Agricultural Export and Economic Growth Nexus: A Case Study of Ethiopia

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Abstract — *The Ethiopian export sector has depended on few agricultural products like coffee (29.5%), oil seeds (14.9%), pulses (9.5%), Chat (9.3%), and cut flowers (8%). The total export earnings were declined over time. This, the aim of this term paper is to study the trend and impact of agricultural export on economic growth in Ethiopia. The study was analyzed through Engel granger co-integration test and causality test by employed secondary time series data from 1997- 2018. The Engel granger co-integration test result showed that there is no long run relationship between agricultural export and economic growth. The Granger Causality test result revealed that there is no evidence of Granger causal relationship between agricultural export and economic growth implying neither export led growth nor growth driven agricultural export is valid in the context of Ethiopia. Therefore the government should make an effort to bring a structural change from export of primary agricultural goods to manufacturing goods.*

Keywords— agricultural export, co-integration test and economic growth.

I. INTRODUCTION

Export is one of the very important contributors to economic growth in developing countries. In order to achieve the goal of economic growth countries were used import substitution or export promotion strategy. In 1950s and 1960s, most of the developing countries followed the import substitution policy for their economic growth and shift towards export promotion strategy in the mid 1970[1].

The relationship between economic growth and exports in developing countries has drawn the attention of researchers both theoretically and empirically since the classical economic theories by Adam Smith and David Ricardo, who argued that international trade plays an important role in economic growth, and there are economic gains from specialization. There are streams of empirical literatures which show conflicting and mixed results on exports and economic growth relationships. One stream of empirical studies provides support for the export-led growth paradigm [2] and [3]. There's empirical evidence confirms that agricultural exports have more

importance for the economic growth in developing countries. Other streams have found no association, or even a negative association [4] and [5].

Like other developing countries Ethiopia followed the export-led growth policy in 1992. Owing to this policy shift, some improvements in export earnings have improved during the post reform period but it contribution to the world market is low [1] and [6]. The country`s export sector has depended on export of a few primary agricultural products like coffee (29.5%), oil seeds (14.9%), pulses (9.5%), Chat (9.3%), and cut flowers (8%). Ethiopia's total export earnings were declined by 2.3% in 2017/2018 from the previous year. The causes for dropping of Ethiopian exports are the markets for these products are largely unstable in terms of volume, price and carry a high degree of risk and uncertainty as well as low income elasticity. It is certain that the exports of primary goods are less competitive on the world market and weigh less against manufactured goods exported by developed countries resulting in deteriorating terms of trade [7]. Despite these unfavorable terms, this term paper

investigates the trend and impact of agricultural export on economic growth in case of Ethiopia.

II.   METHODOLOGY

This study used secondary data for the period of 1997-2018 from world development indicator for analyzing the relationship between agricultural exports and economic growth in Ethiopia. To test the validity of agricultural exports- led economic growth hypothesis in Ethiopia, real GDP growth is captured as a function of the agricultural export. All the data in the models are run using EViews 10 econometric software. The econometric model is specified as follows:

$$GDP = \alpha + \beta Agriex \ldots\ldots\ldots\ldots.1$$

Where, GDP is real gross domestic product; Agriex is agricultural raw material export as; α is the constant term and β the parameter for independent variable to be estimated.

This study applies the Unit Root test, Co-integration test and Causality test. The unit root test is important to ensure that all the variables included in the model are stationary, that is, to ensure that each variable has a time invariant mean and variance. Co-integration test was important to test the existence of long run relationship between the variables which are individually non-stationary at their level form but stationary after first difference. The theory of co integration can therefore be used to study series that are non-stationary but a linear combination of which is stationary. For this study Engle Granger test was used. The Engle Granger test is a two-step test which first requires that the variables be integrated of the same order. The first step consists of estimating the equation in level form while the second step consists of testing the stationarity of the residuals of the estimated equation. The existence of co-integration is confirmed if the residuals are stationary at level form [8]. The co-integration test is based on residuals:

$$\varepsilon t = RGDP - \alpha - \beta Agrixp \ldots\ldots\ldots\ldots\ldots..2$$

Causality test was helps to know if a causal relationship exists between two variables. Given two variables X and Y, X is said to Granger cause Y if lagged values of X predicts Y well. If lagged values of X predict Y and at the same time lagged values of Y predict X, then there is a bi-directional causality between X and Y. It also applied different diagnostic tests for the validity of our estimations.

