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Growth of Tobacco Exports in Zambia: An ARDL Approach

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Abstract

Exports are a vital component of a nation's balance of payments as they are source of foreign exchange and economic growth. Much of the economic growth in Zambia has been driven by copper exports which have suffered from external shocks such as plummeting prices on the world market. It is against this background that the Government of the Republic of Zambia (GRZ) has devised a number of measures to promote export diversification to non-traditional exports with a view to reducing heavy dependency on copper and stabilise foreign exchange earnings. The non-traditional exports have recorded growth averaging about 30 percent during the period. However, the key determinants of the growth of the non-traditional exports are unknown. This study therefore endeavored to determine factors that affect the growth of the main non-traditional export commodity in Zambia; Tobacco. The study employed annual time series data that spans a period of 34 years from 1980 to 2014. The ARDL approach to co-integration revealed that tobacco exports are co-integrated with foreign direct investment, real effective exchange rate, real GDP of trade partners, real interest rate and world price. The ARDL analysis revealed that tobacco exports are significantly affected by real effective exchange rate, real income of the trading partner and foreign direct investment in the short-run while only real effective exchange rate and the real income of the trading partner affect the growth of tobacco exports in the long-run. Apart from creating an enabling environment through diverse export incentives that increase influx of foreign direct investment, there is also need to maintain a stable exchange rate by the government if export diversification is to be realized.

Keywords: Growth, Non-traditional Exports, Co-integration, ARDL, Zambia

1. Introduction

Exports are an important component of national income determination. Ideally, the higher is the level of exports relative to imports, the higher will be the level of national income. The importance of a nation's exports cannot be overemphasized. An increase in a country's exports of goods and services can reduce unemployment problems, improve the balance of payments, increase foreign exchange earnings and subsequently reduce heavy external borrowing. An increase in exports is a conduit through which a country can foster economic growth. Therefore, developing this sector can eradicate the high poverty levels being faced by developing countries like Zambia (Were *et al*., 2002).

Like most African countries, Zambia's economy was heavily controlled by the state after independence. The country pursued an import substitution strategy aimed at creating a manufacturing base that would encourage production of goods locally and discourage imports. The import substitution strategy was supported by earnings from copper exports whose prices were skyrocketing. To this effect, the Zambian government imposed exorbitant import tariffs which were as high as 150 percent. In addition, the import substitution strategy also led to a highly protective exchange rate regime. The overvalued Kwacha during this period had negative repercussions on the agricultural sector as it reduced earnings realized by farmers from export of agricultural cash crops (World Bank, 1984). The agricultural sector was also taxed through low and unfavorable producer prices of maize offered to farmers.

Inefficient policies such as subsidies were pursued mainly to increase production of maize while producers of other agricultural crops were heavily taxed. Furthermore, the rural areas, where the maize is produced were largely isolated in terms of infrastructural development while earnings from copper were used for infrastructural development in urban areas. The agricultural sector was just seen as way of satisfying the food needs of the ever-increasing urban population. However, the country recorded moderate growth during this period, largely due to favorable copper prices on the international market. The rate of growth of Gross Domestic Product (GDP) averaged 3.4 percent during this period (Bonnick, 1997).

The plummeting copper prices in 1974 due to external oil shocks led to the state driven import substitution strategy to become impracticable, infeasible and unsustainable. The country's heavy reliance on a mono export commodity was exposed. Government could not raise its much needed revenue to finance its developmental projects hence resorting to external borrowing which had a negative impact on the balance of payments. The country experienced an upsurge in total external debt from US$1 billion in 1973 to US$ 3 billion in 1983 (Bonnick, 1997).

However, with a change in government in 1991, the economy was liberalized and the country reversed some of the negative growth experienced over the previous two decades. The liberalization of the economy has coincided with the growth of non-traditional exports . These include cotton, sugar, horticulture, floriculture, tobacco and other non-agricultural products such as electrical energy, lime, gemstones and copper wire (CSO, 2015). Earnings from non- traditional exports have increased albeit their share of total exports earnings declining during some periods. For most rural households who grow export crops, Non-Traditional Exports (NTEs) are becoming an important source of income and employment (FNDP, 2006). However, despite the increase in the volume of nontraditional exports traded, the composition of the export sector has not changed much with the growth in exports still largely driven by copper. Copper accounts for over 70 percent of total exports (SNDP, 2014). Occasional decline in copper prices have impacted negatively on economic growth. The key factors influencing the growth of NTEs are not known with certainty. It is therefore, against this background that this study was carried out to determine the main factors that promote growth of NTEs in Zambia to suggest policies deemed necessary to strengthen the factors and ensure sustained growth of NTEs and economic growth in general.

