

Welfare Loss and Surge in Food Commodity Prices in Nigeria

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Abstract

This study endogenously determines the extent of welfare loss during and after the recent economic recession in Nigeria by adopting the technique of Least Squares with Breakpoints (BREAKLS) covering 30 monthly (January, 2016 to June, 2018) data on the selected food commodity prices and CPI. Through the use of Bai-Perron tests as break type, the study revealed that the period of recession erodes the peoples' purchasing power and hence worsens their welfare as an increase in consumers price index is influenced by greater increase in the prices of selected food commodity. Also, peoples' welfare begins to improve as the economy begins to recover as a result of gradual fall in the prices of selected food commodity.

Keywords: Inflation, Economic recession, food commodity, price, welfare.

1.0 INTRODUCTION

Inflation is one of the most leading and dynamic macroeconomic issues confronting the developing economies of the world, Nigeria inclusive and its impact has eaten deep into the fabric of the nation's life due to prevailing increase in the general level of prices (Olatunji *et al.*, 2010). Similarly, the consumer price index for food commodity over the years in Nigeria has been constituting a larger proportion of the composite consumer price index and as noted by Oppedahl (2009), households in developing economies (such as Nigeria) spend more on food relative to overall spending and therefore, food price inflation has indeed played a significant role in overall inflation of the economy.

Nigeria's economy slid into recession following two consecutive quarters of negative economic growth commencing from January, 2016 and began to recover in June, 2017 as announced by National Bureau of Statistics (NBS). However, recession is usually characterised by reduced commodity prices as a result of low productivity precipitated by the contraction of the economy but the period was witnessed an astronomical increase in the commodity prices. To improve market sales, various companies reduce their prices, embark on promotional sales and deploy all sorts of selling strategies to woo customers and even entice them patronize their products. But the recent recession in Nigeria was usually unusual. It was rather compounded by galloping inflation and thus the economy landed itself into a period of stagflation. The negative effects of this economic stance have far-reaching as the prices of many commodities are escalating to an unimaginable higher level. This unprecedented increase in basic food prices raises great concerns about food security, hunger and poverty in the economy. It has indeed resulted into welfare loss as people already find themselves in a period of disequilibrium in which too much money is chasing too few goods and services.

In spite of oil, agriculture remains the back-bone of the Nigerian economy, as it contributes about 21% to GDP and is the main provider of income, employing more than two-thirds of the entire labor force (NBS, 2018). Even during the economic downturn, the agricultural sector was one of the rare sectors to maintain positive economic growth. Indeed, Nigerian government has identified agriculture as one of the sectors that will aid the export revenue diversification initiative of the government, propelling economic growth in economy. With abundant arable lands, agriculture in Nigeria has the potential to drive foreign exchange earnings. However, Nigeria has only achieved self-sufficiency in a few crop productions, like, cocoa, rubber and cassava – Nigeria remains the second largest producer of cassava in the world. (WTO, 2017). Ironically, it has been a major importer of staple foods especially wheat, rice, maize - which are consumed in high quantities but could be cultivated in the country (with the exception of wheat). This has adversely affected the economy's current account balance. The policy thrust of government towards a more export-focused agrarian economy has exposed Nigeria to the interplay of global demand and supply in agricultural commodities.

The increase in the prices of commodities across the country in the past few months is taking its toll on both the sellers and the consumers. The sellers are complaining of low patronage while the consumers are unable to back-up the ability to procure needed essential commodities as a result of their inadequate purchasing. Being an import-dependent country, a number of factors can be responsible for the rising cost of commodities and among them include exchange rate volatility, exclusion of importers of some items from access to the foreign exchange market as well as the increase in the pump price of petroleum products

This is exactly what is currently happening to prices of commodities in Nigeria which many have blamed on the singular attachment of the country's currency to US dollar, some said it was due to unpatriotic practice of some traders to exploit others while some attributed it to inadequate supply of fuel across the nation as factors responsible for the hike in prices of commodities.

