THE CONTRIBUTION OF EXPORT EARNINGS TO ECONOMIC GROWTH OF ETHIOPIA: A TREND ANALYSIS

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ABSTRACT

Empirically examining the contribution of different macroeconomic variables to economic growth would help the country to formulate conducive policies to foster economic growth in this regard. This study had investigated the contribution of export earnings to economic growth of Ethiopia for the period 1960/61-2011/12 by empirically testing the long run and short run relationship and causality between export and economic growth via another macroeconomic variables, i.e., import using popular time series econometric techniques of co-integration ,vector error correction estimation and Granger causality test and the review of the policies commenced by the different regimes in relation to export. The results from unit root test show that all variables are order one integrated; and Johansen co-integration shows the existence of long run relations among the variables. Furthermore, the Granger causality test conducted indicates that in the short run there is no causality among variables but in the long run there is bidirectional causality among the three variables, including: GDP, Export and Import. The key finding in this study is that export growth positively and significantly affected economic growth and growth also stimulate export in the long run. This provided support for the adoption of both Export -Led Growth and Growth-Led Export growth strategies in case of Ethiopia. Thus, effort should be directed towards policies that will expand the volume of a country's exports and at the same time promote the emergence and expansion of domestic industries.

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Introduction

Economic growth can be generally defined as an increase in per capita output or income over a period of time. The process of economic growth is a highly complex phenomenon which is influenced by numerous and varied factors; among other factors, openness to international trade is considered as one of the very important contributors to growth (Samuelson and Nordhaus, 2010).

International trade significantly played a crucial role in the historical economic growth achievement of the four East Asian Tiger economies (South Korea, Hong Kong, Singapore, and Taiwan)(Medina-Smith E.J. 2001, Palley, 2011).Countries with higher international trade involvement achieve a higher and faster economic growth than those that has less involvement in international trade. This can be confirmed by comparing the remarkable success of the four East Asian Tiger economies in the 1970 to 1990 who followed export-led growth strategy, and the poor growth achievement of many African and some Latin American countries who had focused on import substitution growth strategy in the same period.

Many developing countries have attempted to pursue the East Asian growth model in recent decades. This model is widely perceived to have been based on export-led growth. Ethiopia, like other developing countries, pursued the export-led growth strategy since 1992 after years of implementation of the import substitution strategy during the Imperial and Derg regimes. Following the export-led growth strategy, Ethiopia's economy, as well as, its export composition still remained highly dependent on agriculture. Agriculture contributes about 41% and over 80% to national GDP and export sector, respectively (NBE, 2010/11). The export earning contribution,

from 1960 to 2010, accounted to 11% of the GDP on average (Jarra, 2013), which is very low when compared with 30% contribution to GDP in Sub-Saharan African countries (Hailu, 2011). Such a low figure suggests that much has to be done in the Ethiopian export sector to achieve the desired economic growth level.

Many studies have been conducted in least developed countries (LDCs) on the contribution of export earnings to economic growth. Although most of the empirical works support the export-led economic growth hypothesis, there is no consensus over this issue. Some economists, Krueger (1978), Tyler (1981), Kavoussi (1984), Ram (1987), Chow (1987), and Salvatore and Hatcher (1991), seem to generally agree that export has a positive and significant impact on countries economic growth; others, Medina-Smith E.J, (2001), Mishra, P. K., (2011), Abbas,S. (2012), doubt the existence of such a relationship.

Therefore, the evidence regarding export-economic growth nexus is somewhat ambiguous and mixed globally in general. Furthermore, previous studies on this issue in the context of Ethiopia are only few; and even the limited available ones provide mixed evidences. For instance the study conducted by Gemechu,(2002) support the contribution of real exports to economic growth in the context of Ethiopian economy in the short run whereas, Chemeda (2001) says the contribution of real exports to economic growth in the context of Ethiopian economy is greater in the long run than in the short run. But both studies does not include the most important macroeconomic variable, i.e., import, while considering the causality between export and growth. Even though Wolde (2007) included import, while considering the causality between growth and export, his result fails to identify strong causal relation between export and economic growth. In this

regard, this paper try to explore whether there is any long run equilibrium relationship between export and economic growth, to check whether export growth influences economic growth or export growth leads to economic growth or vice versa.

Overview of Ethiopia's Economic Growth Trend

"Ethiopia is one of the poorest and least developed countries in the world in terms of economic and social indicators. High incidence of poverty, low social service facilities, exponential population growth, unemployment, backward technology, low productivity, and environmental degradation, etc. have been the characteristic feature of Ethiopian economy"(Jarra, 2013:28). The Ethiopian economy is highly dependent on agriculture, which accounts for 45% of GDP and around 80% of the population derives its livelihood directly or indirectly from agricultural production. The contribution made by agriculture, service sector and industry goes from 72%, 20% and 8% in 1960/61, respectively, to 43.7%, 44.9% and 11.5% in 2011/12. Although, the share of agriculture in GDP tended to decline over time, it still remains the largest employer, the main source of foreign exchange, and supplier of raw materials. Expansion of the services and agricultural sectors account for most of the recent growth achievements, while manufacturing sector's performance had been relatively modest (NBE, 2011/12).

