Determinants of Export Instability in Nigeria

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ABSTRACT:
The main thrust of this study is to investigate the main causes of exports instability in Nigeria. Violent and sudden fluctuations in export volume and price of exports have adverse effect on the balance of payments (BOP), national income, investment and then also create the severe adverse impact on the overall growth of less developed countries for which Nigeria is not an exception. The severe consequences of export instability at the various front of the economy are ratchet effect on wages and manufactured products in the industrialized countries, especially during the period after boom, and the inflationary consequences on the least developed countries (LDCs) through higher prices. All most all of the less developed countries including Nigeria mostly failed to meet the minimum import requirements of target rate of growth and as a consequence, a persistent trade gap are generated, which reduce the economic growth. This will also reduce investment and saving and finally deteriorate the situation of tax revenue. However, in this study we try to determine instability in oil and non-oil export earnings cause export instability in Nigeria by using the appropriate methodology. Data for the study were obtained from the Central Bank of Nigeria statistical bulletin 2013 edition. Data collected were analyzed using ordinary least square (OLS) estimation technique. The findings of the study reveal that positive relationship exists between oil exports instability and export instability in Nigeria.

Keywords: export instability, oil export instability, non-oil export instability, macro-economic instability.

INTRODUCTION
Sudden fluctuations in prices, and volume of exports, according to the traditional view, on the assumption that there exists an intimate relation between foreign trade, national income and investment, have serious adverse impact on overall macroeconomic performance and growth of less developed countries (LDCs), for the excessive fluctuations in prices and foreign exchange receipts, help generate fluctuations in domestics activities which in turn makes the process of budget implementation difficult and subsequently, making the process of planned development quite complicated and uncertain, reduce the efficiency with which investment resources are allocated and create manifold difficulties in estimating the expected return on investment which rises the cost of capital needed for greater risk (Aggarwal 1982). Economic development is a process of structural transformation where countries shift from the production of low quality goods to high quality goods. The precondition for this process is the existence of an elastic demand for their exports in international markets so that they can influence global export markets without affecting their terms of trade. Many developing countries (including Nigeria) have very low domestic demand for their products, which makes export earnings the main source for economic growth. So it is an important variable for all economies because they are linked through globalization and receive foreign exchange reserves by selling their exports that is an important source for Less Developing Countries (LDCs) to recover their balance of payment gap and for the payments of their imports. So export earnings instability could have different effects on their economic growth. Economists seemed to agree that export earning instability damages the growth potential of less developed countries because of its effect on the
income of producers and more generally on foreign exchange earnings. This in turn adversely affects the level and efficiency of investment (Borumand et al., 2009; Chimoba, 2010).

Nigeria witnessed steady growth in export in the first decade (1970-1980) after the civil war, where receipts grew from ₦885.7 million in 1970 to a peak of ₦14,198.7 million and then began to fluctuate from ₦11,033.8 in 1981 to ₦7,502.5 in 1983. Oil export accounted for about 80 percent Nigeria total export receipts, hence world oil price instability had hugely accounted for the fluctuates in Nigeria’s total export instability. Unfortunately, oil price variability had induced macro-economic instability over the years, further inducing gap between potential and effective advantages from international specialization. This was the case in the second republic when the government was forced to adopt the “austerity measure” and the situation did not get better until the structural adjustment program (SAP) of the IMF was introduced in 1986. Sadly too, the windfall resulting from August 2, 1990 to February 28, 1991 gulf war was grossly mismanaged and embezzled. The situation of macro-economic instability was made worst as the SAP had eventually midwifed the transfer of most public investments to the cronies of the military dictators and their political associates. This so called privatization eventually led to the total demise of some of these institutions privatized, NITEL is a case point. Marketing boards were disbanded for the purpose of efficiency and the policies of the SAP complicated and deepened the macro-economic instability in Nigeria, millions lost their jobs both in the marketing boards and failed privatized public establishments. The overall effects of exports price instability did not help the inflation situation in the country, soaring from 13 percent in 1991 to 57.2 percent in 1993 and then 72.8 percent in 1995. Macroeconomic instability generated by exports price variability was manifested in the pauciting growth rate of 0.01 percent in 1991, 0.78 growth rate in 1994, while rallying around 6.0 growth rate from 2004 to 2012 (CBN,2012).