In Nigeria, we import almost everything we use which is responsible for hike in the prices of commodities

because agriculture sector, which is the only option to revive our dying economy, has been neglected. Most commodity prices of common staple food items like Rice, Beans, Fish, Garri, Meat among others had gone up by over 100 per cent according to the market survey, leaving consumers (the downtrodden masses) with no other choice than to cope with it even though, it does not go down well with them. The take-home pay of greater proportion of salary earners can no longer take them home not to talk of feeding the family, others cannot even live from hand to mouth. Similarly, artisans and other categories of entrepreneurs are also victims of this ugly and discouraging economic stance.

A considerable number of empirical studies identify and analyze the possible causes of recent food and agricultural commodity spikes. Several of these factors are commonly identified as being responsible for the price shift; these studies are commodity-specific neglecting the array of available commodities in the economy. The authors did not also take the cognizance of the indisputable fact that increases in the prices of these commodities have a significant welfare effect on the consumers. This study is indeed motivated by the persistent rise in the prices of food commodity in the economy since the first quarter of 2016. And people have been crying foul, lamenting the ordeal they are passing through as prices of consumer goods are skyrocketing. The aim of the study is therefore to examine the extent of welfare loss during and after the recent economic recession in Nigeria.

2.0 EMPIRICAL REVIEW OF LITERATURE

Unstable price of food commodity in the economy is not only topical but also has become a burning issue of discourse in literature as a result of the direct impact it has on the citizenry. Díaz-Bonilla and Ron (2010) consider the 2007–2008 price hikes as part of normal price instability caused by temporary shocks. Many studies have investigated the causes of and solutions to rising food prices. (Abbott et al., 2009) Abbott et al., 2011, Gilbert, 2010, Roache, 2010) identified series of determinants of food price increases in commodity market. Another strand of research seeks to identify explosive increases in prices of commodity in the markets during 2007–2008 (Gilbert, 2009, Phillips and Yu, 2011, Shi and Arora, 2012). Similarly, Gilbert and Pfuderer, 2012, Grosche, (2012) examine the impact of speculation and agricultural fundamentals on price spikes and volatility discover that price spikes are the short-term ups and downs of prices following short-term shocks while volatility is the variability of price around its trend. The authors conclude that food crisis is more closely related to extreme price spikes, while long-term volatility is more strongly connected to general price risks.

Rezitis and Sassi (2013) examine the potential causes and consequences of recent surges in food and agricultural commodity prices. The empirical results indicate that commodity food prices present seasonality and cyclicity with the longest periodicity of two years. The empirical findings identify certain structural breaks in commodity food price series as well as outliers by analyzing the behaviour of the monthly commodity food price index for the past 20 years. These structural breaks seem to capture the trend component of the price series well, while the outliers take account of temporal effects, that is, short-lived spikes. Finally, the presented forecasts show high and volatile commodity food prices.

The food crisis of 2008 in Nigeria was influenced by price changes in the world market and the escalation of the price of imported fuel into Nigeria which led to sharp increases in the prices of agricultural inputs and transportation cost was the focus of this study. The author, Olomola (2015) analysed the performance of the medium-term policies and strategies to prevent a recurrence of the 2008 episode. The study found out that the economy has not been under any threat of food crisis since the 2008 episode. From 2011, the medium-term policies and strategies were re-designed and entrenched as major components of the Agricultural Transformation Agenda (ATA) which led to an increase in domestic food production, reduction in food import and stabilization of food prices. Also, Akanegbu (2015) examines the effects of agricultural price distortions on output in the agricultural sector of Nigeria by adopting a model based on a modified neoclassical production function in which agricultural exports are taken as inputs. The study found out that agricultural price distortions are inversely related to output growth in the same sector. The result of the study is to confirm the view that agricultural price distortions have a significant and negative influence on agricultural output.

The research work of Adeyeye and Kola (2012) examine the causes and effects of inflation in Nigeria between 1969 and 2009 and what could be done to ameliorate the negative effects on the economy. The result of the study reveals that the gross domestic product growth rate is counter inflationary as against inflationary factors and which implies that there is a positive relationship between inflation and exchange rate of dollar to naira and money supply growth rate while negative relationship exists between inflation and gross domestic product growth rate and ratio of government expenditure to income. This is as a result of increase in money supply without corresponding increase in government revenue. In line with the study above is the research work of Alao and Oloni (2015) that examines the effect of commodity price changes on firms' value in the food and beverage industry in Nigeria given the frequent changes in the prices of raw materials and inflation. The result of the study however indicates that there is a significant positive relationship between commodity price and firm value which suggests that an increase in commodity price between 2009 and 2013, leading to a proportional increase in firm's value during this period and vice versa. And by implication, price fluctuation directly impacts

on the price of raw materials and goods being produced as well as services being rendered. The authors conclude that due attention has to be paid to the issue of raw material sourcing and pricing in Nigeria.

