



## ANALYSIS ON THE PRICE OF PETROLEUM AND HOW IT AFFECTS PRICE OF FOOD ITEMS IN NIGERIAN

### ECONOMY.

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#### Abstract

**T**his study has been carried out to access the statistical analysis on the price of petroleum on how it affects food items in Nigerian economy. This study found on average per capital increment on the various type of food items as the prices of petroleum increases. Data collected on the various types of food item shows 30% and 10% increment on Maize per 5% increase in the price of petroleum in 2001 and 2012 respectively, while there is a little increment on the price of millet compared to that of rice and maize. This research work was carried out with the use of a secondary data to get the information needed for the purpose of the study. Method of data analysis used is multiple regression with the aid of SPSS. The recommendation is that the government should

#### Introduction

**T**he effect of prices of petroleum products on food items and the economy of Nigeria cannot be over emphasized. Petroleum products range from aviation fuel to kerosene just to mention a few, this is solely due to the lack of diversification of the economy. 85%

create enabling policies to see to the fact that the price of petroleum does not always affect the prices of food items in

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Multiple  
Regression.

the country. To this end government should seek the partnership and expertise of relevant petroleum institutes in the country and make sure that the various refineries in the country are been put in good order so as to allow for adequate production of crude oil.

of Nigeria Gross Domestic Product (GDP) is being accounted for by the petroleum sector (Mahumd 2009). Before the discovery of crude oil in the early 70's, agriculture was the main driver of the economy which has helped in the country's development in these periods, there was hardly any incident to hike of products and services. The price stability of food items is of utmost importance to every nation that wants to witness growth; this is because it is only a healthy workforce that can give out their best in terms of work and productivity. Overtime there may have been some arguments about the relationship between petroleum prices and price index of food items. Some school of thought opined that prices of petroleum prices has nothing to do with prices of food items, questioning the agricultural stakeholders and traders for massive exploitation during price instability of petroleum products while the other school of thoughts are of the opinion that petroleum products does affect the prices of food items. Petroleum is believed to have an enormous bad wagon effect on the economy and even agricultural products this normally occurs in the economies of the West Africa sub-region which isn't often diversified. For any oil producing nation that doesn't want to know poverty of its masses then they must have to diversify their economy so as to prevent crises in one sector of the economy spilling over to the other sectors.

Food items were an essential commodity for a healthy nation, the supply of food to any nation must be done without any form of compromise as anything less than an adequate planning will lead to shortage in food supply which could affect the economy of the nation. Every meaningful government should always ensure that adequate food supply remains untouched as such shouldn't be affected by either petroleum.

The current global food system is highly fuel – and transport-dependent. Fuels will almost certainly become less affordable in the near and medium term, making the current, highly fuel-dependent agricultural production system less secure and food less affordable. It is therefore necessary to promote food self-sufficiency and reduce the need for fuel inputs to the food systems at all levels.

The connection between food and oil is systemic, and the prices of both food and fuel have risen and fallen more or less in tandem in recent years (figure 1). Modern agriculture uses oil products to fuel farm machinery,

to transport other inputs to the farm, and to transport farm output to the ultimate consumer. Oil is often used as input in agricultural chemicals. Oil price increases therefore put pressure on all these aspects of commercial food systems. Thus there is concern that high and volatile prices of crude oil may cause food prices to continue to increase (Bloomberg, 2011). Moreover, as oil prices rise, so does demand for biofuels, which are the only non-fossil liquid fuels able to replace petroleum products in existing combustion engines and motor vehicles. But biofuels are often made from corn and other agricultural products. As demand for these alternative fuels increases, crop prices are forced upwards, making food even less affordable. Meanwhile, many poor farmers who cannot afford machinery, fuels and commercial farm inputs find themselves at a disadvantage in the global food economy. Compounding this are agricultural policies in industrialized food-exporting countries that subsidize domestic producers and dump surpluses onto developing countries, thus adding to the economic disadvantages of the smallholder farmers in those countries. As a result, millions of those farmers are being driven out of business annually, those countries are giving increasing priority to production for export and they are witnessing a burgeoning landless poor urban class (whose immediate ancestors were subsistence farmers) that is chronically malnourished and hunger soaring food and fuel prices have a disproportionate impact on developing countries and on poor people in developed countries. Americans, who, on average, spend less than one tenth of their income on food, are able to absorb the higher food prices more easily than the world's poorest 2 billion people, who spend 50 to 70 percent of their income on food. Why are oil prices so high? Speculative investment in commodities plays a role, though there is a persuasive case to be made that oil prices would be rising even if oil futures speculation were entirely curtailed. The oil industry is changing, and rapidly.

