Evaluation of Effect of Exchange Rate Variability on Export of Ethiopia's Agricultural Product: Case of Oilseeds

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Abstract

This research was carried out to find out the effect of exchange rate variability on export of oilseeds. It has employed annual time series data (1992-2010) collected from the country's different institutions, namely: National Bank of Ethiopia (NBE), Central Statistical Agency of Ethiopia (CSA), and Ethiopian Custom Authority (ECA). Tools of descriptive statistics were used to analyze the data and understand the dynamics of the variables included in the analysis. Autoregressive Distributive Lag (ARDL) with Wald test was used to test the hypothesis that 'there is no short run and long run relationship between export oilseeds and explanatory variables included in the model'. The result revealed that export oilseeds have negative relationship with exchange rate variability. Terms of Trade (TOT) was found to be negative and significant. Gross Domestic Product (GDP) is found to be insignificant; implying contribution of oilseeds to the export basket of the country is decreasing. Moreover, the underlined hypothesis was rejected confirming that there is a long run relationship between export and oilseeds and explanatory variables included. Export diversification and value addition are of possible solutions the country should focus on to improve the ever decreasing terms of trade and extract the gain from policy changes.

Key Words: Exchange rate variability, Devaluation, Export, Oilseeds, ARDL and Wald test

1.0   INTRODUCTION

Since 1992, Ethiopia, under the support and guidance of the IMF and the World Bank has undergone liberalization and enhanced Structural Adjustment Programs (SAPs) to restrain internal and external imbalances of the economy. One of the basic tasks of the new policy regime is to increasingly open the economy to foreign competition with a view of benefiting the economy from expanded markets. To this end, the government uses different tools such as: devaluation of the Birr and step-by-step liberalization of the foreign exchange market, streamlining import and export licensing system, tariff reduction and provision of incentives to exporters, abolishing taxes on exports and subsidies to parastatal exporting enterprises, encouraging export-oriented investment introduction of duty draw back and foreign exchange retention scheme, minimizing administrative and bureaucratic procedures, promulgating an export development strategy, established export support institutions, Instituted export specific incentive schemes are the major institutional arrangements (Haile,1999).

Since then, there have been different structural changes in international trade in terms of the quality, quantity, volume and value of both industrial and agricultural products. Basically, in the agricultural sector, the government have been trying to diversify agricultural export products. For instance, flower and oilseed export have been started and have been boosted for the last two decades (NBE, 2010).

Oilseeds are the second largest export earner for the country after coffee in which more than 3 million smallholders are involved in its production. Exports actually consist of sesame and Niger seed, for which there is a growing demand in the world market. Ethiopia ranks among the top 5 world producers of sesame seed and linseed. The growing demand in the world market for these specialty products and the available capacity to expand production could make oilseeds turn into one of the engines of economic growth of Ethiopia. (Bennet, 2004).

Ethiopian government have been devaluing the currency for about two decades, which were expected to improve the competiveness of the country thereby stimulate export and substitute some of the imported commodities by switching expenditure from expensive imported goods to relatively domestic products, which would improve the foreign currency reserve of the country and set up a good ground for domestic investment. Nonetheless, foreign

currency has been a serious problem of the country, where investors have been insisted to wait for more than two months to get a foreign currency. Even in some years the government was unable to import some necessity goods like medicaments (Zelalem, 2006).

Devaluation as a policy instrument is relevant especially in the context of misalignment. A variety of reasons could lead to price misalignments in LDCs: government policies of high tariffs on imports; taxes on exports in some cases; overvaluation of the currency associated with import substitution for industrialization as opposed to export promotion policies; and restrictions on commodity as well as capital flows. As a result of some combination of these policies, domestic prices deviate from world prices. Devaluation might play a key role in eliminating the market distortions and correcting the price misalignment (Salvatore, 2007). However, since economic growth is indispensable, the question of whether or not there is a trade-off between output growth and devaluation becomes a critical issue.

