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A SURVEY ON THE FACTORS AFFECTING CURRENT ACCOUNT BALANCE OF TURKEY: EVIDENCE FROM ARDL-BOUNDS TESTING APPROACH

Abstract:

Main objective of this study is to analyze the relationships between the current account balance and selected major macroeconomic variables in Turkish economy. In this respect ARDL-Bounds testing approach is applied. Results of the study related to the long-run show that the international terms of trade is a strong explanatory variable of the current account balance of Turkey. This result implies that Harberger-Laursen-Metzler (HLM) hypothesis is valid for Turkey. Findings reveal that also foreign trade balance has a strong effect on the current account balance of Turkey while the gross domestic product is found to be statistically significant but the effect level is quite low. Domestic interest rate and the real effective exchange rate variables are found to be statistically insignificant in the long-run. Error correction model results for the short-run reveal that current account balance of Turkey is mostly affected from the lagged value of itself, from foreign trade balance and also from the lagged value of real effective exchange rate.

Keywords:

Current Account Balance; Turkey; ARDL-Bounds testing

JEL Classification: F32, F40, F41

1. Introduction

External economic balance is obviously a crucial factor in terms of the macroeconomic stability of a country and in this regard current account balance is one of the main factors concerning the external economic balance. On the other hand it is observed that persistence of the current account deficits is a crucial economic problem for most of the developing countries. Turkey is an example for such countries with her persistent and high current account deficits. Turkish economy has had continuous foreign trade deficit annually since 1947. Turkey's current account deficits in 2013 and 2014 were approximately 64.6 and 46.5 billion U.S. Dollars (USD), respectively and estimated to be 32.7 billion USD in 2015 according to the recent data of IMF. On the other hand, parallel course of the foreign trade balance and current account balance for a long time in Turkish economy implies that the main factor determining the current deficits is the foreign trade (merchandise trade) deficits. With the impact of foreign trade deficits it is observed that current account deficits of Turkey are structurally continuous in time. Although decreases in total consumption and imports especially during the economic crises periods temporarily affect current balance positively, current deficits persist in the subsequent periods. The main causes of current account deficits in Turkish economy are seen as overvalued Turkish Lira and economic growth according to some studies (Kasman et al., 2005). Strong effect of the overvalued Turkish Lira on the current deficits is proved to a certain extend by the recent data of current account balance of Turkey. By the rapid depreciation of the Turkish Lira in 2014 and 2015, it is seen that current account deficits of Turkey significantly decreased in these years. Turkish Lira is depreciated %15 and %24 against US Dollar (USD) according to the previous year in 2014 and 2015, respectively. In the same years it is also seen that current account deficit of Turkey is decreased %31 and %26, respectively[1].

Determining the factors which affect the current account balance to what extent is important in order to assess the potential effects of the economic policies related to decreasing the current deficits. In this respect, the main objective of this study is to analyze the relationships between current accounts balance of Turkey with selected major macroeconomic factors, namely foreign trade balance, real effective exchange rate, the international terms of trade, gross domestic product and domestic interest rates.

2. Model Specification and Data

In order to investigate the relationships between the current accounts balance and other selected macroeconomic variables in Turkish economy, the basic model to be estimated is as follows:

$$CAB_t = \alpha_0 + \alpha_1 FTB_t + \alpha_2 REER_t + \alpha_3 TOT_t + \alpha_4 GDP_t + \alpha_5 INT_t + e_t \quad (1)$$

[1] Ratios are calculated from the data of Central Bank of the Republic of Turkey, Balance of Payment statistics.

where CAB is the current account balance, FTB is the foreign trade balance, REER is the real effective exchange rate, TOT is the international terms of trade, GDP is the gross domestic product and INT is the domestic interest rates of Turkey. α_0 is the constant and $e_t$is the error terms of the model.