3.0 METHODOLOGY

3.1 Model Specification

The hypothetical statement of the perceived relationship between consumer price index (CPI) (dependent variable) and selected food commodity prices (X) (independent variables) can be expressed in a functional form as follows:

$$CPI = f(X) \quad \text{-----} \quad (3.1)$$

Equation 3.1 above can be explicitly written in a linear form as:

$$CPI_t = X_t\beta + \varepsilon_t \quad \text{-----} \quad (3.2)$$

In order to avoid spurious regression and ensure uniformity of the variables, then equation (3.2) above is transformed into a logarithmic form as:

$$\ln CPI_t = \beta \ln X_t + \varepsilon_t \quad \text{-----} \quad (3.3)$$

3.2 Technique of Analysis

The trend and pattern of rate of inflation as well changes in food commodity prices between 2016(01) to 2018(06) were depicted with the use of descriptive statistics such as graph. In order to examine the extent of welfare loss during the study period, the study adopts the econometric technique of Least Squares with Breakpoints (BREAKLS) developed by Zivot and Andrews (1992) which treats the breakpoint in a model as endogenous. Similarly, an Augmented Dickey-Fuller test is employed to examine the stationarity or otherwise of the variables.

3.3 Measurement of Variables and Data source

The data set used for this study is monthly data on the food commodity prices from 2016(01) to 2018(06). The commodity prices include the nominal prices of eggs, beans, fruits, meat, seafood, vegetables, rice, wheat, beverages and so on are obtained from Selected Food Prices watch (NBS,2018). Data on consumer price index are also sourced from National Bureau of Statistics (NBS,2018). In order to present more robust results, the econometric estimates are broken into sections with regard to economic episodes in the country. Thus, the estimations are categorised into the period of recession [2016(01) – 2017(05)] and period the recession [2017(06) – 2018(06)].

The table 3.1 below indicates the available food commodities and their respective units of measurement as well as the measurement of the consumer price index.

Table 3.1

Item	Unit of Measurement
Agric eggs medium size	1 Dozen
Agric eggs(medium size price of one)	1 Piece
Beans brown,sold loose	1Kg
Beans:white black eye. sold loose	1Kg
Beef Bone in	1Kg
Beef,boneless	1Kg
Bread sliced 500g	1 loaf
Bread unsliced 500g	1 loaf
Broken Rice (Ofada)	1Kg
Chicken Feet	1Kg
Chicken Wings	1Kg
Evaporated tinned milk carnation 170g	1 unit
Evaporated tinned milk(peak), 170g	1 unit
Frozen chicken	1 unit
Gari white,sold loose	1Kg
Gari yellow,sold loose	1Kg
Mudfish (aro) fresh	1Kg
Mudfish : dried	1Kg
Onion bulb	1Kg
Rice agric sold loose	1Kg
Rice local sold loose	1Kg
Rice Medium Grained	1Kg

Rice,imported high quality sold loose	1Kg
Tomato	1Kg
Yam tuber	1Kg
Catfish (obokun) fresh	1Kg
Catfish :dried	1Kg
Catfish Smoked	1Kg
Dried Fish Sardine	1Kg
Iced Sardine	1Kg
Irish potato	1Kg
Mackerel : frozen	1Kg
Sweet potato	1Kg
Tilapia fish (epiya) fresh	1Kg
Titus:frozen	1Kg
Groundnut oil: 1 bottle, specify bottle	1Ltr
Maize grain white sold loose	1Kg
Maize grain yellow sold loose	1Kg
Palm oil: 1 bottle,specify bottle	1Ltr
Plantain(ripe)	1Kg
Plantain(unripe)	1Kg
Vegetable oil:1 bottle,specify bottle	1Ltr
Wheat flour: prepacked (golden penny 2kg)	2Kg
Consumer price index (CPI)	Measures the monthly average change in prices of goods consumed by people and expressed in %.