2.0 Review of Literature

2.1 Supply side factors and Export Performance

Several studies have found that Gross Domestic Product impacts positively on exports growth. Allaro (2010) analyzed determinants of export performance of oilseeds Ethiopia using time series data from 1974 to 2009. . In order to evaluate the determinants of oil seed in Ethiopia, the study adopted variables used in previous studies (Mesieke *et al*., 2008; Babatunde, 2009; Abolagba *et al*., 2010; Folawewo and Olakojo, 2010), amongst others. The findings revealed that the main drivers of export growth of oil seeds in Ethiopia were the real GDP of Ethiopia and the nominal exchange rate.

Idisardi (2010) employed a gravity model to study the determinants of agricultural exports in South Africa and found that the agricultural exports were significantly affected by South Africa's GDP. Helga (2005) on the other hand found that the GDP of the exporting country does not affect its exports in the case of Iceland. Leite (2008) also found no evidence that the GDP of Colombia affects it exports. On the contrary, Hatab (2010) found that the GDP per capita significantly and negatively affected the volume of its exports and concluded that this may be due to the increase in consumption and demand of the domestically produced goods thereby leaving only a small amount available for export purposes. However, Egyptian exports were highly responsive to changes in its GDP. An increase in the GDP of Egypt by 1 percent increased its exports by 5.42 percent. Tien (2009) also found that Vietnam's GDP growth rate positively affected the growth of its exports although the coefficient of GDP was less than unit implying that exports were inelastic with respect to GDP.

Abolagba *et al*. (2010) used Ordinary Least Squares regression (OLS) to analyze determinants of Nigeria's two agricultural exports; cocoa and rubber during the period 1970 to 2005. The findings revealed that for both crops, the main determinants of export growth were domestic or supply side factors. For rubber exports, he found that domestic output of rubber, interest rate, domestic producer price and domestic consumption were important determinants of rubber exports in Nigeria. On the other hand Folawewo and Olakojo (2010) investigated determinants of Nigeria's agricultural exports using co-integration approach and found that domestic agricultural output was the most important factor that affected growth of agricultural exports. They also found that agricultural exports were significantly affected by the world price and the real income of the trading partners. Another study in Nigeria by Yusuf (2007) examined determinants of selected agricultural exports such as cocoa, rubber and palm-kernel post liberalization using co-integration and error correction approaches. The results revealed that export growth is dominated and significantly affected by supply side factors such as previous domestic price, Nigeria's GDP, relative prices and exports in the previous period. Demand side factors such as exchange rate were only found to significantly affect rubber exports.

In an effort to investigate factors that determine the export performance of Ethiopia, Anagaw and Demissie (2012) used econometric model such as the Johansen co-integration and error correction approaches for the period 1970-2011. The findings of the study revealed that in the short run, the growth of Ethiopia's exports could

only be explained by openness of the current year. However, in the long run, factors such as openness, private credit as a ratio of Gross Domestic Product (a proxy for financial development) significantly affected Ethiopia's exports. Real Gross Domestic Product of Ethiopia and infrastructural development were found to have a significant and positive effect on the export volumes. On the demand side, the real Gross Domestic Product of the trading partner and the real effective exchange rate were found to have a positive effect on Ethiopia's exports. Ethiopia's exports were more elastic to its real GDP (1.7) while they were found to be inelastic with respect to the rest of the other variables.

2.2 Demand Side Factors and Export Performance

The Gross Domestic Product of the importing country has also been employed by a number of studies to ascertain if it influences export performance. Tura (2002) examined the factors that affect growth of exports within the demand framework in which the GDP of the importing countries was weighted by subtracting prices of the exports and the quantity of exports of the importing country. His findings revealed that both factors did not influence exports in the short run although the real income of the importing countries did affect growth of the exports in the long run. Shane (2008) examined factors that affected growth of agricultural exports of the United States of America (USA) for the period 1970 to 2006 and employed a similar approach used by Tura (2002). The findings revealed that the real income of the trading partner was the most important factor that affected the growth of agricultural exports of the USA. The elasticity of USA exports with respect to the real income of the importing was found to be 0.75 implying that USA exports are inelastic with respect to the trading partner's income. On the other hand, he found that the real effective exchange rate and the volume of exports impacted negatively on the exports. A decrease in the exchange rate by one percent against the currencies of the trading partner increased USA agricultural exports by 0.51 percent.

