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Export of Agricultural Product Growth Nexus in Ethiopia: A Time Series Analysis

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Abstract
The agricultural export is an important lead of export growth, and its impact on profitable growth has grown a debating macro-economic policy program among scholars & policymakers. Therefore, the study examined Export of Agricultural Product Growth Nexus in Ethiopia A Time Series Analysis, on the data duo of 1990 to 2021; from World Bank & National Bank of Ethiopia. The study applied time series econometric techniques. The result of the study revealed that the Long- run and short- run effect of agricultural export (coffee export and oil seed export) are positive at 5% and 1% significant level independently. This implies, that these coffee and oil seed export had served productive export share to growth. The long run effect of pulse export didn't serve significant share of growth. But the short run effect of pulse export reveals a negative and significant at 1% showing that unproductive consumption. The error correction model result shows that, the former year's error will be corrected in the current period at an adjustment speed of 82% which takes about 1.2 years to meet to its long- run static position after the short- run shocks. The researcher recommends the concerned body for better benefits of agrarian export, the government of Ethiopia has to play a significant role in icing better institutional policy arrangement and sound macroeconomic programs, which help to make export led growth by value adding other than exporting primary product and therefore, agrarian export suggested to be in further investment climate for better profitable development.
Keywords: Auto Regressive Distributed Lag, Agricultural Export, Economic Growth, Error Correction Model, Ethiopia.
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Introduction

Economic development is one of the top pretensions of every economy in the world, and growth is necessary for countries to achieve deserved standing of economic development. In a corresponding way, growth is determined by numerous factors, yet the question is how countries can realize their growth. One of the answers to this question relies on Export Led Growth (ELG) thesis that claims export is a crucial factor in stimulating growth. Export is one of the genuinely important contributors to economic growth in developing countries. In order to achieve the goal of economic growth countries were used import replacement or export creation strategy. In 1950s and 1960s, utmost of the developing countries followed the import substitution policy for their economic growth and shift towards export creation strategy in the central 1970 (Sindie & Selam, 2021).

Due to a robust link between speedy economic growth and exports, countries are floundering battle to quicken their growth by designing Export- Led Growth strategy. For instance, a strong profitable performance of "Asian Tigers" in the 2nd half of 20th c has been largely attributed to external sector. Having realized role of exports, governments in LDC's have been seeking to produce conducive for exports where Ethiopia is among others (Ashenafi & Getaneh , 2014).

Agriculture is the dominant sector in Ethiopian economy. Hence, it serves as the pillar bone of country's economy, which again determines the success of all other sectors. It contributes for 36.3% of GDP, 85% of foreign exchange earnings, employs 79% of labor force and exports are largely reliant on it as of National Bank of Ethiopia. A unique feature of Ethiopian agriculture is the part of smallholder farms in the total output. Despite the estimable efforts, the sector is still characterized by low yields, resulted from low level of inputs and limited areas under cultivation among others. This is substantially because farming system is known by rain- fed mixed farming and grows substantially for home consumption using traditional ways (Netsanet G. *et al*, 2022).

1.2 Statement of the Problem

It is undeniable fact that for appropriate economic growth of developing countries like Ethiopia, boosting export is the most relevant portion. Economists highly insisted that for bringing sustainable economic development, maximizing agricultural exports is the center which must be focused (Sineenat S., 2019).

Ethiopia faces a serious of challenges on which policy priority to adopt to effectively promote economic growth with respect to variables of international trade. Referring to the report of Ministry of Agriculture, Ethiopia at 2020 Fiscal year depicted that the country has lost its market share in the world market for primary goods-led exports. This phenomenon may find an explanation in the fact that prices of primary goods have fallen because they are subject to more volatility than value-added goods which leads to serious consequences on the stability of

macroeconomic variables. Such experience forces the region to attempt diversifying its exports from a heavy dependence on primary goods exports to more value-added product exports and embrace new market potentials.

The heavy dependence on primary commodities is of a great concern because it raises the instability of terms of trade and other macroeconomic variables, with potential consequences on growth. Diversification of exports and economy, in general, is important for Ethiopia as it builds a resilience of country to absorb external economic shocks. Diversification is currently more important to Ethiopia which helps it to avoid the similar impacts to the 2008 global financial crisis (Samen, S., 2010).

When it is looked at up Ethiopian context, it clearly demonstrates that agricultural exports are not only the option but also obligation to the economic growth. However, economic growth of Ethiopia is yet under crisis that export do not play paramount role in maximizing the country's economic welfare. Thus, it is on this particular juncture that motivates the researcher to focus on the impacts of agricultural exports to the economic growth of Ethiopia.

