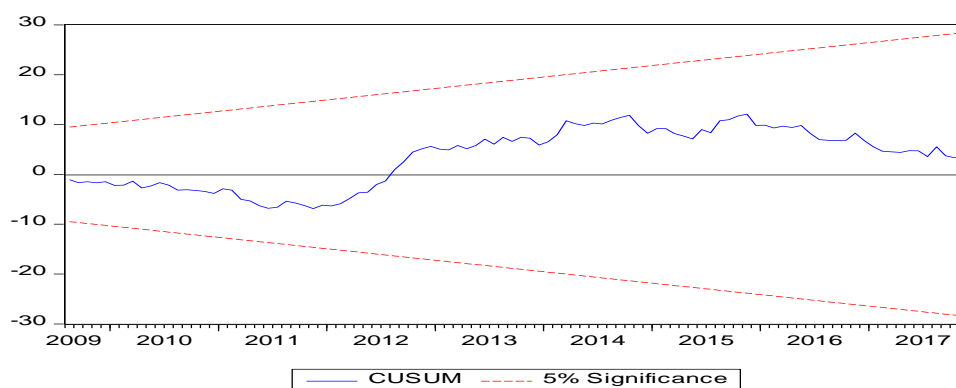
*none, the other variables are stationary at intercept

Source: Eviews

6.1. ARDL Model Regression Results

With an eleven lags of AIC model selection technique, the ARDL regression result is presented in Table 3. Thus, according to the F-statistic probability value (0.000000) the selected model is statistically significant at 5% level of significance. In short, the selected model (ARDL(8,1,0,10,0,11)) is statistically valid with its R-square of 77.29 %. Tests for autucorrelection and hetroskedasticity is made using Breusch-Godfrey Serial Correlations LM Tests and White test respectively. It is proved that the model is free from these problems. The stability of the parameters is also tested using cumulative sum of residuals (CUSUM) technique and which indicates that the change in regression coefficients are within the two critical bounds (the variables are stable) at 5% significance level.

Graph 7. Variable Stability Test Result



Source: Eviews

The result of the regression from Table 3 shows that industrial production index, CDS and real effective exchange rate are statistically significant at 5% level of significance. The sign of these variables' coefficient is also positive as expected for industrial production index and negative for CDS and real effective exchange rate.

Table 3. ARDL Model Regression Results

Dependent Variable: CA

Method: ARDL

Selected Model: ARDL(8, 1, 0, 10, 0, 11)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	18294.17	5349.035	3.420088	0.0009
CA(-8)	0.220973	0.091582	2.412857	0.0176
LNINTDIFF(-1)	-1525.291	969.4608	-1.573339	0.1188
LNOIL	-651.1269	498.3319	-1.306613	0.1943
IPI(-10)	61.02129	15.50505	3.935577	0.0002
RECPDS	-240786.1	112799.9	-2.134630	0.0352
REER(-11)	-78.73173	38.95190	-2.021255	0.0459
R-squared	0.772908	Mean dependent var		-3505.846
Adjusted R-squared	0.693426	S.D. dependent var		1933.721
S.E. of regression	1070.685	Akaike info criterion		17.01191
Sum squared resid	1.15E+08	Schwarz criterion		17.78291
Log likelihood	-1120.810	Hannan-Quinn criter.		17.32522
F-statistic	9.724299	Durbin-Watson stat		2.119285
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection.

Source: Eviews

The above regression results have the following implications. When the country's industrial sector production capacity increases or improves, it results in an increase in exportable products and positively affect export amounts. Other things remain constant, if the industrial production and export increases; then the country's current account balance will improve. Therefore, the positive sign of industrial production index is related to its effect to increase export and decrease the current account deficit. Since CDS reflects a country's geopolitical risks, internal and international political uncertainties and internal economic problems (it reflects any information which reaches to the market), an increase in CDS seriously (negatively) affects the current account balance of Turkey. An increase in level of country risk reduces foreign direct investments and force the country to borrow more to finance the current account deficit. In addition, high country risk also increases the borrowing costs from foreigners. The end result is that the interest rate for the borrowing is reported in the current account section and negatively affect the current account balance. At the same time, an increase in the real effective exchange rate value of Turkish Lira negatively affects the current account balance of the country. This is because a strong currency hinders export and encourage imports.

6.2. ARDL Bound Test Results, ARDL Cointegration and Long Run Form

As it is observed in Table 3, three of the independent variables were statistically significantly affect the current account balance of Turkey. But the fundamental question is 'Do these variables have a long run relationship with the dependent variable?' To answer this question it is necessary to use ARDL Bound test of cointegration and investigate the cointegration of variables. Accordingly, Table 4 presents the test result and at 5% level of significance the F-statistic value (3.719567) is greater than the upper bound(I(1)) critical value (3.38). Therefore, the null hypothesis is rejected and statistically there is a long run relationship between the dependent and independent variables.

