

# On The Impact of Export Agricultural Commodity Price Index on Economic Growth in Nigeria

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## ABSTRACT

This study examines the impact of export agricultural commodities price index on economic growth in Nigeria. The agricultural commodities considered in this study were live animals, animal products, vegetable product and prepared foodstuffs, beverages, spirits and vinegar, tobacco. Real Gross Domestic Product (GDP) was used as a proxy for economic growth. The objective of this study is to determine the export agricultural commodity price index that impact significant on economic growth in Nigeria. The data used in this study was obtained from Central Bank of Nigeria Statistical Bulletin 2017. Findings showed that the model obtained in the study was found to be adequate for estimating real GDP in Nigeria. Further findings revealed that export agricultural price index on prepared foodstuffs, beverages, spirits and vinegar, tobacco has significant impact on economic growth in Nigeria. Also, it was found that export agricultural price index on products such as live animals, animal products, and vegetable product does not significantly impact on economic growth in Nigeria. Hence, we recommend that government should invest more on areas such as was found that live animals, animal products, and vegetable product so that they will impact positively on economic growth in the near future there by strengthen the diversification agenda of the government.

**Keywords:** Agricultural Commodities, Government, Live Animals, Vegetable Product, Price Index

## 1. INTRODUCTION

One can define price index as a measure as a percentage, changes in a set of prices over time. Consumer price index (CPI) measures the changes in prices of goods and services that households consume. This kind of changes is expected to affect the real purchasing power of consumers' incomes and their welfare. Consumer price index measures implies that the relative movement in the general prices of goods and commodities consumed by the public relative to a base period, being made up of a basket of consumables that must not be kept sacred, but changeable.

The constituents of the consumer prices index vary from area to area such as

from rural to urban sectors of the economy, since the consumption patterns in those areas are not the same. As the prices of different goods and services do not all change at the same rate, a price index can only reflect their average movement. A price index is typically assigned a value of unity, or 100, in some reference period and the values of the index for other periods of time are intended to indicate the average proportionate, or percentage, change in prices from this price reference period.

Price indices can also be used to measure differences in price levels between different cities, states or countries at the same point in time. Note that if interest is to measure difference in two states or region

the time point to be considered must be homogenous. However, it is worthy to know that the components of price index alter and vary from country to country, making international comparison meaningless. The understanding is that the high consumer prices in Nigeria could be as result of the imported inflation and the possibility that the high exchange rates, is equally contributing to the prices of goods purchased and consumed in the domestic economy (Adubi and Okunmadewa,1999). However, floatation of the domestic currency has positively affected the export of commodities especially the agricultural produce (Adubi and Okunmadewa,1999). Price increase in the foreign exchange market continuously increases because of level of inflation and this in turn affects the domestic prices though the goods are neither imported nor have imported inputs in their manufacture or assembly process.

Aronu and Bilesanmi (2014) in their study found that import commodity price index in Nigeria has often been higher than export commodity price index. They thereby advocated for more studies within the context of price statistics in Nigeria noting that the significance of price statistics in the economy of any nation cannot be overemphasized because they constitute a very useful tool for policy making, economic planning, analysis and monitoring. Hence, price signals have been found to enhance better understanding of the degree of economic stability in any nation. Therefore, the objective of this study is to determine the export agricultural commodity price index that impact significant on economic growth in Nigeria.

## 2. LITERATURE REVIEW

Brown *et al.* (2008) argued that since low commodity prices create perceived problems, then high prices can create more varied problems, forcing countries and producers to choose between immediate profits and future sustainability. Using countries like Algeria, Nigeria and Venezuela, the study noted that these

countries have fallen prey to over optimistic spending habits during commodity booms, using current and expected gains to finance social and politically motivated projects and activities. This is a typical case of the Nigeria economy where such program quickly becomes unsustainable when commodity prices drop, but are typically very tricky for politicians to cut, and so tend to get funded out of borrowed money, adding to the country's debt burden. Also, price index of exports from advanced economies is used to derive real commodity prices. These real commodity prices are usually measured in terms of their purchasing power over advanced economies' exports while price instability is measured as the absolute percentage deviation from the long-run exponential trend for the period.

