Research Journal of Finance and Accounting
2222-1697 (Paper) ISSN 2222-2847 (Online)
Vol.11, No.17, 2020


# Determinants of Current Account Deficit: Empirical Evidence from Ethiopia

Wuhib Seyoum
Lecturer, Department of Economics, College of Business and Economics, Assosa University, Assosa, Ethiopia

**Abstract**
The main objective of this study is to empirically investigate the determinants of current account deficits in Ethiopia using annual time series data ranging from 1975 to 2016. To investigate the long run and short run relationship between current account deficit and its determinants, Autoregressive Distributed Lag (ARDL) model or bounds testing approach to co-integration and Error Correction Model (ECM) are applied respectively. The results of the Augmented Dickey Fuller (ADF) test indicate that the variables under consideration are a mixture of integrated of order zero and order one, that is, I(0) and I(1). Moreover, the result of bounds testing confirms the existence of stable long run relationship between current account balance and its determinants. The empirical result reveals that net foreign asset, real effective exchange rate, terms of trade and real GDP are found to have a negative impact on current account deficit, while government budget balance positively affected current account deficit in the long run. However, inflation is found to be insignificant both in the short run and in the long run. The ECM also shows that, real effective exchange rate, terms of trade and inflation have no significant effect on current account deficit in the short run. As a policy implication, it is recommended that employing appropriate policy mix along with devaluation, diversification and improving the quality of exports and implementation of efficient tax administration system are among the policy options that are supposed to alleviate the existing current account deficit.
**Keywords**: ARDL, Bounds testing, Current account deficit, ECM, Ethiopia
**DOI:** 10.7176/RJFA/11-17-06
**Publication date:**September 30th 2020

## 1. Introduction

The balance of payments (BoP) is a statistical statement that systematically summarizes, for a specific time period, the economic transactions of an economy with the rest of the world. Current account is one of the components in the BoP of a country. It comprises the international balances of transactions in trade of goods and services, factor income and current transfers. Current account balance (CAB) is significant because it is key economic indicator of country's external performance (IMF, 2009). According to the explanation of Arisovnik (2007), the current account balance plays several roles in policymakers' analyses of economic developments. First, its significance stems from the fact that the current account balance, reflecting the saving-investment ratio, is closely related to the status of the fiscal balance and private savings which are key factors of economic growth. Second, a country's balance on the current account is the difference between its exports and imports, reflecting the totality of domestic residents' transactions with foreigners in markets for goods and services. Third, since the current account balance determines the evolution over time of a country's stock of net claims on (or liabilities to) the rest of the world, it reflects the inter-temporal decisions of (domestic and foreign) residents. Consequently, policymakers are endeavoring to explain current account balance movements, assess their sustainable (and/or excessive) levels and seek to induce changes to the balance through policy measures. A study conducted by Calderon, Chong and Zanforlin (2007) indicated that most African countries are characterized by deficits in the current account that have been very large in recent years due to dismal rates of growth, strong reliance on foreign aid, low public and private savings, concentration of exports on single primary products, and large distortions in the economy. All of these characteristics emphasize the fact that understanding the determinants of current account balances is crucial, in order to understand policy implications not only in terms of magnitude but, given the many peculiarities of the region, also in terms of direction and its determinants.

Given the macroeconomic fragility of the developing world, especially African countries, arriving at a clear understanding of the factors that affect the current account balance appears to be a sensible strategy for effective policymaking. In this context, research has since been pre-occupied by the estimation of the determinants of the current account dynamics, the optimal and sustainable size of the current account deficit.

Like other developing countries, the Ethiopian economy also experienced a persistent deficit in its current account for a long period. The current account deficit (CAD) of Ethiopia is in a persistent increase reaching a record high of 177986 million Birr in 2016. Especially after 2010/11 the deficit has increased at an alarming rate increasing from 26702.09 million Birr in 2011 to 79156.3 million Birr in 2012, and further to 177986 million in 2016. The Ethiopian economy revealed a consistent and excessive current account deficit scoring a record high of

14.7% of GDP in 2006 though it is highly volatile.

According to the NBE (2015), the current account balance has been in persistent deficit accounting for on average 6.3% of GDP for the last 40 years. This large current account deficit may lead to drain foreign reserves, high inflow of borrowed money used to close the saving gap between investment and saving that accumulate over time, currency weakness, higher imported inflation and losses of investor confidence. This therefore necessitates an inquiry into the determinants and sustainability of the current account to act as a signal or an early warning indicator to the likely emergence of a macroeconomic crisis. On the other hand, in order to determine the economic policies to be applied for removing the balance of payments disequilibrium and ensuring the sustainability of current account deficits, it is crucial to identify the factors affecting the current account balance. Potential effects of the policies intended for controlling current deficits on economic growth necessitate determining the factors affecting current account balance and effect levels of these factors on current account balance.