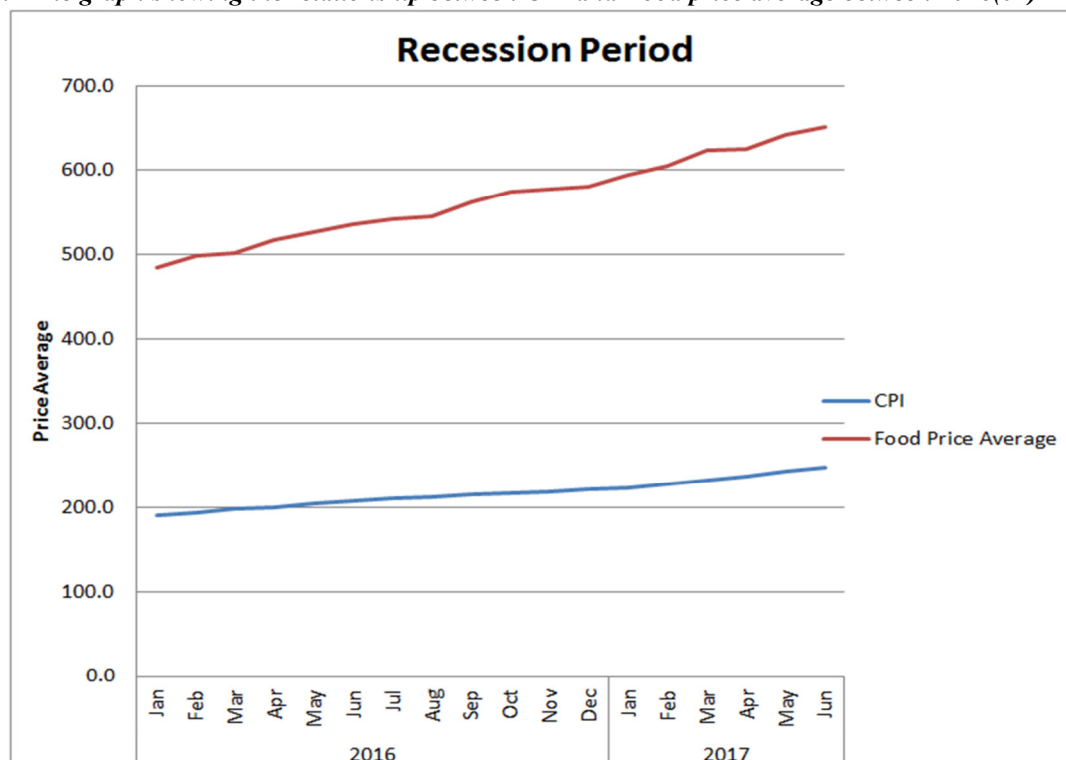
Source: Selected Food Prices watch and Consumer price index (NBS, 2018)

4.0 EMPIRICAL RESULTS

Descriptive Statistics

The trend and pattern of CPI and food price average during and after the period of recession of interest to the study are depicted by the use of graph.

