Volume 17 Issue 35
Originally issued as E5



Global Journal of HUMAN-SOCIAL SCIENCE: E
Economics
Volume 17 Issue 5 Version 1.0 Year 2017
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-460x & Print ISSN: 0975-587X

Economic Growth Nexus Trade Liberalization in Ethiopia: Evidence from the Johnson's Multivariate Cointegration Analysis

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Introduction- The leading motivation behind every economy is to attain a high and sustained economic growth that could further support the overall objective of economic development. To achieve this broad objective, governments over the world have been pursuing various strategies compatible to their respective economies. Trade liberalization, hence is among the many alternatives being in effect towards facilitating the growth process. Countries have embarked themselves in popular economic policies that allow reduction and removal of barriers to trade such as tariff, quotas, and import controls. Among many policies that most countries including Ethiopia have decided to opt-for is trade liberalization of economies (Herath, 2010). Trade liberalization of economies via the reduction or complete elimination of trade barriers has become the most popular economic policy of developed and developing countries today. Import and export tariffs, quotas, export subsidies, technical barriers are the popular trade barriers which have been used during the last few decades. However with globalization of world economies all most all the counties in the world are actively involved with reducing trade barriers among their trade partners. Major objective of moving free trade is to achieve macroeconomic goals of their economies. Basically to achieve high economic growth developing economies are implementing free trade policies during the last few decades. As a result of that trade openness has been widening up in these economies. In the last three decades, trade liberalization increasingly evolved with the expectation of rapid economic growth in Ethiopia (Seid, 2012; Salvatore, 1993).

GJHSS-E Classification: *FOR Code: 349999*



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Economic Growth Nexus Trade Liberalization in Ethiopia: Evidence from the Johnson's Multivariate Cointegration Analysis

Zewdu Bedasa [α] & Minyahil Alemu [σ]

I. Introduction

The leading motivation behind every economy is to attain a high and sustained economic growth that could further support the overall objective of economic development. To achieve this broad objective, governments over the world have been pursuing various strategies compatible to their respective economies. Trade liberalization, hence is among the many alternatives being in effect towards facilitating the growth process. Countries have embarked themselves in popular economic policies that allow reduction and removal of barriers to trade such as tariff, quotas, and import controls. Among many policies that most countries including Ethiopia have decided to opt-for is trade liberalization of economies (Herath, 2010). Trade liberalization of economies via the reduction or complete elimination of trade barriers has become the most popular economic policy of developed and developing countries today. Import and export tariffs, quotas, export subsidies, technical barriers are the popular trade barriers which have been used during the last few decades. However with globalization of world economies all most all the counties in the world are actively involved with reducing trade barriers among their trade partners. Major objective of moving free trade is to achieve macroeconomic goals of their economies. Basically to achieve high economic growth developing economies are implementing free trade policies during the last few decades. As a result of that trade openness has been widening up in these economies. In the last three decades, trade liberalization increasingly evolved with the expectation of rapid economic growth in Ethiopia (Seid, 2012; Salvatore, 1993).

Economies are seeking to diversify out of low income growth agriculture industries. For most developing countries the 1970s and1980s were decades of deepening economic crisis. These countries suffered from continuous economic recession, rapid inflation, deficits in balance of payment and government budget owing to adverse external and internal factors. As a result, the general conception about the benefit from international trade come to be questioned as the "Prebisch-singer hypothesis" revealed that the terms of trade of the countries was deteriorating this hypothesis has partly served as a basis for inwardly oriented trade regime that many developing countries soon adopted (Mannur,1995). Ethiopia has not been exceptional and suffered the disastrous economic crisis of the1970s and 1980s.The country experienced severe internal and external imbalance mostly owing to the past inappropriate trade policies. The imperial era was characterized by absence of quantitative restriction on trade. This policy focused on promotion export and encouraged import of capital and raw material, but there policies were soon shifted to a restricted one when the derg come to power and the government started to pursue import substitution stratagem. When the Ethiopian People's Revolutionary Democratic Front (EPRDF) took power, significantly policy reform were made to change the past restriction trade regime. The birr has been devalued by 142 %(from birr 2.07 per us dollar to 5:00 per us dollar). In addition custom duties were reduced and export duties were eliminated with the exception of coffee; and the licensing procedure has also been simplified (Befekadu and Berhanu, 1999/2000).