In general, farmers can no longer assume that products derived from petroleum and natural gas (chiefly diesel, gasoline, synthetic fertilizers, and synthetic pesticides) will remain affordable in the future, and they should therefore change their business plans accordingly. While many approaches could be explored, which in any case would depend on

specific geographic locations, the necessary outlines of a general transition strategy are already clear.

- Farmers should move towards regenerative fertility systems that build humus and sequester carbon in soils, thus contributing to solving climate change rather than exacerbating it.
- Farmers should reduce their use of pesticides in favour of integrated pest management systems that rely primarily on biological, cultural and physical controls.
- More of the renewable energy that will power farming activities can and must be generated on farms. Wind and biomass production, in particular, can provide farmers with added income while also powering farm operations.
- Countries and regions must undertake proactive steps to reduce the energy needed to transport food by reorganizing their food production systems. This will entail support for local producers and for local networks that bring producers and consumers closer together. More efficient modes of transportation, such as ships and trains, must replace less efficient modes, such as trucks and planes.
- The end of the fossil fuel era should also be reflected in changes in dietary and consumption patterns among the general population, with a preference for foods that are grown locally, that are in season, and that undergo less processing. Also, a shift away from energy and meat intensive, diets should be encouraged.
- With less fuel available to power agricultural machinery, the world will need many more farmers. But for farmers to succeed, current agricultural policies that favour larger-scale production and production for export will need to change in favour of support to small-scale subsistence farming, gardening and agricultural cooperatives. Such policies should be formulated and put in place both by international institutions, such as the FAO and the World Bank, and also by national and regional governments.

### **Statement of the Problem**

The fluctuation of agricultural food items in Nigeria has been a concern for some time now which is not good for a growing economy like ours. A

nation that plays with its agricultural sector is a nation that would encounter shortage of food supply which may not pan out for a populous country like Nigeria. The problem of hike of food items each time there is a little change in the prices of petroleum items has led us to this study.

### **Aim and Objectives of the Study**

1. This study seeks to study the price fluctuation of both petroleum products and food items with a view to knowing if petroleum price changes affects or influences a corresponding change in prices of food items in Nigeria.
2. This study also seeks to examine the nature of relationship that exists between petroleum prices and prices of food items in Nigeria.
3. This study is also intended to predicting the effects of petroleum and food item prices on the economy of the nation.
4. To proffer solutions of ensuring food security in Nigeria.

### **Significance of the Study**

This study would be useful to policy makers, researchers on the economy of the nation and above all the Nigerian government in tackling food scarcity in Nigeria thereby ensuring food security in Nigeria.

### **Research Questions**

1. Is there a relationship between the prices of petroleum prices and the prices of food items?
2. What nature of relationship exists between petroleum and food items prices?
3. What are the ways one can ensure food security in Nigeria
4. Do the prices of petroleum and prices of food items affect the economy?

### **Research Hypothesis**

H<sub>0</sub>: There is no significant relationship between the prices of petroleum products and the prices of food items.

H<sub>1</sub>: There is significant relationship between the prices of petroleum products and the prices of food items.

### **Literature Review**

Yemi (2012) opined that full scarcity has plagued the nation recently appeared to be worse at the beginning of these years it caused a lot pain anguish and dislocation of economic and sundry activities. There was hardly any individual industries institutions and organization in Nigeria today that was not severely affected. It is widely believed in government circles what perennial fuel crisis is largely caused bottlenecks in the distribution system. But a survey show that the bottlenecks and other associated problem are caused by conflicting activities of multifarious government agencies. Besides there are problem of manpower shortage inadequate funding lack of materials legal limitation and safety of personnel which officials explained have hundred departments to petroleum resources (DPR) in the petroleum products which increase the crisis in Nigeria despite the effort of DPR some encourage and sell adulterated fuel (Nwamkwor, 1981). The crisis situation worsening day after day when some fuel stations sold fuel in the night to the a black markets in which they will increase the rate from N350 to N500 per gallon depending on the level of adulteration with kerosene. The fuel scarcity was believed to be worse in certain occasions by hoarding fuel diversion smuggling and under deliver at retails outlets have been rampant with the overall co-operation monitoring and general supervision of product random sampling at several filling stations and observed that the perennial fuel shortage was caused by filling stations. Despite all the efforts of the ministry and parastatals the NNPC has almost found it impossible to eliminate the activities of saboteurs in the oil industry in the country. Investigation has shown that between January and March 1999 Nigeria has had a daily local consumption of 8.509 million liters of fuel supported with 6.883 million liters imported fuel thereby bringing the product available to 15.392 million litters. Allwell (2012) suggests that smugglers and saboteurs in the country contributed so much to the scarcity.