Impact of agricultural export on growth were estimated and particular commodity case was in fact unseen except for few studies like (Netsanet G. *et al*, 2022; Tigist Y., 2015 & Sindie & Selam, 2021) in Ethiopia, the periods considered by some studies were short span ranging 20–30 years on average. An empirical work on impact of coffee, oilseed and pulse exports in growth has been ignored to some extent in most literatures in Ethiopia despite it has great role. Thus, this study filled the existing literature gaps by fixing on coffee, oilseed and pulse exports.

Additionally, as far as the knowledge of the researcher is concerned, there are no sufficient studies conducted in the area of the impacts of agricultural exports (which is disintegrated in to coffee, oil seed, pulses and chat) in the economic growth of Ethiopia up to date. Types of agricultural products exported from Ethiopia to the abroad and the constraints faced the functioning of agricultural exports from Ethiopia to the abroad as tribunal variables. Thus, this study will enshrine the gap on the impacts of agricultural exports in the economic growth of Ethiopia in particular year 1990-2021 GC.

1.3 Research Questions

This study will answer the following questions after being conducted.

1. What is the effect of agricultural product export on economic growth?
2. What is the short run and long run relation of agricultural product export with economic growth?

2. Literature Review

2.1 Theoretical Review

Unlike the traditional growth theories which view economic growth as a result of exogenous factors, Paul Romer, Robert E. Lucas and Robert J. Barro independently came up with a new type of growth theory which endogenizes technology in the eve of 1990s. This theory is known as Endogenous Growth Theory. The recent literature highlights the existence of a variety of channels through which steady state growth may emerge endogenously.

The new growth theory stressed the importance of innovation, human capital accumulation, the development of new technologies and financial intermediation as important determinants of economic growth. The experience of East Asian countries also provides several lessons on the impact of policies on economic growth. It is agreed that government intervention aimed at removing obstacles to market mechanisms or other sources of market failures is not harmful to growth (Agénor, P.-R. & Montiel, P.J., 1996). According to (Salvadori, N., 2003), the aim of the endogenous growth theory is twofold. First, to overcome the short comings of the neoclassical growth theory which does not explain sustained growth, and second, to provide a rigorous model in which all variables crucial for growth such as savings, investment and technology are the outcome of rational decisions.

Since the main objective of the endogenous growth theory is to develop economically meaningful accumulated factors, then the rate of interest should never be driven too low. This is considered as a necessary condition for perpetual growth. The accumulation of factors can be facilitated either by removing the scarcity of natural resources or by introducing technical progress. As far as the former is concerned, for example, labor has been straight forwardly transformed into a fully reproducible resource, human capital. As for technical progress, one of the main features of the endogenous growth theory is the capacity to make endogenous the investment decision yielding technological progress which consists mainly in the introduction of new intermediate and/or final goods (Salvadori, N., 2003).

In general, it has been shown that there is continuity from classical to endogenous growth theories, partly through Keynesian theory concerning the fact that the steady state is conceived as endogenously determined by the model. By contrast, neoclassical economists see it as exogenously determined by factors considered outside the realm of economic explanation. There is also continuity between classical, neoclassical and endogenous growth theory as opposed to Keynesian theory, in terms of saving-investment relationship. While the former theories conceive saving as wholly transformed into investment, and therefore, growth being determined by saving itself, Keynesian theory conceived investment as the source of growth and no relationship between the former and the

latter variable necessarily exists (Salvadori, N., 2003). Y = AI F (R_i,K_i,L_i) Where Y is aggregate output; A is the public stock of knowledge from research and development R; R_i is the stock of results from expenditure on research and development by firm I; and K_i and L_i are capital stock and labor stock of firm I respectively. He assumes the function "F" homogeneous of degree one in all its inputs R_i, K_i, and L_i, and treats R_i as a rival good.

2.2 Empirical Review

The impacts of export growth to economic growth have been tested by different economists using different econometric techniques. All the tests that have been carried out are broadly classified as those that are based on cross-country analysis and those that are based on country specific time series studies.

Empirically, Sanjuan-Lopez, A. I. & Dawson, P. J., (2010) tried to access the correlation between GDP growth and these two sectors using panel co-integration methods in 42 countries. Vigorous support of evidence showed long-run causality between those variables. Thus, confirming the export-led growth hypothesis for the 42 countries under these studies.

