

Diversification of Nigerian Revenue Base for Economic Development: The Contribution of the Non-Oil Sector

¹A.A. Awe and ²S.O. Ajayi

¹Department of Economics, ²Department of Business Administration,
University of Ado-Ekiti, Ado-Ekiti, Nigeria

Abstract: This study seeks to determine the effect of the Non-Oil revenue on Economic Development. It also highlights, the monoculture state of the Nigerian economy and the need to diversify the revenue base of the economy. The impact of the revenue from the agricultural sector, solid mineral sector and the Manufactures on the Gross Domestic Product (GDP) was carried out. The Analytical technique used was the co-integration analysis, which encompasses the use of unit root test and the error correction model. The findings from the study revealed that dynamic relationship exists between the revenue from the non-oil sector and economic development. The major sub-sectors of the non-oil sectors, agriculture, Manufactures and solid minerals were tested individually on the total revenue and all have significant results except Manufactures. On the basis of empirical findings, there is the need to promote expanded production in both the agriculture and industrial sector to diversify the export market for Nigerian goods rather than relying majorly on the European and North American markets while at the same time giving grater attention to the packaging and the design of export product to command better prices and patronage at the international market. The study also suggested the necessity of upgrading basic infrastructure so as to create the conducive environment for expanded output in the non-oil sub-sector of the Nigeria economy.

Key words: Non-oil sectors, American markets, GDP, diversification, infrastructure, Nigerian economy

INTRODUCTION

It is a known fact across the globe that the speed of development depends on the resource mobilization especially, finance. For a country to attain growth and the development of the economy has to be diversified, that is, there should be simultaneous development of the various sectors instead of practicing monoculturalism. The expansion of export base is of tremendous importance to the overall development of the economy. Initially, for oil export country like that of Nigeria, the problem according to our government was how to spend the revenue accruing to country not the generation of the revenue. Subsequently the credit worthiness of the country exposed her to acquisition of loans abroad following this, was the glut in the international oil market, brought about distortions in production and consumption, which gave a false twist to the Nigeria economy.

There is no doubt that petroleum has contributed substantially to the export revenue in Nigeria and other non-oil exporting countries especially when prices were on the upward trend. Experiences over the years indicate. However, that supply as well as demand limitations make

the continuation of large earnings from the petroleum unlikely. There is therefore, the need for strategies and policies for the diversification of the Nigeria revenue base. One of the strategies in the promotion of non-oil exports.

The non-oil export comprises mainly agricultural product minerals and manufactures. The Nigeria non-oil export since independence has been dominated by primary agricultural and unprocessed minerals products. According to Olurorunsola (1996) the main interest of the colonial master was and still is the exportation of products needed for their home industries. The Nigerian economy until today is still dependent on primary products both as foreign exchange earner and contributor to Gross Domestic Product (GDP) (Ajakaye, 1997). The major agricultural export commodities in Nigeria include cocoa, coffee, cotton groundnut, groundnut oil, palm kernel, Soya, beans, ginger, rubber, Benin-seed and chili pepper (CBN, 2003). There are other commodities that are being demanded in the world market such as cassava and cassava products, banana, plantain and so on.

The continuous production and exports of these agricultural produce played a dominant role in attracting foreign exchange to boost economic activities from

independence to the early 1970's Obadan (2000), observe that the production and export of cocoa, groundnut, rubber, palm kernels and palm oil accounted for 96.4% of total exports earnings, while non-oil export product accounted for 97.3% of total export then. He observed further that from the 1970's The Nigeria economy became mono-cultural, having been transformed from one dependent on fairly diversified portfolio of agricultural products to an economy heavily dependent on crude oil for growth and sustenance. Ojo (1994) observed that the advent of crude petroleum production and related activities especially in the early 1970's change radically the structure of Nigerian Economy. The huge foreign exchange earnings from crude oil export encouraged importation of finished foods to the detriment of domestic manufactured ones, while the agricultural sector was rendered less competitive over time through over-valued currency, inappropriate pricing policies and scarcity of farm labour caused mainly by the migration of youth to urban arrears in search of wage employment.

The Nigeria manufacturing sub-sector consists of large scale manufacturing enterprises (including the basic core industrial projects, promoted by government), the intermediate goods produced by firms sponsored by transnational corporations, the small and medium scale manufacturing units financed by foreign and indigenous entrepreneurs and the cottage industries located in urban and rural areas. The large-scale manufacturing enterprises and core industrial projects include iron and steel, fertilizers, pulp, paper, machine tools cement vehicles assembly, petrol chemical plants and petroleum refineries. Among intermediate and consumer goods industries are chemicals, paints, tyres etc., while food, beverages textiles, plastics, soaps detergents and furniture belonging to small and medium scale manufacturing units. The solid minerals sub-sector consists of a wide range of minerals which include gold, limestone, columbite, marble cassiterite and so on.