Table 4. ARDL Bound Test Result

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	3.719567	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Source: Eviews

After checking the cointegration of variables, the most important issue is to analyze how the independent variables interacts with the dependent variable. The answer to this question is presented in Table 5. In the first part of Table 5, as it is expected the cointeq(-1) coefficient is negative and statistically significant at 5% level of significance. This test result strengthens the evidence of cointegration result of the variables under investigation.

The long run coefficient ARDL's long run regression result shows that the industrial production index and real effective exchange rate have negative coefficients and are statistically significantly affects the current account balance at 5% level of significance. Turkey supports its export and economic growth through an import of raw materials and semifinished goods (Atış and Saygılı, 2014; Çiftci, 2014; Ozdamar, 2015; Şahin, 2011). Thus, the negative impact of an increase in industrial production index may be related

to this fact. In addition, the appreciation in real effective exchange rate of Turkish Lira reduces Turkey's competitiveness (in terms of exported goods) in the international market. Therefore, the increase in these two factors definitely results in an increase in imports which can worsen the current account deficit of the country. In the long run, an increase in these two variables will result in an increase in the current account deficit.

On the other hand, at 5% level of significance CDS is not significant but at 10% level of significance the factor is statistically significant and an increase in CDS level has a negative impact on Turkey's current account balance. Foreign direct investors generally attach importance to a country's level of riskiness before proceeding to investmnet. Thus, a further rise in country's risk level prevents an entry of foreign direct investment (FDI) and it may also increases capital outflows. Other things remain constant, an increase in CDS reduces industrial production within the country, increases imports and current account deficit. In general, a rise in the value of industrial production index, CDS and real effective exchange rate statistically and significantly aggravates the country's current account deficit in the long run.

Table 5. ARDL Cointegration and Long run form

ARDL Cointegrating And Long Run Form

Dependent Variable: CA

Selected Model: ARDL(8, 1, 0, 10, 0, 11)

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CA(-1))	-0.216045	0.106369	-2.031094	0.0449
D(CA(-2))	0.081546	0.101800	0.801044	0.4250
D(CA(-3))	0.318778	0.095116	3.351454	0.0011
D(CA(-4))	0.295288	0.098169	3.007951	0.0033
D(CA(-5))	-0.033042	0.098202	-0.336471	0.7372
D(CA(-6))	-0.187821	0.096979	-1.936727	0.0556
D(CA(-7))	-0.230988	0.086168	-2.680667	0.0086
D(LNINTDIFF)	1713.314858	896.346397	1.911443	0.0588
D(LNOIL)	-1863.12977	1084.962642	-1.717229	0.0890
D(IPI)	-57.627911	15.022531	-3.836099	0.0002
D(IPI(-1))	-26.002047	22.812576	-1.139812	0.2571
D(IPI(-2))	-7.071720	21.895675	-0.322973	0.7474
D(IPI(-3))	28.158861	20.185376	1.395013	0.1661
D(IPI(-4))	65.606529	20.014813	3.277899	0.0014
D(IPI(-5))	35.109147	20.807451	1.687335	0.0947
D(IPI(-6))	-38.773182	20.661365	-1.876603	0.0635
D(IPI(-7))	-83.884917	20.238060	-4.144909	0.0001
D(IPI(-8))	-72.473745	18.231867	-3.975114	0.0001
D(IPI(-9))	-61.261354	14.598069	-4.196538	0.0001
D(RECPDS)	-98656.4983	176443.78171	-0.559138	0.5773
D(REER)	-31.610594	42.989752	-0.735305	0.4639
D(REER(-1))	69.865144	44.413310	1.573068	0.1189
D(REER(-2))	103.949310	43.133833	2.409925	0.0178
D(REER(-3))	132.617443	42.578932	3.114626	0.0024
D(REER(-4))	127.472028	43.692941	2.917451	0.0044
D(REER(-5))	48.268630	43.449801	1.110906	0.2693
D(REER(-6))	39.706096	41.764104	0.950723	0.3440
D(REER(-7))	23.761943	40.098829	0.592584	0.5548
D(REER(-8))	63.995194	38.806461	1.649086	0.1023
D(REER(-9))	69.167425	36.663181	1.886564	0.0621
D(REER(-10))	79.818759	36.865389	2.165141	0.0328
CointEq(-1)	-0.611818	0.111969	-5.464154	0.0000

$$\text{Cointeq} = \text{CA} - (258.7334 * \text{LNINTDIFF} - 1088.1617 * \text{LNOIL} - 101.4774 * \text{IPI})$$

$$-402401.1734*RECPDS -151.2533*REER + 30573.1759)$$

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	30573.1759	7262.550369	4.209702	0.0001
LNINTDIFF	258.733436	467.977052	0.552876	0.5816
LNOIL	-1088.16173	682.886601	-1.593474	0.1142
IPI	-101.477441	27.009005	-3.757171	0.0003
RECPDS	-402401.173	203482.403	-1.977572	0.0507
REER	-151.253318	52.467272	-2.882813	0.0048

