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# Impact of Petroleum Pump Price on Prices of Selected Food Items in South-Western Nigeria

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**Abstract**

*This study investigated impact of petroleum products pump price on essential food commodities in South-West, Nigeria between 2017 and 2022, covering Ekiti, Lagos, Ondo, Ogun, Osun and Oyo States. Data on prices of rice and beans, diesel, petrol, and kerosene prices, price of imports and consumer price index, were collated from National Bureau of Statistics (NBS) fact sheet and Global data laboratory. Two regression models were estimated in the study. Findings show that automotive gas oil price caused the price of beans in Osun and Oyo to increase; Petroleum Pump price significantly contributed to the increasing price of beans in Ekiti State; Consumer Price Index and goods import significantly caused the price of beans to increase across the six states. Results of the second model indicate that automotive gas oil price has negative impact on the price of rice in Ondo State; petroleum pump price has positive and significant influence on it in Ekiti and Lagos; the price of kerosene played positive and significant role on the price of rice in Lagos, Ondo and Osun; consumer price index significantly impact on the price of rice in the region. The study recommended government to make implementation of adequate policies aimed at stabilizing petroleum pump prices a priority to mitigate the impact on essential raw food items. Also, prices of food items will respond to lower consumer price index when the rate of inflation is kept low and in control by the government.*

**Keywords: Food Items, Petroleum Products, Prices**
**JEL Classification Codes: D12, Q11, Q41**

## 1. Introduction

One of the macroeconomic variables influencing the prices of raw food is petroleum pump prices. It has been known to be the major

cause of unbridled increases in price level in Nigeria. The three major products of petroleum products that are commonly used by households in Nigeria are automotive gas oil, household kerosene and Premium Motor Spirit, otherwise referred to as Petrol (Babalola & Salau, 2020). The price of each of these products impacts on households' day-to-day activities and welfare. Prices of food items tends to be affected as well, given the role played by most of these petroleum products in the course of production, transportation and preparation (Avalos, 2013). Petroleum products contribute to the input for raw food production sector in no small way. It serves as oil for machinery such as pumps and tractors. After production, it will also serve as fuel for transportation, and hence constitute a cost (Ngare and Derek, 2021).

In Nigeria, the fluctuation of petroleum pump prices has emerged as a critical issue with profound implications, particularly regarding its impact on raw food prices. This problem is multifaceted, encompassing economic, social, and environmental dimensions significantly affecting the livelihood of millions of people in the country (Wale-Awe & Sulaiman, 2020). The primary concern revolves around the complex relationship between petroleum pump prices and raw food prices. As a net importer of petroleum products, the local prices of fuel are affected by the world oil market dynamics. The changes in oil prices coupled with the local policy decisions, lead to constant changes in fuel prices. These changes spread across the economy, affecting transport and production costs, and consumer prices of raw food items (Sakanko, Adejor, & Adeniji, 2021).

The interaction between the incessant upward revision of petroleum pump prices and raw food prices has a worsening implication for poverty threshold and food insecurity in Nigeria, particularly in the South West. Food items such as beans and onions which are staple to households, often transported to the southwest from the north, have seen their prices increased given the cost-push price hike caused by continuous rise in petroleum product prices. As transport expenses rise due to increasing fuel prices, farmers also experience high cost of inputs such as fertilizers, pesticides, and machinery. Hence, the increase in cost of production is passed on to consumers via increased raw food prices, rendering essential raw food items less affordable, particularly for low-income households who end up consuming inefficiently and inadequate food items, (Nwoko, Aye and Asogwa, 2016). This scenario perpetuates poverty cycle, malnutrition, and social inequality. Moreover, increasing raw food

prices affect larger population, including men and women, who allocate a large portion of their income to the purchase of raw food items. This does not only compromise nutritional intake of the people but also hampers their ability to access other essential services such as education and healthcare, (Maijama'a, Musa, Yakubu, & Usman, 2019).

Other challenges caused by this high petroleum products pump price, are structural inefficiencies within the agricultural value chain, such as dearth of storage facilities, limited access to credit and market information as well as poor road networks. These inefficiencies also drive-up transaction costs, upsurge post-harvest losses, and contribute to unstable prices of raw food in the market (Eregha *et al.* 2015). Furthermore, the over-reliance on fuel import and susceptibility of Nigeria to external shocks further worsen the problem. The global oil price change, supply chain disruptions and currency devaluation disrupt production of raw food and its distribution, causing price hikes and market distortions. Moreover, corruption, weak policy implementation, and governance inefficiency undermine the effectiveness of government interventions aimed at addressing the problem of petroleum pump price and raw food price. As a result, many studies were done on the influence of petrol prices on raw food prices in South West of Nigeria. Some of the studies include the work of Kirikkaleli and Darbaz (2021); Ngare and Derek (2021); Babalola and Salau (2020) among others yet a conclusive result had not been reached. The identified challenges couple with the identified inconclusive results necessitate the renewed interest in conducting this study.