The assessment of the way the economy is coherently going with the aforementioned economic policies is vital to come up with sound economic policies and strategies. Being of the major primary agricultural export of the country, the way the export of oilseeds respond to policies measures is mandatory to determine the overall economic performance of the nation. To this end, this paper aims to shad light on the position of the economy whether to proceed with the existing phenomenon or to find other policy measures to alleviate the problem.

Economic policies directed towards affecting external balance and output by changing the composition of expenditures are called expenditure-switching policies. One of the most frequently used policy instruments for expenditure-switching policies has been currency devaluation. However, the consensus on this issue (i.e. the devaluation leads to output expansion) was broken at the end of the 1970s. An alternative line of approach has emerged since, which has raised the possibility that devaluation could be contractionary, especially in developing countries. This approach is sometimes referred to as *structuralist* because it usually tends to consider the economic problems of LDCs as "structural." Contrary to the traditional approach, this view argues that devaluation is highly likely to have a contractionary effect on output and employment, especially for LDCs (Cuffaro, 2000; Romer,2006).

Consistent with other studies (Caglayan, 2002; Abbott, 2001; De Grauwe, 1988; Hooper and Kohlhagen, 1978; Akhtar and Hilton, 1984; IMF, 1984), it is expected that Ethiopian's export of agricultural products is expected to be negatively related with the exchange rate variability which is the outcome of continuous devaluation in this particular case.

There are several theoretical reasons why this happens in such an agrarian economy like Ethiopia. The first is that, most agricultural export contracts in Ethiopia are priced and paid in foreign currency, devaluation affects export earnings valued in domestic currency. The second reason is that is usual that export contracts involve long time lags in the dates for delivery and settlement of payment, both of which may increase the extent of uncertainty. Thirdly, variability will also lead to black market activities, exacerbate rent seeking behaviour and moral hazard of stock holders; consequently, it will probably end up with unprecedented result. Finally, the extent of low export product diversification, and lack of market power among Ethiopian agricultural exporters might undermine the firms' ability to export and earn the possible gain from trade (Dominic, 2007).

Several empirical studies have investigated the effects of exchange rate variability on export. Some found a positive significant relationship while others reported the reverse. Another group of studies indicated that the effect of exchange rate variability is ambiguous (e.g. Du and Xu, 2001; Klaassen, 1999).

Using ARCH and GARCH models Bahmani and Kara (2003) have examined the effect of real exchange rate volatility on South African's aggregate export to the U.S. for the period 1990:1- 2000:4. They found out that that Rand's real exchange rate variability has a significant and negative impact on exports both in the long and short-run. Similar study by Azaikpono, et al. (2005) extends the work of Bahmani and Kara (2003) over the period 1992:1-2004:4 by employing GARCH method proposed by Nelson (1991) as a measure of variability of exchange rate. The results of the latter are lined up with those reached by the former.

Another study by Todani and Munyama (2005) employed ARDL bounds testing procedure on quarterly data for the period 1984-2004 to examine the impact of exchange rate variability on aggregate South African exports to the rest of the world as well as on goods, services and gold exports. The results show that exchange rate volatility has a positive and significant relationship. When we look at these results (Todani et.al, 2005; Bahmani and Kara, 2003), they found out different results for the same country. Even if they have used different types of commodities and models, the results are signalling there is no clear cut and bold conclusion on the effect of exchange rate variability.

Bernardina (2003) investigates impacts of the real exchange rate, real non-oil GDP, and the world income on Russian non-oil export by using an Error Correction Model (ECM) over the period 1994-2001. The author found

that there is a robust and negative long run co-integration relationship between the real exchange rate and Russian non-oil exports. Furthermore, the world income has positive effect on Russian non-oil export while real non-oil GDP causes a decline in non-oil export.