Source: Eviews

6.3. Error Correction Model (ECM) or Short Term Relationship of Variables

One of the basic requirement to run an ECM is that the variables under study must be cointegrated. As it is shown in Table 4, the variables are cointegrated when they are tested using ARDL Bound test. Therefore, it is appropriate to run an ECM and the following is the regression equation.

$$d(ca) = \alpha + \beta_1 d(lnintdiff) + \beta_2 d(lnoil) + \beta_3 d(ipi) + \beta_4 d(recpcds) + \beta_5 d(reer) + u(-1) + \varepsilon \quad (2)$$

Where; $d(ca)$, $d(lnintdiff)$, $d(lnoil)$, $d(ipi)$, $d(recpcds)$ and $d(reer)$ are the first difference of current account, log of interest rate differential, log of oil price, reciprocal of CDS and real effective exchange rate respectively. α , β_s , ε and $u(-1)$ are the constant, coefficients of independent variables, the error term and one period lag of residual respectively.

Table 6. ECM result

Dependent Variable: D(CA)
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.864670	110.2888	-0.007840	0.9938
D(LNINTDIFF)	806.5545	990.2161	0.814524	0.4169
D(LNOIL)	-1027.852	1214.343	-0.846426	0.3989
D(IPI)	-59.16618	12.42316	-4.762572	0.0000
D(RECPDS)	-228354.5	196034.6	-1.164869	0.2462
D(REER)	-30.20550	46.23439	-0.653312	0.5147
U(-1)	-0.888019	0.119366	-7.439437	0.0000
R-squared	0.395119	Mean dependent var		-20.91852
Adjusted R-squared	0.366765	S.D. dependent var		1603.106
S.E. of regression	1275.688	Akaike info criterion		17.19082
Sum squared resid	2.08E+08	Schwarz criterion		17.34146
Log likelihood	-1153.380	Hannan-Quinn criter.		17.25204
F-statistic	13.93531	Durbin-Watson stat		1.978316
Prob(F-statistic)	0.000000			

Source: Eviews

The result of Table 6 shows that the error term ($U(-1)$) is negative and significant at 5% level of significance, which is a good sign for the model. The coefficient of the error term tells that the error term corrects the previous month disequilibrium at a speed of 88.8%. However, in the short run only industrial production index is statistically significant at 5% level of significance. Thus, it clearly shows that an increase

in this variable causes a rise in the current account deficit in the short run. The reason may be similar to the one explained in the long run regression result. In addition, in the short run the other variables does not cause the current account balance to change.

7. Conclusions

Different research outcomes indicate the importance of current account balance starting from 1970s and it was the main focus of researchers, economists and politicians when a financial crisis become common in 1990s in the emerging countries. Since the first half of 2000s, Turkey has also faced a significant amount of current account deficit. Researchers and economic analysts related this current account deficit with Turkey's good economic performance after 2001. But the ratio of current account deficit to GDP was more than the benchmark 5% for many years. Even if many researchs have been done in relation to current account, this article tries to fill the gap by investigating the fundamental macroeconomic factors which affects Turkey's current account balance. The study uses a monthly data from September 2005 to November 2017 to analyze the impact of country risk, oil price, economic growth, interest rate differential and industrial production index on current account balance. ARDL and ECM is used to analyze the data.

The finding of the ARDL regression result shows that industrial production index is statistically and positively affects the current account. The implication of this finding indicates that when the country's industrial sector production increases, it supports export and reduces the gap between import and export. On the other hand, country risk and the real effective exchange rate have a negative and statistically significant impact on the current account balance of Turkey. The other two variables were not statistically significant to explain the country's current account deficit.

When analyzing the long run relationship between the dependent and independent variables using ARDL bound tests, there exists a statistically significant relationship among the variables. In the long run, industrial production index, country risk and real effective exchange rate have a negative and statistically significant impacts on the current account balance. As it is mentioned in the analysis section, Turkey supports its export through importing raw materials and semfinished goods. The disadvantage of this trend is that it will aggravates the gap between import and exports and also negatively affects the current account balance. Unfortunately in the study period, Turkey's economy has been negatively affected from geopolitic risks, internal political uncertainties and international economic and political uncertainties. These risks are reflected in the country's risk level and an increase in this risk negatively affects the country's current account balance. In additoin to that, Turkey was able to attract a significant amount of foreign capital inflows in the study period and it resulted in an overvaluation of Turkish Lira (the average of real effective exchange rate is 108.5850). The overvalued Turkish Lira negatively affects export and encourages imports. The overvalued currency was one of the cause for current account deficit of the country.

However, in the short run, only the industrial production index has a negative and statistically significant effect in explaining the current account deficit. Therefore, as it is seen from the long run and short run regression result industrial production index has a negative impact on the current account balance of Turkey. Thus, in order to improve the deficit problem, Turkey has to follow raw materials and semfinished import substitute policy.

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