Using a simultaneous equation framework, Sharma (2001) investigated the determinants of Indian exports using annual time series data. On the demand side, the main variables used were relative prices and exchange rate, while the supply side factors included domestic relative prices. His findings were that a fall in export prices increased demand for Indian exports while appreciation of the Indian rupee against major currencies of the trading partners had a negative impact on Indian export volumes. On the other hand, a fall in domestic prices relative to world prices had a positive effect on exports. However, foreign direct investment and infrastructural development had no effect on India's exports.

Using co-integration and error correction approaches, Mwansakilwa *et al* (2013) investigated the growth and competitiveness of flower exports for Zambia to major trading partners; Netherlands, United Kingdom and Germany for the period 1990 to 2010. The variables of interest were analyzed within the confines of the demand and supply framework. On the demand side, flower production, export credit and real exchange rate were found to have a significant impact on flower exports. On the supply side, exports by other countries, population of importing countries, real GDP of importing country, world price and real exchange rate had a significant impact on flower exports. The limitation of this study is that the inferences made from their findings are highly questionable due to the short span of their data implying that there is loss in the number of degrees of freedom especially that they used many independent variables. Furthermore, the study used the Vector Error Correction model despite the variables being integrated of different orders.

3.0 Methodology

3.1 Data Sources

The study employed time series data from Bank of Zambia (BoZ), Zambia's Central Statistical Office (CSO), Food Agricultural Organization Statistics (FAOSTAT) and the World Development Indicators (WDI) of the World Bank. Data on real exchange rates, foreign direct investment, real GDP of trading partners and real interest rates were obtained from BoZ and WDI while data on tobacco exports were obtained from FAOSTAT and CSO. Data on world prices of tobacco were obtained from World Bank Commodity prices of the World Bank.

3.2 Methods of Data Analysis

To determine demand and supply factors that affect growth of tobacco exports, the study used the Auto-Regressive Distributed Lagged (ARDL) model approach. This approach was also used by Ragoobur (2011). Therefore, use of this approach is justified because; (1) it helps in establishing the short and long run relationships or dynamics among the variables (2) It can be estimated regardless of the order of integration of the

variables. The first step in estimating the ARDL is testing the order of integration. It is imperative to first test for stationarity as failure to do so would yield spurious regression results. The Augmented Dickey Fuller (ADF) was used to test the variables for stationarity. Following Engel and Granger (1987), ADF test procedures were defined as follows:

$$\Delta Y_t = a_0 + a_1 Y_{t-1} + \sum_{t=1}^{T} b_i \Delta Y_{t-1} + e_t \quad \text{..... (1)}$$

$$\Delta Y_t = a_0 + B_2 t + a_1 Y_{t-1} + \sum_{t=1}^{T} b_i \Delta Y_{t-1} + e_t \quad \text{..... (2)}$$

Equations 1 and 2 above are the augmented dickey fuller tests without trend and with trend respectively where ΔY_t is the differenced Y_t series and its lags, a_0 is the intercept, t is the trend variable and e_t is the error term. The null hypothesis is that the series Y_t is nonstationary (a_1=0 in (9) and (10))). The Akaike Information Criterion (AIC) and the Swartz Bayesian Information Criterion (SBIC) were used to select the optimal number of lags used in the ADF.

3.3 Model Specification

The ARDL bounds testing procedure was used to test for the existence of co-integration among the variables. The ARDL representation was specified as follows:

$$\Delta\, TE_t =$$

$$\alpha + \sum_{i=1}^{m} \gamma_i \Delta\, TE_{t-i} + \sum_{i=0}^{n} \lambda_i \Delta\, FDI_{t-i} + \sum_{i=0}^{o} \Psi_i \Delta\, REER_{t-i} + \sum_{i=0}^{p} \phi_i \Delta\, RIT_{t-i} + \sum_{i=0}^{q} \mu_i \Delta\, RIR_{t-i} + \sum_{i=0}^{r} \varphi_i \Delta\, TP_{t-i} + \beta_1 TE_{t-1} + \beta_2 FDI_{t-1} + \beta_3 REER_{t-1} + \beta_4 RIT_{t-1} + \beta_5 RIR_{t-1} + \beta_6 TP_{t-1} + \varepsilon_t$$

