

STATISTICAL ANALYSIS OF NIGERIA'S OIL AND NON-OIL EXPORT

Bushirat T. Bolarinwa

Dept of Mathematics & Statistics

The Federal Polytechnic, P.M.B. 55, Bida.

Abstract

Data on Nigerian oil and non-oil export for the period 1981 to 2010 were extracted from Central Bank of Nigeria (2010). Loglin and log-log models were used to model the data and parameters were estimated by the least squares method. Fitted loglin models revealed an average annual growth rate of 28.2% for the oil export and 19.7% for the non-oil export. Fitted log-log model revealed that on the average doubling the oil export was associated with 70.1% increase in non-oil export. Therefore, oil export clearly grew at a higher rate than the non-oil export. The implication of this is that the Nigerian economy would continue to be more oil dependent as years pass by, all things being equal. The research recommended to government to put up policies capable of boosting agric production since bulk of the non-oil export is composed of primary agricultural products. The need to invest heavily on infrastructural development so as to create a conducive, atmosphere for a non-oil economy was also emphasized. Above all, government was advised to lead genuine fight against corruption as only a little can be achieved in a corrupt economy.

Key words: Loglin model, log-log model, rate, least squares, economy, foreign exchange.

1. INTRODUCTION

The contribution of export to a nation's economic growth and development cannot be overemphasized. The volume and quality of export determine the volume of foreign exchange that accrues to an economy. As observed by Usman and Salami (2008), export provides employment, increases level of aggregate economic activities and reduces strains in the balance of payments.

The Nigeria's export can be broadly classified into oil and non-oil. The oil sector accounts for over 40% of the Gross Domestic Product (GDP) and about 95% of the foreign exchange earnings (Efobi & Osabuohien, 2011). This is a sharp contrast to what the situation was before the discovery of oil in 1970. Before then, agriculture was the mainstay of the economy and constituted the major foreign exchange earner. As a result of oil discovery in commercial quantity, agriculture started experiencing neglect to such extent that Nigeria began to import some of the agricultural products it formerly exported and other food crops it was self sufficient in (Oyejide, 1986).

The situation is yet to change for the better. Nigeria currently relies heavily on rice imports to feed the population even when the country has the capacity to produce enough for domestic consumption and even export. Palm oil is another example. Agricultural exports as a percentage of total exports declined from about 43% to slightly over 7% between 1970 and 1974 and from mid 1970's, the average annual growth rate of agricultural products declined by 17% (Edordu & Oramah, 1997).

Currently, Nigerian non-oil export is mainly composed of primary products, mainly agric products like cocoa, cotton, timber and so on. This is no

surprise for an economy with weak infrastructural base. Power supply remains in disarray, even though efforts at reversing the situation are recognized. The transport system is in a very bad shape with the rail mode almost non-existent- efforts in this direction are also recognized; the security situation is in worse shape than ever. Rather than export primary products, with appreciably improved infrastructure, value (of international standard) can be added at home before exportation, with direct consequence of further employment generation.

The undue reliance on oil as a major foreign exchange earner is not an enviable position as it makes the economy to be prone to price fluctuations on the international oil market. There is therefore an urgent need to reverse this trend by diversifying the economy - a situation achievable though provision of conducive operating environment in form of sound economic policies and infrastructure, for productive activities.

To achieve appreciable level of economic growth, export must be deliberately encouraged. Udude and Okulegu (2012) studied the relationship between economic growth and export in Nigeria. They concluded the existence of a long run relationship. Opara (2010) made a case for the encouragement of non-oil export in Nigeria. Other studies in the literature on export as it relates to economic growth include: Balassa (1978), Balassa (1985), Al-Yousif (1997), Edwards (1998), Abu Al-Foui (2004), Elbeydi, Hamuda and Gadza (2010). The conclusion in all these studies is that export imparts positively on economic growth. All genuine efforts at promoting export are therefore efforts at promoting growth.

