Determinants of the Current Account Deficit of Ethiopia: is it Structural or Cyclical?

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Abstract

This study examines whether and the extent to which structural and cyclical factors explain the Ethiopian current account imbalance over the period 1985-2017. The results of four filtering methods generally suggest that the structural factors explain most of the variations in the current account deficit in the long-run though the cyclical factors are found to have some contributions to further deterioration of the current account balance in the post-crisis period. The structural determinants of the current account are examined using cointegration techniques, and the results using Fully Modified OLS and Canonical Cointegration Regression (CCR) have revealed that the current account balance worsens the increase in the initial net foreign asset position, the relative income, the financial deepening, and the effective exchange rate depreciation. The vector error correction (VEC) based Granger causality tests have also revealed that trade openness and real effective exchange rate Granger causes current account balance, but current account balance Granger causes only trade openness and neither of the variables Granger causes initial net foreign asset, fiscal balance, and relative income in the system.

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1. Introduction

External imbalance remains a pronounced policy issue for Ethiopia despite its recent significant development in macroeconomic policies and its considerable record in economic performance. The country runs an average of the current account deficit of not less than five percent for decades. The deficit worsens many sectors, such as external sustainability with rising external debt accumulation, constant public deficits, real exchange rate overvaluation and foreign exchange crunch especially in the post-crisis period. Indeed, based on the balance of payment constraints theory (Thirlwall, 1979), the current account deficits may be vindicated if the deficit is consistently associated with the growing capital formation including an increased share of export-oriented manufacturing industries that could guarantee the future repayment of external liabilities. However, export diversification and industrialization remain a major challenge, and the country's export has remained concentrated in a few primary commodities whose prices are volatile and exposed to global price swings. According to the National Bank of Ethiopia annual report (NBE, 2020), a few primary commodities such as coffee, oilseeds, cut flowers and chat account about 75 percent of total value of exports in 2019.

The persistent current account deficit and continued fiscal deficits with the increased spending on basic public infrastructures and social needs are reflected in the accumulation of foreign liabilities. Recent deteriorations generally are reflected in heavy infrastructure investments under the country's public investment-led development strategy, alongside the weak domestic resource mobilization. The resulting saving gap is filled by external debt and aid. As a result, the debt position of the country has been deteriorated resulting increased risk of external debt distress. The debt sustainability assessment report (IMF, 2020) has shown that Ethiopia remains at high risk of external and overall debt distress. The public and publicly-guaranteed debt accounts 57 percent of GDP in 2019 that confirms the elevated debt servicing burden relative to exports. Such chronic external imbalances produce currency instability and continued currency overvaluation, volatile capital flows and arbitrary redistribution of resources, and considerably constrain full employment growth.

Accordingly, Ethiopia's government announced a 'Home-Grown Economic Reform (HGER)' agenda in September 2019, with a private sector focus, consisting of a wide-range of macroeconomic, structural and sectoral policies to correct external imbalances, control inflation, ensure debt

sustainability, and address institutional and structural bottlenecks to private sector productivity. The agenda aims to improve the foreign exchange position and current account balance and reduce external debt vulnerability with increasing exports and strengthening production of import substituting industries.

This study, thus, examines the structural and cyclical sensitivity as well as determinants of the current account imbalance of Ethiopia using four filtering techniques and regression methods. The determining factors of the current account imbalance may vary across different economic activities due to their difference in macroeconomic, political, social and institutional arrangements. Thus, it is plausible to examine the country's specific determinants of current account deficit as it would have important policy implications under the HGER agenda to address the chronic current account deficit going forward.

The research questions would be important for Ethiopia for two main reasons. First, the persisting current account deficit has been reduced during the global financial crisis but has dramatically increased in the post financial crisis period that result in a question of whether cyclical or structural factors drive such an inverse imbalance. Second, the steadily growing external debt and net inflow of FDI to finance current account deficit can raise the issue of sustainability in the external sector.

The rest of the paper is organized as follows. The second section offers empirical literature reviews about the structural and cyclical determinants of external imbalance. The econometric model and data used will be delt with under section three. Section four presents empirical results using different filtering techniques and regression methods. The last section presents conclusions and recommendations derived from the study.

2. Literature Reviews

The determinants of the current account balance have been intensively discussed in both theoretical and empirical literature using the intertemporal approach (Obstfeld & Rogoff, 1995) that views the current account balance as the difference between domestic saving and investment. However, the existing empirical studies have overlooked the least developed economies and the findings remain inconclusive regardless of the economy studied and methodological approach used. The literature offers mixed results for the structural and cyclical factors behind current account imbalance in both developed and developing countries.