The value of manufactured exports was negligible before the introduction of Structural Adjustment Programme (SAP) in 1986. There was no specific attention given to the promotion and development of the non-oil export sub-sector. However, given the price incentive offered by the sharp depreciation of the naira exchange rate, the value of non-oil export has been on the increase. The increasing trend continued well in to the late 1990's the share of manufactures has increased substantially from about 1.9% in 1987 to about 12.1% in 2002. However, its share in total exports has not been significant.

Growth in the manufacturing sub-sector is impaired by dumping (especially second hand goods. Low demand for goods made in Nigeria. Solid mineral production has improved considerably. The contribution of solid mineral

to the non-oil sector has been characterized by fluctuations over the years. The present state of mining and production of major solid minerals in Nigeria has not been encouraging. The problem associated with mining is the extraction and processing technology which has become obsolete over time in Nigeria. In recent times, export policies have been dictated to some extent on self sufficiency. For instance Decrees No 7 of 1989 banned certain categories of product such as grains and tubers from being exported having discovered that such were in short supply locally. Ukpong (1997) agreed with this policies by saying that any meaningful export drive should first ascertain domestic demand is appreciably satisfied before marketing surplus could be exported, Adubi (2000) and Awoseyila (1997) in their own contributions stated that the lack luster performance of the non-oil sector is not unconnected with the varieties of problems associated with government policies and strategies. Some of these policies are highly inconsistent and volatile (Adewuyi, 2000). In the light of the foregoing this study seeks to determine the adequacy of non-oil revenue for sustainable development in Nigeria.

Hypothesis:

- That government collected revenue from that non-oil sector has not been making significant impact on economic development
- That government has not been maximizing the potentials of non-oil as a virile source of generating revenue for meaningful development

MATERIALS AND METHODS

The estimated technique adopted in this study is the co-integration analysis. The Augmented Dickey Fuller (ADF) test is used for determining the stationarity in the series. The software package used for analysis is the Economic view (E-view).

Model specification: The econometric model is specified as follow:

$$GDP = f (RAG, RSM, RMF, u)$$

The linear equation is specified as follow:

$$GDP = a_0 + a_1 RAG + a_2 RSM + a_3 RMF + u$$

where:

- GDP = Gross Domestic Product
- RAG = Revenue from Agriculture
- RSM = Revenue from Solid Mineral
- RMF = Revenue from Manufactures
- a₀-a₃ = Parameters
- U = Error term

The data required for the estimation are sourced from the Statistical Bulletin of Central Bank of Nigeria and the publications of the National Bureau of Statistics.

The unit root test is the first step and the most important in determining the stationarity of time series. A series X_t is said to be stationary if it has the following characteristics; constant mean, finite variance, tendency to return to mean value equilibrium when there is a disequilibrium and zero order of integration (1 (0)). It is usually expressed as X_{t-1} (0).

This means that the series (x_t) does not need to be differenced, it is stationary at levels that is the form in which the data is presented. If the series is not stationary, then it means it is time dependent and its variance is infinite, therefore, if the series (x_t) has to be first differenced in order to achieve stationarity (1 (0)), it said to be integrated of order one, that is x_{t-1} (1). In general terms, if the series (x_t) need to be differenced (d) times in order to achieve 1 (0), then it is said to be integrated of order (d) that is $x_{t-1}(d)$.

A series is differenced by making adjustment to the end points; this is obtained by subtracting by value from one proceeding it in a time series. Sophisticated techniques that have been used widely in evaluation of time series characteristics of macroeconomic variables including the following the Dickey-Fuller test (DF), Augmented Dickey-Fuller (ADF) test and the Sarghan Bhardwa Durbin-Waston (SBDW) test. The Augmented Dickey-Fuller test is employed in this study due to its superiority over the DF and because the E-view package does not have the process of incorporated DF and SBDW test into its results. The critical value for the determination of order of integration is given in more recent Mackinnon critical values incorporated in the E-views ADF tests.

The null hypothesis of the existence of the unit root is state as $H_0: x_{t-1}(1)$. If the MacKinnon critical value is less than the ADF test statistics we reject the null hypothesis that x_t contains a unit root and the alternative hypothesis is accepted that x_t is stationary and vice-versa.