According to Gilbert, N. *et al.,* (2013), the main objective of the analysis was to explore and quantify the contribution of agricultural exports to economic growth in Cameroon. It employed an extended generalized Cobb Douglas production function model, using food and agricultural organization data and World Bank Data from 1975 to 2009. All the variables confirmed co-integration and as such the conventional vector error correction model was estimated using the Engle and Granger procedure. The findings of the study show that the agricultural exports have mixed effect on economic growth in Cameroon. Coffee export and banana export has a positive and significant relationship with economic growth. On the other hand, cocoa export was found to have a negative and insignificant effect on economic growth. Based on our findings, it is recommended that policies aimed at increasing the productivity and quality of these cash crops should be implemented. Also, additional value should be added to cocoa and coffee beans before exporting. When this is done, it will lead to a higher rate of economic growth in Cameroon.

Kang, H. (2015) Investigated ELG (export-led growth) hypothesis of agricultural export especially focus on the major rice exporting countries. This study conducted with VECM model to analyze the link of agricultural export, nonagricultural export and rice export and GDP from the period of 1980-2010. The empirical evidence shows that agricultural raw material and rice export contribute to increase economic growth such as Pakistan, Vietnam and Thailand.

Uremadu, S. O., & Onyele, K. O., (2016) Where interested in analyzing the impact of selected agricultural exports on growth in Nigeria from 1980 to 2014 using descriptive statistics and OLS regression. The findings revealed export of cocoa was insignificant, but positive impact on RGDP, while that of rubber was negative and insignificant and agricultural exports had exerted positive impact on economic growth. Thus, policy of export financing, and value addition are suggested policy prescription.

Oluwatoyese, O. P *et al.,* (2016) Examined agricultural export, oil export and economic growth in Nigeria: Multivariate Co-integration approach from (1981-2014) using Granger causality test and Multivariate Co-integration test. The study found that a significant relationship exists between economic growth and the agricultural export and oil export. They concluded that GDP, agricultural and oil exports are co-integrated.

M. Saqip and Q. Xin, (2017) have attempted to investigate the determinants of exports competitiveness which is an empirical analysis through revealed comparative advantage of external sector of Pakistan. In the paper, the researchers have endeavored to analyze a sector-wise export performance of Pakistan using Revealed Comparative Advantage with the global market. Data for the period 2003-2015, Harmonized System (HS) 1988/92 developed by the World Customs Organization (WCO) are employed in the analysis. They have observed that Pakistan foreign trade concentrated limited products and markets for many years and there are no serious attempts to diversify its export share to the world. Empirical results show that Pakistan is not a major trading player in the international trade. However, it is a major trading player in some of its export items such as, textile and clothing sector, Vegetable, and hides and skins sector which have prominent revealed comparative advantage. Pakistan should diversify its exports and improve its trade diplomacy.

Sindie & Selam, (2021) accordingly, the Ethiopian export sector has depended on agricultural products like coffee (29.5%), oil seeds (14.9%), pulses (9.5%), Chat (9.3%), and cut flowers (8%). The result of the study revealed about 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 could try to bring a structural change from export of primary agricultural goods to manufacturing goods.

3. Methodology

3.1 Model Specification

To survey the effect of agricultural export on economic growth in Ethiopia, efforts were made to merge with theoretical background of growth model lead to empirical achievement. Primarily, this study started from the conventional augmented neoclassical growth framework developed by Solow (1957) to specify the model, where the production function is specified in terms of inputs like labor and capital. The target here is to derive a source of growth equation which can be estimated as Y = f (L, K). Where, Y is real gross domestic product, L is labor factor while K is capital factor. To meet its objective, this study gained inspiration from the work of (Faridi, M.Z., 2012; Gilbert, N. *et al.,* 2013 & Siaw, A. et al., 2018) in modeling the functional link between exports and economic growth. They studied the effect of agricultural export growth on economic growth of Pakistan, Cameroon and Ghana in turn by developing an econometric model based on a generalized Cobb–Douglas production function with aggregated and dis aggregated analysis. As a result, in this study coffee exports has been the selected agricultural item as an independent variable unlike (Faridi, M.Z., 2012) that takes whole agricultural export as single variable. Thus, in the usual notation the production function can be written as equation (1);

$$Y_t = f(L_t\, K_t) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

where the above is a typical growth function,
Yt = aggregate output in time (*t*);
Kt = capital stock in time (*t*)
Lt = human capital in time (*t*).