.... (3)

The Bounds test of co-integration involves testing the hypothesis that the betas in (3) are jointly equal to 0. If we fail to reject the null hypothesis, then we conclude that there is co-integration among the variables. If there is co-integration among the variables, Granger representation theorem postulates that their short-run dynamics can be described by the Error Correction Model (ECM) (Maddala, 1992). The ECM representation was specified as follows:

$$\alpha + \sum_{i=1}^{m} \gamma_i \Delta\, TE_{t-i} + \sum_{i=0}^{n} \lambda_i \Delta\, FDI_{t-i} + \sum_{i=0}^{o} \Psi_i \Delta\, REER_{t-i} + \sum_{i=0}^{p} \phi_i \Delta\, RIT_{t-i} + \sum_{i=0}^{q} \mu_i \Delta\, RIR_{t-i} + \sum_{i=0}^{r} \varphi_i \Delta\, TP_{t-i} + \pi ECM_{t-1} + \mu_t \quad \text{..... (4)}$$

Equation (4) shows the variation in TE_t around its long-run value. The error term, π in (4) shows the speed of adjustment of TE_t towards its long run equilibrium position. It shows the percentage by which any deviations of the dependent variable are corrected within a particular time frame, one year in this case because the study used annual data (Mwansakilwa, 2013). The negative error term implies that the dependent variable will have to fall in the next period for equilibrium to be restored. On the other hand, if the error term is positive, the dependent variable has to rise in the next period for equilibrium to be restored.

Table 1: Description of variables used in the ARDL

Variable	Variable name	Measurement	Expected sign
$REER_t$	Real effective exchange rate	The trade weighted exchange rate between the Zambian Kwacha against currencies of major trading partners	+
RIR_t	Real interest rate	Percentage (continuous)	-
FDI_t	Foreign direct investment in Zambia (net inflows)	United States Dollars	+/-
RIT_t	Real GDP of importers of tobacco	Weighted GDP of importers of tobacco (United States Dollars)	+/-
TP_t	World price of tobacco	United States Dollars	+
TE_t	Tobacco exports	Metric ton	

Note: All variables are expressed in logarithmic form except FDI and RIR

4.0 Results and Discussion

4.1 Stationarity tests

Results in table 2 show that all the variables are integrated of the same order except for Real Effective exchange rate which is stationary in levels. The appropriate and congenial method for testing for co-integration for variables integrated of different orders is the Auto Regressive Distributed Lagged (ARDL) bounds test approach as proposed by Pesaran *et al* (2001**).**

Table 2: Unit root tests

Variable	Level		First Differences		Order of Integration
	Constant	Constant and trend	Constant	Constant and trend	
REER	-3.655(2)**	-3.644(2)**	-3.657(1)**	-4.256 (1)**	0
RIR	-1.632(1)	-2.150(1)	-5.301(0)***	-5.221 (0)***	1
FDI	-1.931(4)	2.331(4)	-4.548(4)***	-4.954(4)***	1
RIT	1.848(3)	-0.302(3)	-4.275(1)***	-5.318(1)***	1
TP	-1.404(1)	-2.331(1)	-3.613(1)**	-3.609(1)**	1
TE	-0.577(1)	-3.196(1)	-4.439(2)***	-4.410(2)***	1

4.2 Co-integration test

The results of the bounds approach for co-integration among factors that affect growth of tobacco exports are presented table 3. The computed F static (6.57) is greater than the F-critical at 10, 5, 2.5 and 1 percent respectively. Therefore, the null hypothesis is rejected hence; there exists a long-run relationship among the variables, implying the existence of co-integration among the variables. Since there is co-integration among the variables, the short-run and long-run dynamics of the factors that affect growth of tobacco exports are examined in section 4.3.

Table 3: Bounds Co-integration test

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	6.569264	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.49	3.38
5%	2.81	3.76
2.50%	3.11	4.13
1%	3.5	4.63

4.3 Short run and Long run dynamics of factors that affect growth of tobacco exports

The ARDL (1, 0, 3, 0, 3, 0) was used to determine factors that affect growth of tobacco exports. The lag structure of the ARDL model was determined by the Schwartz Bayesian Information criterion. The model included the trend variable. Factors that affect growth of tobacco exports and the corresponding are shown in table 4 and 5 respectively.