In order to show the validity of the test, which was obtained, the unit root and co integration tests were conducted on the data sourced and the following results were obtained.

The analysis was carried out to find the contribution of non-oil revenue and its effect on economic development. The non-oil sectors that were used for the analysis included agriculture, solid minerals and manufacture.

The order of presentation starts with the static model. The static model is the result generated from the series at levels. We realize that the coefficient of the constant which represent the autonomous revenue was too large

the level of its significance being unreliable. Due to this, there is the need to log the variables. The loglinearising of variables provides us with the following advantages:

- Non-linear model can be loglinearised so that the relationship among the variables can be stated in linear forms
- Loglinearised variables also has the advantages of interpreting there coefficient as elasticities, propensities
- Variables are also logged when their coefficients are too large for economic interpretation

RESULTS AND DISCUSSION

Table 1 presents the results of the stationarity test for all the variables used. After comparing the ADF values against the Mackinnon critical value at 5%, only the error generated from inside the model is found to be stationary at all levels. The exercise further shows that apart from Total Revenue (LNTRV) that is stationary at second difference, all of this variables that is Revenue from Agriculture (LNTRAG), Revenue from Solid Minerals (LNTRSM) and Revenue from Manufacture (LNTRMF) are all stationary at the first difference variables has to be differenced before they are stationary.

The ADF figures are approximated into four decimal places.

The coefficients of the variables are all negative and they all have corresponding larger negative t-statistic value that suggest that they are now stationary as presented in the Table 2.

It can also be observed from the test results that the R^2 of the variables at their point of stationaity is relatively large.

The R^2 for LNTRV at its point of stationarity shows that the independent variable explains about 83% of the movement in the dependent variable. This result was obtained when the result of total revenue was tested, on total revenue itself. The R^2 for LNTRAG was significant when the log of revenue from agriculture was tested on the revenue from agriculture. About 60% of the movement could be explained in the relationship.

Also, when the log of revenue from the minerals and solid minerals were tested on there respective revenue the R^2 showed the following corresponding statistics 44 and 73%, respectively.

The D.W result for LNTRV is 1.88 also that of LNTRMF = 1.96. This shows that there is no autocorrelation among the variables but the D.W result of LNTRSM and LLNTRAG which is 1.28 and 1.71, respectively shows the existence of serial correlation among the variables.

Table 1: Result of test for stationarities (ADF unit root tests)

Variables	ADF values	Mackinnon critical value @5%	No. time of differences
TRV	-4.47291	-3.0818	2
RAG	-3.6267	-3.0659	1
RSM	-4.40989	-3.0659	1
RMF	-3.1115	-3.0659	1

Table 2: Result of Augmented Dickey Fuller (ADF) test equations

Variable	Coefficient	t-statistics	R ²	Durbin
D (TRV,3)	-2.2581	-4.4729	0.8695	1.8840
D (RAG,2)	-103974	3.62671	0.6061	1.7152
D (RSM,2)	-1.9040	-4.4089	0.7300	1.2823
D (RMF,2)	-0.7985	-3.11139	0.4239	1.9048

Table 3 shows the result of the Johnson Co integration test. Comparing the likelihood ratios against the critical values at 5%, we reject the hypothesis that there is no co-integration vector (equation).

Denote rejection of the hypothesis at 5% significance level L. R tests indicates two co-integrated equation at 5% significance level. These two co-integrating equations are showed in Table 4 all these result reveal the existence of equilibrium condition that keeps the variables in proportion to each other in the long run.

The long run equilibrium necessitates the setting up of a parsimonious Error Correction Model (ECM) that will introduce dynamism into the model. The result of the (ECM) is show in Table 5. It should be noted that only the variables that are statistically significant are reported in the table.

The empirical result shows that the model has a good fit with the coefficient of multiple determination (R²) being 94%. This means that the variables are significant determinant of growth in the revenue base (TRV).

The econometric test such as Durbin-Watson is also within the acceptable unit. It can be observed that the impact of revenue from manufactures in influencing total revenue is quite ambiguous. This is because the coefficient of LNRMFD without lag is positive while the one with lag is (-1) is negative, also it can be observed that the LNRMFD (-1) is significant while that of LNRAg is insignificant. Evaluating the revenue from agriculture LNRAg, it was found to be significant with the probability lying below 10%. It has a positive sign which indicate the higher the revenue from agriculture, the higher the total revenue.