The empirical works have examined the structural and cyclical determinants of external imbalance since the overture of intertemporal approach to the current account include (Chinn & Prasad, 2003), (Cheung, Furceri, & Rusticelli, 2010), (Osakwe & Verick, 2009),(Yang, 2011), (Barnes, Lawson, & Radziwill, 2010), (Sadiku, Fetahi-Vehapi, Sadiku, & Berisha, 2015), (Oshota & Badejo, 2015), (Kandil & Greene, 2015), (Bardakas, 2016), (Das, 2016),(Chuku, Atan, Obioesio, & Onye, 2017) and (Kovacevic, 2018). The empirical evidences generally suggest that structural factors are more significant than cyclical factors to explain the current account variation particularly in the pre-crisis period. (Bardakas, 2016) and (Kovacevic, 2018), using different filtering methods on annual data of Greece and Serbia, respectively, shows that the current account variations are largely explained by structural components of current account though the contributions of cyclical factors cannot be ignored in the post-crisis period.

Many studies (Chinn & Prasad, 2003; Cheung, Furceri, & Rusticelli, 2010; Das, 2016) have confirmed that structural factors such as initial net foreign assets, level of economic development, financial deepening and trade openness significantly affects external imbalances of developed and developing countries. Using a large panel of industrial and developing economies, (Chinn & Prasad, 2003) have examined the structural determinants and the results has revealed that increase government budget balance, initial stocks of net foreign asset and financial development improves current account balance for both developing and developed countries. Current account balance of developing countries including Africa also improves for increase in relative income but worsens for trade openness. (Cheung, Furceri, & Rusticelli, 2010) also examined the structural and cyclical determinants using a panel of 94 countries, and the findings show that the medium-term global imbalance is positively affected by net foreign assets, level of economic development and oil intensity, and negatively related with fiscal deficits, financial development, youth dependency ratio and regulatory quality. Cyclical factors including output growth, oil prices and real exchange rate changes are also found important to explain the narrowing external imbalance in the post-crisis period. Besides, using a dynamic panel GMM model on a large panel of developed, emerging and developing countries, (Das, 2016) suggested quite different results for developed and emerging economies. The current account balance is positively affected by net foreign assets and trade openness while negatively affected by commodity prices, real GDP growth and increase in real effective exchange rate for developed economies. For emerging economies,

the balance is positively related with commodity price, real GDP growth and trade openness while it is negatively related with net foreign assets.

A region or country specific studies (Kandil & Greene, 2015; Barnes, Lawson, & Radziwill, 2010; Sadiku, Fetahi-Vehapi, Sadiku, & Berisha, 2015; Yang, 2011; Osakwe & Verick, 2009; Oshota & Badejo, 2015) also provide the structural and cyclical determinants of external imbalances with mixed results. In industrialized countries, (Kandil & Greene, 2015) have examined cyclical determinants using U.S balance of payments data, and the results have revealed that the current account balance worsens real GDP, real effective exchange rate and energy prices level. Using a panel of OECD countries, (Barnes, Lawson, & Radziwill, 2010) have shown that current account balance is positively related with demographic variables, level of economic development (real GDP per capita), initial net foreign assets, trade openness and real interest rates, while negatively related with oil prices and housing investments. (Sadiku, Fetahi-Vehapi, Sadiku, & Berisha, 2015), using ARDL approach on quarterly data, also suggested that financial development, fiscal deficit and terms of trade have a positive impact while trade openness has a negative impact on the current account balance of FYROM.

For developing countries, Yang has investigated the long-run and short run determinants of the current account, and the results of his study has revealed that initial stock of net foreign assets and trade openness explains the long-run behavior of current account balance in emerging Asian economies except China (Yang, 2011). In Africa, Osakwe & Verick have examined the determinants and sustainability of the current account deficits of Sub-Saharan African countries that have above five percent deficit with sluggish economic growth and investment (Osakwe & Verick, 2009). The results have revealed that an increase in resource exports as a ratio of merchandise exports leads to the probability of higher deficit while an increase in real GDP growth, trade openness and democratic regime may reduce the probability of deficit. Oshota & Badejo also have examined current account imbalance of West African countries (Oshota & Badejo, 2015).The findings show that level of economic development (GDP per capital), financial deepening and dependency ratio have a positive impact while real effective exchange rate appreciation has a negative effect on the long-run balance of the current account. But, in the same region (West Africa), the empirical results of the studies by Chuku, Atan, Obioesio, & Onye have shown that depreciation of real exchange rate and increasing national income worsens

the current account balance in the long run (Chuku, Atan, Obioesio, & Onye, 2017).

The issue of external imbalance, thus, has no a unanimous answer yet due to a structural heterogeneity of countries studied. The existing empirical literature relatively overlooked the least developed nations including Ethiopia, and it is plausible to examine the main determinants of current account balance. This study addresses whether and the extent to which structural and cyclical factors have driven the incessantly widening current account imbalance of Ethiopia, which would be crucial to scrutinize the current account imbalance going forward and the likely policy change for potential adjustment in the external balances.