III.   RESULT AND DISCUSSION

3.1 Descriptive Statistics Analysis

3.1.1   The share of economic sectors in the Ethiopian GDP

In 2019, the share of agriculture in Ethiopia GDP was 33.88%, industry contributed approximately 24.77% and the service sector contributed about 36.87 % [9]. The shares of agriculture in the GDP declined while the share of industry increasing. The rise of industry as a share of the GDP due to several industrial parks was completed or near completion (e.g., Kombolcha and Mekelle industrial parks). It does appear that the emphasis placed on industrial parks by the Government of Ethiopia, as a means of economic transformation, is resulting in change. It remains to be seen to what extent this change will be sustained, or increased, in the years to come. At this junction, we have indications of long-term stability on the macro-scale regarding the sectoral shares of the economy, with indications that industry may play a more significant role in the years to come [10].

Table 1: The Share of Economic Sectors in the Ethiopian GDP from 2014 to 2019

Year	2014	2015	2016	2017	2018	2019
Agriculture	38.52	36.06	34.7	33.78	31.22	33.88
Industry	13.47	16.3	21.93	23.58	27.31	24.77
Service	39.89	39.55	36.72	36.63	36.41	36.87

Source: National Bank of Ethiopia (NBE), 2020

3.1.2   Trend of agricultural export and economic growth

Figure1 shows the trend of agricultural exports and economic growth from 1997 to 2018 in Ethiopia. Generally, the trend of agricultural export has been fluctuating overtime, from 1997 to 2001 the agricultural exports performance was increased because of following the downfall of Derg regime, the transitional government of Ethiopia has taken different measures to increase and diversify exports such as export trade duty incentive scheme which incorporates duty draw-back scheme, voucher scheme and bonded manufacturing warehouse, export credit guarantee scheme and foreign exchange retention scheme to those wholly engaged in supplying their products to foreign markets which is essential [11]. After 2004 the agricultural exports of the country fall down. The trends of Ethiopian economic growth rise from 1998-2001 then it decline until 2003 and dramatically increase in 2004 then after economic growth shows smooth trend.
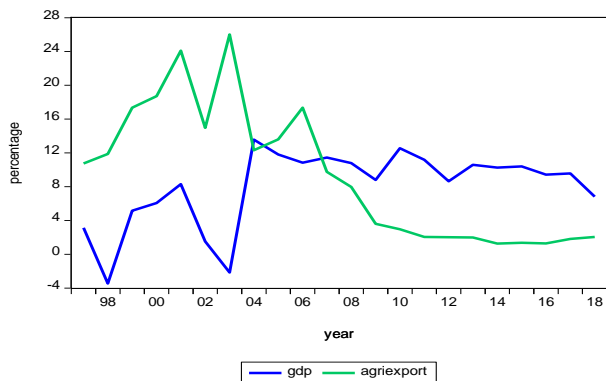
Fig.1: Trend of agricultural exports and economic growth of Ethiopia from 1997 to 2018

Source: Author's sketch based on data from World Development indicators 2020.

3.1.3 Correlation matrix

A correlation matrix analysis Table (2) was performed to investigate the correlation between variables (real GDP and agricultural export). The results illustrated that weak and negative correlation among variables.

Table 2: Correlation matrix of economic growth (RGDP) and agricultural export

	RGDP	Agricultural export
RGDP	1.000000	-0.468874
Agricultural export	-0.468874	1.000000

3.2 Econometrics Analysis

3.2.1 Unit root tests

Unit root tests were conducted first, with real GDP and agricultural export as the time series variables. These variables must be stationary in order to avoid a spurious regression situation. The results of the unit root test for Ethiopian annual data (1997-2018) on two series shows that the ADF test result indicated that the two series are non-stationary at levels. Thus, to correct for the presence of unit root in the series, first difference measures were taken. The results of the unit root tests in the first difference based on ADF test showed that, the series were stationary in the first difference. Therefore, the variables were found to be integrated of order one I (1).