In the case of revenue from solid minerals, LNRSM, the result shows that revenue from solid minerals at all levels is a significant determinant of Total Revenue (TRV), it has the expected positive sign which indicates that the higher the revenue from solid minerals, the hugher the contribution to total revenue. Also, the revenue from manufacturing LNMFD, shows the same positive sign and positive contribution total revenue, with probability level of its significance lying below 10%.

Table 3: Results of Johnson co-integration test

Hypothesized number of co-integrated equation	Eigen value	Likelihood ratio	5% critical
None	0.9284	96.1894	47.21
At most 1	0.9110	51.03587	29.68
At most 2	0.41172	10.2159	15.41
At most 3	0.5292	100380	3.76

Table 4: Normalized co-integration: 2-cointegratin equation

LNTRV	LNRAg	LNRSMN	LNMEFD	C
1.0000	0.0000	-0.6665	-0.857	-303669
	(0.0412)	(0.0309)		
0.0000	1.0000	-13350	0.1395	0.7804
	(0.0933)	(0.0702)		

The figures in parenthesis are the standard error of the corresponding coefficients

Table 5: Modeling absorptive capacity (TRV) by ordinary least square (A dynamic error correction model). Summary of estimated equations

Independent variable	Coefficient	SE	T-statistic	Probability
Constant	-0.0092	0.0794	-0.1158	0.9111
D (LNRAg, 2)	0.4758	0.0150	3.1730	0.0156
D (LNRAg (-2), 2)	0.1890	0.1804	1.0474	0.3297
D (LNRSMN (-2), 2)	0.2000	0.0867	2.3060	0.0545
D (LNRSMN,2)	0.3765	0.1075	3.5003	0.0100
D (LNRMFD (-1), 2)	-0.2610	0.2233	-1.01683	0.2809
D (LNRMFD, 2)	0.6292	0.2613	2.04079	0.0469
D (ECM (-1))	-2.460	0.6537	-3.7627	0.070

R² = 9463, D.W = 2.08, F-statistic = 17.63

The long-run dynamic equilibrium shows the relationship, which would exist among the variables in the long-run. The result of the coefficients of multiple determination (R²) shows that the model has good fit. The high R² can be used to explain the possible potentials of the non-oil sector in promoting growth.

This study has reviewed the contribution of non-oil sector to the Nigeria revenue and its functions in attaining and sustaining development. The contribution of the non-oil sector to total revenue from statistical observations has not been encouraging but from the estimation technique used in this study. The result shows that there is possibility of a long-run interrelationship existing among the variables.

The present structure of exports is a total reversal of the structure in the 1960s when non-oil exports dominated the country's export trade.

Over the years, government has formulated several policy measures to improve the shares of non-oil exports but the present structure of exports, which has existed since the advent of oil could not be altered by the policies

The submission being made is that in order to improve the non-oil exports, we need a redirection of policies towards a diversification of the Nigerian economy and a changing of the Nigerian economy from a monocultural one.

The study reveals that a lot has been done by government towards reviving the non-oil sector in terms of policy packages and incentives. It can be seen that the

spate of development has been adversely affected by government policies. Essentially, the country is not lacking in good policies but the problem is with the effectiveness of the policies which has been undermined by policy instability and inconsistency over time.

Based on the experience of country that have adopted export-led growth as their development strategies, a number of points emerged. Firstly, export oriented industrialization has led to rapid growth rate. By implementing policies that remove the bias against exports, it became profitable to produce for export as well as for the domestic market.

Secondly, these countries promoted manufactured export and not primary products from this; the relevant question to ask is what should be the direction of Nigeria's diversification policy with respect to non-oil exports? It should be noted that apart from earnings from agricultural products being relatively unstable due to weather conditions and the level of technology, many agricultural products have faded out of export list. Also, increasing domestic demand for agricultural commodities coupled with the failure of various agricultural development programmes makes earnings from agricultural exports highly unlikely.

This leaves us with the prospect of developing the manufacturing sectors. Industrialization is said to be the engine of growth and manufacturing is a sub-sector of the industrial sector. The capacity of industrialization in developing an economy can be inferred from the experience of most developed countries, development in these countries is sustained by manufacturing of export goods.

To further buttress the point of favouring the manufacturing sector is the experience of certain developed countries during the economic recessions of the 1970's most of these countries were found to adjust the external shocks which resulted from economic recession.

Although, from this study, it is obvious that the revenue from manufacture is quite low compared with that from agriculture and solid minerals but result from the dynamic model shows possibilities of improvements in the contribution of manufacturing to total revenue.