Analyze period is 1995:Q1-2015:Q3. Data of the Current Account Balance and Foreign Trade Balance are gathered from the Electronic Data Delivery System (EDDS) of the Central Bank of the Republic of Turkey (CBRT). Real Effective Exchange Rate data for Turkey (deflated with the consumer price indices of 37 trading partner countries) are taken from the Eurostat (Statistical Office of the European Commission) database. The International Terms of Trade data (as USD) of Turkey is obtained from the Foreign Trade Indices Database of Turkish Statistical Institute (Turkstat). The nominal GDP data for Turkey is taken from Eurostat in millions of Turkish Lira and converted to USD with the TL/USD exchange rate which is also taken from the EDDS of CBRT. The day-to-day domestic interest rate data in a quarterly basis is also obtained from the Eurostat. CAB, FTB and GDP series are taken as millions of USD. CAB, FTB, GDP and TOT series are included to the analyses after they are corrected with the Tramo/Seats method for seasonal effects. Eviews 9 and Gauss 10 programs are used for the analyses.

3. Empirical Findings

Various econometric methods are available depending on the integration order of the time series. For this purpose, the unit root tests developed by Phillips and Perron (1988, hereafter PP), Kwiatkowski et al. (1992, hereafter KPSS), and Ng and Perron (2001, hereafter NP) are applied to the series and results are given in Table 1. The PP test does not reject the null hypothesis of a unit root for the levels of all variables with the exception of the interest rate. PP test shows that interest rate variable is stationary in levels. Results of the PP test for the first-differences of the variables imply that all variables are stationary. The KPSS unit root test uses Lagrange Multiplier (LM) statistic for testing the null hypothesis of the time series is stationary around a deterministic trend against the alternative hypothesis of non-stationary. KPSS test results show that the null of stationarity (no unit root) is rejected for the levels of all variables except the current account balance. Current account balance is stationary in level form according to the test model including constant and trend, but non-stationary according to the test model with constant. NP (2001) provides tests called MZ_α, MZ_t, MSB and MP_T for investigating the existence of unit roots. Here, MSB and MP_T test results are given in Table 1. MSB and MP_T test results indicate that the null hypothesis of a unit root cannot be rejected for the levels of all variables with an exception of the domestic interest rate variable. As PP, NP test also shows that interest rate variable is stationary in levels.

Table 1: Unit root tests

	PP (1988)		KPSS (1992)		NP (2001)			
					Constant		Constant & trend	
Levels	Constant	Constant & trend	Constant	Constant & trend	MSB	MP_T	MSB	MP_T
CAB	-1.74	-2.33	1.03***	0.09	0.38	7.79	0.199	8.657
FTB	-1.55	-2.66	1.04***	0.12*	0.39	8.35	0.190	7.246
REER	-1.96	-2.57	1.13***	0.20**	0.69	26.64	0.184*	8.441
TOT	-2.29	-2.25	1.06***	0.20**	0.70	26.75	0.205	11.323
GDP	-0.96	-1.74	1.07***	0.13*	0.85	46.07	0.264	13.959
INT	-2.78*	-5.88***	1.10***	0.22***	0.25*	3.84*	0.120***	2.774***
First differences								
ΔCAB	-7.42***	-7.39***	0.06	0.05	0.11***	0.82***	0.117***	2.671***
ΔFTB	-6.09***	-6.06***	0.06	0.06	0.11***	0.71***	0.119***	2.605***
ΔREER	-8.68***	-9.01***	0.28	0.09	0.19**	2.26**	0.206	8.155
ΔTOT	-8.62***	-8.77***	0.29	0.05	0.21**	2.49**	0.168*	5.229**
ΔGDP	-7.63***	-7.59***	0.09	0.08	0.11***	0.64***	0.114***	2.387***
ΔINT	-25.43***	-25.87***	0.18	0.17**	0.32	5.20	0.330	19.939
Test critical values								
%1	-3.51	-4.07	0.739	0.216	0.174	1.78	0.143	4.03
%5	-2.89	-3.46	0.463	0.146	0.233	3.17	0.168	5.48
%10	-2.58	-3.15	0.347	0.119	0.275	4.45	0.185	6.67

Notes: The bandwidth for PP, KPSS and NP tests was selected with Newey-West using Bartlett kernel. ***, **, and * denote statistical significance at 1%, 5%, and 10% level of significance, respectively. Delta (Δ) is the difference operator.

The unit root analyses imply that CAB, FTB, TOT and GDP variables are non-stationary in their levels but stationary in first differences. INT is stationary in its level form according to the PP and NP tests. REER is also stationary in its level form in terms of the MSB test of NP in which the test model includes constant and trend. Since the unit root tests show mixed results for the integration order of the variables, Engle and Granger (1987) and Johansen and Juselius (1990) cointegration methods which require all the variables under study to be integrated in first order cannot be performed.

