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**Title of the paper:** Impacts of Trade on SADC Economies: Some Evidence from Angola

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## **ABSTRACT**

Impacts of selected macroeconomic variables on the economy of Angola are analysed in this study. Using a combination of simple and multiple regression models, we established the effect of these macroeconomic variables on the economic performance of Angola. Utilising time series data for the period 1980 to 2005, the results of the study indicate that exports undeniably play a critical role in the growth of the Angolan economy. In addition to other policy options, that were put forward, the paper recommends an outward looking industrialisation strategy for the economy of Angola, including the other Southern African Development Community (SADC) countries. The direction for further research on the issue under investigation is also strongly recommended.

## **I INTRODUCTION**

Undoubtedly, the Republic of Angola is potentially one of the richest countries in the continent of Africa. It is naturally blessed with enormous amount of liquid as well as diversified solid minerals. The attention, however, has been consistently on oil and diamonds. Indeed the oil sector continues to play an instrumental role in the economy, accounting for about 55 percent of real gross domestic product, 91 percent of exports, 95 percent of total foreign earnings and 62 percent of the public sector revenues (Ogbokor, 2002). Besides, it is no longer deniable among economic scholars that export and foreign capital variables could provide a great source of economic growth for an economy (Akerele, 2001); and (Ogbokor, 2001). Relevant studies attesting to this relationship were also reviewed (Frankel et al., 1999); (Nancy et al., 2001); (Ogbokor, 2005) and (Sharer, 1999). Quantitative estimates showing the link between exports, foreign capital and economic growth of Angola are not common. Accordingly the prime objective of the study is to establish the connection between exports, foreign capital inflow and economic growth using the economy of Angola as a laboratory test ground. We shall equally attempt to show the responsiveness of economic growth to changes in the explanatory variables under discussion. The period of study is 1980 – 2005. The rest of the paper is arranged in the following sequence. In section II, we present the research procedure and model specification. Section III, contains the analysis of regression results. The final part focuses on conclusions and policy implications emanating from the study.

## **II RESEARCH PROCEDURE AND MODEL SPECIFICATION**

The study uses time series data from 1980 – 2005. In order to determine the effects of variables such as exports and foreign capital inflow on economic growth a combination of linearised simple and multiple regression models were derived and estimated by using the popular ordinary least squares (OLS) technique. The double log transformation forms for each of these models were also specified and fitted. The purpose of this is to determine the degree of sensitivity of the dependent variable to changes in the explanatory variables. Variables used are highly aggregative since the study is concerned principally with macroeconomic analysis.

The general form of the model to be estimated is thus presented as:

$$S_t = f(R_t, D_t)$$

Where:

- $S_t$  = economic growth rate  
 $R_t$  = export earnings  
 $D_t$  = foreign capital variable  
 $t$  = time period

The apriori expectations are that:

$$\frac{\partial(S)}{\partial(R)} > 0$$

implying that the economy will grow as the total export earnings rises.

Similarly,

$$\frac{\partial(S)}{\partial(D)} > 0$$

suggesting that capital inflows and economic growth move in the same direction. On the basis of this, the following linear and log-linear models were specified and fitted:

#### **Linear models**

1.  $S_t = \delta_0 + \beta_1 R_t + U_t$
2.  $S_t = \delta_0 + \beta_1 D_t + U_t$
3.  $S_t = \delta_0 + \beta_1 R_t + \beta_2 D_t + U_t$
4.  $S_t = \delta_0 + \beta_1 R_t + \beta_2 R_{t-1} + \beta_3 D_t + \beta_4 D_{t-1} + U_t$

#### **Double log models**

5.  $\text{Ln}S_t = \delta_0 + \beta_1 \text{Ln}R_t + U_t$
6.  $\text{Ln}S_t = \delta_0 + \beta_1 \text{Ln}D_t + U_t$
7.  $\text{Ln}S_t = \delta_0 + \beta_1 \text{Ln}R_t + \beta_2 \text{Ln}D_t + U_t$
8.  $\text{Ln}S_t = \delta_0 + \beta_1 \text{Ln}R_t + \beta_2 \text{Ln}R_{t-1} + \beta_3 \text{Ln}D_t + \beta_4 \text{Ln}D_{t-1} + U_t$

Where:

$S$  = proxy to economic growth i.e. real gross domestic product;

$R$  = export earnings;

$D$  = foreign capital inflow;

$t$  = current period;

$t-1$  = lag of one period;

$U$  = stochastic term.

Note that equations 1 to 4 above are in linear forms, while 5 to 8 are their respective double-log forms.