Following the discourse, this study aims to investigate how pump prices of various petroleum products, such as Kerosene, diesel and Petrol/PMS, impact on essential food items in South Western Nigeria between 2017 and 2022

## 2. Literature Review

### 2.1 Theoretical Review

The research work rests on the postulations of input-output hypothesis which was propounded by Wassily Leontief in 1953 and the classical theory of demand. The former analyses the interactions between various sectors and how changes in one sector of the economy, such as the petroleum industry affect others such as the raw food industry. Petroleum industry influences raw food prices via direct and indirect

impacts, income and demand and supply chain disruptions (Leontief, 1956).

The cost structure of the raw food industry is directly influenced by the petroleum industry directly through production and transport costs. Increase in petroleum pump prices raises the cost of moving agricultural products from farms to processing facilities, distribution centers, and also to the retailers. Additionally, petroleum-based products such as pesticides and fertilizers contribute to production costs in agriculture. Therefore, an increase in petroleum pump prices directly raise foods' production and distribution cost. The indirect impact occurs when there is an increase in transportation and production costs due to higher petroleum pump prices leading to a chain reaction of cost increases throughout the raw food supply chain. Suppliers and manufacturers of raw food-related products, such as packaging materials and agricultural machinery, also face higher transportation and production costs, which they pass on to raw food producers and consumers. These indirect cost increases contribute to higher overall raw food prices (Leontief, 1956). Also, higher petroleum pump prices reduce consumers' disposable income as they spend more on transportation fuel, leaving less money available for purchasing raw food and other goods. This reduction in purchasing power led to decreased demand for raw food items, which exert downward pressure on raw food prices, particularly for non-essential or luxury raw food items. Conversely, lower petroleum pump prices increase consumers' purchasing power, stimulating demand for raw food items and potentially leading to higher raw food prices if supply cannot keep up with the induced increased demand, (Leontief, 1974).

Sharp increases in petroleum pump prices disrupt supply chains, leading to shortages of raw food products and temporary price spikes. For example, if transportation costs become prohibitively high due to soaring petroleum prices, perishable raw food items may not reach markets on time, leading to temporary shortages and higher prices. Similarly, disruptions in the production of petroleum-derived inputs such as fertilizers and pesticides, caused by price hike can affect crop yields and lead to higher raw food prices (Leontief, 1991). Following the classical theory of demand, a major factor influencing demand for goods and services is the costs involved in providing them, the demand for fuel is thus similar. The market forces of supply and demand determine prices. The unit price of a commodity might not be stable in a competitive market until a point where the quantity supplied

and the quantity demanded equates, defining an economic equilibrium between price and quantity (McConnell, 2008). The author further outlined four fundamental laws of supply and demand: Stagnation of supply results in shortage but increased demand, raises the equilibrium price; Surplus may also arise if supply stays the same while demand declines, lowering the equilibrium price; However, an increase in supply when demand remains the same, results to a surplus, and also lower equilibrium price; A shortage arises when supply falls while demand stays the same, raising the equilibrium price.

The willingness and capacity of a customer to buy a specific product within a specified time frame is known as a demand schedule. The rule of demand states that when price decline, consumers are eager for more products, as the demand curve is sloping downward (McConnell, 2008). Demand are often determined by consumers' marginal utility or satisfaction, while the supply reflects the product's marginal cost. A specific product will be purchased by customers at a specific price if the additional satisfaction or utility of its consumption equates the opportunity cost. Accordingly, the demand for a commodity is negatively related to the price, albeit there may be a few uncommon instances of items with demand curves that defies the assertion. Goods in such category include Veblen goods and Giffen products. While the former are made more fashionable by high price, the latter are a staple but inferior commodity. An increase in demand occurs when customers raise the quantity they want at a specific price (Mankiw, 2018).

## 2.2 Empirical Review

Scholarly works that had been done in the past on the study area are empirically reviewed in this section. This cut across studies that were carried out within Nigeria and others that were done in economies that are similar in nature to Nigeria.

Ding, Gummi, Lu, and Muazu (2020) Modelled the influence of oil price shock on raw food prices across high and low-income oil exporting nations. The study modeled quarterly data for the periods 2000 through 2019, using the Fully Modified Ordinary Least Squares method. A negative relationship was found between prices of raw food and oil price among the high-income countries. It was also found that low income economies were incapacitated by insufficient capacity therefore making them unable to match the increasing demand for food items with adequate supply. The study recommended that

concerned countries needed to pay attention to food self-sufficiency policies through implementation of strategies targeted towards food security to cater for their increasing population at lower cost possible.