Table 4: Short run dynamics of factors that affect growth of tobacco exports

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RIR)	-0.0012	0.0024	-0.4999	0.6235
D(REER)	0.9189	0.2517	3.6510***	0.0020
D(REER(-1))	-0.4391	0.2328	-1.8860*	0.0765
D(REER(-2))	-1.3889	0.2508	-5.5370***	0.0000
D(TP(-1))	0.8683	0.6259	1.3874	0.1832
D(FDI)	0.0478	0.0127	3.7603***	0.0016
D(FDI(-1))	-0.0516	0.0140	-3.6942***	0.0018
D(FDI(-2))	-0.0352	0.0106	-3.3324***	0.0039
D(RIT)	-9.7343	4.1615	-2.3391**	0.0318
C	157.0160	23.2269	6.7601***	0.0000
CointEq(-1)	-0.8523	0.1263	-6.7481***	0.0000

Note: *,**,*** means significant at 10, 5 and 1 percent respectively

Table 5: Short run dynamics of factors that affect growth of tobacco exports

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RIR	-0.0044	0.0033	-1.3497	0.1948
REER	1.7850	0.3382	5.2776***	0.0001
TP(-1)	0.6601	0.8996	0.7337	0.4731
FDI	0.1768	0.0916	1.9302*	0.0704
RIT	-16.1426	5.0572	-3.1920***	0.0053
@TREND	0.3275	0.0963	3.4000***	0.0034

Note: *,**,*** means significant at 10, 5 and 1 percent respectively

All the variables have the correct expected signs. The partial elasticity of tobacco exports with respect to real interest rates is -0.0012. This means that a 1 percent increase in the real interest rate will result in a 0.12 percent decrease in the volume of exports in the short-run. On the other hand, a 1 percent increase in the real interest rate in the long-run reduces the volume of exports by 0.44 percent. However, the probability values of the estimated coefficients of real interest rates show that they are insignificant in both the short-run and long-run. This means that the real cost of borrowing is not an important determinant of tobacco exports growth in both the short-run and long-run. This result is consistent with that found by Byanyima (2011) who found that interest rates do not influence exports in the short-run. Abolagba (2010) also found that interest rates did not affect the quantity of rubber exports in the long-run in Nigeria.

The coefficient of real effective exchange rate is significant in both the short-run and long-run. A 1 percent increase in the real effective exchange rate (depreciation of the Zambian Kwacha against its trading partner) results in an increase in the volume of exports by 0.92 percent and 1.79 percent in the short and long-run respectively. This result is consistent with that found by Abbott (2004) who found a positive and significant relationship between the real effective exchange rate and agricultural exports of the United States of America. Kingu (2014) also found a positive and significant relationship between real effective exchange rate and cotton lint exports in Tanzania. Ragoobur (2011) on the other hand found an insignificant relationship between exports and the real effective exchange rate in Mauritius. Byanyima (2011) and Agasha (2009), on the other hand, found a negative and significant relationship between exports and the real effective exchange rate in Uganda. A depreciation of the Zambian Kwacha makes tobacco exports cheaper and competitive on the international market. The converse is also true. An appreciation of the Zambian Kwacha against its trading partners makes the tobacco exports expensive and less competitive on the world market thereby decreasing the volume of tobacco exports. The results also show that depreciation of the Kwacha against major trading currencies in the previous period reduces tobacco exports by 0.44 percent while the depreciation in the previous two periods decreases tobacco exports by 1.39 percent.

The international price in the previous year was found to have a positive but insignificant effect on the volume of tobacco that is exported. The coefficient of international tobacco price means a 1 percent increase in the world price of tobacco will lead to an increase in tobacco exports by 0.87 percent in the short-run and 0.66 percent in the long-run. This means that that the price offered on the world market does not affect the volume of tobacco exports. This result is similar to that of Mold (2010) who found that the international price was positive (0.09) but not significant in influencing the quantity of exports. However, Morrissey (2006) and Mwansakilwa (2013) found a positive and significant relationship between exports and the world price.