Despite the manifested importance of understanding a country's current account determinants, regarding country-specific studies, there is only one paper conducted on the subject by Gebreegziabher (2003). But in his thesis he excluded important variables which have a great impact on current account balance as revealed in many studies such as exchange rate and inflation. Furthermore, to the best of my knowledge, there is no research work that attempt to apply inter-temporal approach to the analysis of CAB in Ethiopia.

On the basis of these grounds, the study is different from the previous works in that, i) it fills the time gap, that is, it uses data up to recent time to fill the knowledge gap created due to time, ii) it incorporates macroeconomic variables that are essential but omitted by the previous researcher, iii) it bases the theoretical foundation on the most recent approach for the analysis of current accounts i.e., inter-temporal approach, iv) it applies the most recent time series model (ARDL) model to investigate the determinants of CAD.

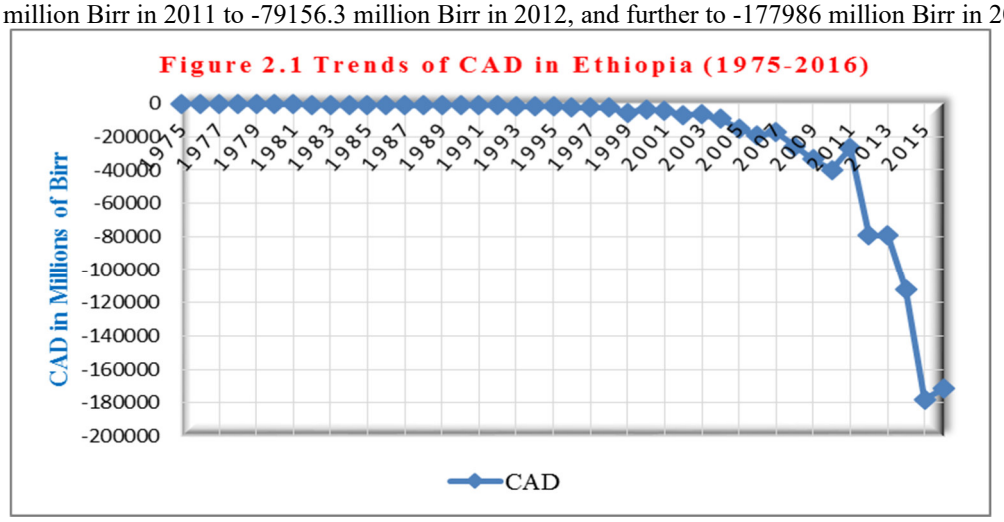
The general objective of this study is to analyze the empirical linkage between Current Account Deficit (CAD) and a set of economic variables proposed by theoretical and empirical literatures as its determinants in case of Ethiopia. Specifically, the study tries to

- ✓ Identify the basic macroeconomic variables that influence the position of current account deficit of Ethiopia over the period ranging from 1975 to 2016.
- ✓ Highlight the structure and trends of CAD of Ethiopia over the study period

## 2. An Overview of the Current Account Balance of Ethiopia

Current account deficit has been a persistent feature of the Ethiopian economy as in the last 40 years the country had never experienced a surplus in its current account as revealed in the data obtained from the National Bank of Ethiopia. The data shows that CAD of the nation had an ever increasing trend throughout the study period except some slight fluctuations.

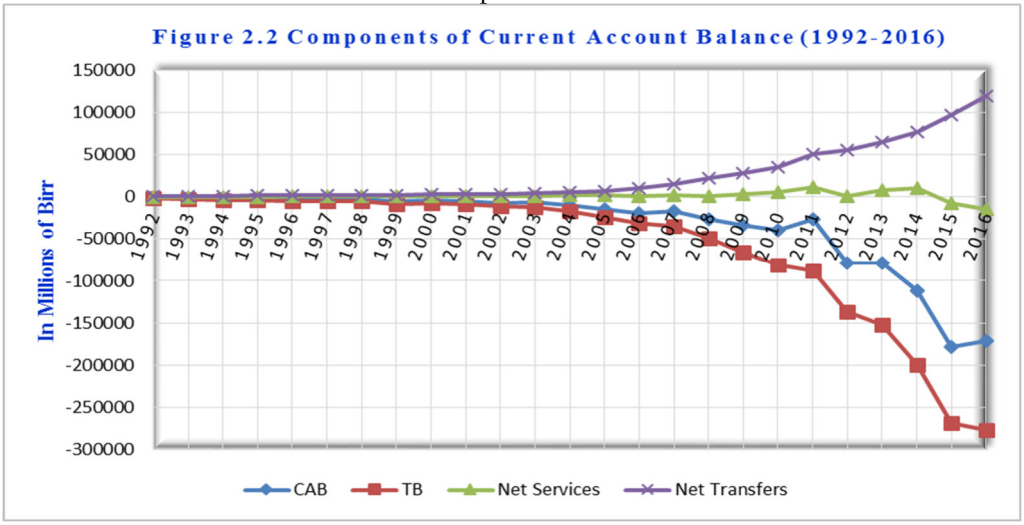
As it can be seen from figure 2.1, the CAD of Ethiopia is in a persistent increase reaching a record high of -177986 million Birr in 2016. Especially after 2011 the deficit has increased at an alarming rate increasing from -26702.09 million Birr in 2011 to -79156.3 million Birr in 2012, and further to -177986 million Birr in 2016.