3. Empirical Model and Data

3.1 Detrending and Filtering Techniques

To examine the relative importance of structural and cyclical determinants of the current account balance of Ethiopia, four filtering methods, including Hodrick-Prescott (HP), Baxter-King (BK), Christiano-Fitzerald fixed-length symmetric (CF Symmetric) and Christiano-Fitzerald full-length asymmetric (CF Asymmetric), are used to isolate cyclical components from long-term trend of current account balance.

First, the HP (Hodrick & Prescott, 1997) is the most commonly used filtering technique in time series data to separate cyclical components from its long term trend. It is a two-sided linear filter that computes the trend component that minimizes the variance of the actual series y around trend growth g. The y series can be given as:

$$y_t = g_t + c_t, for\ t = 1, \dots, T \qquad \textbf{(1)}$$

Where, g_t is the trend component and c_t is the cyclical component (i.e. $c_t = y_t - g_t$). Then, g_t can be minimized as:

$$\sum_{t=1}^{T} C_t^2 + \lambda \sum_{t=1}^{T} [(g_t - g_{t-1}) - (g_{t-1} - g_{t-2})]^2 \qquad \textbf{(2)}$$

The solution is a linear transformation that removes the trend component, and the remaining is a detrended cycle series. The average values of the sum of squared deviations of y_t from the trend (i.e. c_t) over long periods is close to zero.

A smoother trend is generated through a larger value of λ, and the trend component corresponds to a linear time trend as λ approaches to infinity. A smoothing parameter λ controls the volatility of the cyclical component of the actual series and penalizes changes in trend growth. Hence, the filtering results are very sensitive to the value of λ because it is set arbitrarily as a rule of thumb. In fact, HP suggest λ value of 100 for annual data and 1600 for quarterly data.

Second, the BK (Baxter & King, 1999) is a linear filter to isolate the cyclical component of time series using a two-sided weighted moving average based on an assumed business cycle lasting between 1.5 to 8 years for annual data. It removes all frequencies that are not associated with the business cycle. When a finite symmetric average is applied to a time series y_t with annual frequency, the new series can be obtained as:

$$y_t^* = \sum_{k=-K}^{K} \alpha_k y_{t-k} \qquad \textbf{(3)}$$

Where, α_k is fixed weights and K is the maximum lag length.

The moving average may be represented as a polynomial in the lag operator L as,

$$\alpha(L) = \sum_{k=-K}^{K} \alpha_k L^K \qquad \textbf{(4)}$$

Where, L is defined so that $L^k x_t = x_{t-k}$ for positive and negative values of K. To extract the stationary series of a cyclical component, the symmetric moving average has a sum of weights equal to zero, $\sum_{k=-K}^{K} \alpha_k = 0$, and this is a 'trend elimination property'. As the BK filter is symmetric, it is time invariant that makes the series stationary. But, filtering through moving average in the time domain using the same number of leads and lags results the loss of $2K$ data values (Baxter & King, 1999).

Third, the CF filter (Christiano & Fitzgerald, 2003) has two models: fixed-length symmetric and fixed-length asymmetric. Fixed-length symmetric has the same characteristics as the BK filter, while full length asymmetric is the most general type of band pass filter and it is time varying with the weights change for each observation. Unlike the CF Symmetric and BK filter, CF Asymmetric filter does not use the same number of lags and leads so that the filtered series does not lose observations from the actual series. To isolate the component of x_t with a period of fluctuation between p_l and p_u (where, $2 \leq p_l < p_u < \infty$), the recommended approximation of y_t, $\hat{y}_t$, is given as follows.

$$\hat{y}_t = B_0 x_t + B_1 x_{t+1} + \cdots + B_{T-1-t} x_{T-1} + \tilde{B}_{T-t} x_T + B_1 x_{t-1} + \cdots + B_{t-2} x_2 + \tilde{B}_{t-t} x_1 \quad \textbf{(5)}$$

for $t = 3,4, \ldots, T-2$.

Where, $B_j = \frac{\sin(jb) - \sin(ja)}{\pi j}, j \geq 1$

$B_0 = \frac{b-a}{\pi}, a = \frac{2\pi}{p_u}, b = \frac{2\pi}{p_l}$

$\tilde{B}_{T-t} = -\frac{1}{2} B_0 - \sum_{j=1}^{T-t-1} B_j$

p_l and p_u are the cut-offs with a business cycle assumed to last between 1.5 and 8 years. The cyclical component p_l is a cycle that is longer than p_l and shorter than p_u. Although both the BK and CF filters approximate the ideal infinite band pass filter, the CF filter outperforms the BK filter as it works well on larger classes of time series and converges to the optimal filter in the long-run (Christiano & Fitzgerald, 2003). As the approximation error for the weights diminishes with increasing sample size, the CF is consistent compared to the BK and it converges to an ideal band pass filter (Haug & Dewald, 2004).

3.2 Empirical Model

To empirically examine structural determinants of the current accounts, Chinn and Prasad (2003) approach is used that regressed the current account balance on a set of macroeconomic variables, which is stated as:

$$CA_t = \alpha + \beta X_t + \theta F_t + \gamma P_t + \varepsilon_t \quad \textbf{(6)}$$

Where, CA is the current-account balance, and X, $F$and P are a vector of macroeconomic, financial development, and institutional variables, respectively, and ε_t is the error term.