Now, developing the same theoretical model to capture the impact of Agricultural export (Coffee, Pulse and Oil seed) in economic growth in Ethiopia, equation (1) can be rewritten in the following manner together with value of Agricultural exports at time t in equation (2).

$$Y_t = f(L_t\, K_t\, AE_t) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where AEt = Agricultural Export (Coffee, Pulse and Oil seed) at time "t"

As typical neoclassical growth model assumes Cobb-Douglas production function with exponential form, equation (2) can be rewritten as equation (3)

$$Y_t = A_t\left(L_t^{\alpha}, K_t^{\beta}, AE_t^{\delta}\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

Equation (3) is essentially based on the production function and extending this growth model to include Agricultural export indicator as an additional input, together with capital and labor force participation. Where, A in the model shows the level of technology utilized in the country which is assumed to be constant for this study. Hereafter, the model in equation (3) can be further extended by including, non-Agricultural export as determinant of economic growth as control variables along with consistent error term Ut as in equation (4).

$LRGDPt = \alpha_o + \alpha_1 AE_t + \alpha_2 LGCF_t + \alpha_3 FDI_t + \alpha_4 LCPI_{t} + ei$ -------------------4)

Where:

- LRGDPt = Logarithm of Growth of real GDPt,
- $LCPI_t$ = Logarithm of Consumer Price Index
- LFDIt = Logarithm of Foreign Direct Investment
- LAEt = Logarithm of Agricultural exports (*Coffee, Pulse and Oil seed)*
- LGCFt = Logarithm of Gross Capital Information
- e_i = Error terms

4. Result and Discussion

4.1 Descriptive Statistics

Table 1. Descriptive statistics of included variables

	RGDP	CX	OX	PX	GCF	FDI	CPI
Mean	2.13E+1	2.10E+09	8.97E+08	3.54E+08	1.23E+10	8.17E+08	94.07602
Median	2.93E+0	1.41E+09	4.35E+08	1.95E+08	8.81E+09	2.72E+08	42.27327
Maximum	1.10E+1	1.36E+10	5.28E+09	2.23E+09	3.38E+10	4.12E+09	319.0194
Minimum	1.25E+0	1.36E+08	383000.0	386000.0	5.38E+09	170000.0	18.53138
Std. Dev.	3.81E+1	2.59E+09	1.32E+09	5.06E+08	8.93E+09	1.28E+09	86.94247
Skewness	1.35126	3.025717	2.245928	2.472184	1.501324	1.824989	1.152830
Kurtosis	3.08880	13.43480	7.098027	8.463753	3.793241	4.852241	3.060767
Jarque-Bera	9.74874	194.0065	49.29413	72.39915	12.86018	19.54532	6.649701
Probability	0.00764	0.000000	0.000000	0.000000	0.001612	0.000057	0.035978
Sum	6.81E+1	6.73E+10	2.87E+10	1.13E+10	3.93E+11	2.29E+10	2822.281
Sum Sq. Dev.	4.50E+2	2.09E+20	5.43E+19	7.94E+18	2.47E+21	4.44E+19	219210.8
Observations	32	32	32	32	32	28	30

Source: Own computation from raw data by EView 10, 2022

Based on the above descriptive statistics taking into consideration that the normal skewness: 0; Mesokurtic: Kurtosis of 3, thus RGDP mirrors normal skewness and leptokurtic (because 3.08 > 3) implies that the RGDP has value above the sample mean and all other variables follow the same result.

JarqueBera: is the test statistic measure of difference of the skewness and kurtosis of the series with those from the normal distribution. Then the probability that a JarqueBera statistic exceeds (in absolute value) the observed value under the null-hypothesis – a small probability (<5%) value leads to the rejection of the null hypothesis of a normal distribution. H_o: For the JarqueBera, the distribution is normal for p-value > 5%. Based on the summary statistics the probability value of all variables is less than 5%, then the null hypothesis of normal distribution is rejected which need to transform into its logarithmic form. An average positive correlation between real growth domestic product and the explanatory variables. The correlation between the explanatory variables is very low. This shows the absence of multi-collinearity.

4.2 Econometric Result

Table 2. Results of Augmented Dickey Fuller and Philips-Perron Test of I (1).

Var.	**ADF testing at 1st difference, I (1)**			**PP testing at 1st difference, I (1)**		
	Intercept	Int. & trend	None	Intercept	Int. & trend	None
LGDP	-5.3590***	-5.4512***	-5.0538***	-5.3589***	-5.4581***	-5.0531***
LCX	-4.1367***	-4.3410**	-4.1547***	-4.1855***	-4.3332**	-4.2020***
LOX	-5.4099***	-5.4988***	-5.3718***	-5.4129***	-5.5182***	-5.3718***
LPX	-4.3348***	-4.8054***	-4.3024***	-4.2911***	-4.7609***	-4.3024***
LGCF	-5.2865**	-5.5379***	-3.5943***	-3.6143**	-5.8164***	-3.5979***
LCPI	-7.4337***	-7.2920***	-7.6058***	-12.445***	-12.894***	-12.910***
LFDI	-6.3472***	-6.1876***	-5.6650***	-6.6715***	-6.4902***	-6.3723***