**Source: Based on data obtained from NBE annual reports, various years**

This might be attributed to the increasing demand for imported capital goods and intermediate goods in response to the increasing pace of development that the country is achieving. However, this trend might be an indicator that the economy is experiencing a serious problem in its external sector. Being a predominantly agricultural based economy, the country's exports are mainly primary agricultural commodities, with coffee

having a largest share (25%-35% of exports of the country). On the other hand, Ethiopia imports most of its manufacturing intermediate products, in addition to fuel and fertilizer in which capital goods having a lion's share. Figure 2.2 shows the trend of CAB with its main components.




**Source: Based on data obtained from NBE annual reports, various years**

The above figure shows that the trade balance was negative for the whole years considered and the magnitude of the deficit was extremely high and has a drastic increment. Ethiopia's current account has been fluctuating widely, and has been influenced, to a large extent, by developments in the merchandise trade account. This can be proved from the above figure in which both trade balance and current account balance show almost similar trend throughout the period under review. Despite the growth rate of exports being higher than that of imports, the foreign exchange earnings from exports could not cover the growing import bills of the country given the fact that exports are mainly primary products while imports are expensive intermediate and capital goods. Moreover, though net services and net transfers record a surplus for long years, they could not compensate the growing deficits in the merchandise balance. As a result, the severe deficit in trade balance leads to deterioration of CAB over time.

## 3. Data source and Methodology

The time series data ranging from the period 1975 to 2016 is collected from National Bank of Ethiopia (NBE), Ministry of Finance and Economic Cooperation (MoFEC), Central Statistical Agency (CSA) of Ethiopia, Ethiopian Economics Association (EEA) as well as the databases of International Monetary Fund (IMF) and World Bank (WB).

The working definitions of the dependent as well as the explanatory variables with their respective sources are summarized hereunder.

Table 3.1 Summary of definition of variables and respective data sources

| Variables | Definition | Sources |
|---|---|---|
| **Current Account Balance** | Balances of transactions in trade of goods and services, factor income and current transfers of a country in one year. | MoFEC |
| **Net Foreign Asset** | The value of the assets that country owns abroad, minus the value of the domestic assets owned by foreigners. The initial stock of NFA is measured as the one period lagged NFA stock to avoid endogeneity problems with the current account. | NBE |
| **Real Effective Exchange Rate** | Weighted average of the Real Exchange Rate to the currencies of its trading partners adjusted by the weights of trading partners. | NBE |
| **Terms of Trade** | The ratio of export value index to import value index | WDI |
| **Inflation** | A sustained increase in the general price of goods and services in the economy, based on CPI. | CSA |
| **Fiscal Deficit** | The difference between government revenue and its expenditure. | MoFEC |
| **Real GDP** | Measured by the value of total goods and services produced in a given year at constant price, this variable is selected to capture the effect of stages of development on CAD. | MoFEC |

## 4. Methodology and Model Specification

For the purpose of analyzing the long run relationships and dynamic interactions among the variables of interest, Autoregressive Distributed Lag (ARDL) model or bounds testing approach which was developed by Pesaran et al. (2001) is used. For a long period of time, the classical Engle-Granger approach and Johansen co-integration approach are widely applied in empirical literature in order to test the presence of long run relationship among the variables under consideration. But, these approaches are associated with some limitations.

To begin with, the Engle-Granger and Johanson co-integration approaches, for instance requires the underlying variables to be integrated of order one i.e. I (1). This implies that, the pretesting for integration order is prior important step needed to determine long run co-integration relationships. In addition, Johansen's approach based on maximum likelihood technique results an estimator which is asymptotically efficient. It shows that the parameter estimates will be exposed to small sample bias, when the Johnson approach conducted to small sample size.

Therefore, there is a need to look for an alternative co-integration approach that is applicable for further investigation in small sample size. In this study, so as to test the occurrence of long run relationships among the dependent variable, CAD as a share of GDP and the independent variables, Autoregressive Distributed Lag Model or bounds testing approach which was developed by Pesaran et al. (2001) is applied. In contrast to the previously stated approaches, bounds testing approach has several advantages to use it.

Firstly, autoregressive distributed lag model is a single equation method which can be applied on relatively small sample size whereas; the Engle–Granger approach and Johansen co-integration approach are fairly data intensive. Secondly, while other co-integration techniques require all of the regressors to be integrated of the same order; the ARDL approach can be applied whether the regressors are purely order zero [I(0)], purely order one [I(1)], or mixture of both. Thirdly, once the lag order of the model is obtained, it permits the co-integration relationship to be estimated by OLS and also bounds testing is helpful to make a distinction among dependent and independent variables which allows investigating the existence of long run relationship between them. Moreover, the short-run and long-run coefficients of the model are estimated simultaneously (Pesaran and Shin, 1997).