Even though agriculture dominates the country's economy, strong and robust economic growth is becoming the current history of Ethiopia as the country has been experiencing broad based growth over the past years; for instance, the average economic growth of the country from 2004/05-2011/12 was 10.6% which is higher compared to the African regional

average of 4.9% (World Bank, 2013). Figure 1.1 shows Ethiopia's trends of growth rate of real GDP.

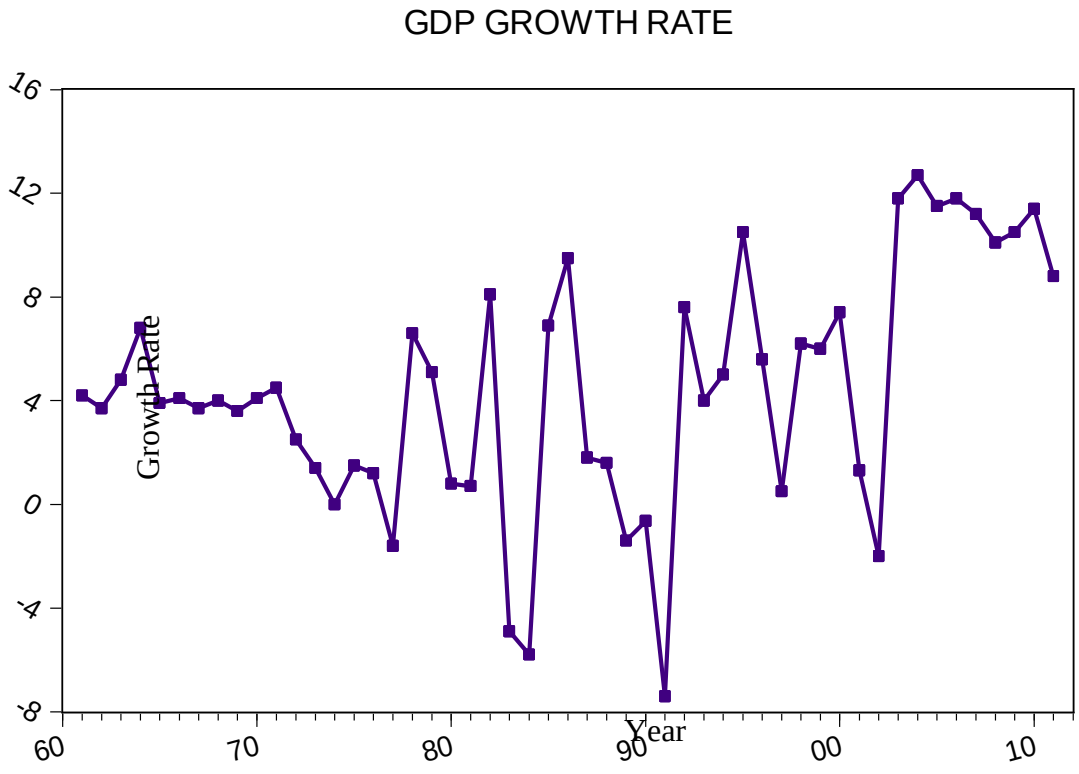

Fig 1.1: Growth rate of RGDP (1960/61-2011/12)
Source: Own sketch using EEA data base (2011/12)

As can be seen from the above graph (Fig.1.1), in general the country achieved a higher economic growth during the current government. The highest economic growth was achieved in 2003/04 although all sectors contributed to this relatively higher economic growth performance, agriculture becomes the leading sector contributing to about 62.4 percent to the 11.9 percent overall GDP growth, industry and service sectors also contributed by 12 and 26 percent, respectively. On the other hand, the lowest economic growth rate was registered in 1991/92 during the downfall of the Derg regime, which could be due to the long war that took place

during the period. Generally, overall economic growth in Ethiopia has been highly associated with the performance of the agricultural sector. However, the dependence of the agricultural sector on the unpredictable rainfall and the influence of other exogenous factors such as drought have made its performance erratic, leading to irregular overall GDP growth (Fig. 1.1).

Structure of Ethiopia's Major Exports

The structure of the export sector of Ethiopia is dominated by a few primary products that account for a lion's share of the country's export earnings, while the share of non-agricultural products in total merchandise exports is almost insignificant. For the past five decades, primary agricultural products accounted to about 80-90% of the merchandise export earnings of Ethiopia. Among the major export products, as shown in Table 1.1 below, coffee accounts the major share of primary exports. From 1963/64-2011/12, Coffee, Oilseeds, Hides and Skin, Pulses, Chat, Fruit and Vegetables and Meat and Meat products accounted for 52.2, 7.8, 5.1, 3.4, 1.0 and 0.94 percent of the total export proceeds, respectively. The average percentage share of coffee in the total merchandise exports during the Imperial, Derge and the present government was 54.7, 56 and 45 percent, respectively. The smallest share of coffee in the total export was 24.5 percent in 1974/75, which was due to the problem of change in regime and political instability, and the largest share was 79.3 percent in 1978/79 due to the then government's development campaign efforts. All these figures illustrate the fact that the Ethiopian merchandise export sub-sector is largely dependent on a single export commodity (i.e coffee) for its badly needed foreign exchange earnings.

