

Performance of Sectors' Export and Their Effects on Economic Growth in Ethiopia: (Disaggregate Approach)

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Abstract

In numerous trade theories; economist argue export orientation boosts total productivity and output growth through its sympathetic effect on the efficiency of resource allocation, capacity utilization, economies of scale and technological advancement. But some other state that the effects of export varies country to country and items to items depending on the level of development. Having these and others arguments in mind, the performance as well as the short run and long run effects of disaggregate export on Ethiopian economic growth mainly designed in advance. To this end, the 41 years data has been collected from different sources and analyzed using both descriptive and econometric techniques. The findings of descriptive analysis reveal the performance of agriculture and service exports have been improved in amid 1992/93 and 2014/15. In particular it is portrayed that the unprecedented service export has been leading the export sector throughout post reform period. Conversely, with minor improvement; the performance industry export has been poor throughout the study period. Likewise the result of VECM model reveals; in the long run all sectors' export significantly affect economic growth and in the short run their individual contribution is insignificant to the economy. In sum albeit the short run contribution of each disaggregate export to economic growth is insignificant, since their donation is significant in the long run; indispensable measure should be taken to develop export in general and each disaggregate export in particular.

Key words: disaggregate export, economic growth and VECM model

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1. INTRODUCTION

Countries' economic growth influenced by enormous variables, among these variables, as to many economist because export orientation scale-up total productivity through its sympathetic effect on the efficiency of resource allocation, capacity utilization, economies of scale and technological advancement, export affect the growth of economies both in developing and developed countries.

Albeit export trade highly believed to play critical role in promoting economic growth of countries, since a number of developing counties import industrial product while they rely on very few agriculture product exports and also since the income sensitivity of demand for these products are reasonably lower than imported industrial products, majorities of developing countries; due to excess import payment over earnings from export, experience deficit on their current account balance. As a result, according to Todar (2006) the export potential of a good number of developing countries has been relatively puny compared with export performance of the developed countries.

This is true when one analyzes about the performance of export and its relation with output growth in Ethiopia. For the past decades the country merchandise export depended highly on these three major agricultural products: coffee, oilseed and chat which are basically income inelastic and have unstable price in the international market. In other word the country has been exporting large volume of less value merchandise items however, even in recent year, earned approximately not more than two billion dollars which is below 3.6 billion US dollar cocoa export revenue in Ivory Coast. Likewise in spite of huge service export potential in Ethiopia surprisingly the overall service export revenue of the country is not exceeding three billion US dollar which is also much below more than 9 billion US dollar tourism export revenue in Egypt. But conversely the country used to import less volume of high value industrial products and with many development programs; has a plan for importing intermediate capital goods and hence the trade balance of the country getting deteriorated time to time.

Loosely speaking Ethiopia's trade balance has always remained unfavorable and its unpleasantness has been also increasing significantly, according to Wondaferahu (2013) although Ethiopia's total exports have been mounting at an average rate of 15.23 percent during the year 1970/71 to 2010/11 the sector is evidenced by lower export to GDP ratio and declining share of export in import financing. For instance the exports of goods in Ethiopia are merely about 7 percent of GDP, compared to an average of near 30 percent of GDP in sub- Sahara Africa. With regard to share of world export Ethiopia's share in total world export despite experiencing linear average increasing trend of about 7 percent annually from 2000 to 2011 still it is very low, equal to 0.014 percent in 2011 Alemayehu (2015).

To address the problems of export sector and strengthen the role of export on output growth, though a few

number of studies exists regarding the effect of export on economic growth in Ethiopia almost all of them focused merely on the aggregate export and even those who tried to show at disaggregate level stressed on the impact of a single sector export on output growth. But this kind of arguments heavily uncovered for major shortcomings of aggregation and single line arguments. Thus bearing these shortcomings and fill the gap in mind; this is work undertaken over the effect of disaggregate export on economic growth in Ethiopia.

2. LITERATURE REVIEW

2.1. Theoretical review

In the late seventeenth century Mercantilism had came up with ``commercial revolution`` which was one of typical explanation of mercantilism thought. And this philosophy of mercantilism strongly suggests that if a country wants gain from the international trade, it should promote the export performance and limited import. This would have a positive gain for the country to scale up production and productivity Thus, according to Mercantilism's trade theory thought if country enjoyed a positive trade balance or increase wealth or export over import. This positive trade balance amass a number of precious metals, gold and silver, which mean more army, strong navy , expansion of colonies, more raw materials for the production of export ,low unemployment and better GDP growth. . (Ajami, 2006)

Conversely classical economist argued that increasing specialization and the division of labor, coupled with international exchange, would contribute to raise welfare and growth of a nation. It can be deduced that Smith saw international trade as a welfare-enhancing mechanism: the division of labor required people exchanging goods and services. Higher levels of trade would imply more specialization – division of labor- and by these means, economic growth would be enhanced. And also David Ricardo's two countries-two goods-one factor of production example proposes gains from trade and specialization for the countries involved, even when one of the countries is more efficient in the production of both goods. That is pattern of trade, being determined by comparative advantage, increases welfare in both nations by means of improvements in production and consumption efficiency (Van den and Lewer, 2007).

Similarly the standard Heckscher-Ohlin model proposes that trade enhances welfare for the nations engaged in trade, considering that countries realize higher levels of aggregated utility as compared to autarky. Aggregate welfare gains from free trade are classified into two distinct effects; namely, production efficiency gains and consumption efficiency gains And based on, general equilibrium model with one single factor of production (labor) and economies of scale internal to the firm, imperfect competition assuming n different goods and consumers' taste for variety- the so-called New Trade Theory shows trade as beneficial, since it increases market size (Krugman and Obstfeld, 2006).

