Investigation of the Impact of Non-Oil Revenue on Economic Growth in Nigeria

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Abstract: This study investigated the time series role of non-oil revenue variables on economic growth in Nigeria. This study thus extends the literature in this area by employing cointegration methodology alongside error correction mechanism to investigate the impact of non-oil revenue on economic growth in Nigeria. The study employed annual observations from 1980 to 2013. The non-oil revenue variables analyzed are: agricultural revenue and manufacturing revenue. Results show that agricultural revenue, manufacturing revenue and interest rate have significant impact on economic growth in Nigeria. Results also show the existence of long-run equilibrium relationship and short run dynamic adjustment with speed of about 52% to restore equilibrium. The study concludes that non-oil revenue has the potential to unlock Nigeria’s economic morass and policy recommendations are provided.

Keywords: Non-oil revenue, Economic growth, Agriculture, Manufacturing, Cointegration

1. Introduction

Nigeria as a developing country has been grappling with the realities of developmental process not only politically and socially but also economically. In the 1960’s, agriculture was the mainstay of the economy and the greatest foreign exchange earner. However, this prime position occupied by agriculture was overtaken by the oil sector by the mid 1970’s, [1]. In the circumstances, Nigeria’s export earnings increased from N339.4 million in 1960 to N14, 077 million in 1980, [2]. The mono-culture nature of the economy makes Nigeria’s export earnings susceptible to the vicissitudes of the international oil market. The weakness of the economy manifested with the oil glut in the early 1980s. This therefore, calls for the need to increase the quantum of non-oil export as well as diversify export in the light of the vagaries of oil fortune decline of external receipt from about N26 billion to about N6.5 billion in each of 1987 and 1988 [3].

Recent developments in the Nigerian economy had led to the recognition of the ultimate significance of development and marketing of quality agricultural produce as a means of enhancing the foreign exchange earning capacity of Nigeria. Simultaneous with this awareness is the growing concern of adherence to standard in order to maintain a reputation in the export market. It is therefore imperative that quality and standards are necessary conditions that must be given adequate attention in order to ensure the sustenance of Nigeria’s competitiveness in the global market [4].

Nigeria is very popular in the area of production and export of top quality produce like Cocoa, Groundnut, Cotton, Gum Arabic, Sesame seed, Rubber, Ginger, mangoes, pineapples, coffee and host of others. Export markets for these products exist in USA, European Union, Gulf States, Japan, Singapore, China etc. Nigeria also has an added advantage over major Agricultural producers and exporters in the Eastern and Southern Africa in terms of fertile land, proximity to traditional and terminal markets in Europe by Air or by sea [4].

The advantages are numerous but the question has been whether Nigeria has succeeded over the years to translate these comparative advantages into gains. This brings us into the problem of “Quality” and “Standards”. While Quality deals with the inherent nature of the product, standards reflect the “in use” requirements imposed by the local environment which may require modifications of the product [5].

Also, the Nigeria Agricultural sector has always been expected to perform the roles of providing employment for the labour force, staple foods and raw materials for domestic and export needs. As earlier stated, until the 1970s, Nigeria depended mainly on agriculture for its export revenue. In 1960, the contribution of agriculture to foreign earnings was about 83% from 1960 - 1970, the export crop sub-sector contributed on the average 58.4% annually to the total foreign exchange revenue. Nigeria experienced substantial capital inflow largely in the form of oil sector earnings. The large oil revenue coupled with the accumulation of reserves in major foreign currencies became enabling factor in the decision to revalue the naira, [6].

Export data for 1985 to 1995 revealed a general decline in total export shipments and repatriated proceeds, [7]. During the 1986/1987 fiscal year, Nigeria’s non-oil export shipments were $483.6 million, while repatriated export proceeds amounted to $356.2 million. Similarly, in 1988, it slightly increased to $483.7 and $493.2 million for shipment and repatriation respectively. By 1990, export shipments repatriation and export proceeds had declined sharply to $289.9 (-7%) and $285.5 (-20.7%) million respectively [7].