3.1. The ARDL-Bounds Testing Approach to Cointegration

In order to determine the presence of cointegrating relations, Bounds testing approach to cointegration under the Auto-Regressive Distributed Lag (ARDL) model which was developed by Pesaran et al. (2001) is employed. ARDL-Bounds testing approach can be applied irrespective of whether the explanatory variables are purely *I*(0), purely *I*(1) or mutually cointegrated. ARDL approach depends on the ordinary least squares regression method in which lagged values of both dependent and explanatory variables are used as explanatory variable. ARDL model explores the different optimal lags of each variable in the model. To apply the bounds testing approach, firstly an unrestricted error correction model is formed. Narayan and Smyth (2006) notes that the ARDL approach is expected to have better statistical properties than the Engle and Granger (1987) and Johansen and Juselius (1990) methods because it draws on the unrestricted error correction model. The bounds test procedure for checking the cointegration relationship between the variables in Equation (1) is conducted with the following ARDL model:

$$\Delta CAB_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i}\Delta CAB_{t-i} + \sum_{i=0}^{n} \alpha_{2i}\Delta FTB_{t-i} + \sum_{i=0}^{o} \alpha_{3i}\Delta REER_{t-i} + \sum_{i=0}^{p} \alpha_{4i}\Delta TOT_{t-i} + \sum_{i=0}^{r} \alpha_{5i}\Delta GDP_{t-i} + \sum_{i=0}^{s} \alpha_{6i}\Delta INT_{t-i} + \beta_1 CAB_{t-1} + \beta_2 FTB_{t-1} + \beta_3 REER_{t-1} + \beta_4 TOT_{t-1} + \beta_5 GDP_{t-1} + \beta_6 INT_{t-1} + e_t \quad (2)$$

where Δ is the first difference operator and *m, n, o, p, r, s* are the optimal lag lengths. The α coefficients are the parameters that represent the short run, whereas the β coefficients show the long run dynamics of the model. To ensure the stability conditions (no serial correlation) for the estimated model firstly optimal lags of the variables in equation (2) are determined by the information criterions and then bounds test is performed for the model estimated with selected lags of the variables. Optimal lags of the variables for the ARDL model are determined as (1,1,1,0,0,0) with the Akaike information criterion (AIC) which satisfies the stability conditions by taking maximum order of lags as 5 due to the quarterly series are used in the study[2]. In bounds testing, null hypothesis of no lung-run relationship between variables is tested. For cointegration inference, *F*-test is applied on lags of dependent and independent variables. The null hypothesis for this test is established as [H_0: $\beta_1=\beta_2=\beta_3=\beta_4=\beta_5=\beta_6=0$]. *F*-test statistic obtained from the Bounds test is compared with lower and upper asymptotic critical values calculated by Pesaran et al. (2001) for various statistical confidence levels according to the structure of the model which takes into account constraints, constant and trend specifications of the model and also number of explanatory variables. If the calculated *F*-statistic is greater than the critical upper bound value the null hypothesis is rejected which means there is a cointegration relationship between the series. If the calculated *F*-statistic is lower than the critical lower bound value the null cannot be rejected which means there is no cointegration relationship between the series. Finally if the calculated *F*-statistic is between the upper and lower critical bounds, no exact opinion can be made and other cointegration tests should be applied.

Following Peseran et al. (2001), the Bounds test results for the model in this study is given in Table 2. In this regard, equation (2) is estimated with the selected lags by the AIC for each variable and then *F*-statistic is calculated to test null hypothesis for cointegration inference. Trend specification of the model is taken as unrestricted constant (level) and in this case the null hypothesis is as mentioned before, [H_0: lagged levels are equal to zero]. Therefore *F*-test statistic is compared with the critical values of Pesaran et al. (2001) which are calculated for this case.

[2] ARDL model selection criteria table is given in Appendix 1.