Table 1.1: Average share of major exports (% of the total)

Period	Coffee	Hides and Skin	Oilseeds	Pulses	Chat	Fruit	Meat and Meat Products
1963/64-1973/74	54.7	10.3	9.7	8.03	0.23	0.52	0.93
1974/75-1990/91	56	10.8	3.9	4.35	1.02	0.99	0.68
1991/92-2010/11	45	9.3	9.6	3.9	7.9	1.2	1.1
1963/64-2011/12	52.2	10.3	7.8	5.1	3.4	1	0.94

Source: Own computation from NBE data

Growth Rate of Export

The total value of receipt from export grew at annual average growth rate of about 13% between 1963/64-2011/12. In terms of growth rate, on average, chat was dominant during the period. The least growth rate was registered by hides and skins. Moreover, Table 2.2 below shows the total average growth of major export items.

Table 1.2: Average annual growth rate of total export earnings from major exports

Period	Coffee (%)	Hides and Skin (%)	Oilseeds (%)	Pulses (%)	Chat (%)	Fruit and Vegetables (%)
1963/64-1973/74	2.7	5.1	1.2	13.8	0.8	27.9
1974/75-1990/91	7.1	22.7	0.08	-0.1	69.8	19.5
1991/92-2010/11	25.08	-2.6	104.2	42.5	221.00	8.7
1963/64-2011/12	11.62	7.96	45.4	21.4	97.20	4.5

Source: Gemechu (2002) and Own computation from NBE data

During the Imperial regime, earnings from the export of coffee, probably the largest exportable item, had been growing at an average annual rate of 2.7 percent. Hides and Skin and Pulses which were the second largest exportable items grew at annual average growth rate of 5.1 and 13.1 percent, respectively. Whereas, oilseeds have a smaller growth rate during the

period. Chat, Fruit and Vegetables and Meat and Meat products had taken the remaining share.

During the Derg era (1974/75 – 1990/91), the average annual growth rate of real export showed a deteriorating trend, compared to the period of Imperial regime. It was due to the low attention given in the export sector in general and the poor performance of pulses and oilseeds in particular during the period. The proceeds from the export of pulses and oilseeds, which was growing at an average annual rate of 13.8 and 1.2 percent during the Imperial regime, declined to 0.08 and -0.1 percent during the military regime.

After the takeover of the government by the EPRDF (i.e. since 1991) the growth rate in the real value of total exports had shown a significant improvement. This is due to different policy measures taken by the current government to promote exports. Revenue from the various export commodities has shown a considerable improvement. However, due to volatility and unpredictability of international market experience, growth rate of export during 2004/05-2010/11 had declined. The increase in the value of export contributed a lot to the registered economic growth during the period 1991/92-2005/06.

In general, the trend analysis results (see Table 1.2 above and Fig.1.2 below) show that growth rates of exports in Ethiopia had been very volatile. This is basically attributed to factors related to demand side (a low income elasticity of commodities that Ethiopia exports, declining prices for its exports, and limited destinations for Ethiopian exports) and supply side (its dependency on few primary products and a very high degree of concentration of exports on few commodities) (Geda, 1999)

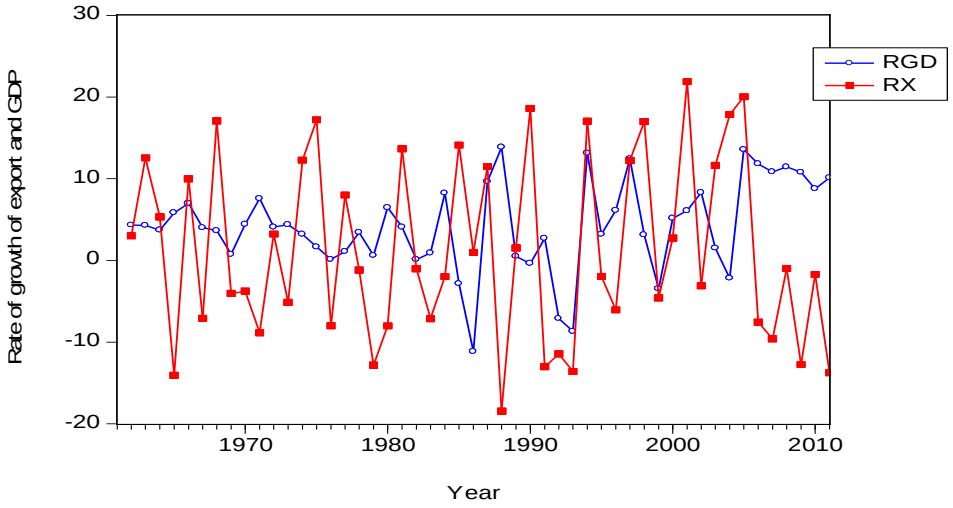

Figure 1.2: Growth rate of exports and GDP

Source: Own sketch using EEA data (2010/11)

The Contribution of Export market to Different Sector of the Economy

Even though the composition of export sector of the country is dominated by agricultural products, it still plays a significant role in the growth performance of the Ethiopian economy. Export contributed about 11.0 percent to the GDP during the past five decades (1960/61-2011/12). The share of exports in GDP was the highest during the present government. The highest share was recorded in the year 1996/1997 which was about 16.2 percent of the GDP, the lowest being 4.5 percent during the transitional period (1991/92) after the fall of the Derg regime.