Trade liberalization is central to the structural adjustment program implemented by most sub-Saharan Africa including Ethiopia. According to Effiomt et al (2011), the corner stone of the SAP induced policy was the opening up of domestic economies to face increased competition in order to ensure efficiency in resources use, removal of wastages, elimination of persistent misalignment in the external and domestic sectors and a general redirection of the economy to the path of recovery and growth. Trade liberalization is one of the most controversial polices in international economics and finance. This is because in a competitive environment prices get lower and products became diversified through which increased welfare emerges gains from specialization and efficiency are also further advantage of economies openness. Therefore, it is quite reasonable that economies generally desire to be economically open.

For many developing countries, potential adjustment costs are of concern. The transition from restrictive to liberalized trade regime involves cost perhaps the most important cost in this process is

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unemployment (WDR, 1987). Removal of quantitative restriction and restriction in tariff rate, cheap imports that flood the domestic market drive out domestic industries from the global market and workers will be left out from their job. Because of high dependence on trade, the countries are also vulnerable to fluctuation in tax revenue induced by trade liberalization (Thomas et al,1991). On Top of there, the situation of developing countries like Ethiopia is being worse because the country's export primary commodities which suffer from low income and price elasticity in the global market. The commodities also face unfavorable and deteriorating terms of trade. Even worse, the countries face protectionist policy from industrial countries (Mannur, 1995). Certainly, Ethiopia is not an exception here. The country's bulk of export come from the agriculture sector and coffee remain to be the dominant export commodity, accounting for 50%-60%of the total export. The export earning of the country is unstable to the extent that it fails to cover the growing import bills, putting the country in a persistent balance of payment deficit position. Owing to the scanty of literatures on the issue, this paper investigates issues related to trade policy in a more systematic way by using a time series econometric analysis to capture the policy impact in the pre and post reform period. Hence, it particularly is concerned with determining whether trade liberalization has real impact on Ethiopian economic growth.

II. Literature Review

Trade liberalization is the removal or reduction of restrictions or barriers on the free exchange of goods and services between nations. This includes the removal or reduction of both tariff (duties and surcharges) and non- tariff obstacles (like licensing rules, quotas and other requirements). The easing or eradication of these restrictions is often referred to as promoting "free trade." It is a policy by which a government does not discriminate against imports or interfere with exports by applying tariffs (to imports) or subsidies (to exports) or quotas. According to the law of comparative advantage, the policy permits trading partner's mutual gains from trade of goods and services (Ikenson, 2006).

Trade liberalization allows countries to specialize in producing the goods and services where they have a comparative advantage (produce at lowest opportunity cost). This enables a net gain in economic welfare. Lower prices; the removal of tariff barriers can lead to lower prices for consumers. E.g. removing food tariffs in West would help reduce the global price of agricultural commodities. This would be particularly a benefit for countries who are importers of food. Increased competition; trade liberalization means firms will face greater competition from abroad. This should act as a spur to increase efficiency and cut costs or it may act as an incentive for an economy to shift resources into new industries where they can maintain a competitive advantage. For example, trade liberalization has been a factor in encouraging the UK to concentrate less on manufacturing and more on the service sector. Economies of scale; trade liberalization enables greater specialization. Economies concentrate on producing particular goods. This can enable big efficiency savings from economies of scale. There are different theories about the importance of trade liberalization on economy; in this respect we will see the three very important theories (Salvatore, 1995).

The absolute and comparative trade theories have long been a considerable influential role while the issue of regional or international trade integration is considered. According to Adam smith, trade between two nations is based on absolute advantage. When one nation is more efficient in the production of one commodity, but there is less efficient in the production of second commodity and the second nation is absolute advantage in the production of second commodity and absolute disadvantage in the first commodity, then both nations can gain by each specializing in the production of the commodity of its absolute advantage and exchanging part of its output with the other nation for the commodity of its absolute disadvantage, due to this trade can be important for efficient utilization of resources and to rise the production of both commodities. These increases in the output of both commodities measure the gains from specialization in the production available to be divided between the two nations through trade (Mankiw, 2010).