Table 2: Bounds test results

k*	*F-statistic*		1% Critical values	5% Critical values
5	6.2963	Upper bound	4.68	3.79
		Lower bound	3.41	2.62

R^2=0.890 $\bar{R}^2$=0.878 *F*-stat.=74.043 (0.000) DW stat=1.906

$\chi^2_{BG\ LM[5]}$=3.843 (0.572) $\chi^2_{Normality\ (JB)}$=0.657 (0.719)

χ^2_{White}=46.194 (0.381) $\chi^2_{Ramsey\ RESET\ [1]}$=0.274 (0.601)

* *k:* number of explanatory variables. Critical values are from Pesaran et al. (2001), Table CI(iii). Numbers in parenthesis are *prob.* values.

Bounds test results shows that *F*-statistic is greater than the critical upper bound value of Pesaran et al. (2001) in 1% statistical significance level, which means there is a cointegration relationship between the series. Diagnostic test results show that the model satisfies the stability conditions. Due to the fact that a cointegration relationship has been detected between the series, the ARDL model can be established in order to determine long-run and short-run relationships.

3.2. Long-Run Estimations with the ARDL Model

The ARDL model to be estimated for surveying the long-run relationships between the current account balance and other variables in this study is as follows:

$$CAB_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i} CAB_{t-i} + \sum_{i=0}^{n} \alpha_{2i} FTB_{t-i} + \sum_{i=0}^{o} \alpha_{3i} REER_{t-i} + \sum_{i=0}^{p} \alpha_{4i} TOT_{t-i} + \sum_{i=0}^{r} \alpha_{5i} GDP_{t-i} + \sum_{i=0}^{s} \alpha_{6i} INT_{t-i} + e_t \quad (3)$$

In order to determine long-run relationships between the series, equation (3) will be estimated with ARDL model by using the optimal lags of the variables which were previously selected according to the Akaike information criterion (AIC). Results of the estimated ARDL (1,1,1,0,0,0) long-run model and results of the diagnostic tests are presented in Table 3.

Table 3: ARDL (1,1,1,0,0,0) model

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
CAB(-1)	0.4072	0.0944	4.3114	0.0000
FTB	1.1181	0.0513	21.774	0.0000
FTB(-1)	-0.5517	0.0977	-5.6470	0.0000
REER	26.538	18.6130	1.4258	0.1582
REER(-1)	-40.963	17.0405	-2.4038	0.0188
TOT	41.962	17.8635	2.3490	0.0215
GDP	0.0142	0.0061	2.2920	0.0248
INT	2.9903	4.1222	0.7254	0.4705
Constant	-3450.98	2482.70	-1.3899	0.1688

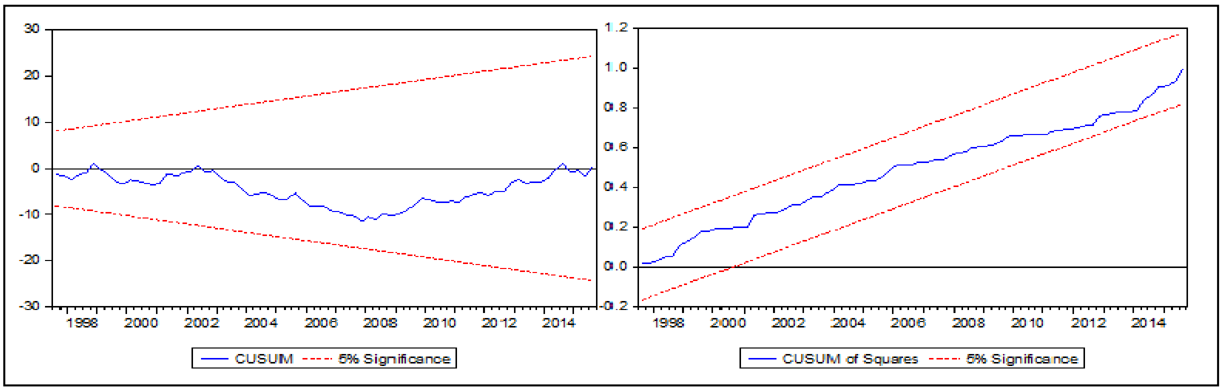
R^2=0.987 $\bar{R}^2$ = 0.986 *F*-stat.=722.52 (0.000) DW stat.=1.985

$\chi^2_{BG\ LM[5]}$=3.466 (0.628) $\chi^2_{Normality\ (JB)}$=0.963 (0.617)

χ^2_{White}=46.759 (0.359) $\chi^2_{Ramsey\ RESET\ [1]}$=1.226 (0.271)

Notes: Model selection method: AIC, Maximum dependent lags=5 (Automatic selection). Numbers in parenthesis are *prob.* values.