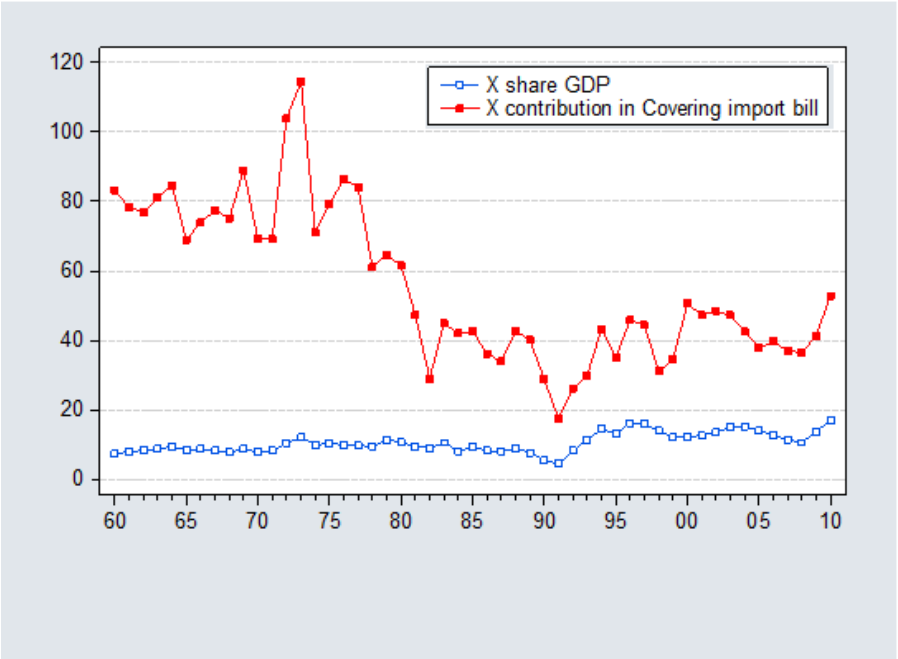

Figure.1.3 Share of export in GDP and in covering import bills

Source: Own sketch using EEA data (2010/11)

The revenue from export made the import of inputs possible that are crucial for development purposes thereby playing as an engine of growth to other sectors. During the period 1960/61-2011/12 proceeds from exports covered more than 70.4 percent of the import bill of the country. In some years during the Imperial period, the proceeds from export were able to cover the total imports bill and even register a surplus (see Fig. 1.3 above). Hence, analysis of the reviewed literature shows that, expanding exports enables the country to reduce the serious foreign exchange constraint faced that acts as a bottleneck for the growth of the economy.

In general, assessed available literature reveals that the two previous regimes and the current government had tried to maximize the contribution of export sector to the development of different sectors of the economy by designing different policies and strategies.

Methodology

Model Specification

In the study of the export-growth linkage, a number of variables that might be important in the analysis can be considered. However, the limited number of available observations often necessities the use of simple models that capture the basics of the relationships of interest (Gemechu, 2002). The assessment of the effect of export performance on economic growth is carried out in a production function framework in which export and import enter as an additional 'input' in the production process using Vector Autoregressive Model (VAR). Following the works of different authors, Bahamin Oskooee (2005), Abou-Stait (2005), Kavoussi (1984), the model to be used can be derived from a general production function of the type:

$$Y_t=f(K_t\ L_t\ X_t\ M_t) \text{ ---------- (3.1)}$$

where, Y_t is aggregate real output, L_t and K_t are the conventional labor and capital inputs, and X_t and M_t denote real exports and real imports, which is introduced as an additional input.

Since data on capital is not available Gross Capital Formation is used as a proxy for capital.

In an econometric form, equation (3.1) can be stated as:

$$LnY_t= \beta_o + \beta_1 LnGCF_t + \beta_2 LnLAB_t + \beta_3 LnX_t + \beta_4 LnM_t + \varepsilon_t \text{ ---------- (1.1)}$$

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Where, Y_t is real GDP

GCF_t is gross capital formation (%GDP)

LAB_t is labor force

X_t is export (%GDP)

M_t is import (%GDP)

In equation (1.1), the signs above the variables suggest the anticipated relationship between each explanatory variable with the dependent variable.

Data Sources and Type

This study used annual data of Ethiopia and the samples are over the period from 1960/61 to 2011/12. The variables included in the analysis are economic growth proxied by Gross Domestic Product (GDP), capital proxied by Gross Capital Formation (GCF), labor force, export of goods and services (X) and import of goods and services (M). The study uses the data collected by national and international organization for the purpose of examining the contribution of export to economic growth of Ethiopia and hence data were sourced from Ethiopian Ministry of Finance and Economic Development (MoFED), National Bank of Ethiopia (NBE), Ethiopian Economic Association (EEA) data base (2012) and Penn World Table version 8.0 (2011).