Many Economic theories provide and established theoretical framework for analyzing the determinants of current account. The most contemporaneous analysis of determinants of current account is inter-temporal approach. The economic theory underpinning this paper stems from this approach, which was initially proposed by Sachs (1981) and Buiter (1981) and further extended by Obstfeld and Rogoff (1995).

The inter-temporal approach to the current account views the current account (CA) as the difference between domestic saving (S) and domestic investment (I):

**CA = S – I …….(1)**

and focused on macroeconomic factors that determine the two variables, S and I.

The starting point of the empirical analysis is the national income accounting identity. From this identity it can be seen that the current account (CA) is equal to the difference between domestic saving (S) and investment (I). Taking the equation for national income

**Y = C + I + G + X − *M* ……..2**

Defining gross domestic savings as S =C + I + G, equation (2) becomes

**C= X− M = S – *I* ……3**

In this case, different variables that could have influence on both saving and investment can also affect CAB. These include the above mentioned explanatory variables among others. In line with the above discussions and based on the work of Chinn and Prasad (2003), the empirical model that is used to analyze the determinants of CAB can be specified as follows.

$$CABG_t = \partial_0 + \partial_1 LNFA_t + \partial_2 LREER_t + \partial_3 LTOT_t + \partial_4 LRGDP_t + \partial_5 BBG_t + \partial_6 INFN_t + \varepsilon_t \quad ...4$$

Where $\partial_0$ is the intercept term,

$\partial_1 \ldots \partial_6$ are the coefficients of the explanatory variables and $\varepsilon_t$ is the white noise error term

a prefix L denotes natural logarithms of the subsequent variables, CABG= current account balance as a share of GDP, NFA = Net foreign asset, REER= real effective exchange rate, TOT = terms of trade (Price of export/ Price of import), RGDP= real GDP, BBG = government budget balance as a share of GDP and INFN = Inflation rate

The ARDL approach to co-integration involves estimating the error correction model (ECM) version of ARDL model for the determinants of current account balance.

$$\Delta CABG_t = \alpha_0 + \sum_{i=1}^{m} \gamma_{1i}\,\Delta CADG_{t-i} + \sum_{i=0}^{m} \gamma_{2i}\,\Delta LNFA_{t-i} + \sum_{i=0}^{m} \gamma_{3i}\,\Delta LREER_{t-i} + \sum_{i=0}^{m} \gamma_{4i}\,\Delta LTOT_{t-i} + \sum_{i=0}^{m} \gamma_{5i}\,\Delta GRGDP_{t-i} + \sum_{i=0}^{m} \gamma_{6i}\,\Delta BBG_{t-1} + \sum_{i=0}^{m} \gamma_{7i}\,\Delta INFN_{t-i} + \varphi_1 CABG_{t-1} + \varphi_2 LNFA_{t-1} + \varphi_3 LREER_{t-1} + \varphi_4 LTOT_{t-1} + \varphi_5 LRGDP_{t-1} + \varphi_6 BBG_{t-1} + \varphi_7 INFN_{t-1} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

where, Δ is first difference operator, φ, i=1.....7 are long run coefficients and γ, 1.....7 are the short run dynamic coefficients of the ARDL. All the variables are as previously defined. The above model will be estimated using OLS for the purpose of testing long run relationship.

The bounds test is mainly based on the joint Wald test or F- test which its asymptotic distribution is non-standard under the null hypothesis of no cointegration. In order to check the significance of lagged levels of the variables an F-statistics is used for the determination of existence of long run relationship. The null hypothesis that there is no cointegration among the variables is tested against there is cointegration among the variables. That is, for equation (6)

$H_o: \varphi_1=\varphi_2=\varphi_3=\varphi_4=\varphi_5=\varphi_6=\varphi_7=0$

$H_1: \varphi_1\neq\varphi_2\neq\varphi_3\neq\varphi_4\neq\varphi_5\neq\varphi_6\neq\varphi_7\neq0 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$

If the computed F-statistics is larger than the upper bound critical value, then the null hypothesis of no long run relationship is rejected in favor of the alternative hypothesis that there exists a long run relationship. But, if the computed F-statistics is less than the lower bound critical values the null hypothesis is accepted showing that there is no long run relationship. At last, if the computed F-statistics lies between the lower and the upper bound critical values, inference is inconclusive and we have to determine the order of integration of the regressors prior to making conclusive inference (pesaran et al.,2001).