Source: E-views 10 output, 2022

Mackinnon (1996) Critical Values

Mackinnon	Level	Intercept	Intercept and trend	None	Significance
Critical	1%	-3.661661	-4.284580	-2.641672	***
Values	5%	-2.960411	-3.562882	-1.952066	**
	10%	-2.619160	-3.215267	-1.610400	*

Source: Mackinnon (1996) Critical Values for unit root tests.

Every variable become stationary once they are first differenced. This indicates that none of the above variables are integrated of order two (I (2)), which is a pre-condition to use ARDL model. The unit root test result at both ADF and PP have shown I (1) order stationary except for Foreign Direct Investment (FDI) which is stationary at I (0) order, as a result, Auto-regressive Distributed Lag to Bound testing approach is the right

technique to apply in this scenario.

4.2 1 Long Run ARDL Result

Based on the confirmation obtained from the unit root test about the absence of a variable which is integrated of order two and given the F statistic result which indicated the existence of long run co-integration among the variables, it is now possible to proceed to the estimation of the long run coefficients of the model. The following table presents the results found after running the appropriate ARDL model to find out the long run coefficients. The figures in bracket are number of lags chosen by the model for each variable.

Table 3. Estimated Long Run Coefficients using the ARDL Approach

Levels Equation

Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	sig
LCX	0.344775	0.151098	2.281792	**
LOX	0.257820	0.112411	2.293547	**
LPX	0.356805	0.365215	0.976973	-
LGCF	1.483374	0.640332	2.316571	**
LCPI	1.896548	0.509274	3.724021	***
LFDI	0.341493	0.117075	2.916874	**

EC = LRGDP - 0.3448*LCX - 0.2578*LOX - 0.3568*LPX - 1.4834*LGCF - 1.8965*LCPI - 0.3415*LFDI)

Source: EViews 10, Own Computation, 2022.

Notes: ***, ** & * represent the probability value and significance at 1%, 5% and 10% respectively.

Coffee Export (CX) and Economic Growth (RGDP): The information presents COFX has a positive and statistically significant impact on long-run economic growth. The coefficient of coffee export is positive 0.34 saying that one percent increase in coffee export results in 0.34 percent increase in economic growth. The finding of this study is consistent with the work of [Gilbert N. 2013; Tigist Y. 2015 & Netsanet G. *et al.,* 2022] examined the impact of agricultural export on economic growth recognized that export of coffee has long run significant and positive impact on economic growth. To assure, the government try his best to motivate coffee production sector. Among these measures, establishment Ethiopian Coffee and Tea Authority (ECTA) is the outstanding. After its establishment, structural modifications were made in proper frameworks, tailbacks of the sector were identified to made coffee improvements. According to (Yishak, T., (2009) the evidence tells that progress in the sector holds coffee to remain as a principal source of hard currencies needed to finance domestic growth.

The Oilseed export (OX) and Economic growth (RGDP) result reveals that oilseed export has a positive and significant effect on economic growth of Ethiopia indicating a 1 percent increase in oilseed export results in 0.25 percent increase in economic growth and stands less elastic. Ethiopia has been significantly increasing its supply to world markets which 90 percent being sesame seed (Sindie & Selam, 2021).

Pulses export (PX) and Economic growth (RGDP): The finding reveal that pulse export has a positive and insignificant impact on economic growth in the long run in Ethiopia depicting a low productivity: low input usage, especially chemical fertilizers capable of increasing yields in field trials by 10 to 80 percent; limited availability of seed and limited familiarity with the variety of prevailing pulse categories, and; restricted practice of contemporary agronomic practices. In Ethiopia on experimental plots have revealed a production gap of at least 150% (Netherlands – African Business Council and FME-CWM, 2015). Advances in planting techniques through targeted investment and knowledge transfer could increase total pulse production and raise smallholder income by between 40% and 70% per hectare (Rashid, A. *et al*., 2010).