Results and Discussion

Unit Root Test

A time series variable is said to be covariance (weakly) stationary if it has constant mean, time invariant variance and a covariance between any two-time period that depends only on the lag between them (Gujarati, 2004). Whereas, a non-stationary series has a different mean at different points in time and its variance increases with the sample size. So, the primary task in an econometric work is to check whether a series is stationary or not. Because using the classical estimation methods to estimate relationships with non-stationary variables results in spurious regression (Wooldridge, 2004 Gujarati, 2004).

The well known Augmented Dickey- Fuller (1981) and the Phillips Perron (1988) tests were applied to test the existence of unit root and ascertain their order of integration. The primary interest is to determine whether the variables are stationary or not, both of these unit root tests suggest that the variables under examination are a unit root process at levels, and hence, integrated of order one, I (1).The unit root test is undertaken both at the intercept and intercept plus trend regression forms, and the results of Augmented Dickey- Fuller (ADF) and PP unit root tests are given in Tables 1.1 and 1.2 below.

Table 1.1: ADF unit root test

	Level							
	Intercept				Trend and intercept			
Variables	test statistic	1% critical values	5%	p-value	test statistic	1% critical values	5%	p-value Level
LGDP	1.9438	-3.5654	-2.9199	0.999	0.4014	-4.148	-3.500	0.998 I(1)
LGCF	-2.0721	-3.5654	-2.9199	0.255	-2.3095	-4.148	-3.500	0.857 I(1)
LLAB	-0.572	-3.5654	-2.9199	0.867	-1.795	-4.148	-3.500	0.691 I(1)
LX	-2.1964	-3.5654	-2.9199	0.210	-2.08	-4.148	-3.500	0.543 I(1)
LM	- 1.9886	-3.5654	-2.9199	0.2908	-2.802	-4.148	-3.500	0.203 I(1)
	First difference							
DLGDP	-7.3363	-3.5683	-2.9211	0.000*	-7.909	-4.161	-3.502	0.000*
DLGCF	-7.2832	-3.5683	-2.9211	0.000*	-7.299	-4.157	-3.502	0.000*
DLLA	-4.7391	-3.5683	-2.9211	0.000*	-4.6870	-4.167	-3.502	0.002*
DLX	-7.9727	-3.5683	-2.9211	0.000*	-7.9502	-4.157	-3.502	0.000*
DLM	-8.3888	-3.5683	-2.9211	0.000*	-8.3239	-4.157	-3.502	0.000*

Where * indicates rejection of null hypothesis both at 1% and 5% level of significance.

Source: Own estimation using Eviews 7.0.2

Table 1.2 PP unit root test

Level									
	Intercept				Trend and intercept				
Variables Level	test Statistic	1% critical values	5%	p-value	test statistic	1% critical values	5%	p-value	
LGDP	2.2877	-3.565	-2.919	0.999	0.7324	-4.148	-3.500	0.999	I(1)
LGCF	-2.1655	-3.565	-2.919	0.221	-2.3951	-4.148	-3.500	0.377	I(1)
LLAB	-0.4708	-3.565	-2.919	0.888	-1.6166	-4.148	-3.500	0.772	I(1)
LX	-2.3148	-3.565	-2.919	0.171	-2.2178	-4.148	-3.500	0.469	I(1)
LM	-1.9886	-3.565	-2.919	0.290	-2.7842	-4.148	-3.500	0.209	I(1)
First difference									
DLGDP	-7.3500	-3.565	-2.919	0.000*	-7.905	-4.152	-3.502	0.000*	
DLGCF	- 7.4806	-3.565	-2.919	0.000*	-7.550	-4.152	-3.502	0.000*	
DLLAB	-4.7621	-3.565	-2.919	0.000*	-4.802	-4.152	-3.502	0.001*	
DLX	-7.9250	-3.565	-2.919	0.000*	-7.900	-4.152	-3.502	0.000*	
DLM	-8.4234	-3.565	-2.919	0.000*	-8.352	-4.152	3.502	0.000*	

Where * indicates rejection of null hypothesis both at 1% and 5% level of significance.

Source: Own estimation using Eviews 7.0.2

The result of both ADF (based on the automatic lag length selection by Schwartz information criteria) and PP test show that all the time series in levels are non-stationary and Integrated at an order of 1, i.e. I(1), which means they do not have constant mean and variance over time but become stationary when differenced once.

Although the individual series could be non-stationary, a linear combination of them might be stationary (Engle and Granger, 1987); which means a well-defined linear relationship exists among them in the long run. So, the subsequent discussion provides a test for co-integration between the

variables under investigation in which the null hypothesis claims no co-integration.

Optimal lag length determination in vector autoregressive (VAR) model precedes the task of testing co-integration relationship. Hannan-Quinn information criteria (HIC), the Log Likelihood (LL), the Schwarz information criteria (SIC) and the Akaike information criteria (AIC) models are considered for selecting the optimal lag. Empirical literature often suggests the use of the Hannan-Quinn criterion (HQC), Akaike Information Criterion (AIC) and the Schwarz Bayesian Criterion (SBC) to select the lag length of the VAR system especially for small sample size i.e up to 60 or less (Asghar and Abid 2005).