If there exists an evidence for the presence of long run relationship (co-integration), the following long run ARDL ($m_1$, $m_2$, $m_3$, $m_4$, $m_5$, $m_6$, $m_7$,) is estimated.

$$CABG_t = \varphi_0 + \sum_{i=1}^{m1} \varphi_1\,CABG_{t-i} + \sum_{i=0}^{m2} \varphi_2\,LNFA_{t-i} + \sum_{i=0}^{m3} \varphi_3\,LREER_{t-i} + \sum_{i=0}^{m4} \varphi_4\,LTOT_{t-i} + \sum_{i=0}^{m5} \varphi_5\,LRGDP_{t-i} + \sum_{i=0}^{m6} \varphi_6\,BBG_{t-i} + \sum_{i=0}^{m7} \varphi_7\,INFN_{t-i} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots (9) \ldots\ldots\ldots\ldots\ldots (7)$$

All the variables are as previously defined. $\varphi_0$ is the intercept term, $\varphi_1 \ldots \varphi_7$ are the long run coefficients of the model and $\varepsilon_t$ is the error term.

After identification of a long-run relationship between variables, then short- run dynamic of the model can be obtained by estimating an error correction model (ECM) associated with the long-run estimates. This also indicates the speed of adjustment back to long-run equilibrium after a short-run shock. The standard ECM involves estimating the following equation.

$$\Delta CABG_t = \gamma_0 + \sum_{i=1}^{m1} \gamma_1\,\Delta CADG_{t-i} + \sum_{i=0}^{m2} \gamma_2\,\Delta LNFA_{t-i} + \sum_{i=0}^{m3} \gamma_3\,\Delta LREER_{t-i} + \sum_{i=0}^{m4} \gamma_4\,\Delta LTOT_{t-i} + \sum_{i=0}^{m5} \gamma_5\,\Delta LRGDP_{t-i} + \sum_{i=0}^{m6} \gamma_6\,\Delta BBG_{t-i} + \sum_{i=0}^{m7} \gamma_7\,\Delta INFN_{t-i} + \theta ECT_{t-1} + \varepsilon_t \ldots\ldots\ldots (10) \ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

where $\gamma_1 \ldots \gamma_7$ are the short run dynamic coefficient of the variables in the model, $ECT_{t-1}$ is the error correction term which is obtained from ARDL long run dynamics of the model. The coefficient of $ECT_{t-1}$ indicates the speed of adjustment to bring back equilibrium in the model. Moreover, it is expected to have a negative sign, showing the variables converge to the equilibrium.

## 5. Results and Discussion

### 5.1 Unit root test results using ADF test

Table 5.1 shows that current account balance, inflation and terms of trade are found to be integrated of order zero (I(0)), whereas net foreign asset, real GDP, budget deficit and real effective exchange rate are integrated of order

one I(1). The table shows that the variables are a mixture of I(0) and I(1). It is evident that none of the variables are integrated of order two which is a precondition for the use of ARDL approach to co-integration. Therefore, using the ARDL approach to co-integration or bounds testing approach developed by Pesaran et al. (2001) is the most appropriate method for estimation or to check the long run relationship among the variables.

Table 5.1 Unit root test results using ADF test

| Variables | Test Statistics under different Assumptions | | | Order of Integration |
|---|---|---|---|---|
| | Intercept | Trend and Intercept | No trend, no intercept | |
| CABG | -2.006379 | -3.605100** | 0.092738 | I(0) |
| LNFA | 2.461681 | 0.537943 | 5.053644 | I(1) |
| D(LNFA) | -4.397941*** | -5.260063 | -0.812438 | |
| LREER | -1.047166 | -1.874948 | -0.413283 | I(1) |
| D(LREER) | -4.985793*** | -4.915908 | -5.030406 | |
| LTOT | -3.039789** | -3.024905 | 0.779633 | I(0) |
| LRGDP | 4.306919 | 1.028333 | 2.006982 | I(1) |
| D(LRGDP) | -1.967908 | -6.545504*** | -.735769 | |
| BBG | -2.817448 | -2.708213 | -0.934647 | I(1) |
| D(BBG) | -8.806112*** | -8.877085 | -8.926204 | |
| INFN | -1.850766 | -4.125446** | -1.098880 | I(0) |
| *Mackinnon* | [with constant only] | [with constant & Trend] | [Without constant and trend] | |
| *Critical Values* 1% | -3.610453 | -4.211868 | -2.624057 | |
| 5% | -2.938987 | -3.529758 | -1.949319 | |
| 10% | -2.607932 | -3.196411 | -1.611711 | |

**5.2 Test for Long Run Relationship (Bounds Testing to Co-integration)**

The critical values used for bounds test for the respective number of regressors (6) are given below.-Table 5.2 The critical values for bound test for the case with no intercept and no trend

| | 1 percent | | 5 percent | | 10 percent | |
|---|---|---|---|---|---|---|
| *K* | *I(0)* | *I(1)* | *I(0)* | *I(1)* | *I(0)* | *I(1)* |
| 6 | 3.15 | 4.43 | 2.45 | 3.61 | 2.12 | 3.23 |

***Source: Pesaran et al. (2001)***

Note: I(0) and I(1) denote upper bound and lower bound values respectively.