Foreign direct investment was found to have a significant impact on tobacco export volumes. The partial elasticity of tobacco exports with respect to foreign direct investment was found to be 4.78. This means a 1 percent increase in the amount of foreign direct investment increases tobacco exports by 4.78 percent in the short-run. In the long-run, a 1 percent increase in the amount of foreign direct investment increases the quantity of tobacco exports by 17.68 percent and is significant at 10 percent level of significance. This finding is consistent with that of Paulino and Thirwall (2004) who found out that foreign direct investment significantly affects exports in developing countries while Boansi (2013) also found a positive and significant relationship

between coffee exports and foreign direct investment in Ethiopia. However, this result contradicts that of Majeed and Ahmad (2006), Nadeem *et al.* (2012) and Agasha (2009) who found a positive but insignificant relationship between the volume of exports and foreign direct investment in Pakistan and Ethiopia respectively. On the other hand, a 1 percent increase in the amount of foreign direct investment in the previous year decreases tobacco exports by 5.16 percent while an increase in the previous 2 years of foreign direct investment reduces the volume of tobacco exports by 3.52 percent. The contradictory results imply that the impact of foreign direct investment on the volume of exports may differ depending on its motive whether the aim is to satisfy local demand or primarily for export purposes.

The real income or GDP of the importing country was found to have a significant but negative impact on the volume of exports both in the short-run and long-run. A 1 percent increase in the income of the trading partner decreases the volume of exports by 9.73 percent and 16.14 percent in the short-run and long-run respectively. This result is consistent with that found by Ragoobur (2011) who found a negative impact of the income of the trading partner on the growth of exports in Mauritius although the impact was positive in the short-run. Idisardi (2010) also found that the real income of the trading partner had a negative impact on South Africa's agricultural exports namely; sunflower seeds, wheat and cereal pellets. However, this finding contradicts that found by Mwansakilwa (2013) who found that the real income of Germany, United Kingdom and Netherlands had a positive and significant impact on the volume of flowers that are exported by Zambia. Shane (2008) also found a positive and significant impact of the real income of importing country on the quantity of agricultural exports of the United States of America. The negative impact of the real incomes of the major trading partners of Zambia on exports may be due to slower adjustment to import tobacco exports when their incomes reduce such that a reduction in their incomes may still increase their imports. On the other hand, an increase in the trading partners' incomes in the long-run may divert their resources towards domestic production of tobacco thereby reducing the amount of tobacco imports from Zambia.

The error correction term is negative and significant thereby affirming the existence of co-integration among the variables. The coefficient of the error correction term implies that 85 percent of the disequilibrium is corrected within a year, as the frequency of the data is annual. Since the error correction term is significant and large, the speed of adjustment towards the long-run equilibrium is therefore high. The reported R squared implies that the variables in the estimated model explain 97 percent of the variation in tobacco exports. The post-estimation diagnostics revealed that the estimated model is free from autocorrelation and heteroskedasticity (see table 6). The Ramsey-Reset test, Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ) showed that the model is correctly specified and stable (see figure 1 and 2).

5.0 Conclusion and recommendations

The study sought to find out factors that have affected growth of tobacco exports over the last 34 years in Zambia. The bounds test revealed that there is co-integration among factors that affect tobacco exports. The ARDL (1, 0, 3, 0, 3, 0) was used to estimate determinants of the growth of tobacco exports. The real effective exchange rate, foreign direct investment and real income of the trading partner were found to have a significant impact on the volume of tobacco exports in both the short-run and long-run. Generally, tobacco exports are more elastic to movements in real effective exchange rate, foreign direct investment and real income in the long-run than in the short-run. This implies that policies should be aimed at reducing interest rates through provision of affordable credit facilities to farmers to enhance production and consequently the volume of exports. Foreign Direct Investment was found to have a significant impact on tobacco exports. There should be incentives in form of lower taxes and provision of export credit for all Foreign Direct Investment that is export oriented which will give impetus to increased exports of tobacco. A stable exchange rate management system should also be maintained by the government to reduce fluctuations in incomes generated from exports. Macroeconomic stability also reduces uncertainties and increases the confidence in the economy thereby attracting more capital flows in form of foreign direct investment that will further boost tobacco exports.