In 1991, the figures rose to $338.7 shipment and $325.5 million, showing increase of 16.8% and 14.0% respectively in the following year (1992), $260.1 (23.2%) and $230.4 million (29.2%). Further decline was experienced in 1993 before shipments rose by 16.6% ($264.7) while repatriations declined by 9.3% (205.5) in 1994. Similarly in 1995, export shipments declined to $236.3 (10.7%) and $283.7 million (38.1%) [7].
Considering the array of government export incentives, the performance of the export sector was unimpressive within the period in view. But the earning from the oil sector (which was over eighty percent) of total export revenue has impacted on the poor performance of non-oil sector which has resulted to very serious economic problem for the country whose citizens possess high appetite for foreign goods [7].

Figure 1 shows that real gross domestic product (RGDP) has been on the increase since 1984 while agriculture contribution to RGDP has not kept pace with the increases in RGDP. However, manufacturing has been worst hit. The contribution of manufacturing to RGDP has remained abysmally low.

Another worrisome aspect of the non-oil sector is the preponderance of raw agricultural products which accounted for $174.2 million or 60.1% of the total export in 1990, and $171.2 million or 64.7% in 1991. Similarly, the figure stood at $171.2 million or 64.7% in 1994 and in 1995 it was $153.1 million or 64.8%. Manufactured and semi-manufactured products also remained low at $46.3 [8].

The implication of these disturbing aspects of non-oil exports data is that the country has not fully harnessed its potentials particularly in the production of goods in which the country enjoys a measure of comparative advantage. Several underlying factors contributed to the poor performance of non-oil exports over the years, the factors include: inefficient/obsolete technological base, low productivity, non functional industrialisation strategy based on import substitution, persistent inflationary pressure, lingering political problems, and policy instability among others [8].

2. Strategic Importance of Non-Oil Export to Nigeria Economy

The significance of non-oil export to Nigerian economy can firstly be appreciated from the perspective of export and economic development, as discussed above. Export has also been described as the bedrock of any economic development which is meaningfully centered on non-oil export in most countries of the world. Therefore the current deliberate efforts to enhance Nigeria’s non-oil export is derived from the failure of oil export (oil boom), which has not been meaningfully managed to positively reflect on the socioeconomic well-being of the people.

Historically, Nigeria’s export involvement before the discovery of crude petroleum (oil) in the early 1950s was centered on the country’s traditional agriculture, mining and other related products. The products constituted Nigerian main export products then, and provided about 85% of total export earnings and accounted for not less than 63 percent of the country’s Gross Domestic Products as at 1960.

From the Nigeria economic perspective, promoting non-oil export products will bring about reduction on the nation’s level of dependence on the dominance of crude oil or what can be described as, “mono-cultural foreign trade product” that averagely racked in over 80% foreign earnings since 1970s. This can be a thing of the past if the export economic potentials of Nigeria are sincerely and usefully harnessed. It is in the recognition of the significance of non-oil export to a nation that Nigeria government made exporting of the country’s non-oil products, a major key element of its structural adjustment program (SAP) in 1986.

The Nigeria export promotion council (NEPC), surveys on the various export potentials, and the foreign market opportunities of the country for industrial goods, according to [7], revealed products such as Aluminium, household utensils, paper products, biscuits, confectionery carpets, wire-nails, nuts and bolts, mango-juice, coca-based beverage, instant yam-flour, beer, African phonographic records, wood products, African prints and handicrafts. The study also confirmed that Nigerian firms can export agricultural and livestock products like cashew-nuts, chillies, Arabic-gum, tropical fruits, vegetables, hoof and horn bones. The NEPC survey further informed that Nigeria has a comparative advantage to produce and supply the above products not only to other African countries, but also to other countries of the world.

The Nigeria non-oil export statistics proceeds for 1986/87, according to NEPC report, showed that Nigeria’s non-oil export shipments amounted to 483.6 million U.S. Dollars, while that of 1988 was 483.7 million U.S. Dollars, 1990 had
a decline of 289.9 million dollars, and 1991 had an increase of 338.7 million dollars. These are some of the earnings realized by Nigeria from exporting non-oil products from 1986 to 1991.