Gross Capital Formation (GCF) and Economic growth (RGDP): Gross capital formation is positive and strongly significant at 5% level in the long run. In fact, holding others' constant a 1% variation of physical capital leads to an increase of economic growth by 1.48%. The disintegration of this capital indicates a control of fixed and mobile assets. This physical capital spurs production via reduction in unexploited time and permitting standard goods and service availability. There are ongoing efforts in Ethiopia to provide a favorable framework or climate for private investments. For example, Ethiopia in 2019 revised her investment code with aim to attract more private investments (privatization). During creation enterprises are exempted from paying the VAT on imported equipment and other materials for import substitution. Additionally, capital formation makes a country autonomous and reduces the load of external debts. When a country borrows from a overseas country for an eras, it enforces a heavy drain on the promised generations. With every loan, the debt charges increase day by day which can rapidly reduce by levying more or/and higher taxes. Therefore, the problem of taxes increases and money flow out of the economy in the form of debt reimbursements. This implies that, capital formation brings freedom from foreign aids, reduces the burden of foreign debt and makes the country self-sufficient. Developing countries are volatile to the problem of balance of payments because they are leaded by export of fresh products like raw materials and agricultural products, and import almost all types of industrial, Simi industrial and capital goods. Domestic capital formation has potential solution to solve the problem of adverse balance of payment. By

establishing import substitution industries, the imports of manufactured goods and Sami-manufactured goods are reduced. Further, with the growing production of all types of consumer and capital goods the structure of export changes. Thus, capital formation benefits in resolving the delinquent of balance of payment (Yohannis B. K. 2022).

Foreign Direct Investment (FDI) and Economic Growth (RGDP): The estimated long run coefficient for foreign direct investment is significant at 5%, positive and robust result confirming a 1 percent increase in FDI will impact the output level by 0.34 percent taking other things unchanged. This result can be explained by the fact that FDI inflows is seen as an important source of savings and capital accumulation for Ethiopia, creating positive spillovers, improving human capital, providing access to advanced technologies and thus lead more economic growth (Christopher Malikane & Prosper Chitambara, 2017). This result is consistent with several past studies on FDI - growth nexus. (Gunby *et al.,* 2017). These authors, but using different methods and samples, come to a similar conclusion.

Consumer Price Index (CPI) and Economic Growth (RGDP): which is the indication of inflation; the estimated result of consumer price index in the long run is significant at 1% and positive impact on economic growth realizing that, a 1 percent increase in consumer price index reveal the economy to grow by 1.89%. According to (Lamambo A. G., 2017) Threshold level of inflation consistent for the economic growth was investigated for the same period, found a threshold of 12% which is beneficial for Ethiopian economic growth. This finding shows that 12% of inflation rate is beneficial for the Ethiopian economic growth and it suggested that 12% threshold level of inflation was consistent for the Ethiopian economic growth; inflation rates below this base do not have as much significant effect on economic growth.

Long run model: the parenthesis represents t-statistics

LRGDP = -8.4 + 0.3448*LCX + 0.2578*LOX + 0.3568*LPX + 1.4834*LGCF +1.8965*LCPI +
(-1.53) (2.28) (2.29**) (0.97) (2.31**) (2.72***)**
0.3415*LFDI
(2.91)**

4.2.2 Error Correction Model

The next step that follows from the estimation of the long run coefficients is the estimation of error correction model which is the error correction representation of the long run model. This representation shows the short run dynamics of the model along with the equilibrium of the model. Theoretically, the ECM term indicates the speed of adjustment to restore equilibrium in the dynamic model and the coefficient of the ECM which should be both negative and statistically significant, shows how quickly the dependent variable converge to equilibrium without losing its long run information (Shrestha, M. B. and Chowdhury, K., 2005).

Table 4. Error Correction Representation for the Selected ARDL Model

ECM Regression				
Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	sig
C	-8.406526	0.914062	-9.196890	***
D(LRGDP(-1))	0.286153	0.081202	3.523970	***
D(LCX)	0.286153	0.131573	2.174861	**
D(LOX)	0.457334	0.092974	4.918943	***
D(LPX)	0.458308	0.082170	5.577536	***
D(LPX(-1))	0.104812	0.064899	1.614993	-
D(LGCF)	1.229948	0.690331	1.781679	*
D(LCPI)	0.095794	0.114368	0.837595	
D(LCPI(-1))	-1.311084	0.194893	-6.727180	***
D(LFDI)	0.430612	0.067149	6.412731	***
CointEq(-1)*	-0.829156	0.089396	-9.275038	***
R-squared	0.885875	Mean dependent var		0.098102
Adjusted R-squared	0.842398	S.D. dependent var		0.350028
S.E. of regression	0.138958	Akaike info criterion		-0.865969
F-statistic	20.37603	Durbin-Watson stat		2.085146
Prob(F-statistic)	0.000000			

Source: own computation by EViews 11

Notes: *, ** & *** indicates that the series are significant at 10, 5 and 1 percent, respectively.