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7 Appendices

Table 6 : Post estimation diagnostics

R-squared	0.969220
F-statistic	41.17743
Prob(F-statistic)	0.000000
Breusch-Godfrey LM Test (Prob>. Chi-Square)	0.4499
Breusch-Pagan-Godfrey(Prob>. Chi-Square)	0.5327
Ramsey RESET Test(Prob F)	0.7406
Jarque-Bera(Prob)	0.485537

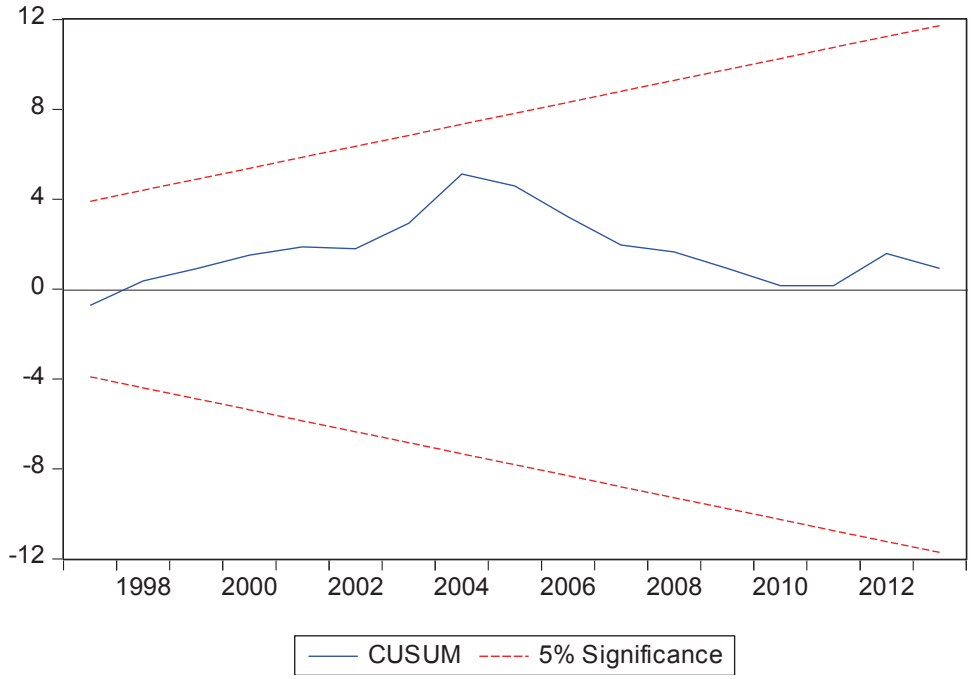

Figure 1: Cumulative Sum of Recursive Residuals

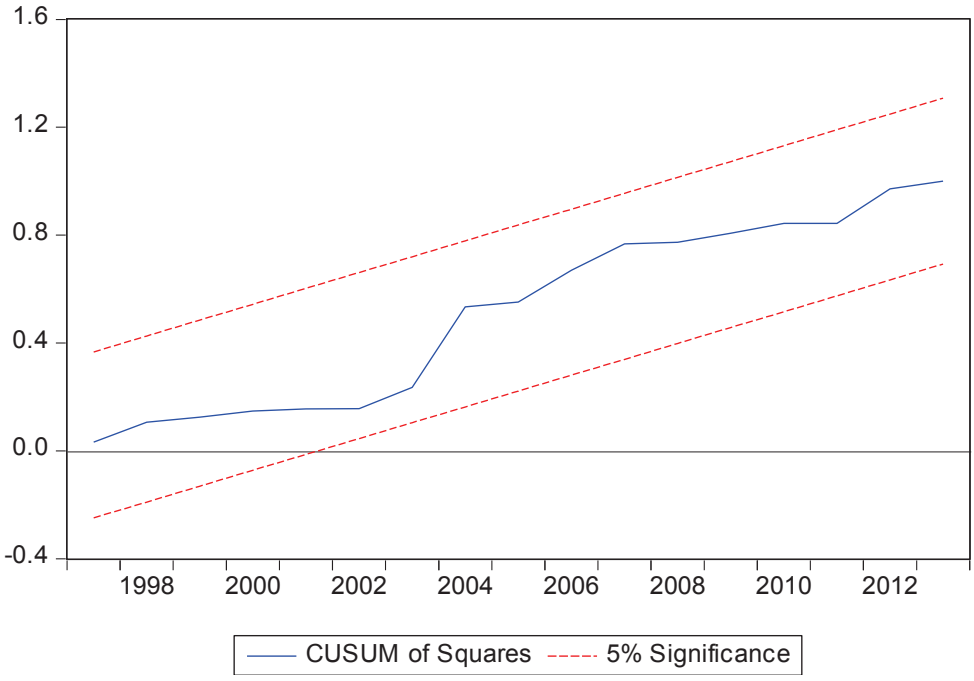

Figure 2: Cumulative Sum of Squares of Recursive Residuals

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