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The Relationship between Oil Price and Food Price in Nigeria (1995 -2015)

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ABSTRACT
This study explores the effect of oil price fluctuation on food prices in Nigeria. Annual time series data is used for the study covering a period of 21 years (1995 to 2015). The study estimates a model using food price as the dependent variable, and oil price, exchange rate, and interest rate as explanatory variables. The Unit root test is used to ascertain the stationarity of the data used, while the ARDL model is applied to find the long run relationship between the variables of interest. The result of the ARDL reveals that oil price has a positively and statistically significant impact on food prices in Nigeria both in the long run and in the short run. However, the result of the granger causality test reveals the presence of unidirectional relationship flowing from oil price to food price in Nigeria. Study, thus, recommends control of pump price of refined crude products and the revitalization of the refineries in the country to work at maximum capacity, as well as the encouragement of use of alternative sources of energy and organic fertilizer in order to cushion the effect of high oil prices on food prices.

Keywords: Oil price, ARDL, food, food price, pump price.

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I. INTRODUCTION

Crude oil can be described as a non-renewable hydrocarbon substance that occurs naturally which serves as an essential part of the modern economy (Anyawu et al., 1997). There is no doubt that it is both a significant source of energy, as well as government revenue, especially in a country such as Nigeria which is both an exporter of crude, and an importer of refined petroleum products. The predominance of the oil sector is well recognized in Nigeria, with the sector generating most of the country's revenue, essentially replacing the agricultural sector which was the leading sector before the discovery and commercialization of oil (FAO, 2008). Furthermore, the oil sector reportedly takes care of some 50% of global energy demand, providing fuel for transportation, industry, commercial activities and even agriculture, in various upstream and downstream formations (Zhang, 2016). The importance of oil as a source of energy and a desirable product in the international market places huge significance on the price at which it is sold. This was reflected in the 1920s with the emergence of the Seven Sisters, a cartel formed by seven oil giants aimed at controlling oil price. This framework has since expanded with the institution of national oil authorities in various economies, paving way for the establishment of the Organization of Petroleum Exporting Countries (OPEC) in 1960. The OPEC is made up of various big oil producers and apply measures such as the quota system to help keep prices at desired levels.

Understandably, relevance of oil in different aspects of the economy creates a channel of influence from the price of crude oil to prices of commodities in domestic markets. Food prices are not exempt. As argued by Hanson et al. (1993) rises in the price of oil leads to upward movements in the cost of agricultural inputs, which in turn places upward pressure on the price of agricultural products. In economies where oil takes up a sizable portion of production costs through such channels as effect on transportation costs and as direct input as energy sources for production processes, and where there is existent market power of the agricultural sector to pass costs onto prices, such an impact of oil prices on the price of food would be especially dire. There have, indeed, being a lot of interests around the oil-food price relationship. Busse et al. (2011) proposes an increasing positive correlation between the two. According to Chen et al. (2010), changes in the price of major food crops such as soybean, corn and wheat are determined by changes in crude oil price. Higher crude prices create higher derived demand for these commodities and in recent years, when this occurs, it encourages more competition for the planted areas of other grains and further rise in price. This, also, in turn leads to more demand for agricultural commodities employed in the production of biofuels.

In light of issues such as food security, recessions and financial crises, there have been various studies and attention on the economic effect of fluctuating oil prices and energy policies (Natanelov, 2011). History has shown that oil price can be extremely volatile. Its movement has been hardly predictable nor consistent such that sudden changes may affect the stability of food prices derived from agricultural activity. The price of oil in 1997 stood at $23.5 in January 1997, but by July 2008, this figure had jumped to $131.87, before crashing to a low of $42.28 in December of the same year. This price was, however $118.43 in March of 2011, but had fallen to a low of $37.76 by March 2016. Movements in agricultural commodity prices have also been anything but stable. This can be clearly seen considering the movements in the prices of maize, wheat and soybeans. In the beginning of 1997, the price of wheat was at $167.79, rising to $304.14 by August 2008, but subsequently falling to $164.56 in January 2016. Maize, on the other hand, stood at $118.70 in January 1997, but plunging upward to $266.94 by July 2008. This unprecedented hike was mirrored by an unprecedent fall in the beginning of 2016 to $161.03. Finally, soybean experienced a rise up to $471.07 in August 2008 from $268.10 in January 1997 and then fell to $323.20.

Juxtaposing movements in oil price with fluctuations in agricultural commodity prices, such as those of maize, wheat and soybeans shows an inconsistent trend. From a rise of oil price to $33.15 in 2000 from its value of $9.85 in 1998, for example, the price of wheat fell to $107.78, while maize and soybeans fell to $84.71 and $173.61 respectively. However, as oil price fell in July 2008, the market prices of wheat, maize and soybeans also rose, and then fell in December of the same year. In 2011, oil price rose and wheat, maize and soybeans prices also increased. This inconsistency further necessitates an assessment of the relationship between oil price movements and domestic price of food in Nigeria.

Statement of the Problem

The agricultural sector was the leading sector of the Nigerian economy before its independence in 1960 contributing about 70% of Gross Domestic Product (GDP), and providing employment for a large percentage of the population, as well as accounting for about 90% of Nigerian government revenue. This however, changed with the discovery of oil and the subsequent commercialization of the product. The oil sector has effectively replaced agriculture in revenue generation and export receipts (Adebipe, 2004). The marked spike in oil revenue following the events of the 1973 war in the Middle-East brought about a huge windfall for the country, further cementing the significance of the oil sector and the channeling focus of government policies and strategies as determined by oil receipts. This had severe implications for public fiscal behaviour, however, evidence has shown that subsequent administrations have performed less than impressively. Furthermore, there have been various instances of political instability which have resulted in inconsistencies in policy formulation and implementation which have, in turn, had serious implications for economic performance. During the first oil boom of the mid-70s, for instance, government spending was financed chiefly by proceeds from oil and supported with moderate domestic and external borrowing. However, this period was also associated with weak institutions which were ill equipped to conceive and implement major investment projects with the required Rate of Return. This undermined the country’s capacity to repay the loans. These credibility problems heightened negative perceptions about Nigeria’s credit worthiness in the international financial market. The gross external debt stock which stood at $4.3 billion (about 6.6% of the GDP) rapidly increased to about $11.2 billion by the time oil prices collapsed in the mid-1980s. There was also an incredible fall in foreign exchange earnings from 10 billion to 1.23 billion between 1981 and 1983 (Budina et al., 2007; Adeniyi, 2008).