Other strategic importance of non-oil export to the Nigerian economy is also revealed from what NEPC called benefits of exporting non-oil products. The benefits include:
1) The export of non-oil products increase the foreign exchange earning of the country, through the export of Nigerian products to other countries, Nigeria earns foreign exchange which assist in the financing of other economic sector of the nation.
2) The earned foreign exchange enables the country to fulfill its international financial obligations.
3) Export of non-oil products create employment and reduce un-employment problem in the country. The exporting company can at least keep the present employees, without the fear of creating further unemployment pressure in the country.
4) The living standard of the people in the exporting country will improve, or be better when compared to countries that do not export (all things being equal).
5) The export of non-oil products brings about increase in sales and profits to firms that export market their products. However, it does not always follow that export marketing bring about increase in profit, because increase in sale is relative to selling price, cost of production and other costs.
6) Foreign trade may also improve product quality, and reduction in production cost, which may be brought about by mass production for export.
7) Business expansion is another benefit that results from export marketing. Firms may consider the expansion of its production line, and other business activities as a result of the company’s involvement in foreign trade.
8) Recognition and Reputation of firms may also be enhanced when quality, quantity, and reliability of the firm are considerably improved as the firm successfully engages in export marketing.

It is important to state that all the above discussed benefits that may accrue to Nigerian firms that engage in non-oil export (although not exhaustive), are by extension beneficial to the country where the exporting products are destined/consumed, and will have positive “spread effect” on both countries’ economies and the well-being of the citizens.

However, with the present situation in the oil industry in relation to the situation in the non-oil sector, it becomes absolutely expedient to investigate the impact of non-oil revenue on economic growth in Nigeria. Against this background, the following research questions have been raised:

What is the impact of agricultural revenue to the Nigerian economy? What is the impact of manufacturing sector revenue to the Nigerian economy? Is there long run relationship between non-oil revenue and economic growth?

Thus, the broad objective of the study is to investigate the impact of non-oil revenue on economic growth in Nigeria. This would give an insight into the dynamism of the Nigerian non-oil revenue operations. Thus, investors in the non-oil revenue would find this work very useful in predicting the non-oil revenue performance and expected yield from the market, which will aid investment decisions.

Given the size of oil wealth relative to her non-oil revenue, Nigeria is a natural candidate to suffer from the “resource curse” phenomenon. This phenomenon is simply a situation where resources generated from the oil industry aids deindustrialization. The literature has documented that oil discoveries and oil price spikes lead to higher government spending, real exchange rate appreciation and a loss of competitiveness in the non-oil tradable sector [9, 10]. However, the worst consequence to the Nigerian economy as a result of the oil boom was the disease inflicted on Nigeria called the Dutch Disease Syndrome. Dutch disease syndrome is a situation where a particular sector of the economy flourishes especially the oil industry at the expense of other sectors of the economy. Moreover, one of the largest challenges associated with the study of Dutch Disease is precisely the difficulty in determining how large the tradables sector would have been in the absence of the natural resources.

However, the development of the export sector has been shown to be critical to the growth of a developing nation like Nigeria’s [11] postulate that export expansion improves economic development but requires incentives in the area of finance in developing nations. [12] states that export performance is important because it allows for accumulation of foreign exchange reserves, increased employment level, [13] and [14] concluded that export growth increases the corporate profit, strengthens competitive edge, and resource.

According to [15] in examining the structure and growth of non-oil export since the late 1980s, it is pertinent to compare the situation with those that prevailed prior to the commencement of Structural Adjustment Programme (SAP). [16] prior to the mid 1980s, policies about agriculture prices were specially rigid, often amounting to revaluation of the naira led to the discouragement of the agricultural export. In the same vein, pegging of interest rate was mostly beneficial to the “big” borrower farmers, [17]. The domestic prices paid to export crop producers relative to the external prices reaped by the erstwhile commodity boards were low, virtually amounting to implicit taxation or negative projection of farmers, [18].