The F-test or the Wald-test is performed to check the joint significance of the coefficients specified in equation (6). The null hypothesis that there is no cointegration among the variables is tested against there is cointegration among the variables. The calculated F-statistic (4.535335) is found to be larger than the critical values for bound test at all levels of significance implying that the null hypothesis of no co-integration is strongly rejected in favor of the alternative hypothesis of there is co-integration. This proved that there is a long run relationship among the variables.

**5.3 Estimation of Long Run ARDL Model**

After realizing the existence of long run relationship among the variables, the next step is estimating the long run ARDL model for the determinants of CAD.

Table 5.3 Estimated Long Run Coefficients using the ARDL Approach ARDL (1,2,1,1,1,3,1) based on Akaike information criteria

| The dependent variable is CABG | | | | |
|---|---|---|---|---|
| **Regressors** | **Coefficient** | **Standard Error** | **T-Ratio** | **P-Values** |
| **LNFA** | -0.127168** | 0.050462 | -2.520062 | 0.0203 |
| **LREER** | -0.164568*** | 0.057447 | 2.864698 | 0.0096 |
| **LTOT** | -0.198020* | 0.150421 | -1.316438 | 0.0729 |
| **LRGDP** | -0.176221*** | 0.056361 | -3.126651 | 0.0053 |
| **BBG** | 1.085418*** | 0.367290 | 2.955209 | 0.0078 |
| **INFN** | -0.000113 | 0.000630 | -0.178555 | 0.8601 |
| **Constant** | 1.706261** | 0.649074 | 2.628763 | 0.0161 |

***Source: Eviews 9 ARDL (1,2,1,1,1,3,1) output***

Note: ***, ** and * denote significance at 1%, 5% and 10% respectively (rejection of the null hypothesis at 1%, 5% and10%).

The coefficient of determination (R-bar Squared) shows that about 79% of the variation in CAD is explained by the variation in the explanatory variables included in the model. The result from table 5.3 indicates that most of the variables, except inflation, appeared to be consistent with the predictions of the theoretical as well as empirical literatures. As it can also be seen from the table, all estimated coefficients except inflation are found statistically significant.

According to the empirical result of long run ARDL estimation, government budget deficit is found to have positive and significant influence on CAD. Consequently, a percentage point increase in budget deficit brings a 1.09 percentage point increase in CAD. The result of this study coincides with that of Bollano and Ibrahimaj (2015) in Central and Eastern European countries, Tehseen and Raza (2012) in Pakistan, Gehringer (2013) in the European union and Bussiere et al. (2006) in OECD and in new EU member states. The other four variables, net foreign asset, real effective exchange rate, terms of trade and real GDP, have a negative and significant impact on CAD. As a result, a 1% increase in net foreign asset, real effective exchange rate, terms of trade and real GDP tends to bring a 0.13, 0.16, 0.19 and 0.18 percentage points decline in CAD, respectively. These results are consistent with the results found by most of the studies in the existing empirical literature including Gumatta (2014) in South Africa, Tehseen and Raza (2012) in Pakistan, Chinn and Prasad (2003) in selected industrial and developing countries, Ozdamar (2015) in Turkey, Calderon et al. (2002) for selected developing countries, Oshota and Badejo (2015) in West Africa, Calderon et al., Gebreegziabher (2003) in Ethiopia, Gehringer (2013) in case of European Union and Aristovnik (2007) in MENA countries. Moreover, inflation appeared to be insignificant meaning it has no meaningful influence to determine the movement of current account in the country.

### 5.4 Estimation of Short run model (Error Correction Model)

Consequent to the estimation of the long run coefficients of the determinants of CAD is estimating error correction model to predict the short run coefficients. The coefficient of the error correction term indicates the speed of adjustment to restore equilibrium in the dynamic model. It is a one lagged period residual obtained from the estimated dynamic long run model. Moreover, it is expected to be statistically significant having a negative sign, showing that the variables converge to the equilibrium.

Table 5.4 Error Correction Representation for the Selected ARDL (1,2,1,1,1,3,1) selected based on Akaike Information Criterion.

| The dependent variable is DCABG | | | | |
|---|---|---|---|---|
| **Regressors** | **Coefficient** | **Standard Error** | **T-Ratio** | **P-Values** |
| **D(LNFA)** | -0.017778 | 0.144556 | -0.122982 | 0.9033 |
| **D(LNFA(-1))** | -0.203362 | 0.112695 | -1.804528 | 0.0862 |
| **D(LREER)** | -0.004261 | 0.075651 | -0.056321 | 0.9556 |
| **D(LTOT)** | 0.011684 | 0.121030 | 0.096536 | 0.9241 |
| **D(LRGDP)** | -0.031414 | 0.080687 | -0.389330 | 0.0411 |
| **D(BBG)** | 0.100929 | 0.196412 | 0.513865 | 0.6130 |
| **D(BBG(-1))** | 0.249311 | 0.206011 | 1.210186 | 0.2403 |
| **D(BBG(-2))** | 0.678271 | 0.238819 | 2.840106 | 0.0101 |
| **D(INFN)** | 0.000784 | 0.000469 | 1.671054 | 0.1103 |
| **$ECT_{t-1}$** | -0.673335 | 0.176613 | -5.454486 | 0.0000 |