2.2. Empirical Review

(Balassa, 1978) it argued that in a usual production function framework, capital and labors are the main determinants of economic growth. However, this neglects the fact that 'export orientation raises total productivity through its favorable effect on the efficiency of resource allocation, capacity utilization, economies of scale and technological change and hence the need to include export within this production-type framework. The study found that the 'rate of growth of exports importantly affected the rate of economic growth.

Begum and Shamsuddin (1998), investigate the impact of exports on economic growth for the period 1961-92 using a two sector growth model. The key finding of their study is that export growth has significantly increased economic growth of the country through its positive impact on total factor productivity.

Sanjuan-Lopez and Dawson (2010) estimated the contribution of agricultural exports to economic growth in developing countries. They estimated the relationship between Gross Domestic Product and agrarian and non agrarian exports. The results of the study indicated that there existed long run relationship and the agriculture export elasticity of GDP was 0.07. The non agriculture export elasticity of GDP was 0.13. Based on the empirical results, the study suggested that the poor countries should adopt balanced export promotion policies but the rich countries might attain high economic growth from non agricultural exports.

Ugwuegbe S. And Uruakpa (2013) examined the impact of disaggregate export on economic growth in Nigeria, by employing annual time series data from 1986-2011. The result reviles that both oil and non oil export positively and significantly affect economic growth in Nigeria.

Gilber, Linyong and Divine (2013) explore the contribution of agricultural exports to economic growth in Cameroon for the period 1975-2009. 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.

Ijirshar (2015) investigate the impact of agriculture exports on economic growth in Nigeria using error correction model and consisting annual data for the period 1970-2012. The key finding of their study is that agriculture export growth has positively contributed to economic growth of the country through its positive impact on total factor productivity

3. RESEARCH METHODOLOGY

3.1. Type and Source of Data

This study considered 41 years time series secondary data. The main source of these data are National Bank of Ethiopia (NBE), Ethiopia Revenue and Custom Authority (ERCA), Central Statistics of Authority (CSA), Ministry Finance and Economic development (MoFED) and World Bank (WB) countries development indicators Data base.

3.2. Methods of Data Analysis

The analytical framework of this work consist both descriptive and empirical ingredient. In the descriptive analysis part the trends of real GDP and the performances of disaggregate exports analyzed through employing some descriptive statistical analysis methods, in particular measures of location employed. In the econometrics section, multivariate regressions analysis of co-integration VAR model has been employed. This is because the co-integrated VAR model has gained reputation in recent empirical research for a number of reasons for instance (i) the effortlessness and relevance in analyzing time-series data, and (ii) the ability to guarantee stationarity and to make available the extra channels through which both the short run and long run effect could be detected when two variables are co-integrated.

3.3. Model specification

To examine the effect of export on economic growth some theoretical models considered in this study. First the neoclassical growth model with two factor production functions, capital and labor as determinants of output imitated as follows.

$$Y = Af(K, L) \text{-----} (1)$$

Where Y is aggregate real output, K and L represent capital and labor, respectively and A is exogenously determined level of technology.

The second theoretical base which considered in this work is the neo-classical growth model which modified and suggested by (Balassa, 1978) as follow.

$$Y = A f(L, K, X) \text{-----} (2)$$

Where Y is aggregate real output, K and L represent capital, labor and export respectively.

Finally, the model that used in this study is the adopted Ugwuegbe and Uruakpa (2013) imperfect substitution model which is expressed as follows:

$$RGDP_t = f(RAEXP_t, RIEXP_t, RSEXP_t, RIMP_t, IR_t, dummy) \text{-----} (3)$$

And equation 7 log-linear-zeds as follow:

$$LRGDP_t = \beta_0 + \beta_1 LRAEXP_t + \beta_2 LRIEXP_t + \beta_3 LRSEXP_t + \beta_4 LRIMP_t + \beta_5 LCPI_t + \beta_6 dummy + e_t \text{-----} (4)$$

Where, LRGDP = Real GDP at time t in log form is the dependent variable.

LRAEXP = Real Agricultural Export at time t in log form is independent variable

LRIEXP = Real industry Export at time t in log form is independent variable

LRSEXP = Real Service Export at time t in log form is independent variable

LRIMP = Real import of goods and service at time t in log form is independent variable

LIR = inflation rate at time t is independent variable

Dummy = proxy variable for political stability

β_0 is intercept parameter

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are slope parameters

e_t is error term

3.4. Estimation Technique

The major econometric techniques which employed in this research are; stationarity test, co-integration test and diagnosis tests

3.4.1. Stationary test

Stationarity in time-series data refers to a stochastic time series that has three characteristics, as described. First, a variable over time has a constant mean. Second, the variance of a variable over time is constant. Third, the covariance between any two time periods is correlated. If one or more of these criteria is violated, then the data generating process of the time-series data is a non-stationary series (Gujarati, 1995).

A series may be difference or trend stationary. A difference stationary series becomes stationary after successive differencing while a trend stationary series becomes stationary after deducting an estimated constant and a trend from it. There are many tests for examining the existence of unit root problem. As the error term is unlikely to be white noise, Dickey and Fuller have extended their testing procedure suggesting an augmented version of the test that incorporates additional lagged term of dependent variable in order to solve the autocorrelation problem.