This study determined the optimal lag length according to the VAR lag order selection criteria; and hence, all information criterion models select the same lag length which is one. So in this study, the lag length used for co-integration test is one. The result is given in Table 1.3 below.

Table 1.3 Lag Length Selections

Lag	Log L	LR	FPE	AIC	SC	HQ
0	42.1434	NA	1.4207	-1.580571	-1.383747	-1.506505
1	334.228	509.594	1.6512*	-12.9487*	-11.763*	2.50148*
2	352.209	27.5449	2.312	-12.64718	-10.48211	-11.83245
3	384.204	42.20678	1.8912	-12.94486	-9.795672	-11.7598
4	405.367	23.4144	2.7212	-12.78158	-8.648274	-11.22619
5	430.831	22.755	3.812	-12.80132	-7.683894	-10.8756

* indicates lag order selected by the criterion
Source: Own estimation using Eviews 7.0.2

LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Export and Economic Growth in the Long Run

Testing the co-integrating relationship among the variables (i.e., GDP, GCF, LAB, X and M) requires the integration of variables to be in the same order. According to ADF and PP test results, all variables are found to be integrated of order one, i.e., I (1); and thus, have a stochastic trend. This means that, they are all candidates for inclusion in a long-run relationship for testing the number of co-integrating relationship among them. In the case of co-integrating equation estimation, this study selected under linear trend and level data. Both tests the maximum eigenvalue (λ_{max}) and trace statistics (λ_{trace}) are used to determine the number of co-integrating vectors.

Table 1.4 below presents the results obtained by the application of the Johansen procedure to test for co-integration relationship using a VAR at an order of one.

Table 1.4: Result of Johansen co-integration test

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.*	Max-Eigen Statistic	0.05 Critical Value	Prob.*
None *	0.655880	130.008	95.75366	0.0000*	53.33831	40.07757	0.0009*
At most 1*	0.500683	76.6706	69.81889	0.0128*	34.72566	33.87687	0.0395*
At most 2	0.361909	41.9449	47.85613	0.1603	22.46372	27.58434	0.1975
At most 3	0.261467	19.4812	29.79707	0.4587	15.15448	21.13162	0.2782
At most 4	0.065835	4.32673	15.49471	0.8755	3.405092	14.26460	0.9162
At most 5	0.018264	0.92164	3.841466	0.3370	0.921647	3.841466	0.337

Where (*) means rejection of the null hypothesis of no co-integration at the 5% level of significance.

Source: own calculation using Eviews 7.2.0

In Table 1.4 above the trace test indicates the existence of two co-integrating equations at 5 percent significance. And the maximum eigen value test makes the confirmation of this result. Thus, the four variables of the study (i.e., GDP, GCF, X, M) have long run equilibrium relation between them. But in the short run there may be deviations from the equilibrium.

Once the existence of co-integrating vector is identified, Johansen Maximum Likelihood method of the linear combination of variables represented by the first row of standardized beta (β) eigenvectors represents the long run equation. Table 1.5 below presents the results of beta matrices.

Table 1.5 Normalized beta (β) eigenvectors.

Normalized co-integrating coefficients (standard error in parentheses)

GDP	GCFSA	LAB	XSA	MSA	DUM
1.000000	-0.739175	-0.990172	-0.566955	0.544052	0.696607
	(0.14662)	(0.11015)	(0.14385)	(0.17064)	(0.09089)

Source: own calculation using Eviews 7.2.0

In the above long run model, all coefficients have the anticipated signs indicating that labor, capital and exports positively affect output while import is negatively related with output. This shows that the much dependence on import for different activities of the country has negatively affected the growth of the economy. Moreover the negative coefficient of the dummy variable suggests that war, drought and famine and the change of government with a new ideology has negatively affected the growth of the economy.

Next, test of significance on the long run parameters which is obtained by imposing zero restriction on the long run β coefficients is conducted. Table 1.6 presents the test of significance of long run coefficients.

Table 1.6: Test of Significance of long- run coefficient

Variable	β coefficient	LR test of restriction ch^2(1)	Prob
LGCF	-0.739175	8.684538	0.0032*
LLAB	-0.990172	8.3250538	0.0039*
LXSA	-0.566955	4.102921	0.0428**
LMSA	0.544052	2.935554	0.086649***
DUM	0.696607	15.06989	0.0001*

Where; *, ** and*** denotes rejection of the null hypothesis at 1%, 5% and 10% significance level respectively.

Source: own calculation using Eviews 7.2.0

As revealed in the above Table (1.6) the null hypothesis that claims β coefficients are not significantly different from zero is rejected at 5% level of significance for gross capital formation, labor and export, indicating that the variable have significant effect on economic growth of Ethiopia in the long run.

Therefore, the long run equation is given as follows:

Y = 0.739175GCF +0.990172LLAB + 0.566955XSA -0.544052MSA-0.696607DUM

P_{value} [0.0032]* [0.0039] * [0.042] ** [0.0866] *** [0.0001]*

In order for the results to be econometrically credible and economically meaningful, it is important to investigate the statistical properties of the

model. To this end, a number of diagnostic tests have been undertaken. The result shows that, the null of no serial correlation, homoscedasticity and normality are not rejected at conventional level of significance. Moreover, the RESET test also confirmed that, there is no functional misspecification problem.