### III DISCUSSION AND INTERPRETATION OF REGRESSION RESULTS

Under each coefficient is the t-statistic in parenthesis. A two-tail test was used. The overall goodness-of-fit of the equations to the data is measured by the coefficient of determination ( $R^2$ ) and the adjusted coefficient of determination ( $R^{-2}$ ). The natural log transformations were generated for the purpose of elasticity analysis. The results of the eight estimated regression equations contained in section II of the study are reported and discussed in the following fashion. Specifically, the impact of macroeconomic variables, namely, exports and foreign capital inflows on the economic performance of Angolan economy are analysed.

The coefficient of R in equation one is positive as expected. This shows that there is a positive correlation between R and S. The R variable passes the significant test at the 10% and 5% levels of significance. The  $R^2$  value of 0.475 shows clearly that the R variable explains approximately 48% of the systematic variations in economic growth.

$$1. S_t = 38360.180^{**} + 0.29670^{**} R_t$$

(2.199)      (4.045)

$$R^2 = 0.475 \quad R^{-2} = 0.446 \quad D-W = 1.15$$

In equation 2, the negative sign of the variable D does not conform to theoretical expectations. The D variable also fails the significant test at both levels. This means that capital inflow variable does not appear to influence economic growth. The  $R^2$  value of 0.140 actually gives the equation a very poor fit. The D term is only able to account for about 14% of the changes in the dependent variable.

$$2. S_t = 100104.131^{**} - 7.084 D_t$$

(4.199)      (-1.736)

$$R^2 = 0.140 \quad R^{-2} = 0.094 \quad D-W = 0.86$$

The coefficient of the R variable in equation 3 is positive as expected while that of D is negative. The R variable also passes the significance test at both levels while the D term was found to be insignificant at both levels. The regressors taken together, that is, export earnings and foreign capital jointly explain about 43% of variations in the regressand.

$$3. S_t = 49080.484^{*} + 0.260^{**} R_t - 2.190 D_t$$

(2.048)      (3.110)      (-0.707)

$$R^2 = 0.477 \quad R^{-2} = 0.428 \quad D-W = 1.12$$

The coefficients of the variables in equation 4 are all positive as expected. However, only the R and  $R_{t-1}$  variables are significant at both the 10% and 5% levels. The equation has a good fit in terms of the adjusted coefficient of determination. The explanatory variables jointly explain 86% of the changes in economic growth.

$$4. S_t = -4636.731 + 0.301^{**}R_t + 0.317^{**}R_{t-1} + 2.356D_t + 0.5410D_{t-1}$$

$$(-0.466) \quad (8.417) \quad (8.745) \quad (0.904) \quad (0.212)$$

$$R^2=0.916 \quad R^{-2}=0.860 \quad D-W=1.14$$

The coefficient of the R variable is positive as expected in equation 5. The R variable is significant at both 10% and 5% significant levels. The equation has a good fit in terms of its coefficient of determination. A ten percent increase in R will ceteris paribus, bring about a 6.2% rise in economic growth.

$$5. \text{Ln}S_t = 4.260^{**} + 0.617^{**}\text{Ln}R_t$$

$$(3.160) \quad (6.44)$$

$$R^2=0.694 \quad R^{-2}=0.612 \quad D-W=1.53$$

An examination of equation 6 shows that the coefficient of the D term is negative. The D variable is only significant at the 10% level. The equation has a poor fit in terms of its coefficient of determination. It is also apparent from the equation that, ceteris paribus, a 10% rise in D will lead to a 2.4% fall in economic growth.

$$6. \text{Ln}S_t = 12.909^{**} - 0.239\text{Ln}D_t$$

$$(11.20) \quad (-1.941)$$

$$R^2=0.179 \quad R^{-2}=0.140 \quad D-W=1.35$$

In equation 7, the coefficients of both the R and D terms conform to a priori expectations. However, only the  $X_t$  variable passes the hypothesis test at both the 10% and 5% levels of significance. The  $F_t$  variable was found to be insignificant at both levels. The high value of  $R^{-2}$  implies that the equation has a good fit. The two explanatory variables jointly account for more than 64% of the variations in economic growth. A 10% rise in R will, ceteris paribus, lead to 6.2% rise in S, while a similar increase in D will lead to a 0.1% rise in S.