Some major economic policies were adopted in the 1980s in attempts to take advantage of increased oil earnings, such as the reformulation of the pay structure of government establishments, as recommended by the Onosode Commission, carried out in 1981. This was accompanied by further rises in salaries and benefits of employees of various public institutions whose duties were considered unique and more complex than conventional civil service. Additionally, corrective economic policies were put in place, such as the Shagari’s Economic Stabilization Act of 1982, which was the administration’s response to dwindling oil earnings and major external sector imbalances. Fluctuations in the price of oil has made the Nigerian economy vulnerable in various cases when dips are experienced. Strategies such as the Structural Adjustment Programme (SAP) introduced in 1986 by the Babangida administration, with the active support of the World Bank, represented Nigeria’s step towards wide-ranging reforms that would cover all the major sectors of the economy. Although it achieved some significant gains for the first two years, SAP had a setback when certain aspects were reversed. Also, the programme was fraught with both internal and external inconsistencies. There was also experimentation with Perspective Planning, in which three-year rolling plans were designed to tide the economy into long-term planning. Again, this was discarded almost as soon as it was initiated.

It is in the light of the above-mentioned problems that this study will seeks to evaluate the relationship between oil price and food price in Nigeria.

II. LITERATURE REVIEW

2.1 Concept of Oil Price

Oil price is a term generally used to describe the spot price per barrel of crude oil associated with a particular benchmark. There is no uniform price for all of the world's crude, as different prices prevail in the market with reference to the specific benchmark the type of crude oil is associated with. This, as Robert (2006) highlights, could be West Texas Intermediate (WTI), Tapis crude, Dubai crude, Bonny Light, Brent ICE, OPEC reference basket, Western Canadian Select (WCS), Urals oil or Isthmus. However, three trademarks, the West Texas Intermediate (WTI), the Brent crude and Dubai crude dominate the market, so that the prices most of the crude bought and/or sold reflect one of these three benchmarks, being established at premium or discounted rates. The discrepancy in type of crude derive from distinct attributes associated with the product. Crude oil from different parts of the world are graded based on factors such as specific gravity and Sulphur content. Here, the average price for crude oil is determined by quality. Higher quality crude such as the UK Forties, Norwegian Oseberg and Venezuelan light are costlier than lower quality crude oils such as Canadian Heavy and Venezuelan Extra Heavy. This classification could also be in terms of location, such as proximity to tide water and/ or refineries. Heavier, sour crude oils without tide water access such as the WCS are cheaper than higher, sweeter oils such as the WTI (Kimberly, 2017).

Apart from grade, factors that might affect crude oil price can go beyond traditional supply and demand to include geopolitics: some of the lowest cost reserves are located in sensitive areas of the world. The import prices for crude oil are determined by the crude oil import Register. Herein, information is accumulated based on the type of crude, and average prices are ascertained by dividing value by volume as recorded by customs administrations for each tariff position (OPEC, 2015). Value is recorded at the time of import and includes Cost, Insurance and Freight (CIF) with the exclusion of import duties. For a given country the mix of crude oils imported each month can also affect average monthly price (Robert, 2006).

2.1.2 Oil Price Shock

There's a high degree of uncertainty regarding movements in prices in the international market for oil, which has spurred both serious economic implications and growing interest in the area. On the latter for example, there is a stack contrast between the *structural* view, which proposes the occurrence of a structural change in the market which is supportive of sustained long-term low oil prices; and the view of those who are in favour of a more cyclical movement in oil prices, in which low prices are temporary and prices would recover sooner rather than later (Friedman, 2015). Notwithstanding, periods of unprecedented spikes and dips have been recorded in history. Major shocks in oil price dating back to 1973 are described by Yep (2015) as being caused by shifts in the demand for crude. With a growing economy comes higher demand for stocks or inventories of crude oil in order to hedge against future shortages in the oil market. This pushes prices up. Historically, inventory demand recorded an upward trend in the period of geopolitical tension in the Middle East. This was associated with low spare capacity in oil production and strong expected global economic growth (Robert, 2006). Political events have a strong influence on oil price. OPEC's 1973 embargo in reaction to the Yom Kippur War, and the 1979 Iranian Revolution (Du et al., 2012) observed spurred major shifts in oil demand and price. Financial analysts and academics have developed such tools as the Political Risk for Oil Export (PRIX) index in an attempt to acutely assess political events as they relate to oil price movements. The index covers political developments and corresponding export trends from the 20 largest oil exporters in the world.

Saggu and Anukoonwattaka (2015) argue that, in addition to the legal and tax framework for oil extraction, geographical discovery, extraction cost as well as availability and cost of technology for extraction, political situations in oil producing countries greatly affect the supply of oil, which in turn, have implications for oil price. Both political instability in oil producing countries and conflict with other countries can destabilize the oil price. As reported by the New York Times in 2008, the price of oil rose to about $20 during Korean war (1951-1953) from its level of $17 in the 1940s. In the period of the Vietnam war, however, this price slowly fell to below $20. However, with the first major oil shock during the Arab oil embargo in 1973, the price of oil jumped a 100%. This started an upward trend that continued with the Iranian revolution of 1979. By the second oil shock in the 1980s, the market price of oil stood at $103.76. This was followed by a period of conservation and insulation efforts which saw oil price gradually falling to $22, but rising again to $65 during the 1990 Persian Gulf crisis. This price fell to as low as $15 in the period of global recession that followed, before rising to $45 on September 11, 2001. After falling to $26 in May of 2003, oil price rose to $80 following the US-led inversion of Iraq. By 3rd March, 2008 the price per barrel of oil was at $103.95 on the New York Mercantile Exchange (NYMEX).

The time period of the 1990s, best described as one of lost opportunities, took the brunt of the policy reversals and reforms from the 1980s as reflected in the real sector, and transited into the Nigerian financial system. This period also coincided with unprecedented accumulation of revenue resulting from the Iraqi war. Adopted economic policies such as liberalization and deregulation were cut short with the coming of the Abacha administration in 1994. The government therefore set out in re-regulating the economy through the implementation of a fixed interest rate regime. This was in response to the hike in interest rates, which had climbed to as high as 78% in deposit money banks and 180% in the non-bank financial services sector. However, these rates were, themselves, pushed upwards by high inflation. The rate of inflation stood at 44.8% in 1992 and was 57.2% by 1993 (Adebipe, 2007; Akpan, 2009). The Nigerian economy, for the rest of the 1990s did not have any clear strategy, additionally, fiscal operations expanded in this period, unchecked by ineffective monetary policy. There was no clear economic direction up on till June 2003. Benefits from accrued from oil earnings were constrained by weak institutional and legal environment. This phenomenon however, changed in 2004, with the introduction of the government's National Economic Empowerment and Development Strategy (NEEDS). NEEDS embodied the government's economic agenda presented as a medium-term strategy aimed at pursuing a number of reforms fundamental to the achievement of effective economic diversification by 2007. The strategy sought to achieve high levels of the growth indices of employment, wealth creation, as well as the implementation of institutional reforms and social charter.

Subsequently, the economy seemed to record an improvement in economic management. The external reserve rose to $28 billion by 2005, a huge change from $5.5 billion in 1999. Additionally, massive debt relief from the Paris Club brought a drastic reduction in the stock of external debt following intense negotiations. Furthermore, reforms allowed the country save more of its oil money, which contributed favourably to the economy. Ongoing reforms, and such developments as better budget preparation process, financial discipline, and better measures of controlling corruption, if sustained, should enable Nigeria benefit immensely from positive oil price shocks.

