



Analysis the impact of export, import and exchange rate in the economic growth of Ethiopia

Mathewos Chafa ^{1*}, Derese Balcha ²

¹ M.Sc. Rural Development and Planning, Wolaita Sodo University, Ethiopia

² M.Sc. In Economics of Development Police Analysis, Wolaita Sodo University, Ethiopia

* Corresponding Author: **Mathewos Chafa**

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Abstract

Despite encouraging improvements in recent decades, Ethiopia's export performance has typically been portrayed as poor compared with other sub-Saharan African countries. Study analysis the impact of export, import and exchange performance of the country by using an econometric model for the period 2013/14- 2017/18. This study tried to review the export, import, and exchange rate impact on long run and short run shocks in GDP; Using structural vector auto regression model approaches. The findings of the study revealed that in the long run export performance has found to be positively influenced by real effective exchange rate, openness, RGDP of home country but The deficit in merchandise trade widened change relative import to export mainly due to the significant growth in total import bills coupled with low performance in the growth of total export. . Based on the findings, the study highlighted the pertinence of economic growth and emphasized the role played by the exchange rate in maintaining the balance between imports and exports. The study recommended that both currency value and economic growth should be given urgent attention in order to revive the deteriorating economy of Ethiopia.

Keywords: imports and exports, exchange rate, GDP, SVAR and Ethiopia

Introduction

Ethiopia's economy has been exhibiting sign of robustness with favorable GDP growth rate exceeding 10% over the last decade. However, the economy is still heavily dependent on the agricultural sector without a structural shift towards other activities. The agricultural sector contributes a large share of GDP at around 36% (NBE, 2017) ^[3]. Besides, Ethiopian exports are dominated by primary agricultural products. Due to the massive expansion of the infrastructure and economic growth in the country for the last decade, imports have increased dramatically to more than USD 16 billion per year.

The increasing gap between imports and exports indicates that Ethiopia's economy has a trade deficit.(UNDP, 2017).Country's export of goods and services is one of the major factors in social and economic development. Nonetheless, exports do not always contribute to economic growth. If the market competition becomes more than expected; if exported products are unpopular in the markets or the targeted country for export is experiencing instability, economic growth will have to decrease (Bakari & Mabrouki, 2017) ^[2]. On the other hand, more imports are generally regarded as a reflection of the country's weakness in achieving its needs. Unlike exports imports lead to the exit of domestic currency and weaken the trade balance, resulting in low economic growth. However, in some cases, imports are considered as a source of economic growth, particularly if they comprise electronic and hardware equipment that assists in improving and increasing investment levels (Bakari & Mabrouki, 2017) ^[2].

Most of these focused on the relationship between exchange rates, imports and exports while others examined the link between economic growth, export and import levels. None of these examined how economic growth and exchange rates simultaneously influence import and export. Economic growth, imports and exports achieving sustainable economic growth is one of the major purposes of any country, because economic growth is fundamental to any form of development and societal wellbeing (Sulaiman & Saad, 2009) ^[4]. The Neo-classical theory argues that the country's level of exports and imports plays a significant role in determining economic social development (Vijayasri, 2013) ^[6].

Exchange rates, imports and exports Sekkat and Varoudakis (2000) assert that countries that have promoted and enhanced their export levels have also experienced depreciation in their currencies. This statement is in line with Standard Trade Theory, suggesting that a country's currency depreciation favors the country's export performance. The reason for this is that the depreciation of a country's currency makes domestic exports comparatively inexpensive to foreign buyers, as they switch their expenditure from their domestic goods and services to inexpensive imports (Appleyard, Field & Cobb, 2010) [1].