Thus, the general empirical model estimated is stated as:

$$CA_t = \alpha + \beta_1 NFA_t + \beta_2 FBAL_t + \beta_3 RGDCAP_t + \beta_4 BMON_t + \beta_5 TOPEN_t + \beta_6 lnREER_t + \beta_7 BURQUA_t + \varepsilon_t \quad \textbf{(7)}$$

Where, CA is current account balance to GDP ratio, NFA is initial net foreign asset to GDP ratio, $FBAL$ is fiscal balance to GDP ratio, $RGDCAP$ is real GDP per capita, $BMON$ is broad money to GDP ratio, $TOPEN$ is trade openness, $lnREER$ is log of real effective exchange rate, $BURQUA$ is bureaucratic quality, and ε_t is white noise error term.

The current account balance, the dependent variable is proxied as the sum of net exports of goods and services, net income, and net current transfers as a ratio of GDP. The study has used fundamental macroeconomic regressors. The first independent variable is net foreign asset position proxied as the initial (lagged) stock level as a ratio of GDP to avoid potential endogeneity problem since the stock of NFA is determined by the sum past current account balances. A Country's NFA can positively affect the current account balance either directly through a change on net investment income or indirectly due to persistence of balances that led to the earlier accumulation of assets. Indeed, under floating exchange rate regime, the sum of the current account and capital account must be equal to zero that leads to a negative link between NFA and current account balance. But the positive effect is empirically expected to outweigh (Cheung, Furceri, & Rusticelli, 2010). A fiscal balance, which is the second regressor, is proxied as fiscal deficit to GDP ratio. The Keynesian cross states that a higher fiscal deficit, due to high government spending especially in developing countries, may increase disposable income and consumption and decrease the private saving so that the current account balance gets worsened (Brissimis, Hondroyiannis, Papazoglou, Tsaveas, & Vasardani, 2010).

The third variable is level of economic development is proxied as relative (to the USA) real income per capita. Under standard neo-classical theory, countries with lower capital-labour ratio will have external financing requirement and import capital from developed economies that result a current account deficit for years until the country reaches a higher level of development through the economic catching-up process. But, the 'Lucas Paradox' (Lucas, 1990) has stated that cross-border capital would flow uphill because of domestic distortions such as undeveloped financial markets and weak institutions in poor countries. Thus, the level of economic development have unclear coefficient.

The fourth variable is financial deepening, which is proxied as broad money (M2) as ratio of GDP. The developed financial market traditionally viewed to encourage saving and improve current account balance due to lower transaction costs and better risk management. However, financial deepening may lower saving rate in emerging economies because they commonly export their excess capital to countries with more sophisticated financial markets (Ju & Wei,

2016). This implies that there is a negative link between financial deepening and the current-account balances.

The other important variables include trade openness, real effective exchange rate and institutional quality. Trade openness, which is measured as total exports and imports as a share of GDP, may reflect liberalized international trade, accessibility of foreign technology, and ability to service external debt through export earnings. It is likely to be associated negatively with the current account balance (Yang, 2011). Real currency depreciation, under intertemporal approach, reduces purchasing power on imports, then tends to lower consumption and increase propensity to save, which improves current account balance. But, under the consumption smoothing hypothesis, current account acts as a buffer to smooth consumption during shocks to national cash flow. Real exchange rate appreciation may lead an economy to run current account surplus rather than allowing consumption to increase (Herrmann & Jochem, 2005), and real effective exchange rate have unclear coefficient. Indeed, currency devaluation may not have significant effect on current account balance of East African nations including Ethiopia (Ayele, 2019). Moreover, weak institutions may lower the risk adjusted return to capital in developing economies encouraging uphill capital flow that result worsens the current account balance (Alfaro, K-Ozcan, & Volosovych, 2005). Bureaucratic quality is used as a proxy of institutional quality, and is expected to have a positive link with the current account balance.

3.3 Data and Testing Tools

To examine the structural and cyclical determinants of the current account imbalance, annual data over a period 1985 – 2017 is used. The study period is selected based on data availability for all variables in the empirical model including institutional factors. The data is retrieved from the databases of World Development Indicators, World Economic Outlook, BRUEGEL, and International Country Risk Guide. The descriptive statistics and correlation results for the variables used for regression analysis are presented in Tables 1 and 2, respectively. The relative income and trade openness and bureaucratic quality have a relatively strong negative correlation while only real effective exchange rate have positive but insignificant correlation with current account balance.