The current global food system is highly fuel- and transport – dependent. Fuels will almost certainly become less affordable in the near and medium term, making the current, highly fuel-depended agricultural production system less secure and food less affordable. It is therefore

necessary to promote food self-sufficiency and reduce the need for fuel inputs to the food system at all levels.

The connection between food and oil is systemic, and the prices of both food and fuel have risen and fallen more or less in tandem in recent year. Modern agriculture uses oil products to fuel farm machinery, to transport other inputs to the farm, and to transport farm output to the ultimate consumer. Oil is often also used as input in agricultural chemicals. Oil price increases therefore put pressure on all these aspects of commercial food systems, thus there is concern that high and volatile prices of crude oil may cause food prices to continue to increase (Bloomberg, 2011).

As Jeremy Gilbert, former chief petroleum engineer for BP, has put it, “The current fields we are chasing we’ve known about for a long time in many cases, but they were too complex, too fractured, too difficult to chase. Now our technology and understanding [are] better, which is a good thing, because these difficult fields are all that we have left” (Gilbert, 2011).

Hendry, D. F. (1986): Nigeria’s foreign economic relations revolve around its role in supplying the world economy with oil and natural gas, even as the country seeks to diversify its exports, harmonize tariffs in line with a potential customs union sought by the economic community of West African States (ECOWAS), and encourage inflows of foreign portfolio and direct investment. In October 2005, Nigeria implemented the ECOWAS common external tariff, which reduced the number of tariff bands.

Adebimpe B. (2004), prior to this revision, tariffs constituted Nigeria’s second largest source of revenue after oil exports. In 2005 Nigeria achieved a major breakthrough when it reached an agreement with the Paris Club to eliminate its bilateral debt through a combination of write-downs and buybacks. Nigeria joined the organization of the Petroleum Exporting Countries in July 1971 and the World Trade Organization 2005; Nigeria imported about US\$26 billion of goods. In 2004 the leading sources of imports were China (9.4%), the United States (8.4%), the United Kingdom (7.8%), the Netherlands (5.9%), France (5.4%), Germany (4.8%), and Italy (4%). Principal imports were manufactured goods,

machinery and transport equipment, chemicals, and food and live animals.

Granger, C. W. J (1987), in 2005, Nigeria exported about US\$52 billion of goods. In 2004, the leading destinations for exports were the United States (47.4%), Brazil (10.7%), and Spain (7.1%). In 2004 oil accounted for 95% of merchandise exports and cocoa and rubber accounted for almost 60% of the remainder.

Akpan, E. O. (2009), India is the largest purchaser of Nigeria's oil which fulfills 20% to 25% of India's domestic oil demand. Indian oil companies are also involved in oil drilling operations in Nigeria and have plans to see up refineries there. [35]

The trade volume between Nigeria and the United Kingdom rose by 35% from USD 6.3 billion in 2010 to USD 8.5 billion in 2011. [36] External debt in 2012, Nigeria's external debt was an estimated \$5.9 billion and N5.6 trillion domestic – putting total debts at \$44 billion. [37]

Akpan, E. O. (2009), In April 2006, Nigeria became the first African country to fully pay off its debt owed to the Paris Club. This was structured as a debt write-off of approximately \$18 billion and a cash payment of approximately \$12 billion foreign investment in 2012, Nigeria received a net inflow of US\$85.73 billion of foreign direct investment (FDI), much of which came from Nigerians in the Diaspora. Most FID is directed toward the energy and banking sectors. Any public designed to encourage inflow of foreign capital is capable of generating employment opportunities within the domestic economy. The Nigerian Enterprises Promotion (NEP) Decree of 1972 (revised in 1977) was intended to reduce foreign investment in the Nigerian economy. This type of policy is not relevant in an economy with a rapidly growing force like Nigeria.