However, a number of empirical studies which have investigated the export-led growth hypothesis, have found that exports have been instrumental to Nigeria’s growth performance suggesting that in Nigeria export-led-growth hypothesis holds, [1, 19, 20, 21, 22] describes in detail the measures the South Korea government used in trade protection and trade promotion such as selective credit subsides, export targets, public ownership of banking sector, export subsidies and price control. This is to some extent popular in Nigeria.

However, a number of empirical studies which have investigated the export-led growth hypothesis, have found that exports have been instrumental to Nigeria’s growth performance suggesting that, in Nigeria, export-led growth hypothesis holds [1, 19, 20, 21]. The introduction of the index of openness, that is, (export + imports)/GDP revealed a
negative relationship between output growth and openness [1, 2, 23], in their study of market access for Nigerian exports in the European Union (EU) found that the impact of commodity specific and the generalized trade liberalization have remained minimal.

3. Methodology and Data

3.1 Methodological Framework

The theoretical foundation of the model in this study is based to a large extent on the model developed earlier by [24]. The model of this study however, differs in several specifications, including the introduction of two variables, namely, oil revenue and exchange rate in model 1. The model consists of three relationships and assumes that economic growth performance, measured by real gross domestic product, is affected by non-oil exports through the effect of the latter on investment and production in the economy. $RGDP = \text{Real Gross Domestic Product, AGR} = \text{Agricultural Revenue, OILR} = \text{Oil Revenue, EXCH} = \text{Nominal Exchange Rate, INT} = \text{Nominal Interest Rate, MNR} = \text{Manufacturing Revenue, GFCF} = \text{Gross Fixed Capital Formation, INF} = \text{Inflation Rate.}$

Where, OILR and INT are sets of control variables for model 3

$\beta, \alpha, \psi, \mu = \text{Parametric Coefficients; } U_t, C_t, \mu_t, \psi_t = \text{Stochastic Error Terms.}$

Therefore, the first model captures objective 1 while the second and third models were used to achieve objectives 2 and 3 respectively. The models, therefore, can be expressed as:

3.2 The Model

3.2.1 Impact of agricultural revenue on economic growth

The model is specified as:

$RGDP_t = \beta_0 + \beta_AGR_t + \beta_{OILR} + \beta_{EXCH} + \beta_{INT} + U_t$ .......................... (2.1)

Where, OILR, EXCH and INT are sets of controlled variables for model 1.

3.2.2 Impact of manufacturing revenue on economic growth

The model is specified as:

$RGDP_t = \alpha_1 + \alpha_{MNR} + \alpha_{GFCF} + \alpha_{INT} + \alpha_{INF} + C_t$ .......................... (2.2)

Where, GFCF, INT and INF are sets of control variables for model 2.

3.2.3 Long-run relationship between non-oil revenue and economic growth

The model is specified as:

$RGDP_t = \psi_1 + \psi_{AGR} + \psi_{MNR} + \psi_{OILR} + \psi_{INT} + \mu_t$ .......................... (2.3)

The long-run equilibrium is specified as;

$\mu_t = RGDP_t - \psi_1 + \psi_{AGR} - \psi_{MNR} - \psi_{OILR} - \psi_{INT} + \ldots$ .......................... (2.4)

The Error Correction Mechanism is modeled as:

$\Delta RGDP_t = \psi_1 + \psi_{AGR} + \psi_{MNR} + \psi_{OILR} + \psi_{INT} + \mu_t - \psi_t$ .......................... (2.5)

Economic analysis supports that there is a relationship between non-oil revenue and economic growth. Applied econometric analysis in trying to estimate this relationship implicitly considered the “constancy doctrine” of the variables involved, in terms of means and variances being constant while not dependent on time.