Adekunle (2010) in his study employed secondary data from the Statistical Bulletin or the Central Bank of Nigeria for all the variables of interest, but was truncated to 21 years (1986-2007) for data availability. To justify the range of years employed in the study, he further explained that the liberalized foreign exchange market in Nigeria effectively took off in September 1986. The study adopted two techniques to measure the variables to analyze the questions raised. The group unit root process was adopted to enable a cross section of the various variables be tested with the same method. The result allowed the variables to be used in the causality approach. The variables that he considered includes the Consumer Price Index, Official Exchange Rate, Autonomous Foreign Exchange Market (Parallel Exchange Rate), Inflation Rate, import Ratio (Imports/GDP). The study found that the short annual length of the data showed that the market is of recent origin in country.

According to Böwer *et al.* (2007), there exist three channels through which commodity prices affect inflation in oil exporting developing countries like Nigeria. In addition to the direct pass-through to retail prices as a result of rising production

costs, they argued that the rise in commodity prices may influence the level of domestic prices through increased private and public sectors spending, reflecting the positive income effect, or by the increase in banking sector liquidity as a result of the expansion of foreign exchange inflows. They equally explained that it is important to note that commodity markets cover a wide range of products that can be segmented into agricultural, metal and energy, with different impacts on retail price level. Although metal prices are the most affected by economic growth, this segment has the less significant impact on inflation. Also, price changes of agricultural and energy commodities quickly affect the retail costs of food and transportation, while price fluctuations of base metals are smoothed along the usually large production chains. Emerging countries, for instance, tend to suffer from greater inflationary impact of commodity prices, since food has a higher share in the average consumption basket and production is usually less energy efficient. In countries where revenues from commodity exports accounts for a significant share of the exchange flow, the inflationary impact of a commodity price shock tends to be offset by the resulting currency appreciation.

Omotor (2008) in his study found that economic growth, exports, imports labour force and exchange rate were cointegrated. Further findings revealed that economic growth uni-directionally Granger-causes exports during the period of study. Hence, the study does not provide evidence to support the export-led economic growth hypothesis in the Nigerian economy.

Aronu and Bilesanmi (2014) examined the equality of export and import commodities price index in Nigeria using secondary data obtained from the Central bank of Nigeria Statistical Bulletin 2010. They employed the Permutation method for Hotelling T-Squared and Descriptive statistics in analyzing the data. The findings of the study revealed the existence of a significant difference between monthly

export and import commodities price index in Nigeria. They concluded that there is a clear evidence to say that export and import commodities price index in Nigeria are not equal and import commodities price index has always been larger than export commodities price index. This has been the major factor affecting the Nigerian economy.

### 3. MATERIALS AND METHODS

#### 3.1 Source of Data

Secondary source of data collection obtained from the Central Bank of Nigeria Statistical Bulletin of 2017. The data comprises of annual real GDP, live animals, animal products, vegetable product and prepared foodstuffs, beverages, spirits and vinegar, tobacco from 2000 -2017.

#### 3.2 Methodology

##### 3.2.1 Regression Analysis

Regression analysis measures the nature of association between two or more variables. On method of estimating the parameters of regression analysis is using the least square estimator.

##### 3.2.2 The Least Square Regression

The least square method of estimating regression parameters aims at generating estimators in such a way that the sum of squares of the error is minimized (Franses, 1996).

Suppose,

$$Y = X\beta + \varepsilon \quad (1)$$

where X is the independent variables  
 $\beta$  is a  $(k+1) \times 1$  vector of unknown parameters,  
and  $\varepsilon$  is an  $n \times 1$  random vector with mean 0 and variance  $\sigma^2 I$ .

#### 3.3 Model Specification

The model for this study was specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad (2)$$

where,

Y represents the real GDP

$\beta$ 's represents the model coefficient and the average change from one period to the next

$X_1$  represents price index for Live animals, animal products

X<sub>2</sub> represents price index for Vegetable Product

ε represents the random error or noise in the system

X<sub>3</sub> represents price index for Prepared foodstuffs, beverages, spirits and Vinegar, tobacco