According to Keynes (1938) macroeconomic instability generates uncertainty which has a negative effect on investment decisions and technological progress. No wonder the Nigerian economy was adjudged the largest economy in Africa after rebasing her GDP, while at the same time having unemployment level of 24 percent which was a record high in 2014, an indication of oil receipt growth rather than manufacturing and general industry. Also the classical economists were of the view that, there exist strong relationship between export, investment, national income and international trade. This variability in export receipts reduce the capital efficiency and returns on investment making planned development complicated (Aggarwal, 1982).

Nigeria like other developing countries of the world has her exports based on primary products. The prices of primary products are low and more volatile in international markets. Hence Nigeria suffers high export instability due to the inelastic and unstable demand and supply of the country’s exports. It therefore follows that the high export instability for these primary products may have an adverse effect on Nigeria macroeconomic performance. Export instability harms the relationship between export and economic growth, while price instability plays an important role for instability in exports. However, price instability in Nigeria is a result of specialization in production and exports of primary commodities. Nigeria is currently facing recession shortly after being in boom occasioned by surge in world oil prices from 2012 to 2015. The impressive growth in national income just couldn’t be sustained for obvious reasons which include; the persistence of very large national budget deficit, huge merchandise trade deficits, growing levels of food imports (especially rice and pastries), the recent depreciation of the national currency occasioned partly by significant slump in world oil price and the drastic cut in crude oil supply by about 60 percent resulting from the militants activities in the Niger Delta, and the near total collapse of the power in Nigeria. The huge trade imbalances and instability of export receipts are of particular concern as they directly impede on macroeconomic stability.

The issue of export instability has resurfaced as an important international trade issue with increasing merchandise trade deficits of many countries in Africa. Although various studies by a number of economists on export fluctuations and volatility in Nigeria do exist, there is some gap in information dealing with the core determinants of export instability in Nigeria; this will empirically determine the main causes of export instability in Nigeria. This study therefore aims at filling this gap. The main
objective of this study is to determine whether commodity and geographic concentration index of Nigeria exports and instability in agricultural and non-agricultural GDP cause export instability in Nigeria.

LITERATURE REVIEW

Conceptual Issues
The year to year fluctuation in exports figure is defined as export instability. It can be defined as the difference between the actual and estimated value of exports, expressing this difference as a percentage of average value of exports. According to The United Nations Secretariat in its 1952 study," Instability in Export Markets of Underdeveloped Countries", instability index is the absolute difference in the value of export from year to year, expressing this difference as a percentage of larger of the two annual values. International trade depend not only on the existence of needs that cannot be satisfied by domestic production, but also on the possibility of exchanging domestically produced goods for foreign goods, mainly capital goods for investment purposes. Developing counties (including Nigeria) use a substantial part of their income to produce or import capital goods, hence a considerable shortfall in foreign exchange receipts inhibits expansion of the export industry which might also reflect in the level of total capital formation (Aiello, 1999).

Export instability of an economy may create economic instability of the same economy as well as other economies of the world through the process of globalization. It is therefore, imperative to give the much attention to the effects of export instability on economic development. These issues have continued to raise serious concern as to counter the instability in Less Developing Countries’ (LDC’s) exports earnings, price stabilization agreement in primary products and a compensatory financing scheme to compensate the loss in LDC’s earnings due to the deterioration in terms of trade of primary product as well as manufactured goods have been advocated.