Between 2010 and 2018, Ngare and Derek (2021) sampled Kenya to assess how fuel prices affected the cost of raw foods. The results showed that there was no causal association between the prices of maize and beans and fuel prices, however one way connection exists between diesel prices and the prices of potatoes and cabbage. Based on the findings, long-term price interaction exists between the cost of fuel and perishable raw products, with increasing diesel prices leading to surge in the prices of potatoes and cabbages. The study recommended that whenever the price of gasoline rises to a certain threshold, a tax break should be implemented to offset the price increase of raw foods.

Sakanko *et al.* (2021) assessed how the price of petroleum at the pump affected the consumer price index over a period of 1980-2020, in Nigeria. Petrol pricing measurements and the CPI were determined to be in a long-term equilibrium. In Nigeria, the consumer price index and the price of petrol at the pump have an asymmetric relationship, according to the empirical findings. It was suggested by the study that authorities should openly allocate funds for the upkeep and repair of domestic refineries in order to improve their efficiency. It was also recommended that fuel-landing costs be lowered and stabilized in order to control the frequent changes in petroleum pump prices causing domestic inflation to rise.

Kirikkaleli and Darbaz (2021) investigated whether the raw food subgroups that made up the raw food price index have a similar causal link to the energy costs and raw food prices. This association has drawn a lot of attention from experts since the 2008 financial crisis caused the price of raw foods to more than double. The results of BC causality test show that Two-way interactions at different degree occur between the energy price index and the raw food price indices (grains, other raw foods, and oils). Given the established interaction between the two variables, the study recommended that governments need to ensure that rising energy prices is kept under control to avoid escalation of food prices.

Wale-Awe and Sulaiman (2020) conducted research on Nigerian economy on the impact of PMS prices on inflation covering the period of 1980 to 2018. It was discovered that the cost of PMS influence the level of inflation in the country. Based on the causality

test, Nigeria's inflation does not have any interaction with PMS prices within a short period. The study therefore suggested that government should work towards stabilizing the price of PMS to keep inflation at check.

The research conducted by Sarwar, Hussain and Maqbool (2020) between 1990Q3 and 2019Q4 focused on crude oil prices and the prices of raw and non-raw foods in Pakistan. The findings show that oil prices have impact on both raw and non-raw food inflation but the impact effect is asymmetric. Its impact is higher on non-raw food inflation compared with the effect on the prices of raw food items. While the study findings validate the market power influence on Pakistani commodity prices, it was recommended that there is the need for efficient regulatory measures to control crude oil and food prices.

Babalola and Salau (2020) studied the impact of petroleum pump price on consumer price index in Nigeria between 2000 and 2019 using monthly data. The study regressed consumer price index on prices of premium motor Spirit (PMS), diesel and kerosene using a panel pooled mean/ARDL cointegration technique. It was discovered that petrol pump price directly affects consumer price while price of kerosene inversely affects consumer price in the short-term. Kerosene price, however, affect price positively in the long-run. The study suggested that Nigerian government needed to discontinue fuel subsidy while reinvesting the saved surplus in the economy to keep CPI low.

Between the period of 1999Q1 and 2018Q4, the effect of change in the price of oil on inflation was carried out on Nigerian economy by Bawa, Abdullahi, Tukur, Barda, and Adams (2020). The study employed NARDL techniques and found that the core and raw food indices of inflation increase in line rise in oil prices. However, as the oil price fall, the marginal production cost also declines. Exchange rate suppressed the effect of declining oil price, as decreasing oil prices leads to low foreign reserves, currency depreciation, and high inflation. Similarly, when the exchange rate was excluded, a negative oil price shocks caused higher inflation in Nigeria. Compared to raw food inflation, core inflation typically reacts strongly to rises in oil prices. Thus, the study suggested that Nigeria's monetary policy actions should concentrate on controlling core inflation during times of significant increases in oil price.

The study carried out in 2019 by Bala and Abdullahi used secondary data between 1972 and 2016 to investigate the

interdependence between Nigeria's raw food prices, exchange rates, and oil prices. Regression estimation was carried out using Autoregressive Distributed Lag (ARDL) approach. A long-period correlation was established by the study. It was found that prices of locally produced raw foods were significantly influenced by oil prices. Exchange rate was also found to impact on the price of raw food as caused by importation of some food items. Based on the study outcome, it was recommended that raw food importation and unstable exchange rate should be controlled because they have strong implications for Nigerian economic wellbeing. The study also recommended that the apex bank needed to take into account the currency ratio, as a factor affecting raw food prices, in order to meet its inflation goals.