Figure 1: ARDL model CUSUM and CUSUM-SQ test results



Diagnostic test results of the estimated ARDL model show that there is no autocorrelation and heteroskedasticity problem in the model, error terms normally distributed and also there is no model specification error. The cumulative sum of recursive residuals (CUSUM) and the CUSUM square (CUSUM-SQ) test results show that long-run parameters estimated with ARDL model and also the residual variance of the model are stable which means there is no structural change and therefore the model can be estimated without using any dummy variable. In this regard, estimated long-run coefficients through ARDL (1,1,1,0,0,0) model are given in Table 4.

Table 4: ARDL (1,1,1,0,0,0) model long run coefficients

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
FTB	0.9555	0.0582	16.3980	0.0000
REER	-24.3356	26.1361	-0.9311	0.3549
TOT	70.7934	28.3784	2.4946	0.0149
GDP	0.0239	0.0101	2.3569	0.0211
INT	5.0450	6.8876	0.7324	0.4662

Notes: Dependent variable is Current Account Balance (CAB).

Estimation results of the long-run ARDL model show that the explanatory variables have the expected signs. According to the results, increases in FTB, TOT and GDP affects CAB positively and coefficients are statistically significant. One unit increase in FTB, TOT and GDP improves CAB 0.95, 70.8 and 0.02 units, respectively. Findings reveal that one unit increase in FTB affects CAB positively almost as the increment in itself, which means CAB and FTB will move together very closely. This result is compatible with the view that CAB of Turkey is highly dependent to the FTB. Relationship between CAB and GDP could be either positive or negative. If the domestic investments which substitute imports increase when GDP increases, the effect of GDP on CAB could be positive. In this context findings show that increase of the GDP affects CAB positively but effect level is quite low. Results indicate that domestic interest rate (INT) also has a positive effect on CAB, which is one unit increase in INT affects CAB positively about 5 million USD but the coefficient is statistically insignificant. On the other hand REER is found to be negative as expected, which is one unit increase in REER affects CAB negatively about 24 million USD but the coefficient is also statistically insignificant. According to the results TOT has a strong effect on CAB of Turkey. In this respect the Harberger-Laursen-Metzler (HLM) hypothesis seems valid for Turkey which means increase of TOT affects foreign trade balance and therefore current account balance positively and strongly.

According to the results FTB and TOT are found as most effective factors on the current account balance of Turkey in the long-run.

3.3. Short-Run Estimations with the Error Correction Model

Short-run relationships between the current account balance and other variables in this study are examined with the Error Correction Model (ECM) based on the ARDL model. The model is as follows:

$$\Delta CAB_t = \alpha_0 + \sum_{i=1}^{m} \alpha_{1i}\Delta CAB_{t-i} + \sum_{i=0}^{n} \alpha_{2i}\Delta FTB_{t-i} + \sum_{i=0}^{o} \alpha_{3i}\Delta REER_{t-i} + \sum_{i=0}^{p} \alpha_{4i}\Delta TOT_{t-i} + \sum_{i=0}^{r} \alpha_{5i}\Delta GDP_{t-i} + \sum_{i=0}^{s} \alpha_{6i}\Delta INT_{t-i} + \delta ECT_{t-1} + e_t \quad (4)$$

In equation (4) ECT_{t-1} is the lagged error correction term which is the one period lagged value of the error terms derived from the long-run equilibrium model. The coefficient of the lagged error correction term *(δ)* shows the eliminating of speed of disequilibrium, i.e. speed of adjustment toward the long-run equilibrium level. Coefficient of lagged ECT is expected to be negative and statistically significant in order to operation of the error correction mechanism. Results of the error correction model based on the ARDL model (i.e. the estimated short-run coefficients) are presented in Table 5.