The theory of comparative advantage developed by David Ricardo is also of concern. It is the greater absolute advantage or the lower absolute disadvantage that one nation may have over another in the production of a commodity. David Ricardo developed the classical theory of comparative advantage in 1817 to explain why countries engage in international trade even when one country's workers are more efficient at producing every single good than workers in other countries. Ricardo demonstrated that if two countries capable of producing two commodities engage in the free market, then each country will increase its overall consumption by exporting the good for which it has a comparative advantage while importing the other good, provided that there exist differences in labor productivity between both countries. Widely regarded as one of the most powerful yet counter-intuitive insights in economics, Ricardo's theory implies that comparative advantage rather than absolute advantage is responsible for much of international trade. When nations practice the principle of comparative advantage, this explains that by specializing in goods where countries have a lower opportunity cost, there can be an increase in economic welfare for all countries. Therefore, According to the law of comparative

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advantage, even if one nation is less efficient than (has an absolute disadvantage with respect to) the other nation in the production of both commodities, there is still a basis for mutually beneficial trade. The less efficient nation should specialize in the production of (and export) the commodity in which its absolute disadvantage is smaller (this is the commodity of its comparative advantage) and import the commodity in which it's absolute disadvantage is greater (Salvatore, 2004; Obstfeld and Rogoff, 1996)·

The Heckscher–Ohlin theory of trade reveals, on the other hand, that countries will have a comparative advantage in (and thus will export) products whose production uses their abundant factors intensively and comparative disadvantage in (and thus will import) products whose production uses their scarce factors intensively. Generally; Heckscher-Ohlin (H-O) theory advocated that trade between countries depends on relative factor abundance. There will be a great mutual beneficial trade if the trading countries have larger differences in technology and factor endowments. Little trade is expected between the countries with similar factor endowments.

a) Macroeconomics Policies and trade liberalization

Trade liberalization policies in the long run are expected to shift resources toward tradable, especially exportable and away from import substitutes. The policies are also said to improve economic welfare by achieving a better allocation of resources (Thomas et al, 1991). The scope of successful trade liberalizing policy depends on macroeconomic and other complementary policies that achieve and maintain stability in the economy and promote reallocation of resources in response to the reform. According to Thomas et al (1991), problems resulting from poor macroeconomic policies may cause liberalization to be perceived as a failure, prompting a return to protectionist policies.

Conventionally, providing a realistic exchange rate is considered vital for the successful introduction of trade reform (WDR, 1987). The real exchange rate should help ensure equilibrium in the balance of payment (POBs) and domestic markets and should be compatible with growth in tradable and output. An overvalued currency has an anti- export bias in that it indirectly taxes exportable while favoring non-tradable and importable (WDR, 1987). A real devaluation improves incentives for export industries and production of import substitutes. Trade liberalization must be associated with real devaluation if the current account is not to deteriorate and if the employment losses in protected import-substituting industries are to be compensated by employment gains elsewhere, especially in export industries. Normally, nominal devaluation will be needed to bring about the required real devaluation.

b) The Sequencing and Pacing of Trade Liberalization Measures

Sequencing and pacing trade reform are considered as pressing priority to avoid transitional complication of trade liberalization. Halevi (1989) suggested that the establishment of any general rule to formulate the intensity of liberalization measures to different nations is quite formidable as countries differ in their initial condition. This demands different sequences of reform. Elimination of export restrictions may be relevant in some cases, reduction of export and import restrictions simultaneously in others and a lowering of protection yet in others. Concerning the sequencing of liberalization measures, Halevi (1989) suggested certain rules of thumb that states "aspects of trade liberalization that involve only adjustment costs can be implemented as fast as technical factors permit". The order of sequence, according to the author, is to move from removing impediment to export, to replacing quantitative restriction on import by price mechanism and finally to reducing protective levels and differentials.

There is no consensus among economists regarding the speed of trade policy reform. Thomas et al (1991) stressed that an expedition reform program is preferable to a prolonged one because the benefits are greater and emerge sooner. Such a reform avoids a drawn-out process that gives opponents time to organize and lobby for a reversal. Also, the sooner the benefits of reform begin, the better the prospects for sustainability. However, there are two factors that are against rapid reforms. First, theoretically, unemployment might be larger than when changes are phased overtime. Second argument concerns the credibility of the reforms and the likelihood that they will be sustained. Gradual reforms may be preferable since they are more likely to be accepted.