Anthony (2019) assessed the relationship between changes in oil prices and CPI in Nigeria using monthly data sets covering 1986 to 2015. The results showed how effectively the state space model represented the trends of the variables. Local prices are impacted indirectly by changes in the oil price globally. Hence, in order to cater possible fluctuations in price, the study suggested effective fiscal and monetary policy which goes beyond national budgets, to take changes in the price of oil into consideration. It also recommended that changes in oil prices be equally factored into inflation strategies in Nigeria.

In Nigeria, the nexus between the price of petroleum pumps and the interest rate on the prices of raw foods from 1984 to 2018 was examined by Maijama'a *et al*. (2019). The findings indicated that while goods' imports negatively and significantly explain price changes in raw food over a long period, they have no significant impact within the short period. In contrast, the price of petroleum pumps and lending interest rates had a positive influence on raw food prices in both the short and long term. Petroleum pump price has a long-term causal relationship, according to the VECM Granger causality results, while interest rate, imports, currency rate, raw food costs and petroleum pump price all have short-term causal relationships. According to the variance decomposition finding, gasoline pump prices, imports of products and services and rate of exchange account for fluctuations in the costs of raw foods and the forex rate. Price of raw foods and exchange rate, however, account for changes in imports and the rate of interest. The research recommended that gasoline pump prices should kept at the minimum level possible to ensure low costs of raw food items.

The study by Goel, Garg, and Sharma (2018) studied the interaction of raw food prices and oil prices. The study found that for ten consecutive years, agricultural commodities experienced an increase in price as oil price significantly rose. The concurrent increase in crude oil price and agricultural inputs suggested that there is a proportional relationship between the two. In order to keep the increasing prices of food items checked, it was suggested that crude oil price would be required to be controlled.

Nwoko *et al.* (2016), investigated how oil price affected costs of raw food in Nigeria, covering a period of 2000 through 2013. Since the study's finding indicated the absence of long-term correlation between oil price and unstable prices of raw food, a VAR was used to examine the short-term link rather than a VECM. Except for the change in the prices of rice and wheat, the VAR result showed that the variables exhibit short-term association and the price volatility of each of the chosen raw foods. A One-way connection between oil price and change in price of soyabean, maize and sorghum, was found by the results. No significant relationship between price volatilities of rice and wheat was however, not reported. The research recommended that in order to keep the prices of food items relatively low and affordable, oil price increase and volatility needed to be paid attention to and be adequately controlled by the government.

Dillon and Barrett (2016) sampled East African countries to establish the connection between local raw food costs and global oil prices. The study used maize and gasoline prices in the stepwise ECM thus estimated. While oil price never had effect on cost of raw foods, the effect was mostly felt through transportation expenses rather than through the cost of biofuel or production. The study established that change in global price of oil has more impact on the price of locally produced maize. While the results suggested that effect of price shocks on domestic raw food prices were driven majorly by costs of transport than by maize prices, it was recommended that pump price of automobile fuels should be reduced to make cost of transportation affordable.

## 3. Methodology

The data employed for this study is secondary in nature. It was sourced from the National Bureau of Statistics [NBS], (2023) fact sheet and Global Data Laboratory (2023). All six (6) states (Ekiti, Lagos, Ondo, Ogun, Osun and Oyo states) in the southwestern Nigeria

were used as the sample. The study captured monthly data ranging January 2017 through June 2022. Variables used include price of beans (using price of bean per kongo), price of rice (using price of rice per kongo), automotive gas oil (using ago price per litre), petrol (using pms per litre), dual purpose kerosene (using dpk per litre), consumer price index (using combined urban and rural cpi) and imports of goods and service (using imports of goods and service per state). To analyze the data, Ordinary Least Square (OLS) was used. This is because it is one of the most effective and widely used regression analysis techniques due to its extremely appealing statistical characteristics.