Generally, however, despite the substantial expansion in the Nigerian economy from the oil sector, there has been little structural development; a situation which successive military administrations in Nigeria have worsened due to their inconsistency, languid enforcement, and implementation of oil policy.

2.1.3 Food Price and Food Price Fluctuation

Food price refers to the (average) price level for food in a particular country or regions or on a global scale (FAO, 2015). Fluctuations in the price of food brings about price variations or volatility. These fluctuations are, often originate from the food production process, various aspects of the marketing of food products, and the food distribution process (Arouri & Teulon, 2014). As pointed out by UNCTAD (2011), erratic levels of crop yield from varying levels of excess harvest supply and production failure, as well as activities from food speculation are part of the factors responsibly for uncontrollable price fluctuation in the food sector. Additionally, following the principles of demand and supply alone, the global price of food may also continue to rise on average with a continually growing world population (Diaz-Bonilla & Ron, 2010). Generally, price volatility implies that prices fluctuate around a rather stable long-term trend (Hull, 2012, cited in kalkhul, Braun & Torero, 2016). Short-term fluctuations may be daily, weekly or monthly in nature. Periods of excessively high or low commodity prices are often associated with crises as they pose a challenge to producers, consumers, and policymakers (Kalkhul et al., 2016). Food security, especially in developing economies, becomes a problem when food commodities become too expensive in the global market, and food policies are often viewed as means of curbing adverse price trends (Diaz-Bonilla, 2016).

The measurement of price volatility has garnered a lot of interest among researchers, and it contuse to be the subject of academic discussions and research endeavours. There are two major approaches involved in the conceptualization of volatility. The historical or ex-post volatility measurement deals with realized variability. This is concerned with unconditional volatility measures that do not control for lag. The forward-looking ex-ante perspective, on the other hand, applies a dynamic model of conditional volatility in which it uses available importation at a time t to provide a forecast of price volatility at time t+1. The inherent ability of conditional volatility to measure changes over time allows for a dynamic and forward looking model that is able to represent changing risk perceptions. Ex-post volatility is also typically calculated over a longer time horizon consisting of several price observations (Kalkhul et al., 2016).

2.1.5 Causes of Foods Fluctuation

Variations in agricultural production and consumption are root causes of variation in prices. Economists draw a distinction between predictable and unpredictable variability, the latter being characterized in terms of stock shocks to production and consumption which transmit into price variability. The variation in production may be caused by variation in the planted area or may come from variation in yield, which is usually brought on by weather. Consumption varies in response to changes in income, prices of substitutes and shifts in tastes. It is the general supposition that weather shocks to agricultural yields are the crucial source of rice variability in agriculture (Gilbert & Morgan, 20010). However, demand shocks, in particular income shocks and policy shocks, may also play an important role (Christiansen, 2009; Gilbert, 2010). Von Braun and Tadesse (2012) argue that the degree which production and consumption shocks cause volatility in price is determined by the responsiveness of producers and consumers to changes in prices, or the elasticity of supply and demand. Usually, elasticity are expected to be low over the short term, in particular over the crop year. Farmers cannot harvest what they have not planted and will almost, invariably, harvest everything they planted. Consumers are reluctant to revise habitual dietary patterns and in poor countries, they may have few alternatives and become vulnerable to shocks in the market.

Recent studies have fingered such factors as biofuel demand, speculation in commodity futures market, and macroeconomic shocks as causes of spikes in food prices. These variables represent both the demand and the supply side of the world food equation (Tadesse, Algieri, Kalkuhl & Bon Braun, 2006). Three groups of exogenous potential causative factors have been identified by Tadesse et al. (2006) as influencing changes in price. The first encompasses factors classified as root causes, which include independent core factors of extreme weather, oil price shock, production shock and demand shocks. Their erogeneity lies in the fact that the possibility of a causal relationship with the agricultural sector is minimal. Exogenous shocks are expected to generate food price spikes and volatility, and magnitude of their impact depends partly on the political and economic environment of a given country. Conditional causes, on the other hand, emanate from the actions of specific political and economic drivers that can restrict or worsen exogenous shocks. Such factors include high concentration of production, or low transparency in commodity market and are usually time invariant and not easy to measure. The third group is made up of internal drivers, triggered by the same price dynamics. Internal causes are endogenous shock amplifiers and include discretionary trade policies, speculative activities (facilitated by price expectations), and declines in world food shocks (Tadesse et al., 2016).

2.1.6 Food Insecurity in Nigeria

Food security is a situation whereby all individuals have access to enough food at all times, which they require for an active and healthy life (Reutlinger, 1987). There are two main facets to food security: ensuring that adequate amount of food is being supplied; and that households who have members suffering from malnutrition are able to acquire food, either through self-production or from having the ability to purchase it (Riscopoulos et al., 1988). On the other hand, food insecurity refers to situations of deficit, where actual per capita daily calorie intake falls short of the minimum per calorie intake (recommended by FAO and WHO for maintaining the human body) of 2450kcal/day (Riscopoulos et al., 1988; Rosen & Shapouri, 1994).

The problem of food security in most economies is evaluated on the basis of three indicators: low average levels of calorie consumption, large fluctuations in and low levels of food consumption, and large numbers of absolute poor. Food insecurity often results in human suffering, substantial productivity losses and a misallocation of scarce resources due to diminished work performance, lower cognitive ability and school performance, and ineffective income earning decisions (Braun et al., 1992).

2.3 Empirical Review

The relationship between oil price and food price has sparked a lot of empirical interests from academics and researchers. While some studies found a clear-cut relationship between oil and agricultural commodities, some provide evidence to support a rather neutral impact of oil prices on those of food. The increase in the price of agricultural commodities can be connected to the substitution effect that manifests as a result of increasing demand for biofuels as alternative means of energy when the price of oil was at its peak. The relationship that exists between biofuels and energy markets is responsible for the widely known food price crisis of 2006 (Saban Nazlioglu et al., 2012).

Several studies have been carried out both in Nigeria and other countries to analyze the relationship between oil price and food price. The findings from some of these studies suggest that a rise in oil price would cause an increase in food price. The study conducted by Arshad and Abdel Hameed (2009), for example, investigated the relationship between petroleum and cereal prices using monthly data from January, 1980 to March, 2008. Bivariate co-integration approach, using the Engle–Granger two-stage estimation procedures, was applied to test the long-run relationship between the variables. Findings arrived at revealed a unidirectional long-run causality from petroleum price to cereal prices.