If the series is non stationary at level form, then, the test is carried out successively on the differenced series until it becomes stationary. The order of integration is then established. The test has variants as below:

- With drift and trend
- With drift and no trend and

$$\Delta y_t = \delta_0 + \delta_1 y_{t-1} + \sum_{i=1}^p \theta_i \Delta y_{t-i} + \varepsilon_t \text{----- (5)}$$

$$\Delta y_t = \delta_1 y_{t-1} + \sum_{i=1}^p \theta_i \Delta y_{t-1} + \varepsilon_t \text{----- (6)}$$

Where, δ_0 and t are the constant and the time trend, respectively. The ADF test assumes that the errors are statistically independent and have a constant variance. Thus, an error term should be uncorrelated with the others, and has a constant variance. The test is first carried out with a constant and trend on the variable in level form. Secondly, it is carried out with a constant only and finally without constant or trend, on the differenced variable depending on which was significant in the level form. Then

- If the ADF test statistic is greater than the critical value, then the series is stationary.
- If the ADF statistic is less than the critical value, the series is non-stationary.

3.4.2. Optimal Lag Specification

There are two approaches for the determination of optimal lag length: Cross-equation restrictions and Information criteria. Cross-equation restrictions deal either about general to specific procedure or vice versa to determine the optimal lag length. This means estimating the VAR model for a maximum number of lags, then reducing down by re-estimating the model for one lag less until it reaches zero lag.

Alternatively information criterion focus choosing the lag length that minimizes the value of the information criteria such as (LR), the Final Prediction Error (FPE), the Akaike Information Criterion (AIC), the Schwarz Information Criterion (SIC), and the Hannan Quinn Information Criterion (HQ) are appropriate for the examination of finite lag order VAR model. Usually, the model with the smallest, AIC or SIC values are preferred.

3.4.3. Co-integration Test

Co integration is the statistical implication of the existence of long run relationship between the variables which are individually non-stationary at their level form but stationary after difference (Gujarati, 1995)). The theory of co-integration can therefore be used to study series that are non stationary but a linear combination of which is stationary. Two main procedures can be used to test for co-integration: The Engle and Granger (1987) test and the Johansen (1988) co-integration test. Johansen procedure of co integration gives two statistics. These are the value of LR test based on the maximum Eigen – value and on the trace value of the stochastic matrix. The Johansen test uses the likelihood ratio to test for co-integration. The decision rule compares the likelihood ratio to the critical value for a hypothesized number of co-integrating relationships. If the likelihood ratio is greater than the critical value, the hypothesis of co-integration is accepted. Alternatively the Engle and 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.

When we have more than one endogenous variable, no longer need to talk of ECM but VECM. The Vector error correction model follows the observation by (Engel and Granger, 1987) that a group of co-integrated variables can be expressed as a Vector error correction model in which all the variables are stationary at I(1). This model can be estimated using the ordinary least squares procedure without risk of spurious correlation. Also, the coefficient of the lagged residual of the long-run co-integrating equation referred to as the error correction term can be used as evidence of the existence of a short-run relationship between the variables. A negative error correction coefficient provides ample evidence of the existence of a long-run relationship. The size of the error correction coefficient determines the speed of adjustment towards equilibrium.

In this study, the VECM estimated as follows;

$$\Delta \text{LRGDP}_t = \beta_0 + \beta_1 \Delta \text{LRAEXP}_t + \beta_2 \Delta \text{LRIEXP}_t + \beta_3 \Delta \text{LRSEXP}_t + \beta_4 \Delta \text{LRIMP}_t + \alpha \varepsilon_{t-1} \text{----- (13)}$$

Where, Δ L represents the change in natural logarithm of the variable, for example ΔLRGDP_t is the change in natural logarithm of real gross domestic product β_0 is the constant term, β_1 , β_2 , β_3 and β_4 parameters of the independent variables and ε_t stochastic error term ε_{t-1} , lag of the residual term representing short run disequilibrium adjustments of the estimates of the long run equilibrium error, α is the coefficient of the error correction term.

And the alternative hypothesis of the existence of a long-run relationship between the dependent and the independent variables, defined;

$$H_0: \beta_1 = \beta_2 = \beta_3 = 0$$

As against $H_1: \beta_1 = \beta_2 = \beta_3 \neq 0$

The decision rule is that if the p-value is less than the chosen α with 5% level of significance, we accept H_1 , meaning the coefficients of the dependent variables are statistically significant and different from zero. But if the p-value is greater than the chosen, we reject H_1 , meaning the coefficients of the dependent variables are statistically insignificant and equal to zero

4. RESULT AND DISCUSSION

4.1. Descriptive Result and Discussion

Disaggregate export performance analysis

As you can see from figure 2 below, agriculture export throughout the study period significantly surpassed industrial export and dominated the merchandise export. In 1974/75 in absolute term the real value of agriculture export was 57.76 mill ETB and this number reached to 289.9 mill ETB in 2014/15 with an average growth rate of 10.8 percent between 1974/75 and 2014/15. More specifically from 1974/75 to 1983/84 real value of agricultural export grew by 2.26 percent and then went-down by 16.97 percent on average from 1984/85 to 1991/1992 and soon after the reform program recovery on the real earning agriculture export witnessed and hence from 1992/93 to 2015 real revenue from agriculture export grew by 23.82 percent on average.