### 3.1 Model Specification

The model is specified based on the previous research (Bala & Abdullahi, 2019; Ding *et al.*, 2020; Bawa *et al.*, 2020; Babalola & Salau, 2020; Kirikkaleli & Darbaz, 2021). It is a simple model that relates petrol prices with the raw food prices following the work of Maijama'a *et al.*, (2019) and Ding *et al.* (2020). Two variables are used to proxy the dependent variables, including price of beans and price of rice while automotive gas oil price per litre, PMS price per litre, dual purpose kerosene price per litre are the regressors. The CPI and importation of products and services are captured as the control variables in order to make this work unique and different from the previous studies. The functional relation is given as.

$$Pi = f(ago, pms, dpk, cpi, m) \quad 1$$

In econometric terms

$$p_i = \beta_0 + \beta_1 ago_t + \beta_2 pms_t + \beta_3 dpk_t + \beta_4 cpi_t + \beta_5 m_t + \mu_t \quad 2$$

Partial log is therefore taken due to the nature of a variable like consumer price index which is usually reported in rate or percentage.

$$lnp_b = \beta_0 + \beta_1 lnago_t + \beta_2 lnpms_t + \beta_3 lndpk_t + \beta_4 cpi_t + \beta_5 lnm_t + \mu_t \quad 3$$

$$lnp_r = \beta_0 + \beta_1 lnago_t + \beta_2 lnpms_t + \beta_3 lndpk_t + \beta_4 cpi_t + \beta_5 lnm_t + \mu_t \quad 4$$

Where Pb= Price of beans, Pr= Price of rice, ago = Automotive gas oil (litre), pms = Premium motor spirit (litre) , dpk = Dual purpose kerosene (litre) , cpi = Consumer price index, m= Imports of goods & service, $\beta_0$- $\beta_5$ = estimated coefficients, $\mu$= Stochastic term.

## 4. Results and Discussion

**Table 1: Average Petroleum Pump Prices & Raw Food Prices**

| States | Pb | Pr | Ago | Pms | Hdpk |
|---|---|---|---|---|---|
| Ekiti | 395.21 | 505.72 | 307.98 | 159.29 | 441.71 |
| Lagos | 406.44 | 479.44 | 314.69 | 159.76 | 446.44 |
| Ogun | 391.68 | 475.31 | 310.18 | 158.68 | 450.97 |
| Ondo | 410.89 | 517.43 | 317.78 | 160.40 | 437.08 |
| Osun | 382.89 | 452.32 | 318.57 | 160.06 | 434.71 |
| Oyo | 440.73 | 490.30 | 318.56 | 160.01 | 412.59 |

Source: Author's Compilation, 2025

Table 1 presents the trend volatility of petroleum pump and raw food prices across states in the South West Nigeria. On the average, Oyo state has the high price differential of ₦440.73 in terms of Bean per congo while Osun has the lowest price differential of ₦382.89. Also, Ondo state has the high price of ₦517.43 in terms of rice per congo while Osun state has the lowest price of ₦452.32 on the average. The price of premium motor spirit is highest in Ondo state at ₦160.40 while in Ogun state, it is lowest at ₦158.68. Finally, household kerosene price is highest in Ogun state at ₦450.97 and lowest in Oyo state at ₦412.59. In general, Osun state has the lowest prices for bean, rice and tomatoes while Ekiti state has the highest prices for rice. Ondo state has the highest prices for premium motor spirit. Ogun state has the highest price for household kerosene, while Oyo state has the lowest price. The study therefore tested for unit root in order to know whether ordinary least square estimate is appropriate appropriate for the work by using group cross-sectional independence and dependent panels. The outcome of the unit root test is shown in Table 2.

**Table 2: Group Unit Root Test Result**

| **Cross-Sectional Independent Panels** | | |
|---|---|---|
| | Statistics | Prob |
| Levin, Lin & Chu t* | -2.20 | 0.014*** |
| Im, Pesaran & Shin W-stat | -10.40 | 0.000*** |
| ADF-Fisher Chi-square | 184.96 | 0.000*** |
| PP-Fisher Chi-square | 198.64 | 0.000*** |
| **Cross-Sectional Dependent Panels** | | |
| Common trends | 4776.620.01*** | |
| Idiosyncratic elements | +/- Inf | 0.00*** |
| Pooled test | | |

***p<0.01, ** p<0.05, * p<0.1

Source: Author's Computation, 2025

Table 2 presents result of a group test for unit root for cross-sectional independent panels and cross-sectional dependent panels. The test examines whether the variables under consideration have a unit root, indicating non-stationarity. For cross-sectional independent panels, three different test statistics are reported: 'Levin, Lin & Chu t*', 'Im, Pesaran & Shin W-stat', 'ADF-Fisher Chi-square', and 'PP-Fisher Chi-square'. The reported statistic values are -2.20, -10.40, 184.96, and 198.64, respectively. The corresponding probabilities (prob) associated with these statistics are also provided. The results indicate that all test statistics are significant at 1% level, suggesting that the variables in the cross-sectional independent panels are stationary and do not have a unit root.