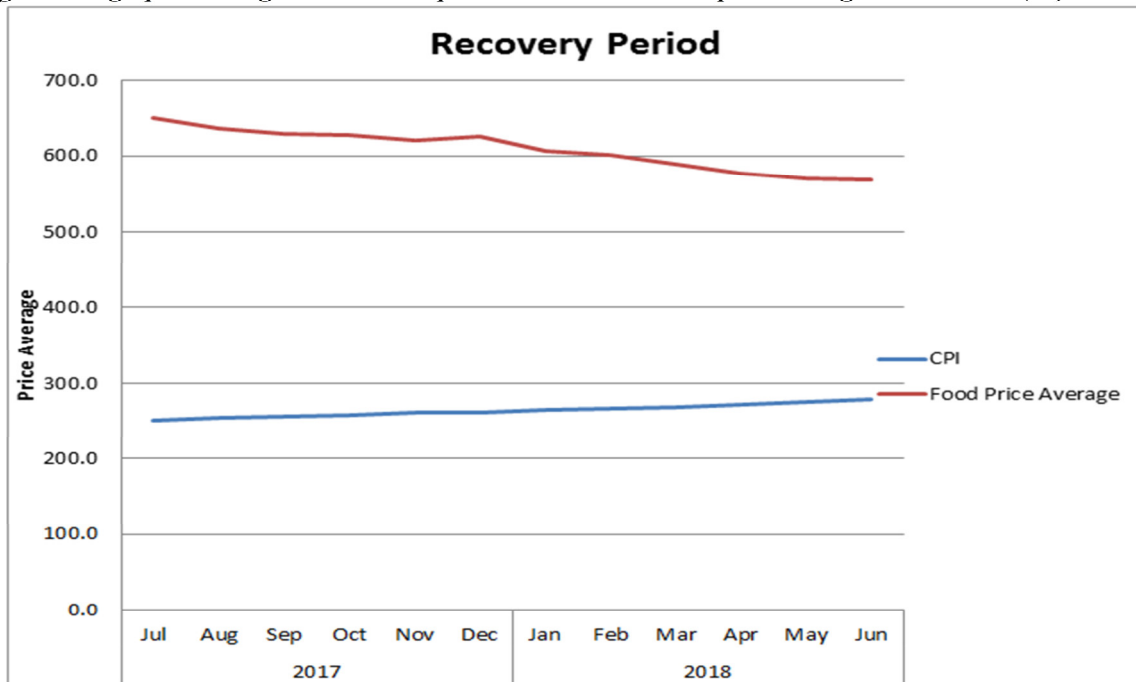
Fig.3.1 The graph showing the relationship between CPI and Food price average between 2016(01) -2017(06)



The figure above indicates that as prices of food commodity continue to upsurge between January, 2016 and May, 2017, the consumer price index also increases concurrently. (Note: June, 2017 is thus the peak period in the business cycle).This is indeed an implication that peoples' purchasing power is being eroded and their

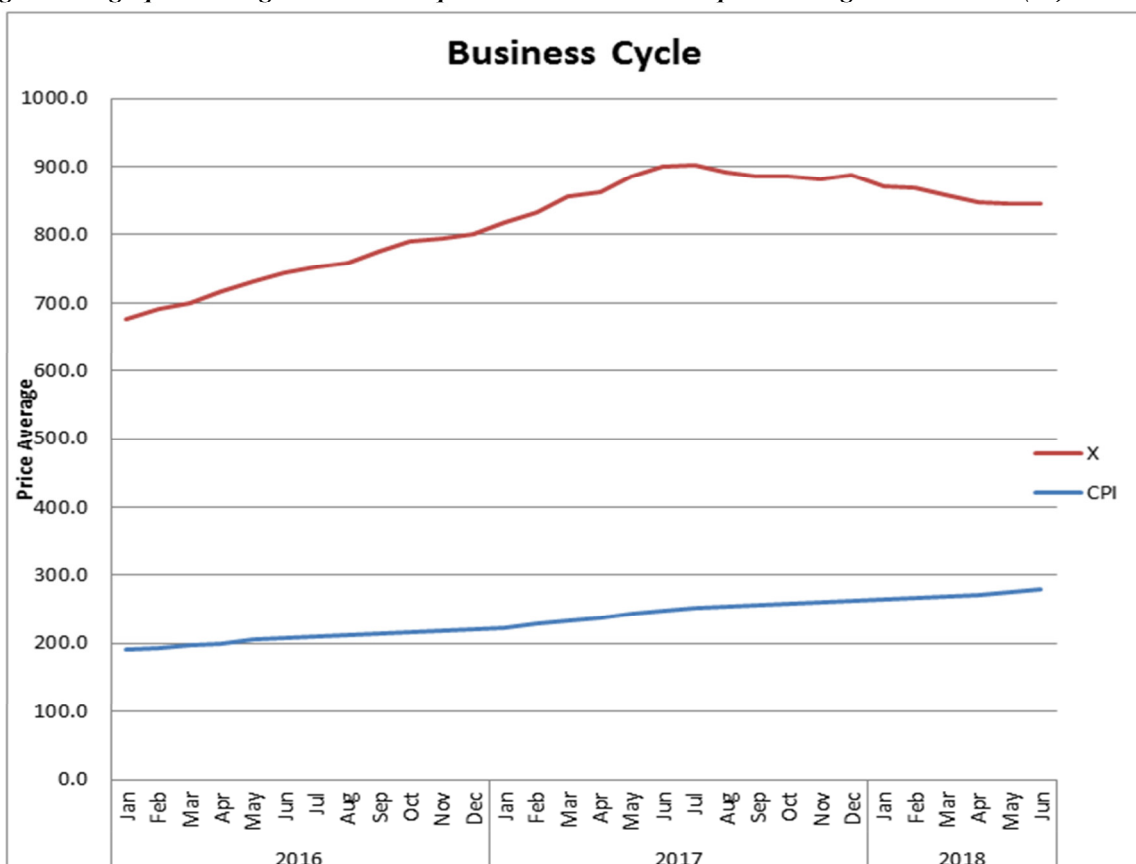
welfare is being lost as well during the period.