2. Statement of the problem

The study intends to explain the influence of export, import, and exchange rate to the economic growth of Ethiopia. The author has not found previous research involves the three independent variables simultaneously to the dependent variable. More unlikely, in Ethiopia Thus, the author hopes to contribute to enrich the literature in this field. In general, the claims and empirical evidence on devaluation currency are mixed. It requires more empirical evidence to prove how the exchange rate, import and export affect the economic growing in Ethiopia. Number of studies were conducted to determine the effect of both exports and imports on economic growth. Most of these focused on the relationship between exchange rates, imports and exports while others examined the link between economic growth, export and import levels. None of these examined how economic growth and exchange rates simultaneously influence import and export Therefore study provides additional empirical evidences by analyzing the impact of exchange rate, export and import on economic growth.

3. General objective of the study

Analysis the impact of export, import and exchange rate in the economic growth of Ethiopia

3.1 Specific objectives

1. Assessing the impact of exchange rate, import, and export on economic growth of Ethiopia
2. Investigate short run and the long-run trends of exchange rate and export earn in Ethiopia

4 Data source and Methodology

4.1. Data and variables

Time series data running from 2003/4 to 2013/14 was used to analyze the effect of exchange rate, export and import on economic growth in Ethiopia. The time frame was chosen based on the availability of data, which was obtained from the World Bank In order to uniformities the used series, variables were transformed into a natural logarithm. Exports and imports and exchange rate were used as independent variables, the economic growth and considered as dependent variables.

4.2. Unit Root Test

Various tests such as the Augmented Dicky (AD), the Augmented Dicky Fuller (ADF) and the Philip and Perron's test are used to detect a unit root within the series. In this study, the Augmented Dicky Fuller (ADF), is used for a unit root test.

$$X_t = \gamma X_{t-1} + et \dots \dots \dots (1)$$

Where *et* denotes white noise stochastic and $|\gamma| < 1$ suggests a stationary condition In other words, if $|\gamma| = 1$, then by deducting X_{t-1} from both sides of equation (1), we will have:

$$X_t - X_{t-1} = X_{t-1} - X_{t-1} + et \dots \dots \dots (2)$$

$\Delta X_t =$ Where ΔX_t refers to a stationary series. In this case, if the series X_t is stationary at level, it is said to be integrated of order zero and it is written as I (0). However, if it is stationary after being taken to the first difference, it is said to be integrated of order one and written as I (1).As mentioned before, ADF is used in this study for the unit root test and order of integration verification.

4.2.1 Augmented Dicky-Fuller (ADF) Test for Unit Roots.

The ADF test is preferable as it rectifies some errors from the DF test. To eliminate autocorrelation amongst residuals, it adds an extra lagged term of the dependent variable. In this study that extra term is determined by the Schwartz information Criterion (SIC). Although the AIC is the most prevalent and most used, the SIC is more desired for its strictness and rigorous features outcome of the study serves as input for policymakers to elaborate development indicators. The Augmented Dicky-Fuller unit root test equation is expressed as follows:

$$\Delta X_t = X_{t-1} + \sum \beta_i p^i X_{t-1} + \epsilon \dots \dots \dots (3)$$

Where Δ is the first difference operator, p is the lag operator, t is the time subscript and ϵ is the error term. Using the ADF tests, the following three options are possible. The null hypothesis (H_0) for the ADF unit root test suggests that the series contains a unit root and the alternative suggests otherwise. The decision is made based on the ADF critical values and the T-statistics or P-values. If t-statistics $>$ the ADF critical value, the null hypothesis is not rejected, meaning that the series contains a unit root. However, if t-statistics $<$ the ADF critical value, the null hypothesis is rejected, meaning that the series has no unit root or is stationary.

4.3 Model Specification

This study investigates the relationship between the dependent (economic growth) and independent (export, import and exchange rate) variables using econometric techniques. Firstly, the unit root test is conducted to ensure the stationary of variables and their order of integration. Secondly structural vector the autoregressive model is employed to establish the short and long-run shocks among variables. ADF unit root test preceded the application of SVAR to confirm that none of the variables is I (2). In order to test this hypothesis, the regression equation was drawn.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon \dots \dots \dots (1)$$

Where: $Y =$ Gross domestic product $\beta_0 =$ the constant term. $\beta_1 =$ coefficient of variable (Average exchange rate) $\beta_2 =$ coefficient of variable (exports) $\beta_3 =$ coefficient of variables (imports) $X_1 =$ Average exchange rate (USA\$) $X_2 =$ Export $X_3 =$ Import $\epsilon =$ Error term .The equations are estimated using annual time series data. As described in the functional forms, the impact is examined using the ordinary least squares (OLS) method by converting non-stationary time series data into stationary data.