An investigation of the effects of exchange rate variability on export volume of domestic saffron production (Iran's major non-oil export good) and price of saffron in the short- and long-run was undertaken by Sabuhi and Piri (2008). The employed Autoregressive Distributed Lag (ARDL) model shows that appreciating exchange rate has statistically significant negative impact on export price of saffron while there is no significant relationship between export price and domestic production of Saffron in the long-run.

Employing Error Correlation (ECM) model on Algerian non-oil export over the period 1981-1997, Sorsa (1999) revealed that, appreciation of real exchange rate is the major factor that impedes non-oil export growth and its diversification.

Ogun (1986) makes use of simulation techniques to examine the effects of real exchange rate, its movements and volatility on the growth of non-oil export in Nigeria over the period 1960-1990. The results show that real exchange rate and also both its misalignment and volatility affect non-oil export growth adversely.

Oyejide (1986) looks at effects of trade and exchange rate policies on Nigeria's agricultural export using Ordinary Least Squares (OLS) over the period 1960-1982 and concludes that appreciation of real exchange rate adversely influences to non-oil export especially during the oil boom. Another study that investigated relationship between exchange rate and non-oil export goods in Nigeria comes from Yusuf and Edom (2007). By applying Johansen co-integration approach over the period 1970-2003, they revealed that depreciation of official exchange rate promotes export of round wood and sawn wood in Nigeria.

By applying OLS on the time series of relevant variables including exchange rate over the annual period of 1970-2005 Abolagba et al. (2010) found that appreciation of real exchange rate has statistically significant and negative impact on export of cocoa and rubber in Nigeria.

The influence of trade and exchange rate policies on agricultural export which is the main part of non-oil export of Cameroon is studied by Amin (1996) over the period 1971-1992. The result from Autoregressive Distributed Lag Model (ARDL) prevailed that current exchange rate policy especially appreciation of national currency impedes agricultural export.

Mohamad et al. (2009) conducted panel data estimation to account for the role of the real exchange rate and other economic fundamentals such as macroeconomic stability, terms of trade, capital goods investment, external demand and human capital on the export performance of Indonesia, Malaysia, Singapore and Thailand. They find that depreciation of real exchange rate and also its misalignment and volatility have strong negative impact on export performance.

What is missing in the existing literature is that, most studies have focused on industrial countries with a high proportion of manufactured exports. Moreover, there is insufficient evidence from studies particularly focusing on specific agricultural primary commodity dependent economies such as those in Sub-Saharan Africa (Azaikpono, et.al., 2005). Therefore, to answer the ambiguity that surrounds the effects of exchange rate variability on exports, there is need for further studies to focus on developing countries with continuous and volatile exchange rates.

2.0 Methodology

2.1 Data Source and Collection Method

All the data were collected from government institutions namely: National bank of Ethiopia, Central Statistical Authority of Ethiopia, Ethiopian Custom Authority. To augment econometric results, primary data were collected from major private traders who have been involved in import and export trade.

2.2 Theoretical Frame Work

There are three main reasons why governments sometimes resort to devalue their currencies. The first reason for devaluing is the resulting improvement in the current account, a development the government may believe to be desirable. Second, devaluation allows the government to fight domestic unemployment despite the lack of effective monetary policy. If government spending and budget deficits are politically unpopular, for example, or if the legislative process is slow, a government may opt for devaluation as the most convenient way of boosting

aggregate demand. The third motive behind devaluations is their effect on the central bank's foreign reserves. If the central bank is running low on reserves, an Ethiopian, one-time devaluation can be used to draw in more (Alemayehu, 2008). When countries devalue their currencies; the local currency price of a commodity at the export market increases by the full proportion of devaluation, if world price does not change. All these will leads to the model which can capture the factors that related to export supply of the country. The model can be presented as follows:

$$X_t = f(REER, GDP, TOT, EV) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

Where :

X_t =   Value of export supply of a commodity;

REER =   Real effective exchange rate and calculated as:

$$REER = \frac{NER \times WPI_W}{CPI_D} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