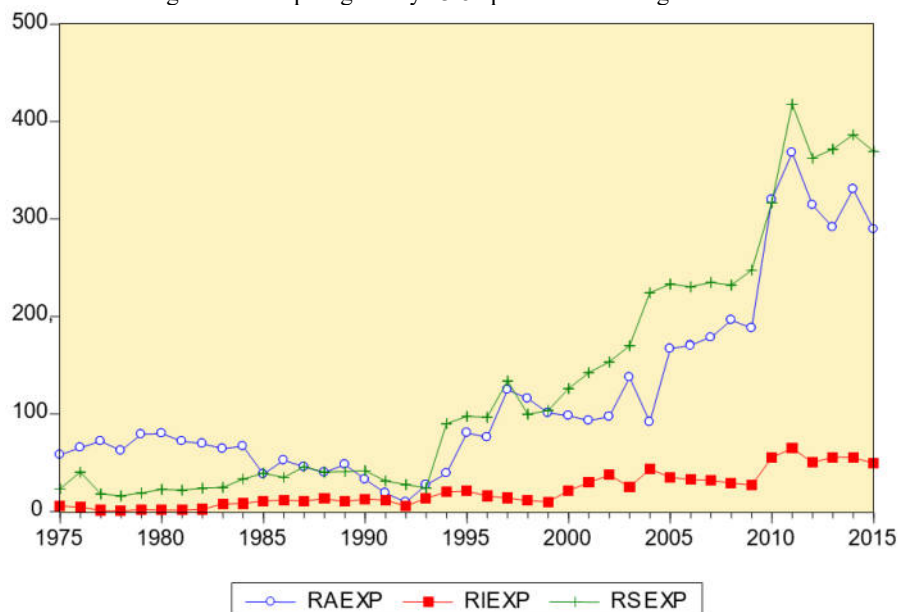


Figure 1: Trends of disaggregate export during 1974/75 to 2014/15 (in millions birr)

Source: Own calculation based on various year NBE, ERCA and World Bank data

Regarding industry and service export figure 2 also clearly show except some years, the improvement in the real value of the two exports observed during the study period. Despite fluctuation exist between maximum real value of 65.32 million ETB and 418.4 million ETB in 2010/11 and minimum real value of 1.05 million and 16.45 million ETB in 1978 FY in the two exports, from 1974/75 to 20/4/15 real earning of industrial and service Export grew by 16.14 and 12.59 percent respectively on average (See figure 2).

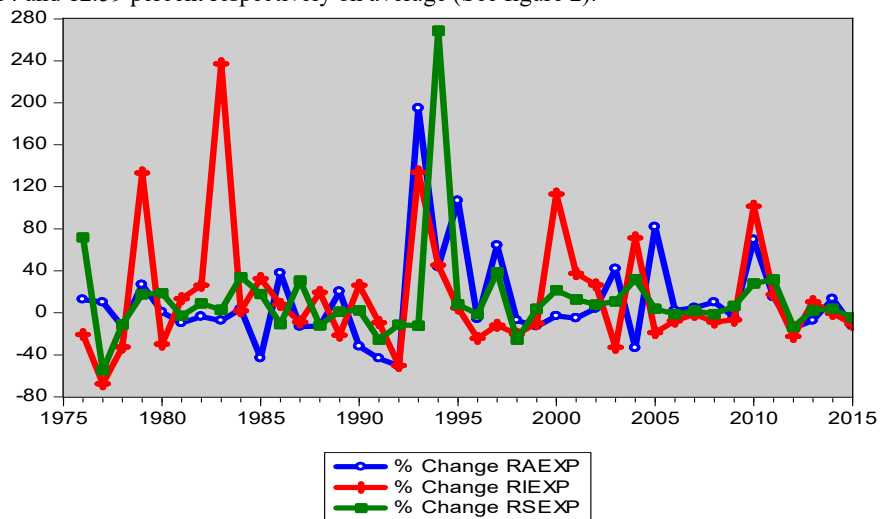


Figure 2: Percentage change in disaggregate export

Source: Own computation based on various years data from NBE, ERCA and World Bank

Looked in detail, during 1974/75 to 1991/92 the values of real industrial and service export grew by 15.23 and 4.65 percent on average respectively and following the reform real value of service export surprising scaled up by 18.45 percent on average from 1992/93 to 2014/15 but the growth rate in the real value of industrial export has not witnessed significant change it grew by 16.81 percent on average since 1992/93 onwards annually.

Compared the average growth rate of disaggregate export and real GDP during 1974/75 to 1991/92 with the periods 1992/93 to 2014/15 in the later periods real GDP, real agriculture export, real service export and industrial export signified average growth rate of 6.4 percent, 30.6 percent, 10.6 percent and 1.6 percent more than the former periods.

Disaggregate export to Real GDP Ratios

During the period under consideration real disaggregate export¹ to GDP ratio has been fluctuating time to time. Despite of fluctuations in the share of real agriculture, industry and service export to real GDP, tremendous improvements observed during the study period. For instance 1974/75 to 1991/92 average percentage share of real agriculture and industrial export to real GDP were 4.69 percent and 0.58 percent respectively. However, during the period from 1992/93 up to 2014/15 due to the abolishment of export tariff, provision of incentives to export oriented business in particular and the introduction of export promotion and diversification strategy in general, the percentage share of real agriculture and industrial export to real GDP improved to 5.08 percent and 1.6 percent on average respectively.

Regarding the percentage share of service export to real GDP, 6.49 percent average annual share to GDP registered during the period 1992/93 to 2014/15. As compare to 2.56 average annual percentage share to real GDP during 1974/75 to 1991/92 significant improvement also observed in the percentage share of real service export to real GDP. In general from 1974/75 to 2014/15 on average real agriculture, industry and service export accounts for 5 percent, 0.85 percent and 4.76 percent of GDP respectively.