For non-oil sector to provide the required revenue to sustain development there is the need to place priority on the promotion of goods while agriculture production must be given a boost to produce raw materials for industries. Also, the solid mineral sub-sector can be improved with the introduction of new mining techniques and the use of machineries that ensure reduction in manpower directed towards mining and which allows mining in commercial quantities.

CONCLUSION

One may say that much as it is desirable to promote and expand our export earnings only credible actions can bring this about.

Unfortunately, our actions since 1986 have not always been consistent and well focused. Most of the successful countries in the export revolution have taken actions at two complementary levels. They have stabilized their macro economic environment, which has given confidence to economic agents involved in the export business. They have also carried out structural changes resulting in various incentives being given to investors. Our actions at these 2 levels in recent years have been grossly inadequate. Fiscal imbalances which crowd out the private sector, interest rate policies which encourage disintermediation and exchange rate policies that tend to overvalue the currency and distort relative prices and allocation of real resources are certainly not conducive to the growth of the non-oil sector.

Similarly, the design of numerous incentives without actually evolving an implementation strategy for them can only see us engage in endless controversies about export promotion strategies rather than actually doing those things that will expand our revenue base.

POLICY RECOMMENDATION

The logical policy recommendations from the review are as follows:

Expansion of output: There is the need to promote expanded production in both the agricultural and industrial sector. A higher level of output will help to achieve the following objectives, satisfying local demand for goods leaving a reasonable balance for export and a reduction in the unit of production. Diversification of export market for Nigerian goods. At present, the bulk of Nigeria limited manufactured goods goes to the African and Asia countries and these accounts for an insignificant share. High priority should be accorded to gain access to market in Africa especially, ECOWAS countries. Effective use of bilateral and multilateral trade agreement between Nigerians and other countries should be effectively used to promote Nigerians exports.

Promotion of foreign private investment. Foreign investment capital is a vehicle for industrial growth in a developing country like Nigeria. Since the bulk of industrial inputs is imported, foreign finance helps to complement foreign earnings as it provides funding for import needs to the investors. Attraction of foreign direct investment either wholly owned or in joint ventures with

Nigerians should be promoted. To promote the inflow of foreign capital, there is need to undertake image restoring measures to counteract the lingering negative image Nigeria has acquired abroad. This should include efforts to design and implement credible economic and political programme, adjustment of interest rate to encourage investment and actions to protect lives and property. Design and packaging: greater attention should be focused on design and packaging of export product which has been recognized as a necessary condition for a successful export business. Specialist institute for design and packaging should be set up to train industrial workers.

Upgrading of basic infrastructures: These are the urgent need to upgrade the basic infrastructure to a functional level. In particular and adequate power and water supplies must be ensured for any meaning industrialization and export trade to take place. Establishment of more export processing zones in strategic locations within the country to facilitate increased production of manufactured goods duty free.

REFERENCES

- Adewuyi, A.O., 2000. Absorptive capacity and Macroeconomic Policy in Nigeria. Nigeria Institute of Social and Economic Research (NISER): Monograph Series No 11, Ibadan. ISBN: 987-181-162-5.
- Adubi, A.A., 2000. Agricultural sector in Nigerian Economy: An Overview National Centre for Economics Management (NICEMA) Policy Papers Analysis Series 4 (2) Ibadan, pp: 31-44.
- Ajakaye, D.O., 1997. The Non-oil sector of the Nigerian Economy: An Overview Central Bank of Nigeria (CBN). *Econ. Financial Rev.*, 35 (4): 41-28.
- Awoseyila, P.A., 1997. Appraisal of the Past and Present Measures for Reviving Nigerian Non-Oil Sector and Policy Implication. Central Bank of Nigeria (CBN). *Econ. Financial Rev.*, 35 (4): 29-45.
- Central Bank of Nigeria, 2003. Statistical Bulletins Hall A, 1994. Testing for a unit root in time series with present data based model selection. *Econ. Quart.*, 80 (4): 49-69.
- Obadan, I.M., 2000. Prospect for diversification in Nigerian export trade. *J. Econ. Manage.*, 4 (1): 65-84.
- Ojo, M.O., 1994. Non-Oil Export in Nigeria Changing Policy Dispensation. Central Bank of Nigeria (CBN). *Bullion*, 18 (2): 15-27.
- Olurorunsola, A.J., 1996. Export-led Growth in Economic Development: Lesson of Experience. Central Bank of Nigeria (CBN). *Bullion*, 20 (4): 105-119.
- Ukpong, G.E., 1997. Production Trends and Selection of Non-Oil Products in Nigeria. Central Bank of Nigeria (CBN). *Econ. Financial Rev.*, 35 (4): 76-93.