Major Causes of Exports Instability in Nigeria
It is generally agreed that, excessive fluctuations in foreign trade originate from variations in supply or demand or other economic and non-economic factors. But most of the recent studies based on statistical evidence conclude, though inclusively that instability index of exports are largely positively correlated with the degree of commodity concentration of exports and with the proportions of exports receipts obtained from the sales of primary goods and negatively correlated with per capita income and with the concentration of exports by geographical area of destination (David Murray, 1978). It has been commonly held that exports of less developed countries fluctuate widely adding to the complexities of economic planning which adversely affects the process of economic development. Specialization in primary and agricultural products as well as instability in their exports has long been considered as the major cause of export instability for least developed countries (LDCs). Domestic production is generally subject to greater short-run variation than are expected often due to unpredictable natural forces. The export supply of these products is positively affected by increases in the country’s total domestic export supply whereas import demand is affected by the volume of export supply by the importing countries. Primary products are known to have low price elasticity of supply and demand, which is said to cause even greater fluctuation of export proceeds in those countries relying heavily on them (Aidam W.P. and Anaman A.K., 2014).

Price instability plays an important role for instability in exports. The reasons for high export instability in LDCs than DCs are: Specialization in production and exports of primary products, Commodity Concentration and geographical concentration of export markets (Hock, 2007).

Supply Side Instability in Agricultural Product: Due to the lack of product specialization, Nigeria has no consistency on agricultural products for the purpose of exports. In addition to this, supply side instability is caused by the following:

I. Deterioration of natural resource, especially the forest resource by heavy deforestation. Nigeria now import timber products for which she used to be a leading exporter up to the early 1990’s.
II. High degree of land fragmentation, lack of irrigation and climate based agricultural farming, and finally rapidly increased population. Due to the first two reasons, i.e., high degree of land
fragmentation, lack of irrigation and climate based agricultural farming land productivity is reduced and fluctuated. Due to the third one, i.e., increased population, even if the land productivity was increased it was used to feed the increased population and as a result we were unable to increase supply of agricultural product for exports. These factors create heavy instability in exports of agricultural products, which have the significant share on the total export for Nigeria.

**Inefficient Tax Administration and Long Open Porous Borders:** Due to the sluggish and prolonged bureaucratic procedure and kicked-backed (corrupt) nature of bureaucrats, the tax administration is highly inefficient. This causes to increase the unscrupulous trade practice. Further, we have very long porous border with our neighbouring countries. This causes to encourage heavy illegal and unscrupulous trade practice in Nigeria boarder. As a result export figures (noted from custom posts) from Nigeria is found to be highly unstable.

**Lack of Exportable Quality:** Due to the lack of international exportable quality, Nigeria's exports heavily fluctuated during the study period. If Nigerian entrepreneurs develop a new and better quality product it takes better international markets in the beginning. But after some years their quality will deteriorate due to the lack of quality control mechanism of the government and the private sectors. This immediately reduces the exports. Such type of phenomenon was observed in the export of cocoa, hide and skin, rubber latex and so on.

**Consequences of Export Instability**

It is argued that fluctuating prices of primary product retard the process of economic growth and then to economic development in poor countries. It also triggers a ratchet effect on wages and manufactured products in the industrialized countries, especially during the period after boom, and the inflationary consequences would reverberate on to the LDC's through the higher prices, they must pay for their imports of investment and consumer goods.

Almost all of the countries frequently failed to meet the minimum import requirements of a target rate of growth and as a consequence, a persistent trade gap would severely constraint the process of economic development due to the sharp fluctuation in exports earning of these countries. This immediately affects certain types of capital goods which are essential for investment but not possible to produced domestically, and maintenance and replacement imports cannot be obtained in the required quantity. Even if it is possible to obtain in the required quantity, it will further deteriorate the foreign trade balance and then to the GDP of the country concerned. This, as Macbean (1969) argues, impose a brake on the growth of capacity as well as full capacity operation of existing plant, there by frustrating domestic saving.

The very high export instability always constrained the capacity of LDCs to plan and to make the investment programmes through its impact on domestic saving, tax revenue, and above all, their capacity to imports. According to Mac bean (1966) the export fluctuations may affect not only the peasants who produce exports crops but also the entrepreneurs who undertake investments in the production of manufactured goods. The peasants may not desire to afford the risk of depending on exportable crops which are subject to severe price instability, while the industrialist may find it difficult to estimate the expected returns on investment and be certain that the necessary capital goods and raw materials which need to be imported could be available. As a result incomes of exporters and industrialists who are likely to have a higher marginal propensity to save will fall, resulting in a fall in domestic savings.