In another study, Ijeoma, Goodness and Benjamin (2016) examined the effect of oil price on the volatility of food price in Nigeria, using time series data from 2000 to 2013. The study specifically focused on maize, soya bean, sorghum, rice and wheat. The price volatility for each crop was obtained using a Generalized Autoregressive Conditional Heteroskedascity (GARCH (1, 1)) model. The study used the refiner acquisition cost of imported crude oil to measure oil price. The Augmented Dickey–Fuller and Phillip–Perron unit root tests showed all variables to be integrated of order one, I(1). The Johansen co-integration test was thus, used to examine the long-run relationship. The result of the study showed no long-run relationship between oil price and tprice changes in any of the individual food price. Thus, a VAR, instead of VECM was estimated to investigate the short-run relationship. The VAR model result revealed a positive and significant short-run relationship between oil price and each of the selected food price volatility with exception of that of rice and wheat. These results were further confirmed by the impulse response functions. The Granger causality test result indicated unidirectional causality from oil price to maize, soya bean, and sorghum price volatilities but does not show such relationship for rice and wheat price volatilities.

Gogoi (2014), in his study, assessed the long-run relationship between crude oil and world food commodity price of maize, rice, soybean, and wheat for the period 1980 - 2011 using time series econometric technique. The co-integration test supported a long-run relationship between crude oil prices and the prices of maize, soybean, and wheat with the exception of rice prices. Granger causality test was also carried out to check for the presence of causality between the two prices. A unidirectional causality was found with only crude oil prices "Granger causing" each of the four food commodity prices, while crude oil prices were not found to be influenced by price of food commodities.

Campiche, Bryant, Richardson, and Outlaw (2007) looked at petroleum prices and global agricultural commodities prices in order to examine the co-variability between crude oil prices and the prices of commodities such as corn, sorghum, sugar, soybeans, soybean oil, and palm oil using weekly time series data for 2003 - 2007. They tested the co-integration relationship between the variables using Johansen co-integration test. The Johansen co-integration test carried out for the period of 2003–2005 and 2006–2007 revealed a co-integration of corn and soybean prices with crude oil but only during 2006–2007.

In a related study, Huchet-Bourdon (2011) analyzed historical commodity price volatility over the last half century for an extended range of agricultural commodities - beef, maize butter, rice, soybean oil, sugar, wheat, and whole milk. The paper also investigated the relationship between oil price, fertilizer price, and each of these agricultural commodities. Spearman correlation statistic was applied as the method of analysis. The application of correlation to the collected monthly data for the purpose of the research showed that there was positive relationship between oil price and the prices of the selected food commodities, however, the relationship did not indicate which one had a predictive power on the other.

Although, Huchet-Bourdon (2011) and Sujithan et al. (2014) worked on oil price and food price volatility, apart from using international food prices, their methodology is different. This is why this study used Johansen co-integration, VECM/VAR model, and the standard Granger causality test to analyze the effect of oil price on selected crops using domestic food price volatility. Specifically, the study examines the long- and short-run relationship between these variables as well as the causal relationship between them.

Han et al. (2015) empirically investigated the impact of energy price on the price of agricultural commodities in China. They found that the global financial crisis exerted the most influential shock on the price link between energy and agricultural commodities. As these price links are vulnerable to financial shocks, the introducing of state-based analysis to risk management and portfolio diversification was recommended across the energy and agriculture markets during times of turmoil.

Cabrera et al. (2016) with their study found that prices move together in the long-run and maintain equilibrium. However, correlations carried out were mostly positive with persistent market shocks. Their results revealed that concerns about biodiesel being the cause of high and volatile agricultural commodity prices were rather unjustified for the German economy.

Du et al. (2011) found evidence of volatility spillover among crude oil, corn, and wheat markets in the United States of America after the fall of 2006. They further emphasized that it can be largely explained by tightened interdependence between crude oil and these commodity markets induced by ethanol production.

Some of the reviewed studies, however, found negative relationship between oil price and food price. One of such studies is Alvalos (2013), which investigated whether oil price Granger cause corn and soybeans prices by estimating a VAR model for monthly prices from January 1986 to April 2006 using international prices. Findings from the analysis made indicated that oil price shocks had no predictive causality over corn and soybeans prices. Oil prices were found to have negative impact on both food commodities in both the long- and short-run.

Additionally, Ano Sujithan, Avouyi-Dovi, and Kolia (2014) applied Bayesian multivariate framework on monthly data covering the period January 2001–March 2013, towards examining the effect of oil price and other drivers on the volatility of global prices of cocoa, coffee, sugar, and wheat. Their impulse response function of food volatility to oil price shocks revealed that an oil price shock leads to an increase in the price volatility of cocoa, coffee, sugar, and wheat for 2–3 months followed by a downward peak after 4 months. The result showed a negative impact on the volatility of soybeans and sugar and a positive impact on cocoa, coffee, corn, and wheat prices.

However, some other studies did not find any significant impact of oil price on agricultural prices. Esmaeili and Shokoohi (2011), for example, found no direct long-run relationship between oil prices and agricultural commodity prices. Similarly, Yu, Bessler and Fuller (2006) evaluated the long-run relationship between crude oil prices and the prices of vegetable oils (oil palm, soybeans, grape seeds, sunflower). Their study found that crude oil price exerted no impact on vegetable oil prices. In the same vein, Gardebroek et al. (2013) from the result of their analysis, supported a higher interaction between ethanol and corn markets in recent years, particularly after 2006 when ethanol became the sole alternative oxygenate for gasoline. They only observed, however, significant volatility spillovers from corn to ethanol prices but not the converse. Furthermore, their study did not find major cross-volatility effects from oil to corn markets. The results do not provide evidence of volatility in energy markets stimulating price volatility in the US corn market.

$H_{O:}$ *There exist no significant long-run relationship between oil price and food price in Nigeria.*

2.4 Theoretical Framework

2.4.1 Hubbert's peak

The Hubbert theory suggests that oil discovery and production activities follow a bell-shaped curve. With oil discovery, there is an exponential growth initially, followed by a peak, and after that, decline. This is explained by the fact that, at first, oil is easy to find and so discoveries spike, however, as the number of easy to find reservoirs continue to be exhausted, new reservoirs become harder to find, thereby slowing the rate of discovery. In the case of production, after oil is discovered, production increases steadily because oil is easy and cheap to reach. However, as more of the oil in a reservoir is extracted, it becomes harder, more time consuming and expensive to extract. Therefore, production increases at first, reaches a peak (the point at which the maximum amount of oil is being produced), and then declines. Peak oil production usually occurs at the midpoint in production. This is the point at which half of the oil in the well has been extracted (Heinberg 2003). Hubbert also observed that oil production parallels oil discovery but is behind by a few decades, due to the fact that oil is not produced immediately after it is discovered. As observed by Goodstein (2004), the rate of discovery predicts the rate of extraction. The bell-shaped curve has been observed to not only apply to oil extraction, and has since been associated to other natural resources as well, such as copper and coal (Goodstein 2004).