GDP =   Gross domestic product of the country;

TOT   =   Refers to Terms of trade and calculated as:

$$TOT = \frac{\sum P_i \times Ex_i}{\sum P_j \times EM_j} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3)$$

EV   =   Exchange rate Variability and calculated as: (as cited by David 2004; from Kenen and Rodrick (1986):

$$EV = \left[\frac{1}{3} \sum_{i=-1}^{+1} (REER_t - REER_{t-1})^2\right]^{\frac{1}{2}} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(4)$$

2.3 Application of the Export Supply Model to Oilseeds

The corresponding structural export supply model for oils seeds can be presented as follows:

$$\ln X_t = \alpha + \beta_1 \ln REER_t + \beta_2 \ln GDP_t + \beta_3 \ln TOT_t + \beta_4 \ln EV_t + \mu_t \dots\dots\dots\dots\dots\dots (5)$$

α, is the intercept

α , β_1, β_2 , > 0 and $\beta_3 < 0$ and $\beta_4 > < = 0$

X_t is export supply of the oilseeds at time t;

$REER_t$, GDP_t, TOT_t, and EV_t are the variables defined above;

μ_t is the error term which is assumed to be serially uncorrelated and homoscedastic

2.4 The ARDL Model

The approach (ARDL) is found to be an appropriate method to estimate the influence of continuous devaluation on export supply. Bahmani-Oskooee and Hegerty (2007) recommended that future studies of the effects of exchange rate variability on trade flows should rely on the ARDL method. According to Bahmani-Oskooee and Hegerty (2007), all variables in a given trade flow model are non-stationary, while most measures of exchange

rate volatility are stationary (see also Abbott et al., 2001; Bahmani-Oskooee and Wang,2007). For this reason, the only co-integration and error-correction method that allows some of the independent variables to be non-stationary (I (1)) and some to be stationary(I (0)) is the ARDL bounds testing approach advocated by Pesaran et al. (2001). For example, Tang (2002) applied the ARDL approach to co-integration for the Bangladesh import demand function. It avoids estimation bias because the relative price of imports is confirmed to be stationary (I (0)), but the other determinants for import demand, such as real income, are non-stationary (I(1)). Other examples which employed the ARDL approach to co-integration due to the presence of stationary I(0) repressor(s) are Tang (2001, 2003, 2004), Abbott et al. (2001), and so on. In other words, the ARDL approach to co-integration has the advantage of avoiding the classification of variables (the independent variables) of interest into I(0) or I(1), and unlike conventional co-integration tests, there is no need for unit root or stationary pre-testing (Pesaran et al., 2001).

The generic ARDL model as adopted from Green (2002) looks like:

$$Y_t = \mu + \sum_{i=1}^{p} \gamma_i Y_{t-i} + \sum_{i=1}^{r} \beta_i X_{t-i} + \delta W_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots(6)$$

Where:

Y_t : the value of dependent variable in time t;

Y_{t-i} : the lagged values of the dependant variable Y;

X_{t-i} : the lagged values of independent variable X and,

W_{t-1} : the first lag of independent variables associated with long run elasticities;

ε_t : Assumed to be serially uncorrelated and homoscedastic error term.

2.5 Test for Unit Root (Test of Stationerity)

Even if the ARDL model doesn't require pre testing of a variable for stationarity, it is important to know the stationarity properties of the variables. This is because the tabulated F-values (pesaran and shin 2009) have upper and lower bound where the upper bound assumes all the variables are I(1) stationary and the lower bound assumes all the variables are I(0) stationary. Therefore, examining a variable weather it is I(1) or I(0) stationary helps to come up with a conclusion in case where the calculated F-statistics lays with in the upper and the lower bound.