In small dependent economy like Nigeria facing an unexpected and temporary increase in primary exports earnings. The result is a fall in the competitiveness of the traditional tradable sector (manufactured goods), an economic phenomenon known as the Dutch Disease (Corden and Neary, 1982 and Neary and Van Wijnbergen, 1986).

Assuming the economy is relying on the activity of three sectors; two are tradable of which prices are determined exogenously: agriculture or mining sector and manufactured goods sector. The third sector is non-tradable and mainly covers services and local industry. There exist two production factors (labor and capital). Labor can move from one sector to another whereas capital is sector specific. Factors cannot move abroad. Other assumptions are the full employment of production factors, the perfect price flexibility and constant returns to scale. The model is real and hence the interesting price is the ratio
between the traditional tradable (non-booming) sector price and the non-tradable one: this is the real exchange rate which is interpreted a competitiveness indicator. The Dutch Disease summarizes two effects, first is the spending effect and second is the resource effect. An unexpected increase of primary exports earnings boost the national income and consequently increase the domestic demand. The main reaction is a labor demand increase and hence wages. Wages increases reduce profits in the traditional (manufactured goods) exports sector as output prices are exogenous and increase non-tradable prices. In the traditional tradable sector, the negative consequences of the spending effect are reinforced by the resource effect as defined as labor flows from the traditional tradable and non-tradable to the booming sector. There is a decrease of the real exchange rate, i.e. an appreciation, which reduces the country's competitiveness.

We can notice that the Dutch Disease only concerns a temporary increase in exports' earnings. If the latter is permanent, the real exchange rate appreciation can be only diagnosed as the "normal" reaction of the economy. When the boom is temporary the inter-sectoral reallocation of resources raises difficulties as there are adjustment costs. For example, deindustrialization may be inducing permanent lags in technological knowledge accumulation or a permanent lag with respect to competitors’ production costs (scale economies).

THEORETICAL LITERATURE
Prebisch - Singer Theory
The Prebisch-Singer theory argues that the price of primary commodities declines relative to the price of manufactured goods over the long term, which causes the terms of trade of primary-product-based economies to deteriorate. As of 2013, recent statistical studies have given moderate support for the idea. The idea was initially developed by Hans Singer in 1948 - 49 and expanded by Raúl Prebisch shortly thereafter; since that time, it has served as a major pillar of dependency theory and policies such as import substitution industrialization (ISI).

A common explanation for this supposed phenomenon is that manufactured goods have a greater income elasticity of demand than primary products, especially food. Therefore, as incomes rise, the demand for manufactured goods increases more rapidly than demand for primary products. In addition, primary products have a low price elasticity of demand, so a decline in their prices tends to reduce revenue rather than increase it.

This theory implies that the very structure of the global market is responsible for the persistent inequality within the world system. This provides an interesting twist on Wallerstein's neo-Marxist interpretation of the international order which faults differences in power relations between 'core' and 'periphery' states as the chief cause for economic and political inequality (However, the Singer–Prebisch thesis also works with different bargaining positions of labour in developed and developing countries). As a result, the hypothesis enjoyed a high degree of popularity in the 1960s and 1970s with neo-Marxist developmental economists and even provided a justification for an expansion of the role of the commodity futures exchange as a tool for development.

Singer and Prebisch noticed a similar statistical pattern in long-run historical data on relative prices, but such regularity is consistent with a number of different explanations and policy stances. Later in his career, Prebisch argued that, due to the declining terms of trade primary producers face, developing countries should strive to diversify their economies and lessen dependence on primary commodity exports by developing their manufacturing industry.

Export-Led Growth Hypothesis
Export-led growth hypothesis postulates a relationship between the growth of export and the economy such that export expansion becomes one of the main determinants of economic growth. This hypothesis holds that overall growth of different economies could be generated not only by increasing the amounts of labour and capital, but also by expanding exports. The significant relationship between export expansion and economic growth could also be traced down to the possible positive externalities caused by the involvement of different countries in the international trade. Different strands of empirical works have extensively stressed the importance of trade especially export expansion in the explanation of growth. To
this end, various models have employed different variables such as the degree of trade openness, term of trade, tariff and exchange rate to verify the hypothesis that open economies grow more rapidly than those that are closed (Omisakin, 2009).