Table 5: Error correction model results based on ARDL (1,1,1,0,0,0) model

Variable	Coefficient	Std. Error	*t*-Statistic	Prob.
ΔCAB(-1)	0.4262	0.1624	2.6236	0.0106
ΔFTB	1.1225	0.0625	17.941	0.0000
ΔFTB(-1)	-0.5630	0.1837	-3.0645	0.0031
ΔREER	26.684	17.134	1.5573	0.1238
ΔREER(-1)	-36.943	17.627	-2.0958	0.0397
ΔTOT	32.886	32.358	1.0163	0.3129
ΔGDP	0.0155	0.0124	1.2510	0.2150
ΔINT	0.7524	3.6692	0.2050	0.8381
ECT(-1)	-1.0298	0.1999	-5.1509	0.0000
Constant	-6.6979	79.966	-0.0837	0.9335
R^2=0.894	$\bar{R}^2$=0.881	*F*-stat.=67.214 (0.000)	DW stat.=1.913	
$\chi^2_{BG\ LM[5]}$=6.709 (0.243)		$\chi^2_{Normality\ (JB)}$=0.811 (0.666)		
χ^2_{White}=50.183 (0.622)		$\chi^2_{Ramsey\ RESET\ [1]}$=0.007 (0.909)		

Notes: Numbers in parenthesis are *prob.* values.

Diagnostic test results of the estimated error correction (short-run) model also show that the model satisfies all of the stability conditions. According to the results given in Table 5, the lagged error correction term (ECT) in the model is statistically significant at the 1% level with a negative coefficient. If the value of the lagged error correction terms coefficient is between -1 and -2, this shows the lagged error correction term produces dampened fluctuations in current account balance about the equilibrium path. As seen from the results of the short-run model, coefficient of the lagged error correction term is found to be -1.02, which implies that instead of monotonically converging to the equilibrium path directly, the error correction process fluctuates around the long-run value in a dampening manner and when this process is completed, convergence to the equilibrium path is expected to be rapid (Narayan and

Smyth, 2006).On the other hand results of the short run analysis reveal that the current account balance of Turkey is affected mostly from the lagged value of itself, from foreign trade balance and also from the lagged value of real effective exchange rate.

4. Conclusion

In this study, the relationships of the current account balance with foreign trade balance, real effective exchange rates, the international terms of trade, gross domestic product and domestic interest rates in Turkish economy are analyzed by using 1995:Q1-2015:Q3 quarterly data. In order to analyze the relationships, firstly unit root tests are applied to the series. Because of some variables found to be integrated in level and some in first order, the ARDL-Bounds testing approach is employed to determine the long-run relationships and error correction model based on the ARDL approach is applied to determine the short-run relationships.

Estimation results of the long-run ARDL model show that the explanatory variables have the expected signs. According to the results, increases in FTB, TOT and GDP affects CAB positively and coefficients are statistically significant. Findings imply that one unit increase in FTB affects CAB positively almost as the increment in itself in the long-run, which means CAB and FTB will move together very closely. This result is compatible with the view that CAB of Turkey is highly dependent to the FTB. Results show that increase of the GDP affects CAB positively but effect level is quite low. On the other hand domestic interest rate (INT) also has a positive effect on CAB but the coefficient is statistically insignificant. REER is found to be negative as expected but the coefficient is also statistically insignificant. Results show that TOT affects CAB positively and significantly and has a strong effect on the current account balance of Turkey. In this respect the Harberger-Laursen-Metzler (HLM) hypothesis seems to be valid for Turkey which means increase of TOT affects foreign trade balance and therefore current account balance positively and strongly. According to the findings FTB and TOT are found as most effective factors on the current account balance of Turkey in the long-run.

Results of the short-run error correction model analysis show that the lagged error correction term in the model is statistically significant at the 1% level with a negative coefficient. Coefficient of the lagged error correction term is found to be between -1 and -2, which implies that instead of monotonically converging to the equilibrium path directly, the error correction process fluctuates around the long-run value in a dampening manner and when this process is completed, convergence to the equilibrium path is expected to be rapid. Short-run findings also reveal that the current account balance of Turkey is affected mostly from the lagged value of itself, from the foreign trade balance and also from the lagged value of real effective exchange rate in the short-run.

When all the results evaluated together, it is seen that foreign trade balance is the dominant factor in terms of the current account deficits in Turkish economy. In this respect real effective exchange rate is also seems to be important both for the foreign trade deficits and current account deficits. Letting nominal exchange rate to be in its free market equilibrium level and disinflation process may help to reduce the current deficits. The international terms of trade is found to be other prominent impact factor on the current account balance of Turkey in the long-run. This result reveals that if Turkey produces and exports high-tech intensive products more which may lead the improvement of Turkey's terms of trade, current account balance could get better in time.