$$7. \text{Ln}S_t = 5.16^{**} + 0.620^{**}\text{Ln}R_t + 0.009\text{Ln}D_t$$

$$(2.44) \quad (5.140) \quad (0.06)$$

$$R^2=0.681 \quad R^2=0.638 \quad D-W=1.58$$

In equation 8, the coefficients of the regressors are positive as expected. Only the R and  $R_{t-1}$  variables were significant at the given significant levels. The equation has a good fit in terms of the adjusted coefficient of determination. The explanatory variables jointly account for about 68% of the changes in S. A 10% increase in R will, ceteris paribus, cause a 6.4% rise in S. In the same vein, there will be 2.3% increase in S if  $R_{t-1}$  goes up by 10%. Furthermore, a 10% rise in D, will ceteris paribus, induces 0.5 percentage increase in S. Similarly, S will jump up by 1.2% if  $D_{t-1}$  increases by 10%.

$$8. \text{Ln}S_t = 0.598 + 0.6399 \text{Ln}R_t + 0.225 \text{Ln}R_{t-1} + 0.0481 \text{Ln}D_t + 0.1185 \text{Ln}D_{t-1}$$

$$(0.162) \quad (4.611) \quad (1.870) \quad (0.491) \quad (0.908)$$

$$R^2=0.756 \quad R^2=0.679 \quad D-W=1.86$$

The analysis of equations 1 to 8 shows that exports have greater impact on the economic performance of Angola vis-à-vis foreign capital inflow for the period under study, i.e., 1980 to 2005. This result reinforces the beauty of earlier works (Noland, 1997) and (Ogbokor, 2005).

#### **IV CONCLUDING COMMENTS AND POLICY IMPLICATIONS**

In the light of the discussion and interpretation presented in section III, we recommend the following policy package.

A plan for sustained expansion of exports should form part of the country's strategy for achieving rapid economic growth. In this regard, trade expansion of the exports of manufactures and agricultural commodities should be given more emphasis in Angola's trade policy. This would help to lessen the high and precarious dependence of Angola on oil and diamond for exports and growth.

Given the need to boost Angola's exports; it may be advisable to establish an export promotion institution charged specifically with the responsibility of formulating and implementing a programme of incentives for manufacturing and agricultural exports. It should also be responsible for fostering the development of external markets for such commodities.

Capital obtained externally should be targeted at sectors capable of stimulating economic growth and development. Furthermore, the government of Angola should explore the possibility of setting up export processing zones. Given the geographical location of Angola a scheme such as the EPZ is likely to succeed.

Although the economy of Angola was used as a laboratory test ground in this study; it is however, anticipated that the results and conclusions obtained in this study would be useful to most of the other SADC economies.

In future research, it would be advisable to accommodate the following suggestions for the purpose of improving upon the results obtained in this study: Firstly, an attempt should be made to find out if serial correlation posed a serious problem in the estimated equations. Secondly, at least four other SADC countries should be included in future study. Thirdly, the foreign capital variable should be disaggregated into private capital inflows and public capital inflows so as to determine their individual effects on growth. Fourthly, in order to eliminate the possible effect of the problem of simultaneous equation biasness, further studies on the issue under investigation should explore the possibility of utilising more robust estimators such as the Two Stage Least Squares, Three Stage Least Squares, K-class estimators etc.

Finally, this study, if for nothing else has contributed in some ways in shedding light on the significance of exports and foreign capital in the growth process.

## REFERENCES

- Akerele, A.O. (2001). "Nigeria's Export Trade: Instability and Forecast." *Journal of Development Alternatives and Area Studies*, 20 (2/3), 61 – 80.
- Frankel, J.A. and D, Romer (1999). "Does trade cause growth"? *American Economic Review*, 89 (2), 379-399.
- Nancy, J.C. et al. (2001). "The Role of Multinational Corporations and Foreign Direct Investment in the Transition Economies." *Journal of Development Alternatives and Area Studies*, 20 (2/3), 81 – 98.
- Noland, M. (1997). "Has Asian Export Performance Been Unique"? *Journal of International Economics*, 43 (1/2), 80 – 95.
- Ogbokor, C.A. (2001). "Oil and Economic Growth: An Econometric Analysis." *Journal of Development Alternatives and Area Studies*, 20 (2/3), 124 – 134.
- Ogbokor, C.A. (2002). "Investigating sources of economic growth by regression methods." *Journal of Development Alternatives and Area Studies*, 21 (3/4), 187-194.
- Ogbokor, C.A. (2005). "Macroeconomic impact of Trade on Namibian Growth: An Empirical Illustration." *Journal of Social Sciences*, 1 (1), 57-60.
- Ogbokor, C.A. (2005). "Time-series Evidence for Export-led Growth Paradigm: A Case Study of Zimbabwe." *Journal of Social Sciences*, 1 (2), 77-80.
- Sharer, R. 1999). "Trade: An engine of growth for Africa." *Finance and Development*, 36 (1), 26-29.