Concerning the rate of change in the real agriculture, industry and service export to real GDP ratios, the percentage share of agriculture export to GDP significantly down by 8.6 percent during the period from 1979/75 to 1991/92 on average. However, during the same period the percentage share of industrial and service export to GDP grew by 12.36 percent and 3.31 percent on average respectively. Looking in detail the 3.31 percent growth rate in the share of service export to GDP tangibly changed to 10.4 percent annual average growth rate during 1992/93 to 2014/15 and similarly growth rate of agriculture export share to GDP highly improved to 14.78 percent average growth rate during the same period. However, relative to 12.36 percent average growth rate post 1992/93 industrial export share to GDP grew by 7.93 percent on average during 1992/93 to 2014/15.

Shares of agriculture and industry Exports to merchandise export

Though agriculture export contributes paramount to total merchandise export, as figure 3 shows it has been slowly declining and fluctuating over time during the concerned period. From 1974/75 up to 1983/84 on average the share of agriculture export to merchandize export was 94.6 percent, it went down to 73.5 percent during 1984/85-1991/92. After while its share reversed and scaled-up to 81.1 percent on average during 1991/92-2014/15. Whereas the share of industry export to merchandise export had been small and largely depends up on the share of agriculture export, but except in some years its share has been improving 1984/85 on ward. For instance from 1974/75 to 1984/85 the share of industrial export to total merchandise export was 5.4 percent on average however during 1984/85 to 2014/15 tremendously improved to 20.3 percent on average, showing 275.93 per cent growth rate.

¹ The terms disaggregate export used in this study to refer sectoral export i.e. the exports of agriculture, industry and service sector.

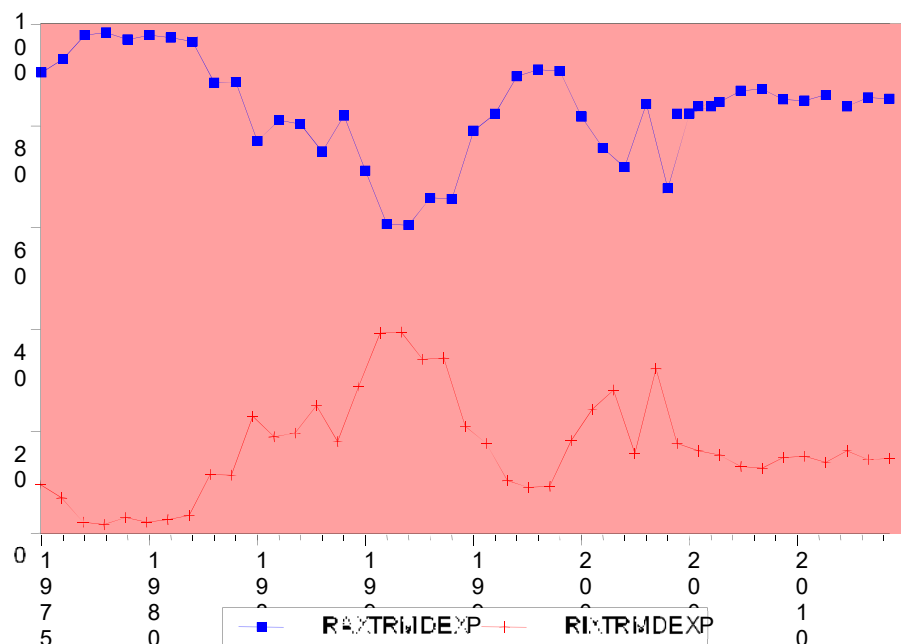


Figure 3: Percentage share of agriculture and industry export to merchandise export

Figure 4 on the other hand shows from 1974/75 to 2014/15 the share of agriculture export to total merchandise export with ups and downs dominated and controlled merchandise export with 83.3 percent average share and industrial export distantly go after with 16.7 percent average share slowly behind the share of agriculture export.

Means

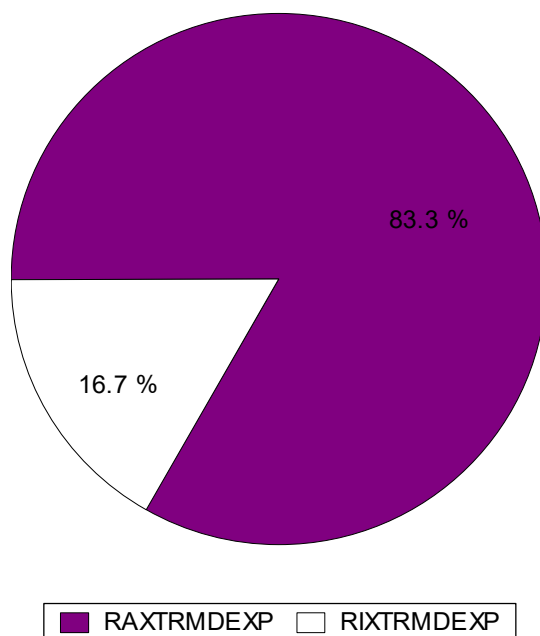


Figure 4: average shares of agriculture and industry export to merchandise export from 1974/75-2014/15

Source: Own calculation based on various year data from NBE and ERCA

Shares of agriculture, Industry and service export to total goods and service export

As indicated in figure 5 the share of agriculture export to aggregate goods and service export fluctuate between 78 percent and 21 percent. From 1974/75 to 1991/92 the average contribution of agriculture export to aggregate export was 57.12 percent but during the same period its average share went down by 5.1 percent annually. Nonetheless, in spite of 6.1 percent average growth from 1992/93 to 2014/15 agriculture contributes 40 percent to aggregate

export on average.