The coefficient of the lagged error-correction term is significant at 1% significant level with the expected sign (i.e., Negative), which confirms the result of the bounds test for co-integration. Its value is found -0.82 which implies that the speed of adjustment to equilibrium after a shock is high. Approximately 82 % of disequilibria of the previous year shock converge back to the long-run equilibrium in the current year. Such highly significant Error correction term is another proof for the existence of a stable, long-run relationship among the variables

(Shrestha, M. B. and Chowdhury, K., 2005). Utmost of the results are comparable in both short-run and long-run. **Agricultural Export and economic growth in short run**: Regarding the relationship between real gross domestic product and agricultural exports, some previous studies found a positive and significant relationship (Abebe Cheffo, 2020).

4.3 Conclusions

Agricultural exports trends in Ethiopia have shown increasing patterns over time. The results of the long run showed a positive and significant relation between coffee export and economic growth. Similarly a positive and significant result is set up between oilseed export and economic growth in Ethiopia and a positive but irrelevant relationship is found amid pulse export and economic growth. As concerns with the control variables, gross capital formation has a positive and significant impact on economic growth. It is peer revealed that foreign direct investment has a positive and significant effect on real GDP. And the consumer price index shows positive significance between them.

The result of error correction mechanism shows the fair speed of adjustment for the short run disequilibrium which is 82 percent and the corresponding short run coefficient of the variables revealed the positive and significant relationship between coffee export, oilseed export, and pulse export and economic growth was observed. The negative magnitude of the error correction term implies that 82 percent of the deviations caused by previous year shocks converge back to the long-run equilibrium in the current year which can take approximately a year and half. The fairly speed of adjustment could be related to the emphasis given to the export growth and expansion policies by government and other favorable conditions.

4.4 Recommendations

The lack of empirical or private evidence linking agrarian export to growth is anticipated to initiate scholars or policymakers to review their views of export led growth and move toward a further genuine understanding of its effect. Indeed, the significant relationship between the variables can help the Ethiopian government to make interesting economic policies over the short- run and long- run profitable adjustment.

To increase the value of coffee export, oil seed export and pulse export on profitable growth, a determinant effort suggested be directed toward productivity channels of agrarian export through mechanized adventure of agrarian product with particular case of exported agrarian product. ultramodern product technologies of coffee adoption is useful to upgrade the traditional styles presently used and encouraging large marketable farms through furnishing new implicit land and administering the perpetration of different export incentives given for the exporters.

The impact of oilseed export on profitable growth of Ethiopia will increase if the stakeholders concentrate towards the productive channels and product value add to increase the export effect on economic growth. Since pulse product provides protein, it's an important part of foreign earnings. The Government of Ethiopia is keen to expand contract husbandry between companies and directors as an important commercialization instrument to enhance export earnings, knowledge transfer and food security.

As gross capital formation and foreign direct investment have positive impact in long- run growth in Ethiopia, increase in capital is one of the keys to sustain growth. This can conceivably be done especially by investment in land advancements, factory, ministry, road construction, railroads, seminaries, hospitals, domestic houses, marketable structures through its multiplier effect from disbursement on stock of capital. Likewise, attracting foreign and original investments to an economy, insure investors' confidence through continued macroeconomic stability, investor protection to insure further growth.

Data Availability

The data used for this article will be available up on the request.

Conflicts of Interest

The authors are interested for this publication and no conflict of in tersest.

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References

Sindie & Selam (2021): Agricultural Export and Economic Growth Nexus: A Case Study of Ethiopia: *International journal of Rural Development, Environment and Health Research (IJREH):* 5(2), ISSN: 2456-8678; DOI: dx.doi.org/10.22161/ijreh.5.2.1, 2021

Ashenafi & Getaneh (2014) Export Trade Incentives and Export Growth Nexus: Evidence from Ethiopia. *British Journal of Economics, Management & Trade* 4(1): 111-128, 2014

Netsanet Gizaw, Jemal Abafita & Tesfaye Melaku Merra | (2022) Impact of coffee exports on economic growth in Ethiopia; An empirical investigation, *Cogent Economics & Finance*, 10:1, 2041260, DOI: 10.1080/23322039.2022.2041260

Sineenat Sermcheep, 2019. "Services Export and Economic Growth in ASEAN Countries," *Journal of Asian Economic Integration*, 1(2), p 163-182.

Samen, S. (2010), A Primer on Export Diversification: Key Concepts, Theoretical Underpinnings and Empirical Evidence. Growth and Crisis Unit, World Bank, Washington DC.