***Source: Eviews 9 output***

Table 5.4 reveals that there is consistency in long run and short run coefficients of the model with the exceptions of REER and TOT which are found to have no significant influence on CAD in the short run. This shows that the effects of these variables on CAD can only be recognized in a long period after the change has been made on them. The error correction term $ECT_{t-1}$, which measures the speed of adjustment to restore equilibrium in the dynamic model, appears with negative sign as expected and it is strongly significant at a 1 percent level, ensuring that the long-run equilibrium can be attained. As shown above the coefficient of $ECT_{t-1}$ is -0.67 showing that the speed of adjustment to the long -run equilibrium after a shock has been happened is 67%. That is; about 67% of disequilibria from the previous year's shock can be corrected to the long run equilibrium in the current year. Moreover, it implies that it took almost one and half years to eliminate the disequilibrium and come back to a full adjustment towards its long run equilibrium.

### 5.5 Results of Model Stability and Diagnostic Tests

To check the standard property of the model, this study carried a number of model stability and diagnostic checking, which include Serial correlation test (Brush & Godfray LM test), Functional form (Ramsey's RESET) test, Normality (Jarque-Bera test), and Hetroskedasticity test.

Table 5.5 Diagnostic tests for long run ARDL (1,2,1,1,1,3,1)

| **Test Statistics** | **F Version** |
|---|---|
| **A: Serial Correlation** | F(2, 18)= 0.503117 [0.6129] |
| **B: Functional Form** | F(1, 19)= 1.907625 [0.1833] |
| **C: Normality** | CHSQ(3)= 2.002940[0.367339] |
| **D: Hetroscedasticity** | F( 2, 20)= 0.920419[0.5614] |
| **A: Lagrange multiplier test of residual serial correlation**<br>**B: Ramsey's RESET test using the square of the fitted values**<br>**C: Based on a test of skewness and kurtosis of residuals**<br>**D: Based on the regression of squared residuals on squared fitted values** | |

***Source: Eviews 9 output***

As can be seen from table 5.5 the model passes all the diagnostic tests against serial correlation, heteroscedasticity, and normality of errors. The Ramsey RESET test also suggests that the model is well specified.

In addition to the above diagnostic tests, the stability of long run estimates has been tested by applying the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) test. The stability of the long-run coefficient is tested by the short-run dynamics. Once the Error

correction model has been estimated the cumulative sum of recursive residuals (CUSUM) and the CUSUM of square (CUSUMSQ) is applied to assess the parameter stability (Pesaran, 1997). The results indicate the absence of any instability of the coefficients because the plot of the CUSUM statistic and the CUSUM of square (CUSUMSQ) fall inside the critical bounds of the 5% confidence interval of parameter stability.

## 6. Conclusion

The objective of this study is to empirically investigate the long run and short run relationship between current account deficit and its main determinants (i.e., net foreign asset, real effective exchange rate, terms of trade, real GDP, budget deficit and inflation) in Ethiopia by using time series data for the period 1975-2016. The analysis is conducted based on the inter-temporal approach of saving-investment theory to define factors that influence current account in the long run. Moreover, the trend, structure and composition of the country's current account balance are also assessed.

In this study, Autoregressive Distributed Lag (ARDL) model or bounds testing approach to co-integration and Error Correction Model are applied to determine the long run and short run relationship among the variables, respectively.

The Ethiopian economy is characterized by a persistent and excessive CAD for the last four decades as it had never registered a surplus. The deficit even shows an increasing trend throughout the study period following a great disparity between merchandise trade deficit and surpluses in net services and net transfers. Moreover, the country's CAD scored an average of 6.5% of GDP between 1975 and 2016, which raises question about its sustainability.

According to the empirical result of long run ARDL estimation, government budget balance found to have positive and significant influence on CAD. Whereas the other four variables, net foreign asset, real effective exchange rate, terms of trade and real GDP, have a negative and significant impact on CAD.

## 7. Policy Recommendations

Based on the findings of this study, the following policy recommendations are forwarded to reduce the increasing trend of current account deficit in Ethiopia.