5. Result and discussion

Group unit root test: Summary
 Series: EXCHANGE_RATE, EXPORT, IMPORT, REAL_GDP
 Date: 08/20/22 Time: 01:57
 Sample: 1 18
 Exogenous variables: Individual effects
 Automatic selection of maximum lags
 Automatic lag length selection based on SIC: 0
 Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
<u>Null: Unit root (assumes common unit root process)</u>				
Levin, Lin & Chu t*	-3.26949	0.0005	4	61
<u>Null: Unit root (assumes individual unit root process)</u>				
Im, Pesaran and Shin W-stat	-2.23420	0.0127	4	61
ADF - Fisher Chi-square	21.3009	0.0064	4	61
PP - Fisher Chi-square	21.1782	0.0067	4	61

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

The unit root test of variables are statistically significant at 1% level by pesaran and shin W-stat, ADF fisher chi-square and PP-fisher chi-square 0.001, 0.006, and 0.006 respectively. This implies the stationery test was checked by 1 difference level.

5.1 short run and long run impact of export, import and exchange rate on GDP

Table 1

Variance decomposition of D(EXPORT)					
Period	SE	D (Export)	D (Import)	D (Exchange Rate)	D (Real GDP)
1	314.475	100.0000	0.000000	0.000000	0.000000**
2	542.0885	66.98898	15.35824	13.30838	4.344406
3	617.8447	53.01585	18.02965	15.49293	13.46156
4	632.4543	51.82444	17.21110	18.07980	12.88567
5	649.7415	49.72078	19.37902	17.34253	13.55816
6	655.4633	49.52212	19.04247	17.42572	14.01970
7	660.2231	49.14044	19.79523	17.23923	13.82540
8	663.9740	48.66884	20.07540	17.56102	13.75474
9	665.7392	48.57839	20.13235	17.59808	13.69116
10	668.7902	48.19291	20.13535	18.03652	13.63521***

Short run shock**, long run shock*** Cholesky one S.D.(d.f.adjusted) Cholesky ordering d(export) d(import) d(exchange rate) d(real GDP)

regression result analysis of variance decomposition under Structural vector auto regression model environment Export shock in short run and long run period .In the above variance decomposition short run the shock to export account 100 percent variation of the fluctuation export or (own shock), the shock or innovation of import can cause zero percent variation of the fluctuation in export, the shock to exchange rate 0 percent variation of the fluctuation export and GDP

zero percent contribute variation of the fluctuation export in short run. While variance decomposition long run the shock to export account 48.19 percent variation of the fluctuation export or (own shock), the shock of import can cause 20.13 percent variation of the fluctuation in export, the shock to exchange rate 18.03 percent variation of the fluctuation export and GDP 13.63 percent contribute variation of the fluctuation in export.

Table 2

Variance Decomposition of D (Import)					
Period	SE	D (Export)	D (Import)	D (Exchange Rate)	D (Real GDP)
1	1814.031	26.83331	73.16669	0.000000	0.000000**
2	2158.891	28.69032	55.07726	2.405944	13.82647
3	2221.401	27.28038	55.29349	4.131530	13.29460
4	2263.681	27.00353	54.95608	3.999188	14.04121
5	2301.252	27.74857	53.30010	3.869945	15.08138
6	2327.178	27.38599	53.76395	4.073548	14.77651
7	2332.285	27.37132	53.73449	4.179823	14.71437
8	2348.345	27.31235	53.20734	4.688094	14.79421
9	2351.811	27.27683	53.13735	4.820002	14.75582
10	2353.714	27.25167	53.06248	4.950684	14.74517***