Table 1: Descriptive Summary Statistics

	CAB	NFA	FBAL	RGDPCAP	BMON	TOPEN	LNREER	BURQUA
Mean	-4.05	6.43	-3.76	0.60	30.31	35.10	4.85	2.10
Median	-3.30	5.32	-3.57	0.55	29.14	36.71	4.75	2.50
Maximum	1.81	17.91	-0.93	1.03	41.46	57.14	5.66	3.75
Minimum	-12.64	-0.36	-8.88	0.42	20.16	8.95	4.40	0.00
Std. Dev.	4.11	5.04	1.89	0.17	5.58	13.96	0.36	1.52

Table 2: Correlation Results

	CAB	NFA	FBAL	RGDPCAP	BMON	TOPEN	LNREER	BURQUA
CAB	1.00							
NFA	-0.08	1.00						
FBAL	-0.36	-0.05	1.00					
RGDPCAP	-0.50	-0.48	0.54	1.00				
BMON	-0.17	0.82	-0.34	-0.45	1.00			
TOPEN	-0.61	0.63	0.39	0.16	0.45	1.00		
LNREER	0.20	-0.86	-0.04	0.32	-0.74	-0.72	1.00	
BURQUA	-0.61	0.37	0.46	0.46	0.28	0.83	-0.59	1.00

Moreover, to provide non-spurious regression results, a stationarity test is critical for time series data. Unit root tests are conducted using Augmented Dickey-Fuller (ADF), Phillips and Perron (PP), Kwiatkowski, and Phillips, Schmidt, and Shin (KPSS) tests. The unit root results are presented in Table 3, and it is suggested that all data series have unit root at level, stationary at first difference, and neither of the variables are integrated order two, I(2).

Table 3: Unit Root Tests using Augmented Dickey Fuller, PP and KPSS tests

	Unit root	**Variables**							
		CAB	***NFA***	***FBAL***	***RGDPCAP***	***BMON***	***lnREER***	***TOPEN***	***BURQUA***
ADF	Level	-2.47	-1.92	-2.89*	0.82	-2.03	-2.40	-1.40	-1.29
	1st Diff.	-5.38***	-4.22***	-5.84***	-2.85*	-5.16***	-4.21***	-5.27***	-3.57**
PP	Level	-2.44	-1.73	-2.84*	1.18	-2.10	-2.35	-1.41	-0.99
	1st Diff.	-7.43***	-4.05***	-8.06***	-2.95*	-5.20***	-4.21***	-5.27***	-3.29**
KPSS	Level	-5.66***	7.32***	-11.45***	20.36***	31.22***	78.46***	14.44***	7.93***
	1st Diff.	-0.46	0.09	0.13	2.10**	0.76	-0.85	0.49	1.93*

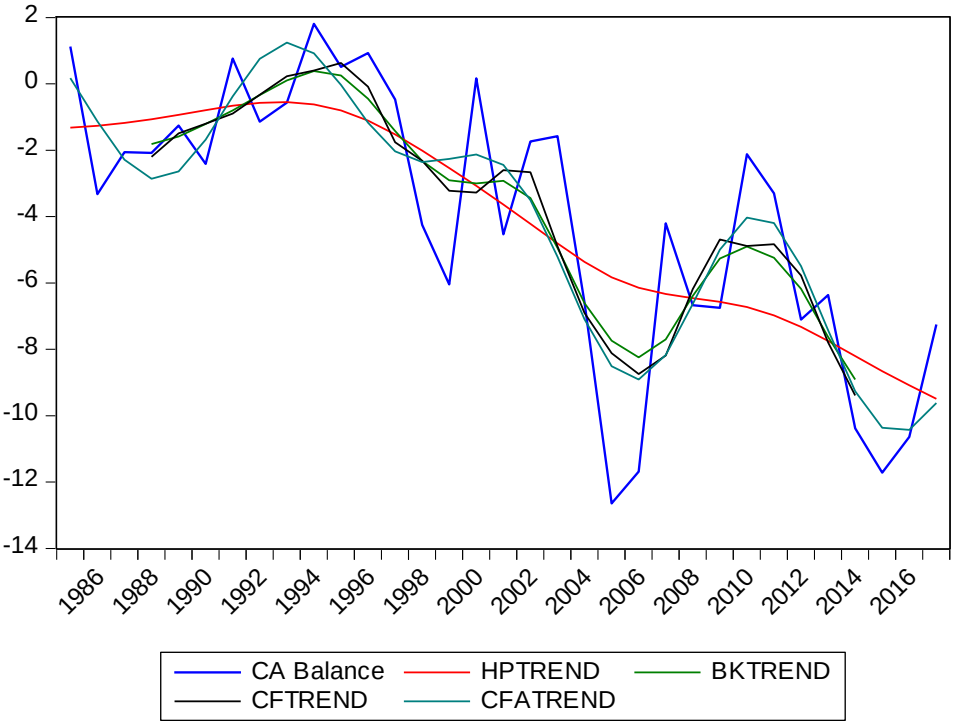
***, **, * are 1%, 5%, and 10% unit root rejection levels, respectively. SIC used for Max-lag selection.