The assumption in the equations is that all the variables exhibit a mean reversing property of stationarity. In practice, most economic series are attuned to time with a non-reversing mean. In view of this, the study employed Augmented Dickey Fuller test of stationarity $\Delta Y_t = (Y_t - Y_{t-1}) = \mu_t + \ldots$ .......................... (2.6). This is to ensure that the regressors attain stationarity. The EVIEWS econometric package was adopted for this analysis. The study employed annual data from 1980 to 2013. Data were sourced from Central Bank of Nigeria statistical Bulletin volume 23 (2013). However, RGDP and OIR are in billions of naira.

4. Results and Discussion

The results of the ordinary least square regression are presented below.

4.1 Unit Root Test

The test is carried out to know whether the mean value and variances of the variables are time invariant, that is, constant over time. The unit root test for stationarity is applied using the Augmented Dickey Fuller (ADF) test.

Table 3.1: Unit Root Test (first differencing)

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF</th>
<th>5%</th>
<th>CONST</th>
<th>TRND</th>
<th>LAGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>RGDP</td>
<td>-4.324926</td>
<td>-3.5312</td>
<td>YES</td>
<td>YES</td>
<td>2</td>
</tr>
<tr>
<td>AGR</td>
<td>4.456070</td>
<td>-1.9495</td>
<td>NO</td>
<td>NO</td>
<td>2</td>
</tr>
<tr>
<td>OILR</td>
<td>-2.940304</td>
<td>-1.9498</td>
<td>NO</td>
<td>NO</td>
<td>2</td>
</tr>
<tr>
<td>EXCH</td>
<td>-3.313814</td>
<td>-1.9498</td>
<td>NO</td>
<td>NO</td>
<td>2</td>
</tr>
<tr>
<td>INT</td>
<td>-6.575195</td>
<td>-2.9399</td>
<td>YES</td>
<td>NO</td>
<td>2</td>
</tr>
<tr>
<td>GFCF</td>
<td>5.420722</td>
<td>-3.5279</td>
<td>YES</td>
<td>YES</td>
<td>2</td>
</tr>
<tr>
<td>INF</td>
<td>-3.562596</td>
<td>-2.9378</td>
<td>YES</td>
<td>NO</td>
<td>2</td>
</tr>
</tbody>
</table>

From the table above, the study can infer that all the variables are stationary after taking their first difference.
4.2 Discussion

Impact of Non-Oil Revenue on Economic Growth in Nigeria

The result of our study supports the hypothesis of a positive relationship between economic growth and agricultural revenue. This implies that a 1% increase in agricultural revenue would increase the value of economic growth by 5%. Although agricultural revenue is significant, but the marginal 5% shows that there is a lot of potential to tap in the agricultural sector. However, this result conforms to the findings by [4, 7]. The result of this study equally supports the hypothesis of a positive relationship between economic growth and manufacturing revenue. This implies that a 1% increase in manufacturing revenue increases the value of economic growth by 18%. Also, the result shows that there is still room for improvement in the manufacturing sector of the Nigerian economy. This result is also in tandem with the findings by [4, 7].

The result of this study also supports the hypothesis of a positive relationship between economic growth and oil revenue. This implies that a 1% increase in oil revenue increases the value of economic growth by about 91%. This is a reflection of the over dependence of oil revenue for economic activities of the Nigerian government.

The coefficient of interest rate conformed to “a priori” expectation and it is very significant in both results. Thus, this shows that interest rate plays very important role in the production and marketing of Nigeria’s agricultural and manufacturing products.

From figure 3.1, oil revenue has been on the increase, contributing greatly to the increases in economic growth. Non-oil revenue has not been keeping pace with its oil counterpart, contributing less to economic growth. Interestingly, in the last decade, non-oil revenue has been rising consistently with a rate higher than the rate of the rise in economic growth in Nigeria.

4.3 Cointegration

Since the study does not want to lose any useful information due to differencing, the study carries out a cointegration test on the estimated model. This test is carried out using the Augmented Dickey Fuller test on the residuals obtained from the regression under the following hypothesis, $H_0: \alpha = 0$ (not cointegrated) against $H_1: \alpha \neq 0$ (cointegrated)

Decision Rule:
Reject $H_0$ if $t_{cal} > t_{tab}$. The following result was obtained.