Hubbert made his predictions about the United States by studying the rates of discovery in the lower 48 states and graphing what he found. Because he knew that oil discoveries would eventually create a bell shape, he was able to finish the graph and estimate the total amount of oil existent in the U.S. Using this number, he could then predict when production would peak; he knew that production would peak when half of the reserves had been produced. His total reserves estimate included a high and low, thus he predicted that oil production in the U.S. would peak between 1966 and 1972. U.S. Oil production peaked in 1970.

2.4.2 Absolute Ownership Theory

The crux of the Absolute Ownership Theory is that oil and gas are owned by the owner of the land in which they are discovered and extracted. When these resources are extracted, they become the personal property of, and are possessed by whoever captures it. The theory however, argues that the ownership of crude oil can be denied to the land owner in cases where the oil migrates and is captured by others. This implies that the ownership of oil and gas can be lost by the rule of capture or through reasonable drainage. Also referred to as the ownership in place theory, the theory is premised on the doctrine of *ad coelom*. This doctrine states that the owner of a piece of land is regarded also as the owner of the petroleum lying underneath the land. Land in this regard includes everything down to the lowest and deepest part of the earth beneath the land and up to the sky.

III. METHODOLOGY

The data for this study is obtained mainly from secondary sources, and was in the form of time series data for a period of 21 years (1995 – 2015), obtained the Central Bank of Nigeria (CBN) statistical bulletin. Data was collected for all the years and variables under consideration. The study laid emphasis on measuring the relationship between oil price and food price in Nigeria. The reason for the choice of the study period was that it was within this period that important economic policies related to boosting local food production were implemented in Nigeria. The period between 1995 and 2015 was large enough to get a meaningful result with minimal error. It was also large enough to ensure true replicability of the analysis for testing the relationship existing between the variables. This would allow for a more robust result.

3.1 Model Specification

FOP = F (OIP, EXR, INR)……………………………………………..………3.1

Where:

FOP = Food Price
OIP = Oil Price
EXR = Exchange rate
INR = Interest rate

Assuming a linear relationship between the dependent variable and the independent variables, the econometrics equation of the above function becomes as follows;

$$FOP_t = \beta_0 + \beta_1 OIP_t + \beta_2 EXR_t + \beta_3 INR_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.2$$

Where:

FOP = Food Price
OIP = Oil Price
EXR = Exchange rate
INR = Interest rate
β_0 = $Constant\ parameter$
$\beta_1 - \beta_4$ = $Coefficient\ of\ independent\ variables$
ε_t = $Error\ term$

3.2 Variable Measurement
The variables in this research are dependent and independent variables
3.2.1 Dependent Variables
- Food Price

3.2.2 Independent Variables
- Oil Price
- Exchange Rate
- Interest Rate

3.3 Method of Data Analysis

These section present methodological issues related to the estimation of the specified variables. Data for the study were analyzed using both descriptive and inferential statistical tools. In order to investigate the relationship that exist between the dependent variable and independent variables, this research adopted the following procedures; unit root test to test for statinarity, and ARDL model to test the long run short run relationship and Granger causality test to test the direction of the causality between the variables.

In order to properly estimate the relationship between oil price and food price in Nigeria, ARDL model (Bound test) will be adopted. The ARDL involves estimating of over parameterized model with an arbitrary number of lags for both the dependent and explanatory variables. Although the transformation procedure reduces the over parameterized ARDL to a parsimonious simplification of the general representation, it produces a model that is consistent with the theory and data through the imposition of coefficient restriction (Iyoha, 2004).

However, the choice of ARDL model was adopted because export trade entails the spillover of the past regime into the current set. This is a typical autoregressive phenomenon and the model wants to capture this effect in the lag structure. In order to ensure the parsimonious nature of the model, the variables used for the model are; food price, oil price exchange rate and interest rate.

3.3.1 Unit Root Test

The data series were tested for existence of unit roots. Three reasons accounted for the test; to avoid infinite persistent shocks of data series, eliminate spurious regression and conform to the standard assumptions for asymptotic analysis that ensure that the t-ratios follow a t- distribution. The study conducted the unit root test on the variables by employing the Augmented Dickey Fuller (ADF) to test the characteristics of the variables with a view to determining the order of integration. The usage of ordinary least squares (OLS) methodology on time series data usually requires that the data be stationary to avoid the problem of spurious regression.

A variable is said to be stationary if it' means variance and auto covariance remains constant no matter at what point we measure them, the process is said to be stationary when it has a constant and time independent mean a finite and time independent variance, and the covariance between successive terms time independent . A series is therefore stationary if it is the outcome of a stationary process. The most common example of a stationary series is the white noise which has a mean of zero, a constant variance and a zero covariance between successive terms.

A non-stationary time series may become stationary after differencing a number of times. A series may be difference or trend stationary. A difference stationary series becomes stationary after successive differencing while a trend stationary series become stationary after deducting an estimated constant and a trend from it. The order of integration of a series is the number of time it needs to difference to become stationary. A series of integrated order 1 (n) becomes stationary after differencing n times. To establish the order of integration of series, unit root test are performed. There are many tests for examining the existence of unit root problem.

Dickey and Fuller (1979, 1981) constructed a method for formal testing of non-stationary. The Dickey-Fuller (DF) is suitable, if the error term (μ) is not correlated and it becomes inapplicable if error term (μ) is correlated. As the error term is unlikely to be white noise, The Dickey and Fuller have extended their testing procedure suggesting an augmented version of the test that incorporates additional lagged term of dependent variable in order to solve the autocorrelation

The unit root test involves testing for the order of integration of each time series (variable). A series is said to be integrated of order 1 (1) if it needs to be differenced once to become stationary. The same holds for 1(2) series which need to be differenced twice to become stationary. Thus a stationary series is integrated of order zero 1(0) (i.e no differencing is necessary). Augmented Dickey- Fuller (ADF) (Dickey and Fuller, 1979, 1981), "unit root" test is employed to determine the order of integration of each series. To test if a series x_t is stationary using the ADF test the following equation is estimated: $Dx_t = \alpha + \delta_{Xt\text{-}i} + \varepsilon_t$.
The test has three variants - with drift and trend and with drift and no trend.

3.3.2 ARDL (Bounds Test) Model

Over the past decade considerable attention has been paid in empirical economics to testing for the existence of relationship in levels between variables. Mainly, this analysis has been based on the use of co-integration techniques. Two principal approaches have been adopted: the two step residual based procedure for testing the null no co-integration (see Engle & Granger, 1987; Phillips & Ouliaris,1990) and the system based reduced rank regression approach due to Johansen (1991, 1995).

In addition, other procedure such as the variable addition approach of park (1990), the residual based procedure for testing the null of co-integration by Shin (1994), and the stochastic common trends (system) approach of stock and Watson (1988) have been considered. All of these methods concentrate on cases in which the underlying variables are integrated of order one. This inevitably involves a certain degree of pretesting, thus introducing a further degree of uncertainty into the analysis of levels relationships (Peseran, Shin & Smith, 2001).