### 3. 4 Data Presentation

**Table 1: Export Agricultural Commodity Price Index (Base Period: January 2007) and Real GDP form 2000-2017**

Year	Live animals, animal products	Vegetable Product	Prepared foodstuffs, beverages, spirits and Vinegar, tobacco	Total Agriculture Commodity price index	Real GDP
2000	1129.301	2024.4	1290.493	4444.195	23688.28
2001	1139.303	1848.822	1359.407	4347.532	25267.542
2002	1131.557	1773.622	1247.49	4152.669	28957.71
2003	1182.435	2089.074	1313.149	4584.659	31709.447
2004	1038.541	1872.974	1364.391	4275.906	35020.549
2005	1124.182	1775.138	1168.823	4068.143	37474.949
2006	1159.592	1532.724	1302.926	3995.242	39995.505
2007	1143.533	1696.535	1316.339	4156.407	42922.408
2008	1170.943	1953.441	1286.462	4410.847	46012.515
2009	1144.242	1758.838	1309.793	4212.873	49856.099
2010	1310.669	3266.382	1677.137	6254.187	54612.264
2011	2023.322	2208.572	2130.443	6362.337	57511.042
2012	1201.139	1602.2	1497.047	4300.385	59929.893
2013	1344.032	2447.466	1470.726	5262.224	63218.722
2014	1689.836	2322.457	1785.799	5798.093	67152.786
2015	5908.314	7095.105	2252.562	15255.98	69023.93
2016	10491.35	17829.25	3561.915	31882.51	67931.236
2017	7890.654	12179.31	4587.734	24657.7	129069.35

Source: Central Bank of Nigeria Annual Statistical Bulletin, 2017

## 4. Data Analysis and Result

### 4.1 Test of Adequacy of the Model

**Table 2: Summary of Test for adequacy of the Model**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.910 <sup>a</sup>	.829	.792	11150.23055

a. Predictors: (Constant), X3, X2, X1

The result of the test for adequacy presented in table 2 found a coefficient of determination value of 0.910. This result implies that the independent variables were able to explain about 91.0% of the total variation in the dependent variable economic growth.

### 4.2 Analysis of Variance Table

**Table 3: Summary of Analysis of Variance Table**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8420875076.400	3	2806958358.800	22.577	.000 <sup>b</sup>
	Residual	1740586977.118	14	124327641.223		
	Total	10161462053.519	17			

a. Dependent Variable: Real GDP  
b. Predictors: (Constant), X3, X2, X1

The result obtained in table 3, found F-value of 22.577 and p-value of 0.00 which falls on the rejection region of the hypothesis. Hence, the model is useful in estimating the dependent variable economic growth.

### 4.4 Test for Individual Coefficient of the Model

**Table 4: Summary of Test for Individual Coefficient of the Model Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-1674.680	8175.214		-.205	.841
	X1	3.511	6.182	.394	.568	.579
	X2	-5.277	3.599	-.949	-1.466	.165
	X3	36.424	6.973	1.350	5.223	.000

a. Dependent Variable: Real GDP

The result obtained in table 4 showed that only variable X3 (Prepared foodstuffs, beverages, spirits and Vinegar, tobacco) contributed significantly to the model with a t-value of 5.22 and p-value of 0.00 which falls on the rejection region of the hypothesis assuming 95% confidence level. It was found that variable X1 (live animals, animal products and X2 (vegetable product) does not impact significantly on economic growth in Nigeria since a t-value of 0.568 and -1.47 respectively were obtained with corresponding p-values of 0.58 and 0.17 respectively.

The obtained model was expressed as  
$$RGDP = -1674.68 + 3.51 * X1 - 5.28 * X2 + 36.42 * X3 \quad (3)$$

## 5. CONCLUSION

This study examines the impact of export agricultural commodities price index on economic growth in Nigeria. The agricultural commodities considered in this study were live animals, animal products, vegetable product and Prepared foodstuffs, beverages, spirits and Vinegar, tobacco. Real Gross Domestic Product (GDP) was used as a proxy for economic growth. Findings showed that the model obtained in study was adequate for estimating real GDP in Nigeria. Further findings revealed that export agricultural price index on prepared foodstuffs, beverages, spirits and vinegar, tobacco has significant impact on economic growth in Nigeria. Also, it was found that export agricultural price index on products such as live animals, animal products, and vegetable product does not significantly impact on economic growth in Nigeria. Hence, we recommend that government

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