There are various methods of testing stationerity of a series. The most common ones are: The Augmented Dickey–Fuller (ADF) Test and Phillips–Perron (PP) Unit Root Tests. In this study the ADF test was employed. The test statistics is given as:

$$\Delta Y_t = \beta_1 Y_{t-1} + \sum_{i=1}^{n} \alpha_i \Delta Y_{t=i} + \varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots(7)$$

Where ε_t is a white noise error term and $\Delta Y_{t-1} = \left(Y_{t-1} - Y_{t-2} \right)$.
The testable hypothesis is:

H_o: Both β_1 and α_i are equal to zero (β_1 and $\alpha_i = 0$)

H_1: β_1 and αi are less than 0 (β_1 and $\alpha_i < 0$)

If we reject H_0, we conclude that there is no unit root in the series.

2.6 Lag length Determination

Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn Criterion (HQC), are the most common techniques to determine the lang length of a time series data. In this study we have employed the parsimonious model (SIC) to select the smallest possible lag length. Since ARDL model estimates (p+1)k number of regression in order to find optimal lag length, where p is the maximum number of lags to be used k is the number of variables in the equation, this criteria will help us to arrive at a given fit with smallest

number of parameters per observation Green (2002). The simplified formula for determining the parsimonious lag length (Green, 2002) is given as:

$$SIC_{P\max} = \left(12\left(\frac{T}{100}\right)^{\frac{1}{4}}\right) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 8$$

2.7 Specification of the Model

To estimate the long term relationship between dependant variable and other explanatory variables; Engle Granger and Johansen and Juselius reported that the error correlation model can be applied. But due to constraints in this model, more appropriate techniques have been suggested. Among which, ARDL that outlined and elaborated by Pesaran and Shin (2001). This approach involves two stages, at the first stage it examines if there is or no long run relationship between the variables under investigation. Secondly it estimates the coefficient of the long run relations and the associated error correlated models. Based on what has been brought up earlier, the ARDL model for export of oilseeds can be specifically modelled as follows:

$$\Delta \ln X_t = \alpha_0 + \sum_{j=1}^{k}\beta_0\Delta\ln X_{t-j} + \sum_{j=1}^{m}\beta_1\Delta\ln REER_{t-j} + \sum_{j=1}^{n}\beta_2\Delta\ln GDP_{t-j} + \sum_{j=1}^{s}\beta_3\Delta\ln TOT_{t-j} + \sum_{i=1}^{l}\beta_4\Delta\ln EV_{t-j} +$$

$$\mu_0\ln X_{ti-1} + \mu_1\ln REER_{t-1} + \mu_2\ln GDP_{t-1} + \mu_3\ln TOT_{t-1} +$$

$$\mu_4\ln EV_{ti-1} + u_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(9)$$

Where:

k,m,n,s,l and w indicate optimum lag length of the variable under investigation

$\Delta\ln X_{t-j}$: differenced and lagged logarithmic value of export of oilseeds measured in USD;

$\Delta\ln REER_{t-j}$: differenced and lagged logarithmic index of real effective exchange rate of the country using base year 1995=100;

$\Delta\ln GDP_{t-j}$: differenced and lagged logarithmic value gross domestic product of the country measured in USD;

$\Delta\ln TOT_{t-j}$: differenced and lagged logarithmic value of terms of trade of the country measured in percentage (calculated using equation 3 above);

$\Delta\ln EV_{t-j}$: differenced and lagged logarithmic value of exchange rate variability (calculated using equation 4 above);

$\Delta\ln X_{t-1}$, $\Delta\ln REER_{t-1}$, $\Delta\ln GDP_{t-1}$, $\Delta\ln GDP_{t-1}$, $\Delta\ln TOT_{t-1}$ and $\Delta\ln EV_{t-1}$ are logarithmic first lag values of the same variables explained above;

β_0, β_1, β_2, β_3 and β_4 are short run coefficients to be estimated, and

μ_0, μ_1, μ_2, μ_3 and $\mu4$ are long-run coefficients to be estimated.