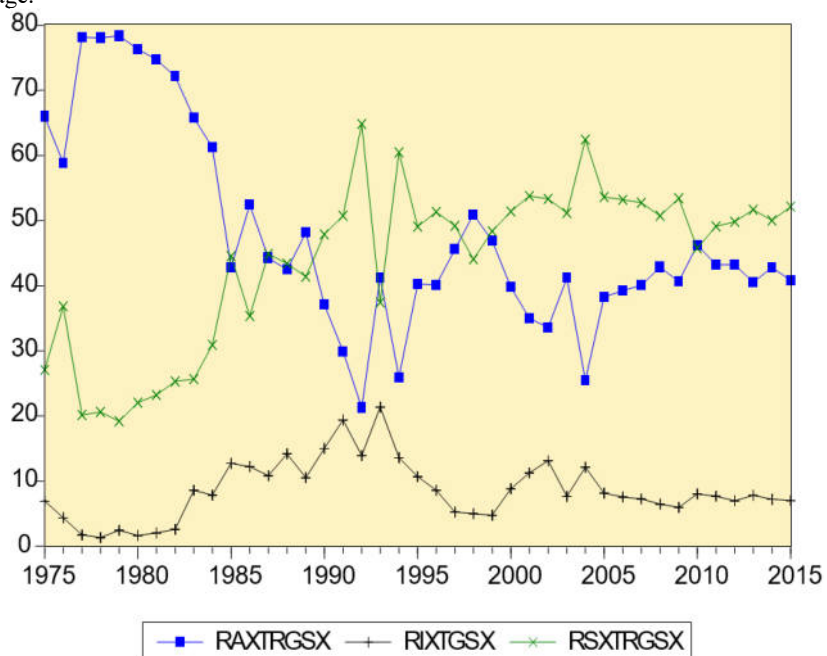


Figure 5: % shares of agriculture, industry and service export to aggregate export
 Source: Own calculation based on various years data from NBE, ERCA and World Bank

As to the share of service and industry export to the aggregate export, their share fluctuate between minimum values of 19 percent and 7 percent and maximum values of 65 percent and 21 percent respectively during the study period. More specifically, their share were 27 percent and 7 percent respectively in 1974/75, it reached to 65 percent in 1991/92 and 21 percent in 1992/93 respectively and at the end of 2014/15 moved back to 52 percent and 7 percent respectively.

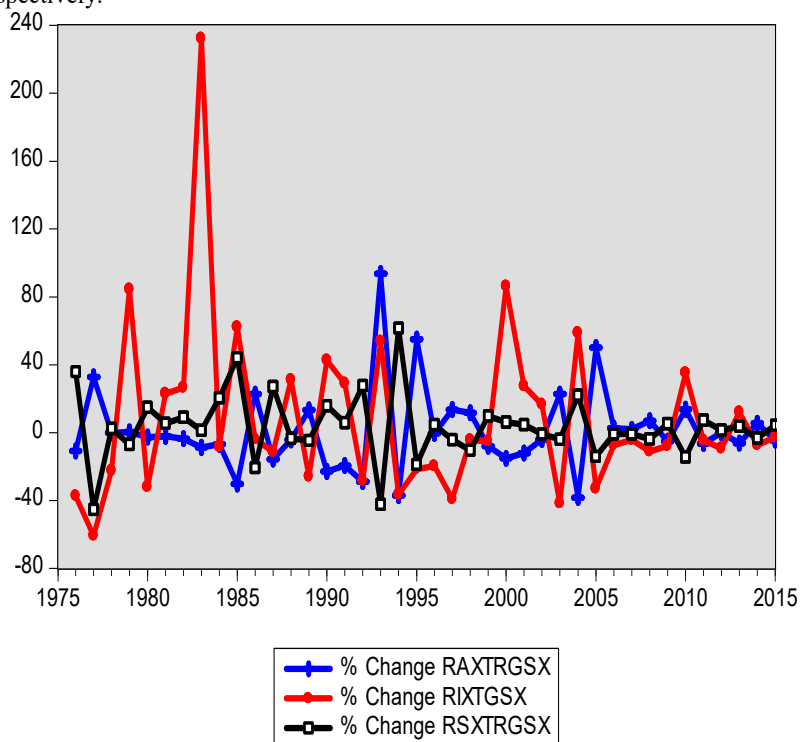


Figure 6: growth rate of agriculture, service and industry export share to aggregate export
 Source: Own calculation of data from NBE, ERCA and World Bank data

Figure 8 shows, from 1974/75-1991/92, the contribution of service export to aggregate export and its share growth rate averaged at 34.7 percent and 7.6 percent respectively. However, from the period 1991/92 to 2014/15 even though the growth rate of service export share on average grew by 0.57 percent, its contribution to aggregate export improved to 51.05 percent and with this share it dominated the aggregate export by turning the dominance of agriculture export share down below it for the past 33 years from 2014/15. Similarly from 1974/75 to 1991/92 the share of industry export to aggregate export and its growth rate averaged at 8.2 percent and 17.7 percent consecutively. And then with little improvement during 1992/93 up to 2014/15 the share of industry export to aggregate export on average scaled-up to 8.8 percent but its share growth rate average at 1.5 percent.