4. Empirical Results

4.1 Structural and Cyclical Estimates of Current Account Balance

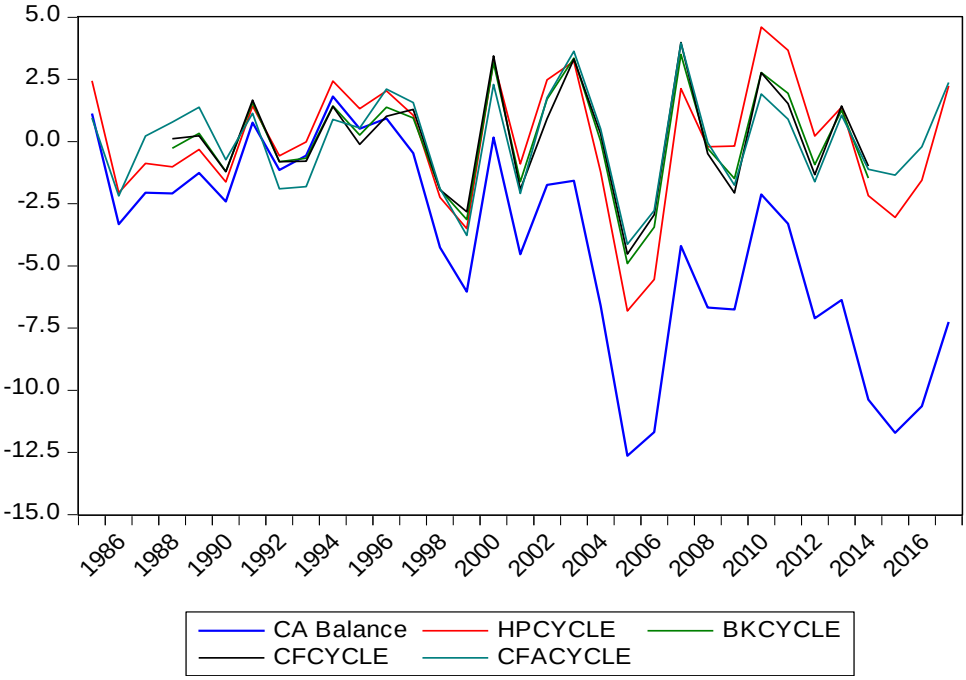
The filtering results using four methods for both structural and cyclical estimates of the current account balance are presented in Figures 1 and 2 with the actual current account value. The results have indicated that structural components have incessantly been worsened along with the path of the actual current account balance over the full sample period.

Figure 1: The Current Account Balance (%GDP) and its Structural Components



Note: CA Balance is current account balance, HPTREND is the Hodrick-Prescott filter, BKTREND is Baxter-King filter, CFTREND is Christiano-Fitzerald fixed-length symmetric filter, and CFATREND is Christiano-Fitzerald full-length asymmetric filter.

Figure 2: The Current Account Balance (%GDP) and its Cyclical Components



Note: CA Balance is current account balance, HPCYCLE is the Hodrick-Prescott filter, BKCYCLE is Baxter-King filter, CFCYCLE is Christiano-Fitzerald fixed-length symmetric filter, and CFACYCLE is Christiano-Fitzerald full-length asymmetric filter.

The mean value of the current account balance and its filtering components are presented in Table 4 for both the full sample and post-crisis period (2010 – 2017). The results show that the mean value of structural components (-3.90) is close to the mean value of actual current account balance (-4.05) for the full sample, while the structural deficit was 0.43 percentage points higher than the actual current account deficit for the post-crisis period. During the post-crisis period, both the mean value of actual current account deficit and its structural estimates have been worsened with 3.31 and 3.89 percentage points respectively, which indicate that the current account deficit is largely affected by structural components for both the full sample and post-crisis period. The persisting and recent widening of the current account deficit has a long-term or structural nature. Regarding the cyclical components, the mean values show a surplus of 0.03 and a deficit of 0.34 for the full sample and post-crisis period,

respectively, indicating that cyclical factors may have some contributions to the further deterioration of current account balance in recent years.

Table 4: Average Value for Actual Current Account Balance and its Components

Sample Period	**1985 – 2017**		**2010 – 2017**	
Current Account Balance (% of GDP)	-4.05		-7.36	
Filters	***Structural***	***Cyclical***	***Structural***	***Cyclical***
Hodrick-Prescott	-4.05	0.00	-7.36	0.00
Baxter-King	-3.75	0.06	-8.15	-0.75
Christiano-Fitzerald Full Length Asymmetric	-4.07	0.02	-7.48	0.12
Christiano-Fitzerald Fixed Length symmetric	-3.75	0.05	-8.16	-0.73
Average*	-3.90	0.03	-7.79	-0.34

** Average values of four filtering results (components) for the sample period indicated. The smoothing parameter λ for Hodrick-Prescott filter is set to 100. For other frequency filters, the frequency length (lead/lags), low and high values cycle period are 3, 2 and 8 respectively. The current account series is also specified as a unit root process and a detrending adjustment is applied for both Christiano-Fitzerald filters.*

Moreover, the correlation results are presented in Table 5 to examine the relative importance of components of current account balance. The structural estimates track the actual current account with an average coefficient of 0.81, while the cyclical estimates follow the actual series with an average coefficient of 0.65. This indicates that the structural component is relatively more important than cyclical component for the full sample period. The average correlation coefficients has increased to 0.84 and 0.80 for structural and cyclical components, respectively, during the post-crisis period over which both cyclical and structural factors are almost equally important to interpret the further deterioration of current account balance.