How genuine are the efforts of the Nigerian government at promoting non-oil export? One would expect much encouragement from the government to the farmers since bulk of the non-oil export is mainly agric products. Rather, the situation is that monies meant for assisting the farmers end up in the pockets of the ministry officials, who often design irrelevant foreign tours to spend the allocation. The so-called subsidized fertilizers end up in the hands of politicians who end up selling same to the end users at high costs. So, who really enjoys the subsidy? The answer is obvious.

This research is aimed at modelling oil and non-oil export from the Nigerian economy. The article is organized as follows: section 2 presents the methods; section 3 presents the results and discussions while the last section concludes the article and recommends.

2. METHODS

Data

The data in millions of naira, on oil and non-oil export from 1981-2010 were extracted from Central Bank of Nigeria (2010).

Model

Loglin and log-log models were used to model the data.

The fitted loglin models are:

$$\log_e(\text{oil export}) = \alpha + \beta(\text{time}) + e \quad (2.1)$$

$$\log_e(\text{nonoil export}) = \alpha + \beta(\text{time}) + e \quad (2.2)$$

The fitted log-log model is:

$$\log_e(\text{nonoilproportion}) = \alpha + \beta \log_e(\text{oilproportion}) + e \quad (2.3)$$

Parameter estimation was carried out by the least squares method.

Equation (2.3) is also known in the literature as double log or log-linear models and the fact that the slope estimate β measures the elasticity of the dependent variable (non-oil proportion in this case) with respect to the independent variable (oil proportion) makes it quite attractive in applied work (Gujarati & Porter, 2009).

3. RESULTS AND DISCUSSIONS

The results of the analysis are presented as appendix. Table 1 presents the result of overall regression for the loglin model for oil export. With a p-value of 0.00, the regression is highly significant. Table 2 presents the parameter estimates and the associated p-values for the same model. Both the intercept (8.434) and the slope (.282) have p-values of 0.0 which implies high significance. The slope implies that oil export increased by 28.2% annually on the average. Test of overall regression for loglin model for non-oil export is presented in Table 3. The p-value of 0.0 implies high significance of the model. Table 4 presents the parameter estimates (5.890 for the intercept and .197 for the slope). Both parameters have p-value of 0.0 and are hence highly significant. The slope implies that non-oil export grew by 19.7% annually on the average.

Results of overall regression for log-log model involving proportion of total export represented by each of non-oil export and oil export are presented in Table 5. With a p-value of 0.0, the regression is highly significant. Table 6 presents the parameter estimates and their p-values. The intercept is highly insignificant (p-value=.985) while the slope is highly significant (p-value=0.0). In

econometric research, it is the significance of the slope that is usually of primary interest; hence the non-significance of the intercept should not be of serious concern. The slope estimate of the model being .701 implies that when the oil export doubled, the non-oil export increased by only 70.1% on the average.

Results from the loglin models for oil and non-oil export have suggested that oil export increased at a higher rate than the non-oil export. This position is corroborated by the log-log model. The forecasts generated by the fitted loglin models are presented in Table 7. The forecasts suggest substantial increase in the volume (value) of oil export but marginal increase in the volume (value) of non-oil export.

This is not a good trend for a country that is struggling to liberate her economy from the bondage of oil. Although the proportion of total export represented by the non-oil export has struggled to increase from 0.0146 in 2005 to 0.0359 in 2010, it remains unacceptably low. The fact that non-oil export grew at a lower rate than the oil export is worrisome. If the trend is allowed to continue, one would expect greater domination of the export by oil and hence the aim of achieving a non-oil economy becomes jeopardized.

4. CONCLUSION AND RECOMMENDATION

This research has modelled the oil and non-oil export from Nigeria between 1981 and 2010. Oil export grew at a higher rate than did the non-oil export. Unfortunately, the reverse has been the wish of successive governments, as such means diversification of the economy. The paper concludes by stating that except deliberate measures are taken, the Nigeria's export would continue to be dominated by oil.

Towards achieving the much desired non-oil economy, this article recommends to government as follows:

- 1) Explore means of reviving the huge neglected agric potential.
- 2) Huge investment in infrastructure so as to create enabling environment for productive activities to thrive.
- 3) Explore solid mineral deposit which presently does not enjoy the deserved attention.
- 4) Genuine fight against corruption at all levels of governance as only a little can be achieved in a very corrupt economy .