From the above result, we can infer that in the long run an increase of export by 1% will lead to increase of economic growth by 0.56%. This could be due to the multiplier effect of export to economic growth. More exports mean more aggregate output from firms and industrial facilities, as well as a greater number of people employed to keep these firms running. Moreover the receipt of export proceeds also represents an inflow of funds into the country, that stimulates consumer spending which in turn play a crucial role in increasing the investment level as a result Ethiopia's overall output level, eventually economic growth. The finding is consistent with that of Jarra's findings (2013) in the case of Ethiopia.

Vector Error Correction Model

After the existence of co-integration among variables is confirmed, the next step demands the construction of error correction mechanism to indicate the speed of adjustment from the short run equilibrium to the long-run equilibrium state. In order to estimate the dynamic short run model, the first difference of all variables are estimated using OLS by including one period lag of the vector error term saved from the long run equation.

With the exception of import and one period lagged gross domestic product all included variables are found to be statistically insignificant. This means gross capital formation, labor and export does not affect economic growth of Ethiopia in the short run. Moreover, normality test, residual autocorrelation,

test of heteroscedasticity and Ramsey's RESET tests are conducted; and all tests did not detect any problem of serial correlation, hetroscedasticity, non-normality and model misspecification.

Table 1.7: Result of VECM estimate

Variables	Coefficient	Std.error	t-value	Prob
C	0.002203	0.009897	0.222534	0.825
DGDP_1	0.636637	0.116713	-5.454709	0.0000*
DLGCF_1	-0.053858	0.067538	-0.797454	0.4298
DLLAB_1	-0.869619	0.954181	-0.911378	0.3674
DLX_1	0.078091	0.072841	1.072088	0.2900
DLM_1	-0.26559	0.073676	-3.604846	0.0008*
ECT_1	-0.129729	0.040708	3.186784	0.0028*
DUM	-0.072421	0.025175	-2.876727	0.0064*

R-squared	0.606478	Mean dependent var	0.001461
Adjusted R-squared	0.539292	S.D. dependent var	0.102035
S.E. of regression	0.069257	Akaike info criterion	-2.353716
Sum squared resid	0.196655	Schwarz criterion	-2.044848
Log likelihood	65.66605	Hannan-Quinn criter.	-2.236532
F-statistic	9.026777	Durbin-Watson stat	2.170864
Prob(F-statistic)	0.000001		

Source: own calculation using Eviews 7.2.0

In the short run, change in economic growth is positively and significantly affected by last year's growth and negatively and significantly affected by import. The base year growth matters for the current year economic improvement and become the base for the enhancement of its components for the years to come. The lagged error correction term (ECT-1) included in the model is negative and significant indicating speed of adjustment towards equilibrium and indicates the existence of a long-run causality between the variables of the study. However, the effect of export is

insignificant in the short run. This is consistent with the finding of Chemeda (2001) and contradicts from the findings of Gemechu (2002) and Jarra (2013) in the case of Ethiopia.

Generally, the magnitude of export, import and gross capital formation in the long run are much higher and significant than the short-run impacts indicating that the impacts of change in those variables on economic growth are much stronger in the long-run than in the short run.

Granger Causality Test

Co-integration implies the existence of at least unidirectional causality between variables but it fails to provide the direction of causality (Engel and Granger, 1987). Thus, having established a co-integration relationship, we test for Granger causality among export, import and economic growth based on Error Correction Model (ECM). According to Granger (1988), if the series are found to be co-integrated, the inclusion of error correction term in testing causal relationship among variables is very much important, since it provides an extra channel through which causality may be observed. Otherwise the standard Granger test may lead to invalid causal information. Moreover, including error correction term also allows us to distinguish between the short run and long run causality. Four patterns of causality can be distinguished: (a) unidirectional causality from one variable, let us say X to another variable Y; (b) unidirectional causality from Y to X; (3) feedback or bi-directional causality; and (d) no causality.

The coefficients of each explanatory lagged change variable (i.e., ΔlnGDP-1, ΔlnX-1 and ΔlnM-1) in each VECM equation tells us about the short-run Granger causality, whereas the lagged error correction term (ECM-1) shows the long-run causality among the variables. As long as the coefficient of

error correction term is statistically significant, causality exists among the variables under investigation even if the coefficients of the lagged variables are not statistically significant. As a testing criterion, the F statistic is used. With these statistics the variables of interests (economic growth, export and import) are tested for each separate equation. The results are indicated in the following table.

Table 1.8: Granger Causality Test Results: A VECM Approach

The included variables in the analysis are: GDP, share of export earnings in the GDP (X), and share of import in the GDP (M).

Dependent variables	DlnGDP	DlnX	DlnM	ECM_1
DlnGDP	-	0.3562	0.7316	0.0298*
DlnX	0.1484	-	0.6307	0.0124*
DlnM	0.5741	0.2397	-	0.0013*

In the long run all variables have a cumulative effect for each other's causality, that means in the long run export and import Granger cause growth, economic growth, and export Granger cause import, at the same time growth and import Granger cause export, confirm long run bidirectional causality that runs among the variables (GDP, Export and Import). However, in the short run there is no causality among variables. The result shows the importance of export in influencing economic growth, at the same time the role of growth in enhancing export of Ethiopia. With respect to the previous work undertaken concerning export and growth relations, the findings that shows export Granger cause economic growth in the long run is consistent with the findings of Silaghi (2009) in the case of Czech Republic and Lithuania, Shirazi and Abdul Manap (2005) in the case

of Pakistan and the findings of Jarra (2013) and Chemeda (2001) in the case of Ethiopia.