Short run shock**, long run shock*** Cholesky one S.D.(d.f.adjusted) Cholesky ordering d(export) d(import) d(exchange rate) d(real GDP)

The regression analysis of variance decomposition Structural vector auto regression model Import shock in short run and long run period. The variance decomposition short run the shock to import account 73.2.percent variation of the fluctuation their own shock, the shock or innovation of export can cause 26.8 percent variation of the fluctuation in import, the shock to exchange rate zero percent variation of the fluctuation import and GDP zero percent contribute variation

of the fluctuation import in short run. While variance decomposition long run the shock to import account 53.05 percent variation of the fluctuation own shock, the shock of export can cause 27.25 percent variation of the fluctuation in import, the shock to exchange rate 4.13 percent variation of the fluctuation import and GDP 13.29 percent contribute variation of the fluctuation in import.

Table 3

Variance Decomposition of D (Exchange Rate)					
Period	SE	D (Export)	D (Import)	D (Exchange Rate)	D (Real GDP)
1	0.087278	23.41170	0.006530	76.58177	0.000000**
2	0.102535	17.62477	0.107146	56.92016	25.34792
3	0.122048	12.46292	0.578095	66.75066	20.20833
4	0.126368	11.71835	6.280267	62.76172	19.23967
5	0.131602	11.05671	5.943658	63.73738	19.26226
6	0.135142	10.82117	8.468932	60.84766	19.86225
7	0.139216	10.22606	8.613080	62.10022	19.06064
8	0.141338	10.17888	9.681572	61.53590	18.60365
9	0.142820	9.987783	9.640259	62.11238	18.25958
10	0.143719	9.933359	9.899752	61.74563	18.42125***

Short run shock**, long run shock*** Cholesky one S.D.(d.f.adjusted) Cholesky ordering d(export) d(import) d(exchange rate) d(real GDP)

The regression output interpretation of variance decomposition under structural vector autoregression model exchange rate shock in short run and long run period. The variance decomposition short run the shock to exchange rate account 76.5 percent variation of the fluctuation their own shock, the shock or innovation of export can cause 23.4 percent variation of the fluctuation in exchange rate, the shock to import 0.1 percent variation of the fluctuation exchange rate and GDP zero percent contribute variation of

the fluctuation exchange rate in short run. While variance decomposition long run the shock to exchange rate account 61.74.percent variation of the fluctuation own shock, the shock of export can cause 9.93 percent variation of the fluctuation in exchange rate, the shock to import 9.89 percent variation of the fluctuation exchange rate and GDP 18.42 percent contribute variation of the fluctuation in exchange rate.

Table 4

Variance decomposition of D (REALGDP)					
Period	SE	D (Export)	D (Import)	D (Exchange Rate)	D (Real GDP)
1	4677.136	38.28874	1.613580	45.37112	14.72656**
2	4855.840	35.62053	7.150480	42.52550	14.70349
3	5295.068	30.29898	6.764480	50.45036	12.48617
4	5539.986	28.82475	7.490170	46.47998	17.20510
5	5677.952	27.58408	7.143430	48.80243	16.47007
6	5734.501	27.05109	8.813109	47.96772	16.16808
7	5802.880	26.55492	8.797660	48.17241	16.47751
8	5847.129	26.37429	9.486524	47.59760	16.54159
9	5905.992	25.85124	9.593557	48.15226	16.40294
10	5930.757	25.71927	9.801158	48.14267	16.33690***

Short run shock**, long run shock*** Cholesky one S.D.(d.f.adjusted) Cholesky ordering d(export) d(import) d(exchange rate) d(real GDP)

The regression output interpretation of variance decomposition Structural vector auto regression model GDP shock in short run and long run period. The variance decomposition short run the shock to GDP account 14.7 percent variation of the fluctuation their own shock, the shock of export can cause 38.2 percent variation of the fluctuation in GDP, the shock to import 1.6 percent variation of the fluctuation GDP and exchange rate 45.3 percent contribute variation of the fluctuation GDP in short run. While variance decomposition long run the shock to GDP account

16.33.percent variation of the fluctuation own shock, the shock of export can cause 25.71 percent variation of the fluctuation in GDP, the shock to import 9.80 percent variation of the fluctuation GDP and exchange rate 48.14 percent contribute variation of the fluctuation in GDP. In terms of short-run relationships, both exports and imports are passively influenced by economic growth and currency appreciation. As seen for long-run, economic growth remains the engine of changes within the export and import of goods and service.