This research work used a new approach to testing for the existence of a relationship between variables in levels which is applicable irrespective of whether the underlying regressors are purely *I(0)*,purely *I(1)* or mutually co-integrated i.e the ARDL model. The autoregressive distributed lag (ARDL) model deals with single co-integration and introduced originally by Peseran and Shin (1999) and further extended by Pesaran et al. (2001).the ARDL approach has the advantage that it does not require all variables to be *I*(1) as Johansen framework and it is still applicable if we have *I*(0) and *I*(1) variables in our set. The bound test method of cointegration has certain econometrics advantages in comparison to other methods of co-integration.

The use of the bound technique is based on three validations. First, Pesaran et al. (2001) advocated the use of the ARDL model for the estimation of level relationship because the model suggests that once the order of the ARDL has been recognized, the relationship can be estimated by OLS. Second, the bound test allows a mixture of *I*(1) and *I*(0) variables as regressors, that is, the order of integration of appropriate variables may not necessarily be the same. Therefore, the ARDL technique has the advantage of not requiring a specific identification of the order of the underlying data. Third, this technique is suitable for small or finite sample size (Pesaran et al, 2001).

The ARDL bound test is based on the Wald-test (F-statistic). The asymptotic distribution of the Wald-test is non-standard under the null hypothesis of no coinegration among the variables. Two critical values are giving by Pesaran et al. (2001) for the cointegration test. The lower critical bound assumes all the variables are *I* (0) meaning that there is no cointegration relationship between the examined variables. The upper bound assumes that all the variables are *I* (1) meaning that there is cointegration among the variables. When the computed F-statistic is greater than the upper bound critical value, the H0 is rejected (the variables are cointegrated). If the F-statistic is below the lower bound critical value, then the H0 cannot be rejected (there is no cointegration among the variables). When the computed F-statistics falls between the lower and upper bound, then the results are inconclusive (Nikolaos, 2011). In a situation in which the null hypothesis of no cointegration is rejected, the specification of ARDL model becomes necessary.

3.3.3 Stationary

Based on observation, most of the times it has been observed that time series data are non-stationary that is they are characterized by non-stationary VAR analysis however, cannot be conducted on a non-stationary data set. This is because non-stationarity of data set causes a problem/threat to econometrics analysis and often leads to meaningless results if appropriate adjustment are not made. Logarithmic transformation is used in order to ensure it is stationary.

3.3.4 Diagnostic Test

Diagnostic tests are carried out to ensure that the data being analyzed is reliable and ensure that deceptive results are not obtained.The possible existence of heteroscedasticity is a major concern in the application of regression analysis, including analysis of variance, because the presence of heteroscedasticity can invalidate statistical test of significance that assume the modeling errors are uncorrelated and normally distributed and that their variances do not vary with the effects being modeled.

3.3.5 The Granger Causality for Testing Hypothesis and Modified

The bivariate Granger causality test is implemented by regressing the respective index on m-lag values of the index and m-lag values of the reference index.

$R\text{Index}(t) = a0 + a1\ R\text{Index}(t-1) + \ldots + amR\text{Index}(t-m) + \varepsilon t$

$R\text{Index}(t) = a0 + a1\ R\text{Index}(t-1) + \ldots + amR\text{Index}(t-m) + b1\ R\text{BET-Fi}(t -$

$+\ bmR\text{BET-Fi}(t-m) + \varepsilon t$

The null hypothesis that the reference index does not Granger-cause the chosen index is accepted if and only if no lagged values of reference are retained in the regression. An F-test is then used to determine whether the coefficients of m-lag values of the reference index are jointly equal to zero. The p-values for each F-test are reported in table format.

IV. DATA ANALYSIS AND DISCUSSION OF RESULT

4.1 Data Presentation

Data are presented using descriptive statistics, the result of which is presented in Table 1.

Table 1: Descriptive Statistics

	LFOP	LOIP	EXR	INR
Mean	4.152272	3.735903	114.4283	4.298093
Median	4.202451	3.901771	128.6516	6.224809
Maximum	5.182401	4.695468	193.2792	18.18000
Minimum	3.018472	2.507972	21.88610	-31.45257
Std. Dev.	0.638575	0.718130	51.02282	10.51936
Skewness	0.068285	-0.094482	-0.878853	-1.868745
Kurtosis	1.816898	1.604409	2.701273	7.362843
Jarque-Bera	1.241084	1.735458	2.781425	28.87783
Probability	0.537653	0.419904	0.248898	0.000001
Sum	87.19771	78.45396	2402.994	90.25995
Sum Sq. Dev.	8.155550	10.31420	52066.56	2213.139
Observations	21	21	21	21

Source: E-Views (version 9) Output.

The summary of the data used in investigating the relationship between oil price and food in Nigeria from 1995 to 2015 is presented in table (4.1). From the table (4.1), the average rate of Food Price is 4.152272 with a skewness of 0.068285 and a kurtosis of 1.816898 the value for the kurtosis indicate that the distribution of Food Price for the period under investigation are normally distributed which is between 0-3. Oil Price has an average rate of 3.735903 percent with a skewness of -0.094482 and kurtosis of 1.604409. The level of skewness of oil price is negative signifying concentration of the distribution of the variables within the study period to the left. However, the Exchange rate has an average rate of 114.4283 percent with a skewness of -0.878853 and kurtosis of 2.701273 which is also normally distributed, with the highest number of standard deviation which stands as 51.02282 signifying the highest degree of variability in the distribution among the variables. Interest rate has an average rate of 4.298093 with the skewness of -1.868745 and kurtosis of 7.362843 which is not normally distributed because it is above 3.

4.1.2 Unit Root Test Result

The result of the unit root test of the study is presented in Table 2 below.

Table 2: Unit Root Test Result

Variables	Augmented Dickey- fuller	
	Level	First Diff.
FOP	-0.790751	-4.159059***
OIP	-1.389873	-3.374884**
EXR	-1.129051	-4.167317***
INR	-2.911113**	-5.709527

Note: ***, **, * indicate significant at 1%, 5%, and 10% respectively.

Source: E-Views (version 9) Output.

From the unit root test conducted, we found that the variables were integrated of different order, that is INR is stationary at I(0) and FOP, OIP, and EXR are stationary at I(1). And that ARDL can be applied in modeling the series relations irrespective of order of integrations. We therefore, move ahead to conduct ARDL bound test for co-integration. The results of the test confirmed that there is an evidence of long run relationships.

4.1.3 Bound Test for Co-integration Analysis

After unit root test there is the need to find the value of F-statistic in order to identify the presence of co-integration or otherwise between foot price and explanatory variables. This has been estimated using ARDL model (see Table 3)

Table 3: Bound Test Result

Test Statistic	Value	Observation
F-statistic	9.692213	3
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.37	3.2
5%	2.79	3.67
2.5%	3.15	4.08
1%	3.65	4.66

Source: E-Views (version 9) Output.