In general all variables (i.e., GDP,GCF,LAB,X and M) are found to be non-stationary at levels and become stationary when they are differenced once, this is consistent with the theoretical argument that most macroeconomic series are not stationary at their levels and become stationary at their first difference. Checking whether a time series is stationary or non-stationary is important, because if a time series is non-stationary we can study its behavior only for the time period under consideration. Each set of time series data will therefore be for a particular period. As a consequence, it is not possible to generalize it to other time periods. Therefore, for the purpose of forecasting, such non-stationary time series may be of little practical value (Gujarati, 2004).

Though individual time series are not stationary, a linear combination of these variables could be stationary (i.e., they may be co-integrated). Economically speaking, two variables will be co-integrated if they have a long-term, or equilibrium, relationship between them. In this study GDP, GCF, labor, export and import are found to be co-integrated which confirms the existence of long run relation among the variables. In the long run an increase of export by 1% leads to a 0.56% overall economic growth achievement, this could be due to the multiplier effect of export i.e. as the export performance increases the amount of foreign currency the country would get increases so as to increase its capacity to invest and/or import more on capital goods which in turn play a crucial role in increasing Ethiopia's overall output level, and increased export performance also means more aggregate output from firms and industrial facilities, as well as a greater number of people employed to produce those outputs that

stimulates consumer spending which in turn play an important role in increasing the investment level as a result Ethiopia's overall output level, eventually economic growth. With regard to previous studies specifically done in Ethiopia, this study is consistent with the findings of Jarra (2013).

While in the short-run export has an insignificant impact on economic growth in Ethiopia, which could be due to the fact that export is a long-run phenomenon that does not show its effect on economic growth immediately. This is consistent with the finding of Chemeda (2001) and contradicts from the findings of Gemechu (2002) and Jarra (2013) in the case of Ethiopia. Generally, the magnitude of export, import and gross capital formation in the long-run are much higher and significant than the short-run impacts, indicating that the impacts of change in those variables on economic growth are much stronger in the long-run than in the short-run. The direction of causality between macroeconomic variables determines the type of policy that should be formulated by policy makers. If export causes growth, export promotion oriented policies are more appropriate but if growth causes export then import substitution oriented policies would be advisable (Oskooee, 2005). The result of this study reveals the existence of long-run bidirectional causality between export and growth but no short-run causality among the variables, which indicates that Ethiopia will accelerate its growth if the country focuses on implementing both export promotion oriented and import substitution oriented policies. The findings that shows export Granger cause economic growth in the long-run is consistent with the findings of Jarra (2013) in the case of Ethiopia.

Conclusion and Policy Implications

Conclusion

The study examined the contribution of export in economic growth of Ethiopia from 1960/61 to 2011/12 by including another macroeconomic variable that is import in the conventional production function form using annual time series data. In empirical analysis, Augmented Dickey Fuller (ADF) and Phillips Perron (PP) unit root tesst were used in testing the stationarity of the variables. The study result shows that all variables (i.e., Gross Domestic Product, Gross Capital Formation, Labor, Export and Import) are found to be integrated of order one I(1). Therefore, the study proceeds to determine the existence or otherwise of co-integrating vectors in the variables. The result of Johansen co-integration test shows that Gross Domestic Product, Gross Capital Formation, Labor, Export and Import are co-integrated (i.e., they have long-run equilibrium relationship).

In the long-run gross capital formation, labor and export positively and significantly affect economic growth of Ethiopia. While import is negatively related with output, this could be due to consumer durables and non-durables outweigh the imports of capital goods. This in turn slows down economic growth through affecting the country's international reserves. The result of Granger causality test shows a long-run bidirectional causality that goes from the cumulative effect of export and import to economic growth; from growth and import to export; and from economic growth and export to import. The existence of bidirectional causality between export and growth necessitate the formulation of both export oriented and import substitution policies.

Generally, export is important for facilitating economic growth, and economic growth also has an impact on stimulating export growth. In other words, economic growth Granger causes export and export is also the causes for economic growth in Ethiopia in the long-run.

Policy Implications

Ethiopia adopted Export-Led Growth strategy since 1991/92. Despite the focus on export diversification in the development plans of the country, the export pattern is still dominated by traditional produces whose world price has been fluctuating. The findings of the study suggest that the country needs to strengthen the promotion and expansion of domestic industries, and at the same time, strengthen export capacity to promote diversification both in the export and domestic industrialization sector to fully exploit the benefits of those sectors and achieve a sustainable growth. So, designing export promotion strategies, policies and support services conducive towards stimulating competitiveness, and designing import substitution promotion strategies, policies and support services would be more advantageous for achieving an accelerated economic growth.

Generally, selective protection of export expansion would be more efficient than complete trade liberalization.

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