For cross-sectional dependent panels, the Common trend and Idiosyncratic elements tests statistics are reported. The Common trend statistic has a value of 4776.62, and the corresponding probability is 0.01, indicating a significant at 1% level. The Idiosyncratic elements (Pooled test) statistic is reported as +/- Inf, indicating an infinite value, and the associated probability is 0.00, suggesting strong evidence against the presence of a unit root. In summary, as shown in Table 2, the variables in both cross-sectional independent panels and cross-sectional dependent panels are stationary and do not exhibit unit root behaviour. This outcome indicate that the variables are stationary at level, that is, I(0) meaning that long-run association exist among the model's variables and OLS method will be appropriate for the work.

**Table 3: Effect of Average Petroleum Pump Prices on Price of Beans**
Dependent variable: pb

| | **Ekiti** | **Lagos** | **Ogun** | **Ondo** | **Osun** | **Oyo** | **South-West** |
|---|---|---|---|---|---|---|---|
| AGO | 0.186 | -0.066 | 0.171 | -0.191 | 0.385 | 0.386 | 0.514 |
| | [0.156] | [0.627] | [0.415] | [0.188] | [0.014]** | [0.054]* | [0.000]*** |
| PMS | 1.512 | 0.444 | 0.125 | 0.265 | 0.239 | 0.288 | 1.122 |
| | [0.000]*** | [0.122] | [0.743] | [0.202] | [0.438] | [0.492] | [0.000]*** |
| Hdpk | -0.026 | -0.008 | 0.055 | 0.125 | -0.038 | 0.178 | -0.143 |
| | [0.879] | [0.957] | [0.842] | [0.488] | [0.843] | [0.516] | [0.120] |
| CPI | 2.226 | 5.129 | 5.484 | 8.466 | 11.248 | 2.885 | 0.210 |
| | [0.027]** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.030]** | [0.003]*** |
| M | 8.251 | 123.90 | -15.542 | 242.579 | 47.866 | -31.982 | 0.192 |
| | [0.014]** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.027]** | [0.013]** |
| C | -46.391 | -532.668 | 34.528 | -971.131 | -242.340 | 109.692 | -1.264 |
| | [0.010]** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.029]** | [0.050]** |
| $R^2$ | 0.624 | 0.558 | 0.591 | 0.756 | 0.699 | 0.603 | 0.441 |
| Adj $R^2$ | 0.593 | 0.522 | 0.558 | 0.736 | 0.675 | 0.571 | - |
| F | 20.24 | 15.41 | 17.64 | 37.85 | 28.36 | 18.55 | 312.25 |
| | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** |

*** p<0.01, ** p<0.05, * p<0.1

*W*here, pb represents price of beans per Kongo, ago represents automotive gas oil (diesel) price per litre, pms represents premium motor spirit (petrol) price per litre, hdpk represents household kerosene price per litre, cpi represents consumer price index & m represent imports of goods and services per state.

Source: Author's Computation, 2025

In both Osun and Oyo states, automotive gas oil (diesel) per litre has a statistically significant positive effect on the price of beans per Kongo. This suggests that changes in diesel prices per litre directly impact the price of beans per Kongo in these states. Based on the results of Osun state, a 1% rise in the price of automotive gas oil per litre caused a 0.385% surge in the price of beans per Kongo. In Oyo state, a 1% rise in automotive gas oil price per litre leads to a slightly higher rise in the price of beans per Kongo by 0.386%. The positive coefficient indicate that increased diesel prices are related with higher transport costs, which may in turn lead to surge in the production and distribution costs of beans, and rise in the price of beans. In Ekiti state, PMS cost per litre statistically influences the price of beans per Kongo. This implies that a change in petrol will affect the price of beans per Kongo in the state. Precisely, an increase in premium motor spirit

price per litre by 1% could cause a 1.512% increase in per kongo price of beans. This suggests a strong price sensitivity of beans to changes in the price of petrol. The positive coefficient shows that an upsurge in pump price of petrol will increase transportation costs, which may lead to increase in production and distribution costs for beans and eventually contribute to higher bean prices.

Furthermore, the CPI has a significant and positive influence on the price of beans per Kongo in all the six states (Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo). This implies that generally, inflation play an important role in determining bean prices across these states. However, the magnitude of the effect varies across states, with Ekiti state experiencing a 2.226% increase in bean prices per Kongo for every 1% increase in the consumer price index, while Lagos state sees a larger increase of 5.129% per Kongo. Similarly, Ogun state experiences a 5.484% increase per Kongo, Ondo state sees an 8.466% increase per Kongo, Osun state experiences an 11.248% increase per Kongo, and Oyo state sees a 2.885% increase per Kongo. These positive coefficients indicate that higher consumer prices, reflecting increased overall price levels, contributes to higher bean prices in all six states. In addition, goods' import have a significant influence on the price of beans per Kongo. However, the direction and magnitude of this effect vary across states with positive effect in price of beans per Kongo in Ekiti state with 8.251%, Lagos state with 123.90%, Ondo state with 242.579% and Osun state with 47.866% while it showed negative effect on beans price in Ogun state with 15.542% and Oyo state with 31.982%.