Yifru, Tigist, 2015. "Impact Of Agricultural Exports On Economic Growth In Ethiopia: The Case Of Coffee, Oilseed And Pulses," Research Theses, Collaborative Master's Program in Agricultural and Applied Economics. DOI: 10.22004/ag.econ.265676

Sindie & Selam: Agricultural Export and Economic Growth Nexus: A Case Study of Ethiopia: *International journal of Rural Development, Environment and Health Research (IJREH):* 5(2), ISSN: 2456-8678; DOI: dx.doi.org/10.22161/ijreh.5.2.1, 2021

Agénor, P.-R. & Montiel, P.J. (1996) Development Macroeconomics. Princeton University Press, Princeton, NJ.

Salvadori, N. (2003). The Theory of Economic Growth.

SANJUAN-LOPEZ, A. I. & DAWSON, P. J., 2010. Agricultural exports and economic growth in developing countries: a panel co-integration approach. *Journal of Agricultural Economics*, 61(3), 565–583.

Gilbert, N., S. Linyong and G. Divine, 2013. Impact of agricultural exports on economic growth in Cameroon: Case of banana, coffee and cocoa. *International Journal of Business and Management Review*, 1(1): 44-71.

KANG, H. 2015. Agricultural exports and economic growth: Empirical evidence from the major rice exporting countries. *Agricultural Economics – Czech*, 61(2): 81–87

Uremadu, S. O., & Onyele, K. O. (2016). The impact of selected agricultural exports on the growth of the domestic economy. *Academia Journal of Agricultural Research*, *4*(5), 281–291

Oluwatoyese, O. P., Applanaidu, S., Abdul-Razak, N. 2016. Agricultural Export, Oil Export
and Economic Growth in Nigeria: Multivariate Co-integration Approach. International Journal of Environmental & Agriculture Research (IJOEAR), Vol. 2, Issue. 2, pp. 64-72

M. Saqip and Q. \Xin (2017), Determinants of Export Competitiveness: An Empirical Analysis through Revealed Comparative Advantage of External Sector of Pakistan: *Asian Economic and Financial Review,* Vol, 6, No 3, 623 – 633.

Faridi, M.Z. (2012) Contribution of Agricultural Exports to Economic Growth in Pakistan. *Pakistan Journal of Commerce & Social Sciences*, 32, 133-146.

Siaw, A., Jiang, Y., Pickson, R. and Dunya, R. (2018) Agricultural Exports and Economic Growth: A Disaggregated Analysis for Ghana. *Theoretical Economics Letters*, **8**, 2251-2270. doi: 10.4236/tel.2018.811147.

Yishak, T. (2009). DETERMINANTS OF ETHIOPIA'S EXPORT PERFORMANCE: AGRAVITY MODEL ANALYSIS. *Trade and development.* Munic, Germany: BKP DEVELOPMENT RESEARCH & CONSULTING GMBH.

Rashid, A.; De Zoysa, A.; Lodh, S.; and Rudkin, K., Board Composition and Firm Performance:
Evidence from Bangladesh, *Australasian Accounting Business and Finance Journal*, 4(1), 2010, 76-95.
Available at:http://ro.uow.edu.au/aabfj/vol4/iss1/5

Yohannis Bekele kemiso, (2022): Capital Inflow Nexus Growth in Ethiopia: Evidence from ARDL, ECM Testing Approach. *Global Scientific Journal*, 10(1), ISSN 2320-9186, 2022

Christopher Malikane & Prosper Chitambara, 2017. "Foreign Direct Investment, Democracy and Economic Growth in Southern Africa," African Development Review, African Development Bank, vol. 29(1), pages 92-102

Gunby, Philip & Jin, Yinghua & Robert Reed, W., 2017. "Did FDI Really Cause Chinese Economic Growth? A Meta-Analysis," World Development, Elsevier, vol. 90(C), pages 242-255.

Lamambo Arega Gashe (2017) relationship between saving, inflation and economic growth in Ethiopia, *Journal of human social Science, Economic*, 17(4)

Shrestha, M. B. and Chowdhury, K., ARDL Modelling Approach to Testing the Financial Liberalization Hypothesis, Department of Economics, University of Wollongong, 2005. https://ro.uow.edu.au/commwkpapers/121

Wondesen Teshome Bekele and Fekadu Gelaw Mersha, (2019), A Dynamic Panel Gravity Model Application on the Determinant Factors of Ethiopia's Coffee Export Performance, *Annals of Data Science*, **6**, (4), 787-806

Abebe Cheffo (2020). Export Performance of Spice Crops and Its Determinants in Ethiopia: VECM Analysis. 11(3)