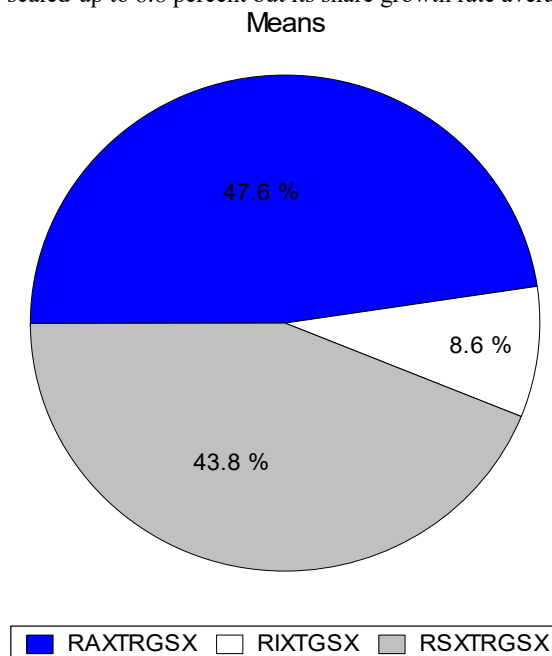


Figure 7: Average share of agriculture, industry and service export to aggregate export from 1974/75-2014/15.

Source: Own calculation of data from NBE, ERCA and World Bank data

And figure 7 portrays a bulk of export, on average 47.6 percent and 43.8 percent out of the aggregate export contributed by agriculture and service export while industry export share the remaining insignificant 8.6 percent during the study periods.

4.2. Econometrics Results and Discussion

Results of Stationarity Test.

Like most macroeconomic series the results of the unit root test of all variables except LCPI are not stationary at their levels and become stationary at their first difference.

Table 4.1: Augmented Dickey-Fuller (ADF) stationarity test results

Variables	ADF test statistics		Intercept And trend	Critical value	prob.	Remarks
	Intercept No trend	Critical value				
LRGDP	-2.020151	-3.621023	-6.635440	-4.219126	0.0000	I(1)
LRAEXP	-6.540730	-3.610453	-6.549601	-4.211868	0.0000	I(1)
LRIEXP	-6.240128	-3.610453	-6.151209	-4.211868	0.0000	I(1)
LRSEXP	-7.381334	-3.610453	-7.390909	-4.211868	0.0000	I(1)
LRIMP	-8.285444	-3.610453	-8.451934	-4.211868	0.0000	I(1)

Notes: A variable is stationary when ADF test statistics are greater than the CV at a given level.

Source: E-views version 7 outputs

As we can see from Tables 4.1 the stationarity test for all variables, at their first differences, strongly reject the unit root which mean they are an integrated of order of one, meaning they are stationary.

Co-integration Test Result

The employed Johansen test result that is both tests; the maximum eigen value and trace statistics indicates the

existence of one co-integrating relationship (see table 4.3 and 4.4)

Table 4.3: Johansen co-integration tests (Trace)

List of variables included: LRGDP, LRAEXP, LRIEXP, LRSEXP, LRIMP

Null hypothesis	Alternative hypothesis	Eigen value	Trace statistic	Critical Value(5%)	Prob.**
$r=0^*$	$r \geq 0$	0.832604	88.08627	69.81889	0.0009
$r \leq 1$	$r \geq 1$	0.383785	29.10237	47.85613	0.7635
$r \leq 2$	$r \geq 2$	0.200912	13.12510	29.79707	0.8858
$r \leq 3$	$r \geq 3$	0.128374	5.723726	15.49471	0.7279
$r \leq 4$	$r \geq 4$	0.035409	1.189702	3.841466	0.2754

Source: E-views 7 output.

Trace test indicates 1 co-integration equation(s) at the 0.05 level, * denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values and r denotes the rank of long run matrix

Table 4.4: Johansen co-integration tests (Max-Eigen)

Null hypothesis	Alternative hypothesis	Eigen value	Max-Eigen statistic	Critical value (5%)	Prob.**
$r=0^*$	$r=1$	0.832604	58.98389	33.87687	0.0000
$r=1$	$r=2$	0.383785	15.97728	27.58434	0.6678
$r=2$	$r=3$	0.200912	7.401369	21.13162	0.9364
$r=3$	$r=4$	0.128374	4.534025	14.26460	0.7991
$r=4$	$r=5$	0.035409	1.189702	3.841466	0.2754

Source: E-views 7 output. Max-Eigen test indicates 1 co-integration equation(s) at the 0.05 level, * denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values and r denotes the rank of long run matrix

Both of the above tables show the null hypothesis claims no co-integration is rejected at the conventional level of significance. This is because both the trace test statistic and Max-Eigen statistic greater than the critical values at zero co-integrating vector in their respective tests, which means the null hypothesis of no co-integration($r=0$) among the variables is rejected at the 5% level of significance. And hence these results demonstrate that the considered variables are co-integrated so that it ensure the presence of long run equilibrium relationship among them and additionally it may reveals the existence of causation between endogenous and exogenous variables at least in one direction.

Vector Error Correction Model (VECM)

Once the modeled variables co-integrated, in the next step vector error correction model (VECM) which combined both the long run properties and short run dynamics has been estimated. And the results of long run and short run models presented as follows.