Table 5: Correlation Coefficients between Actual Current Account and its Components

Sample period		**1985-2017**		**2010-2017**	
Filters		***Structural***	***Cyclical***	***Structural***	***Cyclical***
Hodrick-Prescott		0.72	0.71	0.89	0.90
Baxter-King		0.84	0.66	0.82	0.75
Christiano-Fitzerald Full Length Asymmetric		0.84	0.59	0.82	0.82
Christiano-Fitzerald Length symmetric	Fixed	0.84	0.62	0.83	0.75
Average		0.81	0.65	0.84	0.80

Source: Eviews Results

Thus, the filtering estimation results generally suggest that structural components are the main determinants of the chronic current account deficit than cyclical components in Ethiopia. The trend of current account deficit is largely explained by the structural factors in the long-run.

4.2 Cointegration Estimation Results

Variables with unit root process generally offer spurious regression results, unless they are cointegrated and produce stationary residuals. The cointegration results using Engle-Granger (EG) and Johansen Cointegration estimation techniques are presented in Table 6 below and they can indicate all variables in equation (7) are cointegrated and have long-run association.

Table 6: Cointegration Test results

		t-Statistic	**Prob.**
Engle-Granger (EG) Test:			
ADF	At level	-5.0488	0.0003
PP	At level	-6.7232	0.0000
Johansen Cointegration Test:			
Trace test	None	326.8474	0.0000
	At most 1	239.4007	0.0000
Max-Eigen test	None	87.4466	0.0000
	At most 1	83.4691	0.0000

Source: Eviews Results

4.3 Long-run Estimation and VEC Granger Causality

As the long-run association among variables is prevailed with cointegration tests, the long-run relationship is estimated using Fully Modified OLS (FMOLS) and Canonical Cointegration Regression (CCR) estimators which are followed by the vector error correction based on short-run Granger causality tests. FMOLS and CCR generally offer a check for the robustness of long-run associations and provide reliable estimates under small sample sizes. FMOLS is appropriate for a long-run estimation as it modifies least squares to explain serial correlation effects and endogeneity in the regressors that arise from the existence of long-run relationship (Phillips & Hansen, 1990) while the CCR removes the second-order bias of least square estimator by transforming variables in the cointegrating regression(Park, 1992). Indeed, the CCR estimator, which is similar to FMOLS, performs much better than OLS estimator (Montalvo, 1995).

The long-run estimation results are presented in Table 7, and both the FMOLS and CCR offers relatively similar results. The findings generally suggest that the current account balance is negatively associated with initial net foreign asset position, real effective exchange rate depreciation, relative income (real GDP per capita) and level of financial development. The results have also proved those findings, though statistically insignificant. The current account balance is positively related with fiscal deficit while negatively associated with trade openness and bureaucratic quality. Moreover, the coefficient with relative income and real effective exchange rate are higher than other variables suggesting relative income (level of economic development) and exchange rate as a strong indicator of the behavior of the current account imbalances in the long-run.

The negative coefficient of NFA, which is supported by (Das, 2016), is robust for developing countries. Persistent larger net foreign assets may reduce imports through wealth erosion, and the negative link may hold for highly indebted countries due to more deep concerns about sustainability (Phillips, et al., 2013). Similarly, the negative effect of real exchange rate and relative income are supported by (Chuku, Atan, Obioesio, & Onye, 2017). The results of the exchange rate depreciation may be due to the country's poorly diversified and inelastic exports, high trade costs with poor trade logistics and infrastructure, incessantly rising external debt service burden, high demand for imported capital goods for public investment in infrastructures, and a large dependence on non-substitutable consumption imports. Indeed, the annual report of NBE (2020) has shown that few primary commodities (coffee, oilseeds, chat and cut flowers)

account about 75 percent of the country's export in 2019. Similarly, the imports of capital and consumer goods account for about 30 percent and 29 percent of total value of imports, respectively. According to the World Bank data, Ethiopia has poor trade logistics and it is ranked 126th in the world with an overall logistics performance index (LPI) score of 2.38 out of 5 points in 2016, which is even dropped from a LPI of 2.41 in 2010.