Despite the highlighted theories of international trade policies, practice and principles in a relation to economic growth, various empirical literatures related to the issue under consideration are also reviewed. Dollar (1992) investigated the relationship between per capita income growth and distortions in the real exchange rate and its variability as well as investment rates in 95 countries for the period between1967-1985. The test showed that the high level of distortion and greater exchange rate variability are strongly correlated with per capita income growth. The result implied that that openness has a positive and significant impact on economic growth. Vamvakidis (1999) has taken 51 cases of broad liberalization and finds that countries have grown faster after liberalization. He used two measures of liberalization or openness. One is the standard measure used in much of the new growth theory literatures of the ratio of total trade (export plus import) to GDP. The second is the measure adopted by Sanchs and Warner (1995). This is named as the ratio of openness. The authors introduced five major criteria for

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an economy to be regarded as open. These are (1) the an average tariff rate of less than 40%, (2) average non-tariff barriers equivalent to a tariff rate less than 40%, (3) no communistic government, (4) a black market exchange rate premium of less than 20% and (5) no state monopoly of major exports.

Herath (2010) examined impact of trade liberalization on economic growth of Sri Lanka. In identifying the impacts of trade liberalization on growth and trade balance, data were collected on a specific time interval before and after the trade liberalization. The time period selected was from 1960 to 2007. Using regression analysis and Chow test to the variables, findings of the study confirmed a significant positive relationship between trade liberalization and economic growth of Sri Lanka. The result of Chow test proved a clear change of economic growth before and after trade liberalization of the country.

Sinha (2000) conducted a time series analysis using total trade volume as an accurate measure of openness and examined the link between openness and growth for 15 Asian countries for the period 1950 to 1992. They developed a model that specified GDP growth as a function of growth rates of openness (exports plus imports), domestic investment, and population. The coefficient of the growth of openness was found to be significant for only eight of the 15 countries. However, they found support for the proposition that GDP growth rate is positively related to the growth rates of openness and domestic investment, whereas the relationship between GDP growth rate.

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Debel (2012) analyzed that trade liberalization seeks to reform a country's international commercial policies in order to improve economic welfare by achieving a better allocation of resources in the long-run. The results of the estimated model has confirmed undoubtedly that in the observed period, 1974-2009, trade liberalization has had a positive and significant impact on the export performance of the Ethiopian economy. This implies that policy makers should generate such policies for attracting exports from Ethiopia, which will focus on the utilization of the country's resource endowments in terms of developing new technologies, and improving national capabilities. As a result, openness has lead Ethiopia to economic growth. This suggests that when countries are more open, they are better able to exploit market opportunities through product diversification and differentiation. These results have important implications for national policies and strategies within the trading system of Ethiopia to open up its foreign trade policies in inter regional and global perspective.

Alemnesh (2012) examined the relationship between trade liberalization and economic growth by using time sires econometric analysis. She takes real GDP as a dependent variable and real private investment, real public investment, human capital and trade openness (proxy to determinant of trade liberalization) as independent variable in Ethiopian context. According to her finding trade liberalization have positive long run impact and significant effect on Ethiopian economic growth.

III. Research Methodology

The time series data set ranging from 1974/75-2014/15 is used in the analytical framework of this paper. Each observation has potentially sourced from domestic institutions like; MOFED, NBE and EEA. The data set has all passed through all the necessary tests required for time series data to be in effect. The common pre-tests undertaken are the unit root and cointegration tests to enable handle the long run behaviors of variables entered the growth model of this paper.

Trade liberalization variable which is proxied by the sum of export and import divided by nominal GDP, is a principal regressor in the estimated growth model; while, RGDP is a dependent variable. Moreover, variables like FDI and REER are also controlled for the growth model. The dependent and independent variables included in the adopted growth model are functionally linked as follows;

$$RGDPt = f(OPNt, FDIt, REERt) \quad (1)$$

Where; RGDP is Real Gross Domestic Product, FDI measures the level of foreign direct investment in the country each year and REER represents the real effective exchange rate; whereas, t is a time trend. However, to be able to capture the elasticity of each variable in a relation to the growth variable and squeeze the estimated coefficients of each regressor in the model, the growth model considering the effect of other stochastic factors which are not controlled in the model is econometrically specified as follows;

$$\ln RGDPt = \beta 0 + \beta 1 \ln OPNt + \beta 2 \ln FDIt + \beta 3 \ln REERt + st \quad (2)$$

Where; ln is the natural logarithmic operator and is the white noise error term assumed to follow normal distribution with zero mean and constant variance.