In order to determine whether there is long-run relationship among the variables in co-integrating equation (1), the null hypothesis of no long-run relationship (i.e. H_0: $\mu_1 = \mu_2 = \mu_3 = \mu_4 = 0$) against the alternative hypothesis of long-run relationship (i.e. H_A: $\mu_1 \neq \mu_2 \neq \mu_3 \neq \mu_4 \neq 0$) using the F-statistic (Wald test) was used.

3.0 Result and Discussions

3.1 Movement of Price and Competitiveness

Since Ethiopia is a small country, it is not be able to affect the world price. It is obvious that this country is a price-taker. As a result, the only policy measure for the country to increase the foreign currency (in the short-run) earning is through increasing its competitiveness. Figure 3.1below gives a clear picture how competitiveness moves with price of oilseeds.

Even if the country's competitiveness index (REER) had increased during the year 1992-1994, there was no real improvement in competitiveness. But, during the same period the price of oilseeds was decreasingly volatile. As

a result, the overall competiveness and foreign exchange earning of the country had improved. Between the fiscal years 1995/96 and 2002/03, REER was decreasing while prices of the commodities in question were decreasing. This implies that the improvement in competitiveness did not benefit the country in real terms. This is because; the earning from export is just by exporting more and more products to the outside world. The implication of this phenomenon is that, there is unfair flow of resources from the country; since the country is exporting primary agricultural products. Perhaps this has its own contribution to the current incremental environmental degradation which leads us to the overwhelming environmental problems that the world is talking about day and night these days (Haile, 1999; Kidana,1999 and Josef et al., 2009).

3.2   Unit Root Test Results

In order to justify the theories behind the models, it is important to test for the stationerity properties of the variables. This helps to make conclusions in case where the test statistics (the calculated F- value) lies between the upper and lower critical values of the tabulated F-statistics (pesaran et.al, 2001). In fact, many time series analysts confirm that most time series variables are stationary after the first difference. This is what has happened in this study, as well.

3.3   Diagnostic Tests

Before embarking in econometric estimation it is a must to test the data for different diseases which would mislead the output and end up with wrong interpretations and conclusions. To this end different tests namely: Breusch-Pagan / Cook-Weisberg test for heteroskedasticity, Ramsey RESET test, ARCH, Breusch-Godfrey LM test for autocorrelation, were employed to assure the robustness of the model used. All the test results revealed that there none of these diseases in the model. This is inferred from the fact that each of the tests has failed to reject the null hypothesis (see table2).

3.4   ARDL Estimation Results

Consistent with Abolagba et al.,(2010), Mohamad et al., (2009) Egert and Morales-Zumaquero, (200) and Azaikpono, et al., (2005), the target variable, exchange rate variability is found to be negative and significant at 1% significance level. This implies that the continuous devaluation of Ethiopian currency affects export of oilseeds adversely. This is also consistent with the theory of risk aversion, where producers speculate further devaluation and hoard their produces and even exports as well.

A term of trade is found to be positive and significant implying export of oilseeds is in favour TOT. This is the result of in increasing demand for oilseeds all over the world. For instance, export of sesame seed has grown in double digits each year from 1998 to 2006:50,000 tons in 1998 and more than 100,000 tons in 2006 (CSA, 2006; CAE, 2009). In addition to this, the price of oilseeds is also increasing which resulted in a significant contribution to the improvement of TOT. For instance, one kilogram of sesame seed was about 0.88USD/kg in 2005 and it has increased to 1.3USD/kg 2009 and it was about 1.4USD/kg by the end of 2010.

The long-run results revealed that, Exchange rate variability and REER are not significant. This is because in the long run it is obvious that risk aversion behaviour of actors in the export sector became lower and lower as a result of experience and ability of precise speculation. In addition to this, in the long-run it is possible to boost production of oilseeds. Generally the long-run coefficient of REER and its sign are found to be ideal indicators of the real situation on the ground.