Table 7: Long-run Estimation Results

Dependent Variable: CAB

Sample (adjusted): 1986: 2017

Cointegrating equation deterministic: C

Method	**FMOLS**			**CCR**		
Variable	**Coefficient**	**Std. Error**	**Prob.**	**Coefficient**	**Std. Error**	**Prob.**
NFA	-0.5065	0.1178	0.0003	-0.4486	0.1441	0.0049
FBAL	0.0727	0.1879	0.7023	0.0434	0.2799	0.8781
RGDPCAP	-12.8764	3.4184	0.0010	-12.2801	4.9376	0.0206
BMON	-0.1689	0.0828	0.0530	-0.1910	0.1101	0.0962
TOPEN	-0.0897	0.0467	0.0674	-0.0718	0.0631	0.2669
LNREER	-7.0443	2.0849	0.0026	-6.5006	3.2269	0.0558
BURQUA	-0.2722	0.4496	0.5508	-0.2105	0.5129	0.6853
C	50.2335	10.5252	0.0001	46.6260	15.5762	0.0065
Adjusted R^2		0.5711			0.5577	
S.E. of regression		2.7042			2.7460	
Long-run variance		1.8511			1.8511	

Long-run covariance estimate (Pre-whitening with lag=1, Bartlett kernel, Newey-West fixed bandwidth = 4.0)

As all non-stationary variables are cointegrated, the dynamic causal interactions can be expressed in a vector error correction (VEC) form to show the short-run Granger causality among the variables. The short-run Granger causality tests are useful in determining potential predictability among variables, and can indicate whether lagged values of one variable conditionally help to predict the current value of another variable in the empirical model. As shown in Table 8, both trade openness and real effective exchange rate Granger causes (predicts)

the current account balance, but current account balance Granger causes only openness to trade. Trade openness also Granger causes level of financial development. All variables except initial net foreign asset and level of financial development Granger can cause trade openness, but neither of the variables Granger can cause initial net foreign asset, fiscal balance and relative income in the system.

Table 8: VEC Granger Causality Results

Dep. Var.	Independent Variables							ECT_{t-1} Coeff (t-ratio)
	ΔCAB	ΔNFA	$\Delta FBAl$	$\Delta RGDPC$	$\Delta BMOl$	$\Delta TOPE$	$\Delta lnREl$	
ΔCAB	-	0.013	0.540	0.001	1.111	3.864	5.454	-0.425
		(0.910)	(0.463)	(0.980)	(0.292)	(0.049)	(0.019)	[-1.910]
ΔNFA	0.001	-	2.142	1.238	0.709	0.696	0.214	0.309
	(0.982)		(0.143)	(0.266)	(0.399)	(0.404)	(0.644)	[2.585]
$FBAL$	1.850	0.105	-	0.093	0.881	0.044	1.188	0.094
	(0.174)	(0.746)		(0.760)	(0.348)	(0.834)	(0.276)	[0.692]
$\Delta RGDPC_$	0.952	0.013	0.008	-	0.889	1.696	0.041	-0.002
	(0.329)	(0.909)	(0.930)		(0.346)	(0.193)	(0.839)	[-1.179]
$\Delta BMON$	3.823	0.217	0.253	0.043	-	6.168	0.161	0.407
	(0.051)	(0.641)	(0.615)	(0.836)		(0.013)	(0.689)	[2.306]
$\Delta TOPEN$	4.724	0.154	8.107	10.211	0.061	-	9.867	-0.201
	(0.030)	(0.694)	(0.004)	(0.001)	(0.805)		(0.002)	[-0.695]
$\Delta lnREER$	0.015	0.048	1.949	5.437	0.296	1.224	-	0.003
	(0.903)	(0.826)	(0.163)	(0.020)	(0.586)	(0.269)		[0.312]

NB: The figures in the parenthesis (…) and square brackets […] indicate p-values and t-statistics, respectively.

5. Conclusions

External imbalance with continued fiscal deficit, rising external debt accumulation, real exchange rate overvaluation, and shortage of foreign exchange remains a great policy concern for Ethiopia. The study has examined whether and the extent to which structural and cyclical factors behind the current account imbalance in Ethiopia. The results using various filtering methods generally

suggest that structural components of current account balance explain most of the variations in current account deficit in the long-run though cyclical factors may have some contribution to the further deterioration of current account balance in the post-crisis period. The correlation among the current account balance and its components during the post-crisis period indicates that both cyclical and structural factors are almost equally important to interpret the further deterioration of the current account balance. The regression results using FMOLS and CCR have indicated that current account balance worsens with an increase in initial net foreign asset position, relative income, financial deepening and real effective exchange rate depreciation. The results have also shown that both trade openness and real effective exchange rate Granger causes the current account balance, but the current account balance Granger causes only openness to trade and neither of the variables Granger causes initial net foreign asset, fiscal balance and relative income in the system.

Thus, the main implication of the findings is that emphasis should be given for structural factors for any improvement in current account balance. To correct the continuous current account deficit and make it sustainable, policy measures should focus on structural changes. The change must focus on diversification of exports towards value-added products, comprehensive support and incentives for export sectors including small and medium-sized firms, promotion of innovation and technology in manufacturing sector, and enhancing government effectiveness with better institutions.

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