Owning to its implicit assumption of no-collinearity among variables already supposed to be integrated of order n, the traditional Dickey Fuller (DF)

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procedure has not been applicable in empirical works. No doubt variables may be multi-collinearly related in practice. However, the traditional approach is modified to account for this issue thereby extending the equation by adding the lagged terms of the dependent variable; and hence, named Augmented Dickey Fuller Unit Root test (see Gujarati, 2004; Maddala, 1992). The regression specification considering both the drift and trending parameters together with the testing procedure under ADF are discussed below;

$$\Delta yt = \alpha + \eta 1t + \eth yt{-}1 + \sum^{m} \text{þ}_i \Delta y_{t-1} + st \ldots\ldots\ldots\ldots (3)$$

Where, εt; is the usual pure white noise error term, $\delta = \Pi - 1$ and $\Delta yt-1 = (Yt-1-Yt-2)$, $\Delta Yt-2 = (Yt-2-Yt-3)$, & the like. α is the intercept term, η1 is the trend coefficient, t – the time/trend variable and where; m, are the lag terms. For this test, the hypothesis would be;

H0: $\delta = 0$; there is unit root→ (implying the time series is non-stationary).

H1: $\delta < 0$; No unit root → the time series is stationary

Decision: reject the null hypothesis of ($\delta = 0$), hence the time series is stationary; if the computed t-statistic (in absolute terms) exceed the ADF critical values; the variable under consideration is stationary.

If the long run issue has to be examined, it is a priori to undertake the cointegration tests among the variables of interest. It can be a case in empirical analysis that, some certain linear transformation of variables already suspected of being nonstationary may be jointly stationary. It is what we call cointegration revealing the existence of long run equilibrium relationships between them. For our purpose, the Johnson's approach for cointegration is employed.

Though many more other options are available, the Johnson procedure has remained popular in most of the recent empirical analysis in economics. Because it makes the presumption that only one cointegrating rank in the model, the Engle-Granger (Two-way) approach for cointegration has not been a choice for many. Moreover, the Durbin-Watson test has also of less practical value as the calculated test statistics is inconsistent for various sample sizes. For detailed information on this issue refer Maddala (1994), Gujarati (2004) and Wooldridge (2013).

As far as the existence of cointegration is not meant to guarantee the existence of equilibrium relationship in the short run, we estimated the error correction model to capture the dynamic impact each regressor on the growth model adopted. A beautiful feature of ECM is that it instantaneously yields both the long and short run elasticities of the series under consideration with employed empirical model. Assuming variables x and y are the concerned variables, ECM in this study requires estimating the following regression;

$$\left.\begin{aligned} \Delta y_t &= d_1 + \alpha_1 \varepsilon_{t-1} + \sum_{i=0}^{n} \beta_i \Delta y_{t-i} + \sum_{i=0}^{n} \delta_i \Delta x_{t-i} + \sum_{i=0}^{n} \Omega_i Z_{t-i} \\ \Delta x_t &= d_2 + \alpha_2 \varepsilon_{t-1} + \sum_{i=0}^{n} \delta_i y_{t-i} + \sum_{i=0}^{n} \beta_i \Delta x_{t-i} + \sum_{i=0}^{n} \Omega_i Z_{t-i} \end{aligned}\right\} \quad (4)$$

The coefficient of the error term in both equations (i.e. the α parameter) measures the speed of adjustment by distortions in the long run towards the long run equilibrium point. A negative and significant coefficient of ε_{t-1} indicates convergence where as a positive coefficient shows the economy is rather diverging from the long run equilibrium point. However, convergence is the desirable property in principle.