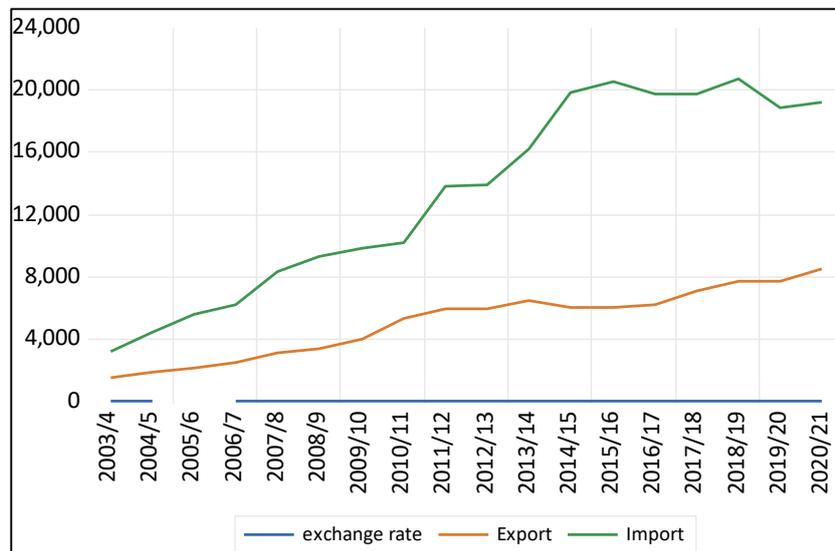


Fig 1

5.2 Analysis the trends of independent variable in the graph

In the presence of a long-run relationship amongst variables, it is necessary to investigate the property of the model in the short-run relationship. The graph result indicated that in short run insignificant growth in export. The deficit in merchandise trade widened percent change relative to the preceding fiscal year mainly due to the significant growth in total import bills coupled with low performance in the growth of total export proceeds. In the review period, export to GDP ratio was down and import to GDP ratios raise up. Exchange rate is stagnant at initial allow to fix any short-run shocks. In terms of long run relationship, both exports and imports are passively influenced by economic growth and currency appreciation. As seen for long-run relationships, economic growth remains the engine of changes within the export and import. Export would be promoted to enhance economy by substituting imports.

6. Conclusions and Policy Implication

The study analyzed and discussed the Impact of exchange rates, imports and exports in the Ethiopian economy. The reviewed literature provided a mixture of results. Some literature indicated that economic growth and exchange rates exert a positive effect on import and export levels, whilst others suggested an inverse relationship amongst these economic variables. Using the structural vector auto regression for this study found the existence of a long-run relationship between economic growth, exchange rates, imports and exports in Ethiopia. The study found also that, in the long-run, economic growth impacts more on exchange rate and exports than import. This result suggests that Ethiopian products are less expensive as compared to those from abroad and when the economy is at the booming stage, consumers prefer to import goods and services than buying from domestic markets. It was also found that the weak exchange rate favors imports while boosting exports this implies that, in the

short-run, each of the analyzed variables can assist in predicting changes in others.

6.1 Policy Implication

Since improvement in economic growth favors the consumption of imports more, probably because the high price of domestic goods and services, government and policy-makers should find a way to subsidies local producers in order to lower the cost of production and thereafter the price for domestic goods and services. This level of subsidies would prevail when the economy is booming and when the currency is weakened. Meaning that during a booming economy, subsidies will encourage the consumption of domestic goods and services and during currency depreciation; subsidies will assist in producing more goods and services for exports.

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