- Structural trade related policies like diversification of export commodities through identification of new comparative advantages and development of new export products, improving the quality of the existing export products, increasing the productivity of export producers by training and providing credit incentives and searching new markets for exports could help alleviate the existing deficit.
  Moreover, the fact that most of the import products of the country are necessities such as capital goods and petroleum means that trying to limit imports is not really a viable option to solve the problem of the persistent and widening CAD. Rather, in addition to increasing the pace of the growth of exports it is recommended that production of quality substitutes should be encouraged and awareness creation in favor of the consumption of home produced substitutes should be made to help cut the large import bill of the country.
- The empirical results indicate the existence of negative long run relationship between real effective exchange rate and CAD. The depreciation of real exchange rate is expected to encourage exports by raising payment for exports in terms of the national currency and discourage imports by keeping the payments for imports higher. While exerting a positive impact on the CAB by stimulating exports and restraining imports, devaluation also influences the cost of living, the government budget and production. Increasing prices of essential goods such as fertilizer, fuel and certain basic consumer goods consequent upon the devaluation may put extra cost on the economy. Moreover, for products that have a high import content in their production inputs, devaluation could adversely impact export competitiveness.
  Accordingly, to make and keep Ethiopia competitive in the international market, keeping the track of international exchange rate adjustment is crucial. In addition to this, as a complimentary policy instrument to real exchange rate depreciation, compatible policies such as tight monetary and fiscal policies should be implemented timely and sequentially to avoid the possible depletion of the competitive advantage obtained by real exchange rate depreciation due to rise in domestic prices.
- Government budget balance is found to be among the basic determinants of CAD, in fact with a greater influence. The empirical result shows that both of them tend to move in the same direction which implies that the reduction of government budget can help improve the position of current account. However, reduction of government budget could not be a feasible solution since most of the government expenditure is spent on the construction of basic infrastructure which is the engine for the ongoing development process that the country is achieving. The better way to reap the benefits of government budget would be

implementing appropriate planning and efficient ways of fiscal control to reduce wastage of resources. Furthermore, it is recommended that the government should strive to broaden the tax base of the nation and implement efficient tax administration system that could tackle tax evasion and tax avoidance so as to increase government revenue and national saving thereby improving the CAD.

- The other empirical finding reveals that the existence of inverse relationship between CAD and real GDP which confirms the stages of development hypothesis. Based on the result, low level of income tends to aggravate the CAD in relation to mass importation of capital and intermediate goods needed to the development process while after reaching higher income level the country tends to be exporter and eventually improves its CAB. Consequently, in this regard the government is expected to encourage private investment so as to generate additional income for the people and encourage private saving. Moreover, it should also be noted that investors that produce exportable items have to get the right incentives (maintained if prevail) like improving the cumbersome administrative procedures related to export, provision of adequate infrastructure that could reduce trade costs and building image in the international arena so that our products would be acceptable. These measures may improve the foreign exchange earnings of the country and income of producers thereby increasing domestic saving which in turn improves the position of current account.

**References**

Aristovnik, A. (2007). Short and Medium Term Determinants of Current Account Balances in Middle East and North Africa Countries, *The William Davidson Institute Working paper* No. 862, The University of Michigan.

Bollano J. and Ibrahimaj D. (2015). Current Account Determinants in Central Eastern European Countries. *Graduate Institute of International and Development Studies International Economics Department Working Paper Series*, Working Paper No. HEIDWP0022-2015

Bussiere M., Fratzscher M. and Muller G. (2006), Current account dynamics in OECD and new EU member states: an inter-temporal approach. *Journal of Economic Integration*, *21* (3): 593-618.

Calderon C., Chong A. and Zanforlin L. (2007). Current Account Deficits in Africa: Stylized Facts and Basic Determinants. *Economic development and cultural change*: 191-221

Chinn, M. D. and Prasad E. S., (2003). Medium-term determinants of current accounts in industrial and developing countries: an empirical exploration. *Journal of International Economics, 59*:47-76.

Gebreegziabher T. (2003). *An empirical analysis of the determinants of the current account in Ethiopia (1961/62 - 1999/00)*. Unpublished Master's Thesis, Addis Ababa University.

Gehringer A. (2013). Another look at the determinants of current account imbalances in the European Union: An empirical assessment. *FIW working paper*, no. 105

Gumatta N. (2014). *The Determinants of South African Current Account*. Unpublished Master's Thesis

International Monetary Fund (2009). Balance Of Payments Manual, IMF

National Bank of Ethiopia, (2015). *Annual report (various issues)*

Ozdamar G. (2015). Factors affecting Current Account Balance of Turkey: A survey with the co-integrating regression analysis. *Journal of Business, Economics and Finance, 4*(4): 633-658

Pesaran, M. and Shin, Y. (1997). An Autoregressive Distributed Lag Modeling Approach to Cointegration Analysis, in S. Strom, Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch centennial Symposium, Cambridge University Press, Cambridge.

Pesaran, M., Shin,Y. & Smith, R.J. (2001). "Bounds Testing Approaches to the Analysis of level Relationships". *Journal of Applied Econometrics* (16):289-326

Tehseen S. and Raza A. (2012). Dynamics of Current Account Deficit: A Lesson from Pakistan. *MPRA working Paper*, No. 38999