Though TOT is positive and significant in short run it has negative and significant effect in the long run. In the short run, the positive relationship is due to the increasing demand that has resulted in the improvement of prices. But in the long run, due to inelastic nature of demand for agricultural products, the price would not increase further. As a result, the negative relationship would persist in the long run, which implies the deteriorating TOT of the country. This is basically the main problem of countries like Ethiopia that are relaying on export of primary agricultural products.

All the above conclusion are done after examining the existence of long run relationship between export of oil seeds and all explanatory variables in the model. The test statistics (Wald test) computed revealed that, regardless of the signs and their significance, there is a significant relationship between the explanatory variables and export of oilseeds in the long-run at 5% significance level.

3.4.1 Sensitivity Analysis

The critical bounds are graphed and it is found that the plot of CUSUM stay within the critical 5% bound for all equations and CUSUMsq statistics does not exceed the critical boundaries that confirm the long-run relationships between financial variables and also shows the stability of determinants (see figure 3).

3.0 Conclusion and Recommendation

Export of oilseeds is found to be a negative function of Exchange rate variability. Therefore the continuous devaluation of Ethiopian birr was not in favour this produce. In addition to this, the theory of deteriorating Terms of Trade (TOT) was proved, implying that in an agrarian economy like Ethiopia, prices of primary agricultural products are bound to stack or decrease after a certain level while price of imports are ever increasing. Real Effective Exchange Rate (REER) was found to be insignificant, implying that continuous devaluation had no significant effect in improving competitiveness of the country. On the other hand, Wald test performed suggested that there is long-run relationship between export and the determinant variables included in the model.

Regardless of the competiveness and exchange rate variability, emergency of oilseeds as an important export crop is in favour of the Ethiopian economy. This is good indicators that export diversification would benefit the country. Therefore, it is very important to diversify export to make the export basket of the country multi sourced. In addition to this, continuous currency devaluation should be amended based on the competitiveness index of the country. This will help the country to extract all possible benefits of international trade and reward factors of production accordingly.

According to exporters in the country, it is the sub-standard equality which hinders the price of Ethiopian exports. This quality constraint is due to high transport and handling costs and unsophisticated pre-production, production and post production techniques. As a result, working on improving the production techniques, and storage and transportation will improve the quality of produces thereby boosting the export earning of the country. Moreover, institutional factors which are embedded with rent seeking[42] and adverse selection[43] are also crucial constraints that are hampering Ethiopian exports. In fact further research need to be done in such factors to find out the link and the exact effect.

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[42] Rent seeking arises because of long bureaucracy where by stakeholders prefer to find out the way to break the process and lobby officials for the benefit of a few lobby group.

[43] Adverse selection implies that a consequence of rest seeking and other related problems where by government is unable to screen best performing employees and traders to the benefit of the country. The concepts are more explained in Kirsten et. al (2009).