The bound test result in Table 3 reveals evidence of co-integration among the variables. The F-calculated from table 4.3 (i.e. 9.692213) reveals that the null hypothesis of no co-integration can be rejected at 1% significant level. This is because the F-statistic is greater than the upper bound critical value of 4.66 and 3.65 for lower critical bound. The estimation of long run coefficient of the variables using ARDL model is followed immediately.

4.1.4 Estimated Long Run Co-efficient

Table 4: Result of Estimated Long Run Co-efficient (Dependent variable; Real GDP)

Variables	Coefficients	Std. Error	t-statistics	Prob.
LOIP	0.208438	0.310918	0.670396	0.5164
EXR	0.010095	0.005119	1.971858	0.0743
INR	0.038123	0.022107	1.724450	0.1126
C	2.648658	0.931391	2.843766	0.0160

Source: E-Views (version 9) Output.

The long run ARDL result from Table 4 reveals that oil price is positively related to the food price at 0.208438. This implies that an increase (decrease) in oil price will lead to an increase (decrease) in the food price in Nigeria. For instance, a unit rise/fall in the level of oil price will lead to about0.208438 rise/fall in food price (ceteris paribus). The result also reveals a positive and significant relationship between exchange rate and food price in Nigeria. This shows that an increase (decrease) in the exchange rate will lead to an increase (decrease) in the food price in Nigeria. In other words, a unit rise in exchange rate will lead to a 0.010095 rise in the food price in Nigeria. However interest rate reveals a positively and statistically insignificance relationship with the food price of Nigeria.

4.1.5 Result of the Estimated Short Run Relationship

Table 5: Error Correction Estimation of the ARDL Model (Short Run Dynamics)

Variables	Coefficients	Std. Error	t-statistics	Prob.
OIP	0.013272	0.052574	0.252443	0.8054
EXR	0.000043	0.000732	0.058981	0.9540
INR	0.002312	0.001661	1.391372	0.1916
ECM	-0.173430	0.022827	-7.597743	0.0000

Source: E-Views (version 9) Output.

The short run relationship between explanatory variables and economic growth is estimated using the error correction model (ECM). The error correction co-efficient is -0.173430 and is statistically significant at 1% level going by its p-value of 0.0000. This shows a very low speed of adjustment to equilibrium level after a shock. For the explanatory variables, the short run analyses identify the presence of a positive and statistically insignificant relationship between the dependent variable and oil price, and exchange rate is positive and statistically insignificant with the depend variable. However interest rate is also positively related with food price in Nigeria.

4.1.6 Result of the Diagnostic Test of the ARDL Approach

To ensure the adequacy of the ARDL model, post-estimation diagnostic test for serial correlation (autocorrelation) and heteroskedasticity have been conducted and the outcomes are presented in table 4.6. For serial correlation test, Breusch-Godfrey LM test was used and the p-value is 0.3123 with the F-statistic being statistically insignificant even at 10% level. This indicates that the null hypothesis of no serial correlation is accepted.

The result for the test for heteroskedasticity, this is, autoregressive conditional heteroskedasticity (ARCH) however, did not show any sign of heteroskedasticity as indicated by the p-value (0.3251) of F-statistic is insignificant even at 10% level. We therefore conclude from our result of the diagnostic test that our ARDL model is strongly adequate.

Table 6: Result of Diagnostic Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.328306	Prob. F(2,9)	0.3123
Obs*R-squared	4.330215	Prob. Chi-Square(2)	0.1147
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.323579	Prob. F(7,11)	0.3251
Obs*R-squared	8.686679	Prob. Chi-Square(7)	0.2759
Scaled explained SS	2.473752	Prob. Chi-Square(7)	0.9291

Source: E-Views (version 9) Output.

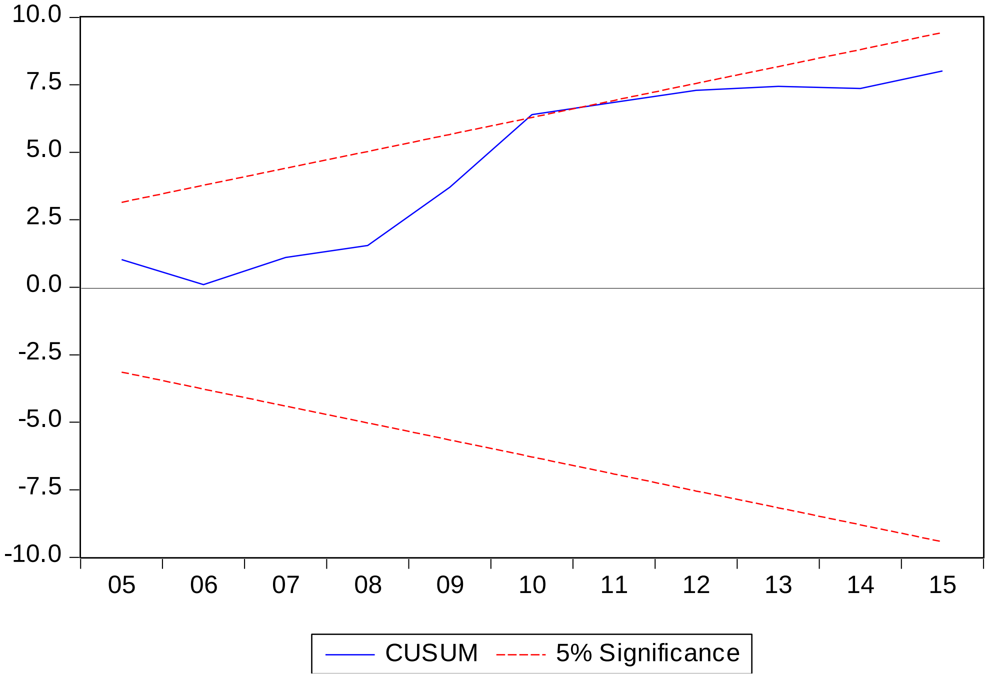
4.1.7 Stability Test of the Estimation Equation and Parameters

To ensure the stability of the equation and parameters under investigation, stability test were conducted through the use of cumulative sum (CUSUM) of recursive residual and cumulative sum of squares (CUSUMSQ) of recursive residual techniques. The results are presented in Figure 1 and 2 respectively.

4.1.7.1 The Cumulative Sum of Recursive Residual Test

The equation is said to be stable, if the entire sum of the recursive error lies between two critical lines. From the test conducted the result in Figure 1 shows that the parameters of the estimated equation are stable because the recursive errors fall strongly within 0.5 critical lines of the CUSUM during the study period.