Fig.3.2 The graph showing the relationship between CPI and Food price average between 2017(07) -2018(06)



The figure above indicates that as prices of food commodity starts falling between July, 2017 and June, 2018, the consumer price index increases at a decreasing rate. This implies a recovery period for the economy and that peoples’ purchasing power is gradually getting momentum and their also welfare is being improved during the period.

Fig.3.3 The graph showing the relationship between CPI and Food price average between 2016(01) -2018(06)



The figure above indicates that as prices of food commodity continue to rise from January, 2016 and reaches peak period in June, 2017, the consumer price index also increases concurrently. The former variable decreases from July, 2017 while the latter variable increases at a decreasing rate during the period. This implies that peoples' welfare is better – off immediately after the period of recession.

Unit Root Test

The table 1 below reports the Augmented Dickey-Fuller results of the unit root test which shows that the variables are non- stationary at levels, at their first differences but they are stationary at their respective second differences at 5% level of significance. Hence the time series variables are integrated of order one, i.e. I(1). The optimal lag length is determined by the SIC criterion.

Table 1 **ADF test results**

Variable	At Level		At First Difference		At Second Difference	
	ADF	Critical Value	ADF	Critical Value	ADF	Critical Value
L(CPI)	-1.020184	-2.971853	-2.308934	-2.971853	-7.802771	-2.976263
LX	-2.196808	-2.971853	-1.447363	-2.976263	-9.532660	-2.976263

Source: Author's computation

Also the Durbin-Watson statistics of the test above for L(CPI) and LX are 2.091206 and 1.979311 (at level); 2.174168 and 1.897429 (at first difference); and 1.530894 and 2.006827 (at second difference) respectively. The results imply that the test is reliable while the variables are stationary, cointegrated and have long-run relationship.

Least Squares with Breakpoints (BREAKLS) Results

The table 2 below reports the Least Squares with Breakpoints results using Bai-Perron tests of $L+I$ vs. L at 5% significant level as Break type which sequentially determined breaks. The sample period is thus divided into the two breaks: the first 18 months and the last 12 months.

Dependent Variable: L(CPI)

Method: Least Squares with Breakpoints (BREAKLS)				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
<i>Period Economic Recession: 1 – 17 months</i>				
C	0.138721	0.147448	0.940812	0.3555
LX	0.826472	0.023305	35.46300	0.0000
<i>Period of Recovery: 18 – 30 months</i>				
C	10.09713	0.307022	32.88735	0.0000
LX	-0.705671	0.047858	-14.74517	0.0000
R-squared	0.995900		R-squared	0.995427

Source: Author's computation

The results reveal that there is a positive relationship between consumer price index (CPI) and prices of selected food commodity prices between January, 2016 and May, 2017 while the relationship between the two variables is inverse between June, 2017 and June, 2018. This implies that the consumers pay more as prices skyrocket during the period of economic recession but as the economy gains recovery the prices become lower.

5.0 CONCLUSIONS

The study examines the extent of welfare loss during and after the recent economic recession in Nigeria. The empirical results show that the period of recession erodes the peoples' purchasing power and hence worsens their welfare as an increase in consumers price index is influenced by greater increase in the prices of selected food commodity. Also, peoples' welfare begins to improve as the economy begins to recover as a result of gradual fall in the prices of selected food commodity.

It is therefore recommended that the policy thrust of the government is to sustain the current economic trend by restricting the importation of the selected food commodity of the study and improving the domestic production. This will enhance the peoples' welfare and forestall future economic downturn.

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