Lastly, on the result of the Southwest region as whole, automotive gas oil (diesel) and petrol prices are the only two pump prices with positive and significant effects on beans price. A 1% rise in prices of diesel and petrol will bring about 0.514% and 1.122% increase in price of beans, respectively. This suggests that higher diesel and petrol prices result in increased transportation costs, ultimately contributing to higher bean prices in the Southwest region. Further, CPI and importation of goods exhibit positive and sign ificant effects on price of beans with 0.210% and 0.192% increase, respectively.

**Table 4: Effect of Average Petroleum Pump Prices on Price of Rice**

Dependent variable: pb

| | Ekiti | Lagos | Ogun | Ondo | Osun | Oyo | South-West |
|---|---|---|---|---|---|---|---|
| AGO | 0.180 | -0.035 | 0.162 | -0.320 | 0.182 | -0.162 | -0.122 |
| | [0.224] | [0.764] | [0.312] | [0.037]** | [0.135] | [0.162] | [0.019]** |
| PMS | 0.771 | 0.553 | -0.425 | -0.060 | 0.086 | -0.235 | 1.288 |
| | [0.011]** | [0.028]** | [0.145] | [0.782] | [0.724] | [0.339] | [0.005]*** |
| Hdpk | 0.011 | 0.459 | -0.069 | 0.441 | 0.333 | 0.222 | 0.292 |
| | [0.952] | [0.001]*** | [0.746] | [0.022]** | [0.031]** | [0.168] | [0.000]*** |
| CPI | 0.011 | -1.395 | 4.362 | 2.502 | 2.822 | 3.718 | 0.837 |
| | [0.952] | [0.132] | [0.000]*** | [0.029]** | [0.063]* | [0.000]*** | [0.000]*** |
| M | -2.554 | -50.422 | -9.819 | 40.292 | 7.897 | -30.733 | -0.269 |
| | [0.491] | [0.015]** | [0.000]*** | [0.217] | [0.201] | [0.000]*** | [0.000]*** |
| C | 10.339 | 215.267 | 23.627 | -162.802 | -41.333 | 105.515 | -0.165 |
| | [0.600] | [0.016]** | [0.000]*** | [0.213] | [0.186] | [0.000]*** | [0.737] |
| $R^2$ | 0.757 | 0.843 | 0.541 | 0.843 | 0.789 | 0.812 | 0.716 |
| Adj $R^2$ | 0.737 | 0.830 | 0.503 | 0.830 | 0.782 | 0.797 | - |
| F | 38.07 | 65.32 | 14.37 | 65.465 | 48.21 | 52.81 | 998.78 |
| | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** | [0.000]*** |

*** p<0.01, ** p<0.05, * p<0.1

Where, pr represents price of rice per kongo, ago represents automotive gas oil (diesel) price per litre, pms represents premium motor spirit (petrol) price per litre, hdpk represents household kerosene price per litre, cpi represents consumer price index & m represent imports of goods and services per state.
Source: Author's Computation, 2025

In Ondo state, diesel's price per litre has significant and negative effect on price of rice per Kongo. This indicates that change in diesel's price directly affects price of rice per Kongo in Ondo state. Precisely, an increase in per litre price of diesel by 1% will cause a 0.320% reduction in the price of rice per Kongo. This inverse coefficient implies that higher price of diesel is connected with low rice price in Ondo state.

In both Lagos and Ekiti states, price of petrol significantly and positively influences the price of rice per Kongo. This implies that a change in petrol price per litre will directly influence price of rice per Kongo in the two states. In Ekiti state, a 1% rise in petrol prices per litre leads to a 0.771% hike in the price of rice per Kongo. In Lagos state, an increase in petrol price per litre by 1% result to a rise in the price of rice per Kongo by 0.553%. The positive coefficients imply that hike in price of petrol causes increase in price of rice in Ekiti and Lagos states. This connection could emanate from the fact that petrol is often used by vehicle and machinery for rice cultivation and distribution. When petrol prices increase, production and transport costs will also increase. Hence, these are shift of cost burden to final consumers through higher prices.