REFERENCES

- Abou-Stait, F. (2005). Are exports engines of economic growth? *An application of cointegration and causality analysis for Egypt, 1977-2003*. African Development Bank, Economic Research Working Paper, No. 76.
- Abu Al-Fousi, B. (2004). Testing the export-led growth hypothesis: Evidence from Jordan. *Applied Economic Letters*, (11), 393-396.
- Al-Yousif, K. (1997). Exports and economic growth: Some empirical evidence from the Arab Gulf countries. *Applied Economics*, (29), 693-697.
- Balassa, B. (1978). Exports and economic growth, further evidence. *Journal of Development Economics*. 5, 181-189.
- Balassa, B. (1985). Exports, policy choices and economic growth in developing countries after the 1973 oil shock. *Journal of Development Economics*, 18, 23-53.
- Central Bank of Nigeria (2010). *Statistical Bulletin*, 21.
- Edordu, C.C. & Oramah, B.O. (1997). *Potentials for diversifying Nigeria's non-oil exports to non-traditional markets*. African Economic Research, Research Papers Series, No. RP_068.

- Edwards, S. (1998). Openness, productivity and growth: What do we really know? *Economic Journal*, (108), 383-398.
- Efobi, U.R. & Osabuohien, E.S. (2011). Promotion of non-oil export in Nigeria: Empirical assessment of Agricultural Credit Guarantee Scheme Fund. *Current Research Journal of Economic Theory*, 3(1), 20-28.
- Elbeydi, K.R., Hamuda, A.M. & Gadza, V. (2010). The relationship between export and economic growth in Libya Arab Jamahiriya. *Theoretical and Applied Economics*. 17(1), 69-76.
- Gujarati, D.N. & Porter, D.C. (2009). *Basic Econometrics* (5th ed.). New York: McGraw-Hill.
- Opara, B. (2010). Export marketing: catalyst for Nigeria economic paradigm shift. *Research Journal of International Studies*, 13, 81-87.
- Oyejide, T.A. (1986). *The effects of trade and exchange rate policies on agriculture in Nigeria*. International Food Policy Research Institute (IFPRI), Research Report 55.
- Udude, C.C. & Okulegu, B.E. (2012). Exports and Nigerians economic growth: a cointegration analysis. *Asian Economic & Financial Review*, 2(2), 429-444.
- Usman, O.A. & Salami, A.O. (2008). The contribution of Nigerian Export-Import (NEXIM) Bank towards export (non-oil) growth in Nigeria (1990-2005). *International Business Management*. 2(3), 85-90.

APPENDIX

Table 1. ANOVA for oil export

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	179.220	1	179.220	695.007	.000(a)
	Residual	7.220	28	.258		
	Total	186.440	29			

a Predictors: (Constant), time variable

b Dependent Variable: logoil

Table 2. Parameter estimates for oil export

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	8.434	.190		44.352	.000
	time variable	.282	.011	.980	26.363	.000

a Dependent Variable: logoil

Table 3. ANOVA for non-oil export

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	86.870	1	86.870	19.354	.000(a)
	Residual	125.679	28	4.489		
	Total	212.549	29			

a Predictors: (Constant), time variable

b Dependent Variable: lognonoil

Table 4. Parameter estimates for non-oil export

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	5.890	.793		7.424	.000
	time variable	.197	.045	.639	4.399	.000

a Dependent Variable: lognonoil

Table 5. ANOVA for log-log model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	91.517	1	91.517	21.172	.000(a)
	Residual	121.032	28	4.323		
	Total	212.549	29			

a Predictors: (Constant), logoil

b Dependent Variable: lognonoil

Table 6. Parameter estimates for log-log model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	-.038	1.987		-.019	.985
	Logoil	.701	.152	.656	4.601	.000

a Dependent Variable: lognonoil

Table 7. Forecasts in =N=millions

Period	Oil export	Non-oil export
2011	28,803,284.97	162,267.2587
2012	38,186,782.28	197,599.9873
2013	50,627,223.33	240,626.207
2014	67,120,495.34	293,021.1296
2015	88,986,924.40	356,824.7343