**Empirical Literature**

A study by Ocran and Biekpe (2008) to assess the impact of export earnings instability of primary commodity and the level of commodity dependence on economic growth in Sub Saharan Africa using fixed effects panel data estimator found that instability in exports was negatively related to economic growth. Stordel (1990) focused on the link between export earnings instability and capital formation through a model of the investment behaviour where both effects of export earnings instability and financial constraints on capital formation were taken into account. A country-specific approach for 12 developing countries during the period 1963-1983 was used. He found out that export earnings instability was seen to affect investment in seven of the countries and finally concluded that the overall effect of export earnings instability on investment could be positive. Sinha (1999) established that there was a positive relation between export instability and investment for most of the countries studied based on time-series data for eight countries. Sinha (2007) in a similar study to assess the effects of volatility of exports in the Philippines and Thailand using the GARCH model concluded that the shock to export volatility was permanent.

A study by Akopokodje (2000) about export earnings fluctuation and capital formation in Nigeria also discovered that export earnings fluctuations adversely impinged on investment in the short-run period. Love established that export instability caused income instability based on a time-series study of 20 developing countries. Gyimah-Brempong (1991) in a study of 34 Sub-Saharan African countries during the 1960 to 1986 period using the production function framework found that export instability had a negative effect on economic growth irrespective of how export instability was measured. Other studies that established some significant linkage between export instability and investment or income include Khan and Saqip (1993), Krishna et al. (1998) and Levine and Renelt (1992).

Bakar and Subramaniam (2010) conducted study on effects of export instability on economic growth for Malaysia economy by using Augmented Dickey Fuller (ADF) and residual based test to check the stationarity of the variables and cointegrated test to find out the long run relationship between export instability, export growth and economic growth. This study concluded that export instability had negative and significant effect on the economic growth of Malaysia economy. It affected the economic plans and reduced capital formation that led to increase in unemployment rate.

GARCH model was used to measure the export instability index by (Sinha, 2007). The time series data was used to investigate the relationship between export volatility and economic growth for two countries Philippines and Thailand. This study concluded that these both countries relied on exports for their economic growth. This study also concluded that export volatility is permanent for these countries and is significant for the prediction of future volatility.

Hesse (2008) examined the effect of diversification polices on economic growth for developing countries. Solow growth model was used to find out the relationship between these variables for 1961-2000 time periods. The conclusion of this study was that export diversification had positive relationship with economic growth in developing countries and developed countries could perform better by adopting specialization.

**METHODOLOGY**

**Calculation of Export Stability Index:**

Economics literature is inundated with various statistical measures for calculating export instability index (II). However, the United Nations Secretariat in its 1952 study "Instability in Export Markets of under Developed Countries" used the method below to measure export instability. This method involves no formula adjustment for trend. It consists of obtaining the absolute difference in values from year to year, expressing this difference as a percentage of large of the two annual values and then averaging these percentages (Coppock, 1962).
The formula for this method is:

\[ II = \frac{ABS(X_{t+1} - X_t)}{X_t} \times 100, \text{ if } X_t > X_{t+1} \] ..............................(1)

\[ II = \frac{ABS(X_{t+1} - X_t)}{X_{t+1}} \times 100, \text{ if } X_{t+1} > X_t \] ..............................(2)

ABS = Absolute value

\( X_{t+1} \) = Next year export and

\( X_t \) = Current year export

**Model Specification**

To determine the causes of export instability in Nigeria, we develop the following model.

\[ II = f(II_{oil}, II_{noil}) \] .................................................................(3)

Where,

\( II \) = Instability index

\( II_{oil} \) = Instability index of oil GDP.

\( II_{noil} \) = Instability index of non-oil GDP.