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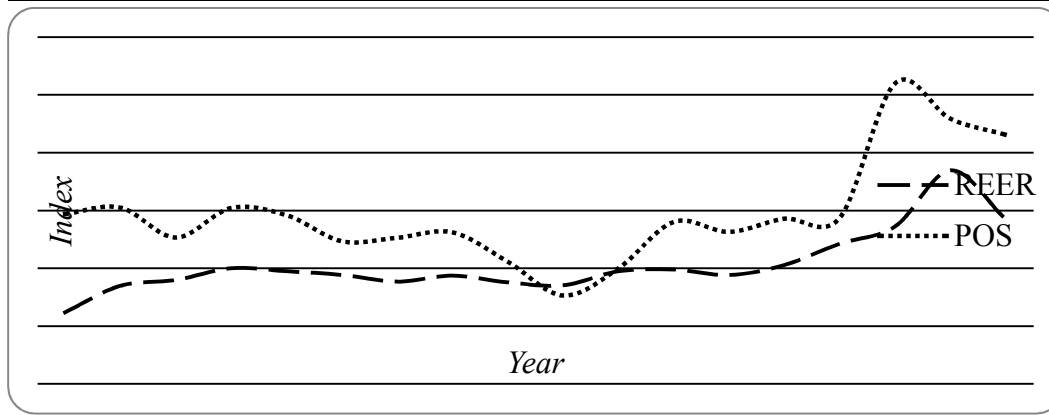
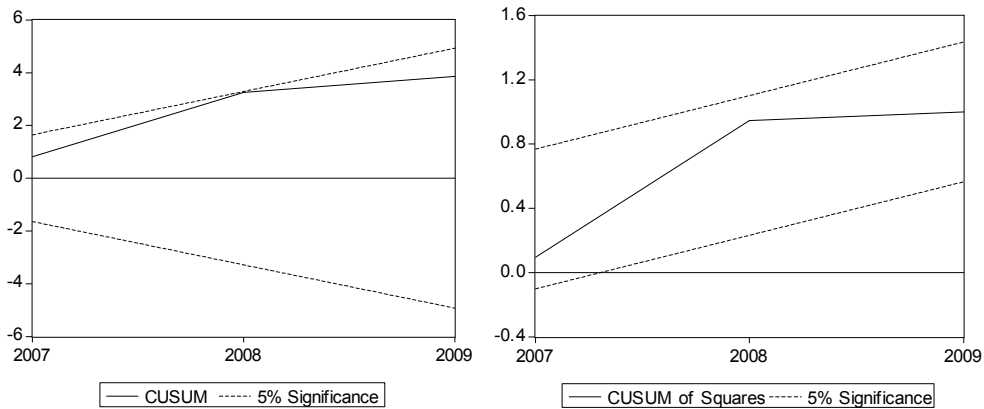**Figure1:** Real effective Exchange rate and price dynamics

Figure 2: CUSUM and CUSUM plots

Table 1: Unit root test results

Table 2: Diagnostic test results

Test	Null hypothesis (Ho)	Test statistics	Prob>chi^2
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	Constant variance	Chi2(1)=0.01	0.9263
Ramsey RESET test	model has no omitted variables	F(3, 3) = 0.358	0.225
ARCH	no ARCH effects	Chi2(1)=0.375	0.5405
Breusch-Godfrey LM test for autocorrelation	no serial correlation	Chi2(1)=0.096	0.7566

Table 3: ARDL (0, 0, 2, 1, 1) Short run determinants

*The stars ***, ** and * shows significance of variables at 1%, 5% and 10% significance level respectively*

Table 4: Long-run determinants

DlnVOS	Coefficient	Standard error	p-value
L1lnVEOS	-0.534506*	0.187031	0.016
L1lnGDP	0.0520286	0.296083	0.864
L1lnREER	1.130967	1.468787	0.458
L1lnEV	-0.150804	0.133205	0.282
L1lnTOT	-2.28553*	0.824098	0.018
_cons	7.973407	6.040285	0.214

Table 5: Test statistics (Wald Test)

Ho (Null Hypothesis)	Computed test statistics (Wald Test)	1% critical values		5% critical value		10% critical value	
		I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
No long run relationship	4.45**	3.57	4.84	2.78	3.94	2.43	3.50

DlnVEOS	Coefficient	Standard error	p-value
L1DlnVEOS	0.7017722**	0.2144004	0.022
DlnGDP	-0.0544084	0.1106686	0.644
DlnREER	2.64478**	0.7530268	0.017
L1DlnREER	1.382915	1.282798	0.330
L2DlnREER	-2.978365*	1.218546	0.058
DlnEV	-0.2701841***	0.0571313	0.005
L1DlnEV	-0.2170326**	0.0735877	0.032
DlnTOT	2.45882**	0.7101518	0.018
L1DlnTOT	1.039613	0.5343706	0.109
_cons	0.2938326**	0.1086176	0.043

Adj. R^2 = 0.665   P= 0.06   Durbin-Watson d-statistic(10, 16) = 1.822

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