Table 3: Unit root test for agricultural export and economic growth (RGDP)

Augmented Dickey-Fuller test statistics	At level		
		RGDP	Agri-export
	t-Statistic	-2.828749	-0.526441
Test critical values:	1% level	-3.788030	-3.808546
	5% level	-3.012363	-3.020686
	10% level	-2.646119	-2.650413
first difference			
Test critical values:	t-Statistic	-4.893760*	-7.875521*
	1% level	-3.831511	-3.808546
	5% level	-3.029970	-3.020686
	10% level	-2.655194	-2.650413

3.2.2 Co-integration test

This test was performed to see if there is a long-run relationship between real GDP and agricultural exports. The Engle-Granger co-integration technique was used because all the variables have the same order of integration I (1). The result in table 4 below shows that the ADF test statistic of the error term in absolute term is less than the test critical values provided by Davidson and MacKinnon (1993) at 1%, 5% and 10%. Thus indicating that the error term obtained from the regression using OLS is non stationary at 1%, 5% and 10% level of significance. As such, we cannot reject the null hypothesis of residual has a unit root. This confirms that the two variables are not co-integrated. Implies there is not long run relationship between agricultural export and economic growth. Hence the export structure of Ethiopia is highly concentrated to a few primary agricultural commodities, such as coffee, hides, skins, oilseeds, and pulses. The relative importance of these commodities, particularly coffee, in total export revenue has declined drastically due to the strong volatility and declines in the international prices of their primary commodities exports. Therefore, high dependence on a few agricultural export commodities added with the high volatility of prices left the countries' export earnings extremely vulnerable [12].

Table 4: Unit root test of error correction term

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.151910	0.0379
Test critical values:	1% level	-3.90	
	5% level	-3.34	
	10% level	-3.20	

3.2.3   Causality test

The causal relationship between agricultural export and economic growth of the country was analyzed with the application of Granger (1969) causality test using annual data for the period 1997 to 2018. Table (5) indicates both the hypothesis that agricultural export does not Granger causes GDP and GDP does not Granger causes an agricultural export is accepted. These results provide evidence of no causality between agricultural export and GDP. This implies that agricultural export growth doesn't causes economic growth and vice versa. That is none of these alternative growth hypothesis is valid in the context of Ethiopian economy. This result is similar to the finding of Medina[7] while it does not consistent to the finding of [13]; [14] and [15]. This may be due to competitiveness of our primary agricultural commodities in price and quality in the international market is not such improved.

Table 5: Granger causality test results

Null Hypothesis:	F-Statistic	Prob.	remark
GDP does not Granger Cause Agri-export	1.49853	0.2367	accept
Agri-export does not Granger Cause GDP	0.00346	0.9537	accept

IV.   CONCLUSION

The impact of agricultural export on economic growth of a country is in debate among researchers. Some argue that agricultural export lead economic growth and development, while others argue that economic growth lead export growth. In this paper, we have reviewed the theoretical and empirical literature on the relationship between agricultural export and economic growth for Ethiopia. The literature review found mixed and in some cases conflicting evidence on the relative importance of agricultural export in the growth process. In the investigation of the validity of the export led growth hypothesis to Ethiopia, mixed results have been observed most of which are inclined to support the Export led growth hypothesis.

In this paper the author examine the relation between agricultural export and economic growth in Ethiopia for the period between 1997 to 2018 using Engle granger cointegration test and causality test. The Engle granger result showed that agricultural export and economic growth has not long run relationship. Hence, prevailing high dependence on primary agricultural exports makes the country more instability and volatility of foreign exchange earnings in the short-run and erratic deterioration terms of trade in the long-run. In the same way, causality test indicates that agricultural export does not granger cause for economic growth and vice versa. Hence, neither agricultural export led growth hypothesis nor economic growth driven agricultural export is valid in the context of Ethiopian economy. In order to enhance economic growth the government should export processed agricultural products instead of exporting primary agricultural commodities.

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