IV. Results and Discussion

Table 1: Unit Root Properties of individual variables entered the growth model

Variables	ADF test statistics	Inferences
ln RGDP	-5.687***	I(1)
ln OPN	-5.021***	I(1)
ln REER	-5.021***	I(1)
ln FDI	-8.813****	I(1)

Source: Model Estimation Output

Where, *** indicates the level of significance at 1 percent. It is clear from table 1 that, the ADF approach has confirmed the variables are all integrated of order one. Therefore, the order of integration is one and it is also among the precondition for Johnson's cointegration test to be practical.

Johnson's approach requires the determination of appropriate lag length included in the estimation of VAR model. Hence, the AIC has been suggested minimum at the lag length of 1 and hence the appropriate lag size included was 1.

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Johnson's Cointegration Test Result

Table 2: Cointegration Test Results

Cointegrating Rank	λ*max*	Critical @ 5%	λ*trace*	Critical @ 5%
r = 0	54.7643	33.46	101.8256	68.52
r ≤ 1*	20.7901	27.07	47.0614*	47.21
r ≤ 2	17.6011	20.97	26.2713	29.68
r ≤ 3	7.6017	14.07	8.6701	15.41
r ≤ 4	1.0684	3.76e	1.0684	3.76

Source: Model Output

As it is clearly indicative from the table 2 above, both the trace and maximum eigen test statistics have confirmed the existence of one cointegrating relationship between variables entered the growth model of this paper. Hence, test results suggest for the existence of at most one way for the variables to have stable equilibrium relationship in the long run.

Table 3: The Estimated Long run elasticities

Variables	Coefficients	Standard Errors	t-statistics
[D_lnRGDP_ce1]	.0483051[0.679]		
*ln*OPN	.2414934	.0240516	10.04**
*ln*REER	.3247612	.0452029	7.18**
*ln*FDI	.048355	.0540048	0.90**
Constant	4.90201		
Diagnosis Tests			
Breush-Godfrey: Chi2 = 0.283[0.5951] VIF: 4.95			
Heteroskedasticity condition: chi2 (1) = 0.01[0.9353]			
$R^2 = 0.96$			
Jarque-Bera test: Chi^2(14) = 4.493[0.99170]			

Source: Model Output

** *indicates significance level at 5 percent. Values in parenthesis are p-values of the corresponding test statistics representing various post model estimation diagnosis tests. Of course, all of the diagnosis test result has confirmed the fitness of the growth model estimated. Hence, it guarantees any inferences based on the estimation results of our model.*

From the table above we see that the coefficient for the error correction term is positive and insignificant revealing that there is no adjustment towards the long run equilibrium point in the growth model. Rather, the short run deviations are suggested to diverge in significantly by a speed rate of 4.8% in a year.

From the estimated output, we observe that all of the independent variables entered the growth model have significant impact on the economic growth of in the long run. That means; the trade openness variable, real exchange rate and the foreign direct investment variables have a positive and significant impact on the economic growth of Ethiopia in the long run. These findings are in line with many theories like; Romer (1996) and Obstfeld and Rogoff (1996) and many empirical literatures in economics. A 1% improvement in a country's level of exposure to international trade increases its economic growth by 24%; while a percentage rise in inflow of FDI improves the economic growth rate in the long run just by 4.8%. On the other hand, with a 1% increase in REER the economic growth rate increases by 32.4% in the long run. Of the variables considered in the model, the long run growth impact of exchange rate has been estimated to the dominant one. This may be because with highly depreciated currency the country's export increases thereby affecting its current account balance positively; and the real income as well since current account balance forms part of the national income. But, our justification holds true only if the positive effect of devaluation dominates its negative impact.

However, the VECM estimates reveal that the growth impact of each regressor on economic growth is insignificant in the short run. It is because growth in the short run is being explained by another variables not included in the growth model of the present study.

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V. Conclusions and Policy Implication

Trade liberalization has long been said to influence favorably in the long run. In an attempt to confirm this theory in the context of Ethiopian economy, we adopted the Johnson's approach for cointegration tests to test the long run behavior of variables entered the growth model of this paper. The test result has suggested the existence of positive and significant impact of trade liberalization on economic growth in Ethiopia; its short run growth impact is estimated to be insignificant. Moreover, the impact of real effective exchange rate and foreign direct investment variables were found to be positive and highly significant in the long run. Therefore, there is a need to design and implement any policy action that could help improve the magnitude of the country's exposure to international trade integration.

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