Equation (3) is further expressed in the explicit linear form as follow:

\[ II = \beta_0 + \beta_1 II_{oil} + \beta_2 II_{noil} + U_t \]

\( \beta_1 > 0, \text{ and } \beta_2 > 0 \)

In the above models to calculate \( II_{oil} \) and \( II_{noil} \) we use the following formula:

\[ II_{oil} = \frac{ABS(X_{t+1} - X_t)}{X_t} \times 100, \text{ if } X_t > X_{t+1} \] ..............................(4)

\[ II_{noil} = \frac{ABS(X_{t+1} - X_t)}{X_t} \times 100, \text{ if } X_t > X_{t+1} \] ..............................(5)

**Nature and Sources of Data**

This study employed secondary data sourced from: Central Bank of Nigeria’s statistical bulletin (1997, 2013) editions. The data series sourced therefrom and used in this study include: Instability index (II), Instability index of oil GDP (\( II_{oil} \)), and Instability index of non-oil GDP (\( II_{noil} \)).

**DATA ANALYSIS AND DISCUSSION OF FINDINGS**

**Stationarity Tests**

In order to test for the time series properties of data set the Augumented Dickey Fuller (ADF) test statistic was employed. The unit root test results shown in table 1 below revealed that the variables are stationary at levels I(0).
Table 1: Stationarity Test

<table>
<thead>
<tr>
<th>Level</th>
<th>First</th>
<th>Second</th>
<th>Order of Int.</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>-6.10381</td>
<td>-3.92001</td>
<td>I(0)</td>
</tr>
<tr>
<td>IIOIL</td>
<td>-6.10966</td>
<td>-3.92405</td>
<td>I(0)</td>
</tr>
<tr>
<td>IINOIL</td>
<td>-6.80783</td>
<td>-4.45409</td>
<td>I(0)</td>
</tr>
</tbody>
</table>

1% level -3.65373 -3.66166 -3.68919
5% level -2.95711 -2.96041 -2.97185
10% level -2.61743 -2.61916 -2.62512

Table 2: Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.983490</td>
<td>0.433373</td>
<td>-2.269383</td>
<td>0.0306</td>
</tr>
<tr>
<td>IINOIL</td>
<td>0.014893</td>
<td>0.006663</td>
<td>2.235234</td>
<td>0.0330</td>
</tr>
<tr>
<td>IIOIL</td>
<td>0.985552</td>
<td>0.007331</td>
<td>134.4447</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.999244  F-statistic 19834.49
Adjusted R-squared 0.999194  Prob(F-statistic) 0.0000

Durbin-Watson stat 1.848315

The results in the table 2 above indicate that there is positive relationship between export instability and the explanatory variables included in the model: \( \Pi_{noil} \) and \( \Pi_{oil} \). The variation in non-oil export instability index (\( \Pi_{noil} \)) of about 1.5 percent is statistically significant at 5 percent critical level. This implies that a unit variation in non-oil export instability index will bring about 1.5 percent change in export earnings instability in Nigeria. On the other hand, oil export instability index of about 99 percent is statistically significant at 1 percent critical value. Thus oil price instability is the major determinant of export earnings instability in Nigeria with a unit change in oil export instability (\( \Pi_{oil} \)) bringing about 99 percent variation in total export earnings in Nigeria.

The coefficient of determination (R-squared) of 0.99 indicates that 99 percent variation in export earnings instability (\( II \)) – the dependent variable is explained by the explanatory variables included in the model; hence the model is of good fit. The f-statistic is also very significant at 1 percent, indicating that jointly all explanatory variables included in the model are statistically significant at 1 percent critical level, implying that the model is very much useful for economic analysis and predictions. The Durbin-Watson (WD) statistic of 1.8 is an indication of the absence of autocorrelation in the model.

CONCLUSION /POLICY IMPLICATION

From the findings of this study, we can conclude that instability in oil export earnings is the major cause of exports instability in Nigeria. However, the study also showed that variability in non-oil export earnings has weak positive but significant relationship with export instability in Nigeria. Thus policymakers should expand the diversification strategy into manufacturing processes that the country has
clear comparative advantages such as food processing, garments, leathers, petro-chemicals and processing of solid minerals. Emphasis needs to be placed on the promotion of manufactured exports.

REFERENCES