Figure 1: Result of the Cumulative Sum of Recursive Residual Test

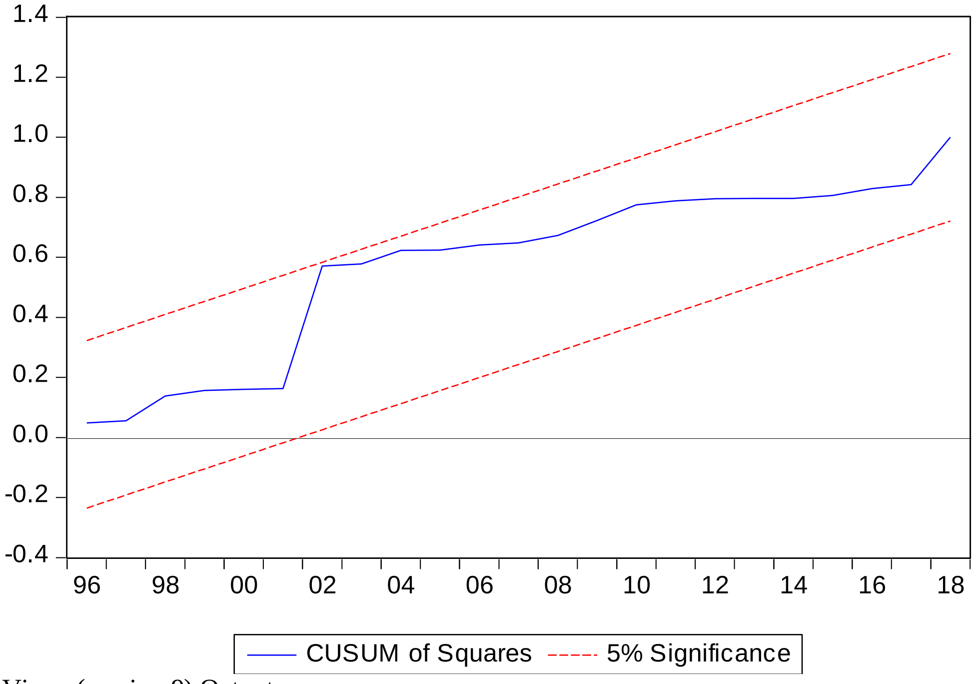


Source: E-Views (version 9) Output.

4.1.7.2 The Cumulative Sum of Squares of Recursive Residual Test

The cumulative sum of squares (CUSUMSQ) of recursive residual uses double error. Under this technique, stability of the estimated equation and parameters is achieved when the whole sum of recursive error lies within two critical lines of the 0.05 or 5%. The CUSUMSQ result in Figure 2 below is stable because the CUSUMSQ plot is within the critical lines at 5% significance level. Therefore we conclude that the CUSUMSQ is stable at 5% level of significant.

Figure 2: Result of the Cumulative Sum of Squares of Recursive Residual Test



Source: E-Views (version 9) Output.

4.1.8 Result of the granger causality test

The main purpose of conducting Granger Causality test is to identify the nature and direction of causality between the dependent variable (FOP), and independent variables (OIP, EXR, and INRS). The test result is summarized and presented in Table 7

Table 7 Result of Granger Causality Test

Null Hypothesis	obs	F-statistic	p- value
LOIP does not Granger Cause LFOP	20	6.16977	0.0237
LFOP does not Granger Cause LOIP		0.17658	0.6796
EXR does not Granger Cause LFOP	20	0.19354	0.6655
LFOP does not Granger Cause EXR		1.83040	0.1938
INR does not Granger Cause LFOP	20	5.49680	0.0315
LFOP does not Granger Cause INR		0.76454	0.3941

Source: E-Views (version 9) Output.

The Granger causality test result from Table 7 shows that, there is unidirectional relationship between oil price and food price. This is because at 5% level of significance, the null hypothesis that oil price does not granger cause food price is rejected going by its p value 0.0237 while on the other hand, the null hypothesis that food price does not granger cause oil price cannot be rejected going by its p-value of 0.6796. Also the result of the granger reveals that there is no directional relationship between food price and exchange rate as shown by their respective p-values of 0.6655 and 0.1938 which are not significance even at 10% level. As such, the null hypothesis of no causality between food price and exchange rate cannot be rejected. Finally, the result reveals a unidirectional relationship between interest rate and food price where interest rate granger cause food price without a feedback going by their p-value 0.0315 and 0.3941 respectively.

4.2 Discussion of Findings

This section discusses the findings of this study in relation to the findings of the literature reviewed in chapter two and explain the extent to which the findings is in line or otherwise with the studies reviewed.

The ARDL result reveals a positive relationship between oil price and food price in Nigeria which is in line with the works of Gogoi (2014), Huchet-Bourdon (2011) and Ano Sujithan et al. (2014).

Also the result reveals a positive relationship between exchange rate and food price in Nigeria which is in line with the work of Gardebroek et al. (2013) and contrary to the work of Alvalos (2013).

However, the result reveals a positive and statistically significant relationship between inrerest rate and food price in nigeria which is in line with the work of Esmaeili and Shokoohi (2011).

V. CONCLUSION AND RECOMMENDATIONS

This section has three aspects. It provides a brief summary of the entire findings of the study which includes conclusion of the work, and finally infers some recommendation based on the facts evidenced in the study. The research work investigated the relationship between oil price and food in Nigeria using Autoregressive Distributed Lag Model (ARDL). And the results of the research are summarized below as follows:

I. The result of the ARDL reveals that oil price is positively related to the food price in Nigeria both in the long run and in the short run.
II. Also, the result reveals a positive and insignificant relationship between exchange rate and food price in Nigeria.
III. However, interest rate reveals a positive and statistically significant relationship with the food price in Nigeria.

However, the result of the granger causality test reveals the following:

I. There is a unidirectional relationship between oil price and food price in Nigeria.
II. Also the result shows that there is a no directional relationship between exchange rate and food price in Nigeria.
III. However, there is a unidirectional relationship between interest rate and food price in Nigeria.

This study, as one of the empirical investigations on the relationship between oil price and food price in Nigeria has provided a good understanding of the effects of oil price on the food price in Nigeria. The study covered the period of 1995 to 2015 and time series data obtained from CBN were used. The econometrics tools used in this study include ARDL model which was used to determine the level of the effects that one variable has on the other and Granger causality test in order to test the direction of causality of the variables. The result arising from our findings indicates that exchange rate is negatively related to the agricultural output in Nigeria.

Also the result reveals oil price has a positive relationship with food price in Nigeria both in the long run and in the short run and also there is unidirectional relationship between oil price and food price. Also the result reveals a positive relation with exchange rate and food price and no directional relationship between the variables. Finally, the result reveals a positive and unidirectional relation between interest rate and food price in Nigeria.

5.3 Recommendations

The following policy recommendations are

I. To ensure that pump price of refined oil or crude oil products are being controlled, ensuring that the refineries are working at a maximum capacity.
II. Encouraging the use of alternative source of energy and organic fertilizer to cushion the effect of high oil prices on food prices.
III. Also there is need for government to invest more in agricultural sector through giving loans to the farmers so as to reduce the level of food price in Nigeria.

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