The household kerosene price per litre in Lagos, Ondo, and Osun states have positive and significant impact on the price of rice per Kongo. A change in kerosene price per litre will therefore affect the price of rice per Kongo in these states. Specifically, in Lagos state, an increase in kerosene price per litre by 1% leads to a 0.459% rise in the price of rice per Kongo. In Ondo state, a 1% hike in kerosene pump price leads to rise in the price of rice per Kongo by 0.441%. In Osun state, a 1% increase in kerosene price per litre increases the price of rice per Kongo by 0.333%. The positive coefficients imply that hike in the kerosene price is connected increase in the rice prices in Lagos, Ondo, and Osun states. This relationship arises from the fact that kerosene is needed for cooking, and a possible increase in its price could increase of costs for households, including those involved in rice preparation.

In Ogun, Ondo, Osun and Oyo states, the consumer price index has a positive and significant influence on price of rice per Kongo at 4.362%, 2.502%, 2.822% and 3.718% respectively. The positive coefficients explain a high value of consumer price index, reflecting rising overall price levels in the economy, contributing to increased rice prices in Ogun, Ondo, Osun, and Oyo states. This situation is attributed to some factors, including huge cost of production and transportation or demand pressures. However, imports of goods and services show a negative impact on price of rice per Kongo in Ekiti, Lagos, Ogun and Oyo states at 2.55%, 50.422%, 9.819% and 30.733% respectively. The negative coefficients suggest that higher imports of goods and services are associated with lower rice prices in Lagos, Ogun, and Oyo states. This relationship may be

due to increased competition from imported rice or improved availability of rice in these states due to imports, which can lead to lower prices.

The Southwest result indicates that the pump prices of diesel, PMS and kerosene significantly determines the price of rice per Kongo in the region. While PMS and household kerosene exert positive effects on price of rice with 0.288% and 0.292% respectively, diesel exerts a negative influence on the price of rice with 0.292%.The negative relationship may be due to diesel being used in machineries used in rice cultivation and in transportation and distribution. When diesel prices rise, it can lead to increased production and transportation costs, which may result in lower rice prices to maintain competitiveness in the market. CPI exerts a positive significant effect on price of rice with 0.837% and imports of goods and services exert a negative significant effect on price of rice with 0.269%.

## 4.1 Discussion of Findings

The prices at which fuel, in the forms of diesel, petrol and kerosene are being sold has been shown to have no small impact on the prices of raw beans and rice in the southwestern region of the country. The bulk of beans sold and consumed by the southwestern states are cultivated and transported down from the northern states with the use of heavy-duty vehicles that run on automotive gas oil or diesel, hence the positive association between the pump price of diesel and the commodity thus found. In addition, the positive response of the price of rice to change in the pump price of diesel is also in connection with logistics. This discovery aligns with the established of Babalola and Salau (2020) that the price at which petroleum products, such as diesel petrol, sells is a factor in determining raw food prices in Nigeria.

The positive influence of petrol pump price on rice and beans prices per kongo greatly hinges on the fact that distribution of these food items within each states in the south west is done using vehicles that run on petrol. Conveyance from a market spot to another and from other destinations to various households, are done through either cars, buses, bikes or other commuter vehicles that run on petrol. The influence of movement in the price of petrol therefore have implication for the price at which rice and beans are sold in the market. Kerosene is the main household fuel used for cooking and heating by middle-income households in the states in the southwest, hence its

significant influence on prices some food items. However, rice consumers tends to feel the effect more. The petroleum product prices impact thus found, align with the discovery made by Sarwar, *et al.* (2020) that oil price does not only affect raw food prices, but also affect the prices at which processed food items are sold.

As discovered in the study, consumer price index in Nigeria has a positive grip on the prices at which raw rice and beans are sold in the southwestern states. Importation of reduces the prices of these food items in the region given the negative relationship found. The proximity of the southwestern states to Nigeria's entrepot, such as Lagos, where various food items are shipped into the country is a factor.

## 5. Conclusion and Recommendations

This study investigated the impact petroleum pump price on selected food items in south-western Nigeria. Premium Motor Spirit (PMS) and Automotive Gas Oil prices affects the price of beans in the region. The region experienced increase in the price of rice whenever the prices of PMS and kerosene rises. However, pump price of Diesel does not affect the price of rice in the region. It is noteworthy to mention that Consumer Price Index and costs of imports have significant impact on all the food items in the region.

The study makes the following recommendations in line with the findings;

i. The government should prioritize avoidance of indiscriminate fuel price hike through regulation and control of petroleum products cost and sales to mitigate food price increase.

ii. Encouragement of consumption of locally produced food items by the people, to curb the unbridled increasing costs of importation.

iii. Prices of food items will respond to lower consumer price index when the rate of inflation is kept low and in control by the government.

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