Long Run Model Results

The result of long run model reveals that all the variables have the anticipated signs and are of reasonable magnitude. In other word all explanatory variables except import ride the same horse with dependent variable; loosely speaking agriculture export, industry export and service export positively affect economic growth while import is negatively related with output growth

The estimated long run model with t-statistics in the parenthesis stated as:

$$\text{LRGDP} = 6.916942 + 3.398395\text{LRAEXP} + 1.064308\text{LRIEXP} + 1.743059\text{LRSEXP} - 7.136312\text{LRIMP}$$

(7.60580) (2.66963) (2.55869) (-11.5886)

- ❖ In the long run holding other variables remains constant, the finding reveals that agriculture export has a positive and significant relationship with economic growth in Ethiopia. That is, a one percent increase in agriculture export stimulates economic growth by 3.4 percent in Ethiopia. This because agriculture export is principal factor in guaranteeing equilibrium in the balance of payments and, as a consequence, guaranteeing macroeconomic stability and economic growth of developing countries. And hence this result is consistent with the findings of (Usman and Mc millan, 1998; Gilbert, 2009; Sanjuan lope and Dawson, 2010).
- ❖ Similarly service export positively and significantly related with output growth in Ethiopia. That is a 1% increase in service export leads to a 1.7 percent rise in economic growth in Ethiopia in the long run. This is because exporting service motivates the economies of developing countries through generating foreign currencies, creating jobs and financing their trade deficit. Thus this finding is line with Ziramba (2011), Rashid Mohamed, Yee Liew and Said S. (2012) among other.
- ❖ Even though the effect of industry export is small, it affects economic growth positively and significantly. That is a 1% increase in industry export, in the long run, leads to a 1.1 percent increase in economic growth in Ethiopia. Such findings can be interpreted as stemming from the effects of increased productivity

associated with the industrial sector compared to those depending on primary goods. Thus this finding is accordance with the findings of Greenaway, D. Morgan and Wright (1999) and Herter (2004 and 2006).

Results of Short Run model

From the short run model result we can observe that error correction term (ECM-1)) is negative as expected but insignificant and the coefficients of all independent variables except import and dummy variables are insignificant at 5%. Besides table 4.5 reveals the value of error correction term ECM (-1) is -0.88% signifying a very low speed of adjustment that is the speed at which a deviation from long equilibrium is removed slowly where 0.88% of disequilibrium adjusted in each year. Which means the full disequilibrium will be adjusted approximately after 100 years.

From the result below the short run effects of agriculture and industry export on economic growth in Ethiopia are positive but insignificant. That is a 1% increase in agriculture and industry export leads to a 0.032 percent and 0.013 percent increase in economic growth. Thus these results suggest that in the short-run the two exports are insignificant in affecting economic growth in Ethiopia. Similarly, the short run effect of service export on the economic growth is positive but insignificant. That is a 1% increase in service export leads to a 0.014 percent increase in economic growth. These kinds of export effect on output growth are quite realistic when the growth paths of the two time series are determined by other, unrelated variables (for example, investment) in the economic system (Pack, 1988)

Table 4.5: Estimates of short run Parameters

Dependent variable: DLRGDP

Variables	Coefficient	Std. Err	t. statistic	Prob.
DLRAEXP(-1)	0.031778	0.026133	1.216019	0.2353
DLRIEXP(-1)	0.013544	0.020270	0.668166	0.5102
DLRSEXP(-1)	0.014081	0.028225	0.498881	0.6222
DLRIMP(-1)	-0.104304	0.047418	-2.199681	.0373*
C	0.045206	0.022836	1.979530	0.0589
DUMMY	0.076961	0.018193	4.230188	0.0003*
ECM(-1)	-0.008811	0.007030	-1.253402	0.2217
R-squared	0.632330	Mean dependent var		0.051372
Adjusted squared	0.529382	S.D. dependent var		0.058471
S.E. of regression	0.040112	Akaike info criterion		-3.387066
Sum squared resid	0.040224	Schwarz criterion		-3.024277
Log likelihood	63.88659	Hannan-Quinn criter.		-3.264999
F-statistic	6.142251	Durbin-Watson stat		2.019944
Prob(F-statistic)	0.000302			

Source: calculation by author using Eviews 7

Note: * indicates significance at 5% level

5. CONCLUSION AND IMPLICATION

Conclusions

To accomplish the objectives of this work both descriptive and econometric methods of analysis has been used. The findings of descriptive analysis revealed during the study periods agriculture, industry and service exports have been shared 5 percent, 0.85 percent and 4.76 percent to GDP respectively. In the second performance indicator the trends in growth rates of values of agriculture, industry and export showed a positive but fluctuation trend with annual average growth rates of 10.8 percent, 16.14 percent and 12.59 percent respectively. These rates of growth in the values of disaggregate exports of the country are by far better during post 1992/93 than average growth rates recorded pre reform periods. A closer look at the third and fourth indicators agriculture and industry export have been contributed 83.3 percent and 16.7 percent to merchandise export and agriculture, industry and service exports have been shared 47.6 percent, 8.6 percent and 43.8 percent on average to aggregate export respectively during the study period. And the findings of empirical analysis reveals that in the long run agriculture,

industry and service exports positively and significantly affect economic growth however, in the short run despite the effect of each disaggregate export on output growth is positive but their respective contribution is insignificant. In sum despite the performances of agriculture, industry and service exports have been improving time to time the short run effects of each disaggregate export on the economic growth is very weak in Ethiopia. More specifically the performance of industry export, even as viewed from the angle of service and agriculture export contribution, its contribution to GDP is very tiny. In general since the world demand for primary agriculture products is not very dynamic, Ethiopia will not be competitive through merely exporting limited primary products. And hence to realized outstanding performance in the export sector; sustainably standardizing, diversifying as well as boosting production and productivity of sectors' output and implementing sector wise balanced economic development policies and strategies are more than anything else.

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