<table>
<thead>
<tr>
<th>Variable</th>
<th>t-ADF</th>
<th>Critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cointegration ($U_{t-1}$)</td>
<td>$-3.930043$</td>
<td>1% = -3.6019</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5% = -2.9358</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10% = -2.6059</td>
</tr>
</tbody>
</table>

From the table above, since the absolute value of computed t-ADF > critical t-ADF, especially when compared with the 5% critical value i.e. $|-3.930043| > -2.9358$, the study concludes that the estimated error term is stationary which means that the variables are cointegrated. Put in another way there is a sustainable long run relationship (steady–state path) between economic growth and non-oil revenue variables.

4.4 Error Correction Model (ECM)

The error correction model is a short run model, which explains the extent to which the long run errors of the model are corrected in the short run. In other words, it is employed to check the speed of adjustment between the long run and short run dynamics in model (3.5). To arrive at this error correction model, all the variables in model (3.5) were estimated in their level form and the cointegrated residuals obtained. The ECM thus, implies estimation of the first difference of their level forms against the first lag of their cointegrating residuals (ECM(-1)) obtained.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECM(-1)</td>
<td>-0.521531</td>
</tr>
</tbody>
</table>
From the table above, the speed of adjustment is found to be negative and statistically significant in the stock return. The larger the value of the error–correction term, the faster the disequilibrium is adjusted in the short run so that long run equilibrium relationship holds. The speed of adjustment is - 0.52, implying that about 52 percent of the previous deviation between the actual and the desired private consumption expenditures are corrected in each year.

4.5 Diagnostic Test Result: Normality Test

The test is conducted to check whether the error term follows the normal distribution. The normality test adopted is the Jarque-Bera (JB) statistics, which follows a chi-square distribution with 2 d.f. Reject $H_0$ if $J_{bcal} > J_{btab}$, accept otherwise. Application of the JB test shows that $J_{bcal} = 0.945209$ and the probability of obtaining such a statistic under the normality assumption is 0.62, while the $J_{bcal} = 5.99$.

Since $J_{bcal} (0.94) < J_{btab} (2df) (5.99)$, the study does not reject the null hypothesis and conclude that the error term is normally distributed. Also, looking at the histogram the study observes that the residual is normally distributed.

5. Conclusion

This study revealed the need for viable agricultural and manufacturing revenue alternative to oil revenue, which is a dominant export product in Nigeria. It noted that non-oil revenue offer a greater viable alternative to oil revenue in relation to economic growth and development in Nigeria. Therefore, for Nigeria to prosper in economic growth, and manifest the desired economic transformation, they need to appreciate the strategic importance of non-oil revenue. The overall performance of non-oil revenue cannot be compared with performance of oil revenue. This could be largely due to the policies of the various tiers of Government to develop the non-oil sector due to the fluctuations in the International oil market and the incessant conflicts in the oil producing areas of Nigeria. This study recommends the following for policy:

- The government needs to invest in the non-oil sector adequately so as to be able to strike a balance, between the oil and non-oil sector and other sectors of the economy. In order to achieve this, the following steps must be taken: investments in agriculture, that is, cultivation of vast plots of land, for the farming of crops, in areas where these crops thrive most e.g. sugarcane (for the production of sugar), rubber in Edo and adequate management/administration should be provided for these crops, wherever they are planted, so that high revenue yields can be got from agricultural products' exports.
- Interest rates should be reduced to make loanable funds cheaper for investors in the non-oil sector of the Nigerian economy especially the manufacturing sub-sector. Finally, this work has shown that the non-oil sector can contribute more to the export earnings of Nigeria than the oil sector if properly managed, thus government should gear her efforts toward improving the non-oil sector of the Nigerian economy.

References

Export Seminar organized by NEPC Lagos zone, held at Palace Hotel, Lagos, April 25th.