Appendix:

Appendix 1: The ARDL Model Selection Criteria Table (First 10 Model)

LogL	AIC*	BIC	HQ	Adj. R-sq	Specification
-616.328940	16.034075	16.306003	16.142933	0.986090	ARDL(1, 1, 1, 0, 0, 0)
-616.084409	16.053446	16.355589	16.174399	0.985973	ARDL(1, 1, 1, 1, 0, 0)
-613.123078	16.054438	16.447223	16.211677	0.986399	ARDL(1, 1, 1, 4, 0, 0)
-616.140971	16.054897	16.357039	16.175850	0.985953	ARDL(1, 1, 1, 0, 0, 1)
-615.186647	16.056068	16.388424	16.189116	0.986088	ARDL(1, 1, 1, 0, 0, 2)
-612.216583	16.056835	16.479834	16.226170	0.986504	ARDL(1, 1, 1, 5, 0, 0)
-616.295688	16.058864	16.361006	16.179817	0.985897	ARDL(1, 2, 1, 0, 0, 0)
-615.301072	16.059002	16.391358	16.192050	0.986047	ARDL(3, 1, 1, 0, 0, 0)
-616.305250	16.059109	16.361251	16.180062	0.985894	ARDL(1, 1, 2, 0, 0, 0)
-616.312448	16.059294	16.361436	16.180247	0.985891	ARDL(2, 1, 1, 0, 0, 0)

References

CENTRAL BANK of the REPUBLIC of TURKEY (CBRT). Electronic Data Delivery System (EDDS). *http://evds.tcmb.gov.tr/index_en.html*, (Last access: February 24, 2016).

ENGLE, R. and GRANGER, C. (1987). Cointegration and Error Correction: Representation, Estimation and Testing. *Econometrica.* Vol. 55, No. 2, pp. 251-276.

EUROSTAT (Statistical Office of the European Commission). Statistics Database. Economy and Finance Statistics. *http://ec.europa.eu/eurostat/data/database*, (Last access: February 26, 2016).

FED - Board of Governors of the Federal Reserve System (2014). Monetary Policy Report (February 11, 2014). Washington D.C. *http://www.federalreserve.gov/monetarypolicy/mpr_default.htm*, (Access: 10 August, 2015).

INTERNATIONAL MONETARY FUND (IMF). World Economic Outlook Database - October 2015, *http://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx*, (Last access: March 3, 2016).

JOHANSEN, S. and JUSELIUS, K. (1990). Maximum Likelihood Estimation and Inference on Cointegration with Applications to the Demand for Money. *Oxford Bulletin of Economics and Statistics.* Vol. 52, No. 2, pp. 169-210.

KASMAN, A.; TURGUTLU, E. and KONYALI, G. (2005). Cari Açık Büyümenin mi Aşırı Değerli TL'nin mi Sonucudur?. *İktisat İşletme ve Finans.* Vol. 20(233), pp. 88-98.

KWIATKOWSKI, D.; PHILLIPS, P.C.B.; SCHMIDT, P. and SHIN, Y. (1992). Testing the Null Hypothesis of Stationary Against the Alternative of a Unit Root. *Journal of Econometrics.* Vol. 54, pp. 159-178.

NARAYAN, P. K. and SMYTH, R. (2006). What Determines Migration Flows from Low-Income to High-Income Countries? An Empirical Investigation of Fiji–U.S. Migration 1972-2001. *Contemporary Economic Policy.* Vol. 24(2), pp. 332-342.

NG, S. and PERRON, P. (2001). Lag Length Selection and the Construction of Unit Root Tests with Good Size and Power. *Econometrica.* Vol. 69(6), pp. 1519-1554.

PESARAN, M. H.; SHIN, Y. and SMITH, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics.* Vol. 16(3), pp. 289-326.

PHILLIPS, P. C. B. and PERRON, P. (1988). Testing for a Unit Root in Time Series Regression. *Biomètrika*. Vol. 75(2), pp. 336-346.

TURKISH STATISTICAL INSTITUTE (TURKSTAT). Foreign Trade Indices Database. *http://biruni.tuik.gov.tr/disticaretapp/menu.zul,* (Last access: February 24, 2016).