Deadman, D. F. (1992), Declining global economic activity could cause oil prices to fall, as happened in late 2008. Indeed, this is a fairly likely possibility. But while it would make oil cheaper, it would not make fuel more affordable to most people. It is theoretically possible for the world to curb oil demand through policies that limit consumption, and it is also conceivable that some unexpected technological breakthrough could rapidly result in a cheap, effective alternative to petroleum. However, these latter two developments are rather improbable. Thus there is no likely scenario in which the services provided by oil will become more

affordable within the context of a stable global economy at any time in the foreseeable future.

Deadman, D. F. (1992), Despite the NNPC official attempt to arrest the lingering fuel crisis culminating in the first even “operation crush” nationwide exercise the problem has refuse to go. The station is blamed on the activities of economic saboteurs who divert greatest percent of the fuel supply meant for daily consumption to the black market.

Nwosu (2009), said that as long as poor pricing of petroleum product the high pricing in neighboring countries continued the smuggling of oil outside the country would remain a lucrative business.

### **Research Design and Population of the Study**

Research design is almost the same as the scientific methodology just that the former differs from the latter as it has to do with the data to be collected and how to collect the data as well as the appropriate statistical techniques to be used for the data analysis. And this simply implies that the type of investigation whether it is a field survey field experiment or a laboratory experiment, the choice of statistical procedure will depend on the design of investigation (or research design). Based on design, the primary categories that emerge are based on two main considerations. The first consideration is the number of samples being used and secondly, whether the samples are paired or unpaired. The statistical procedure or research design is used in this research work is multiple regression to test relationship between variable at five percent (5%) level of significance.

The populations considered in this research work on the price of petroleum on how it affects the food price on Nigeria Economic (2010 – 2016).

### **Method of Data Analysis**

Statisticians have developed a large array of techniques or methods for data analysis. Among these many techniques available for data analysis, the multiple linear regression for the relationship between a dependent variable petroleum (Y) and two or more independence variable maize, rice and millet ( $X_1$   $X_2$  and  $X_3$ ) ... procedures for data analysis has been discussed earlier in chapter two of this piece of work.

## Multiple Regressions

In multiple regressions the coefficient derived from the model indicates the changes in the expected log odds relative to the one unit change in  $X_1$ , holding all other predictors constant.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

(1)

## Assumptions

- i. Multiple regression assures that the observations are independent.
- ii. Multiple regression also assume that the natural log of the odds ration and the measurement variables have a linear relationship.
- iii. Multiple regression does not assume that the measurements variable are normally distributed.

## Data Presentation and Analysis

### Regression

#### Descriptive Statistics

	Mean	Std. Deviation	N
Petroleum	101.83	32.781	11
Maize	168.73	13.070	11
Rice	269.09	55.399	11
Millet	342.09	172.667	11

## Correlations

		Petroleum	Maize	Rice	Millet
Petroleum		1.000	.132	.606	.806
Pearson Correlation	Maize	.132	1.000	-.123	.172
	Rice	.606	-.123	1.000	.821
	Millet	.806	.172	.821	1.000
Petroleum		.350	.350	.024	.001
	Maize	.350	.359	.306	.306
Sig. (1-tailed)	Maize	.024	.359	.001	.001
	Rice	.001	.306	.001	.

<b>Petroleum</b>	<b>Millet</b>	11	11	11	11
		11	11	11	11
	<b>Maize</b>	11	11	11	11
	<b>Rice Millet</b>	11	11	11	11

#### Variables Entered/Removed<sup>a</sup>

Model	Variables Entered	Variables Removed	Method
1	Millet, Maize, Rice <sup>b</sup>	.	Enter

- a. Dependent variable: petroleum  
b. All requested variables entered.

#### Model summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate
1	.814 <sup>a</sup>	.662	.517	22.784

- a. Predictors: (Constant), Millet, Maize, Rice

#### ANOVA<sup>a</sup>

Model	Sum Squares	of Df	Means Square	F	Sig.
<b>Regression 1</b>	7112.354	3	2370.785	4.567	.045 <sup>b</sup>
<b>Residual</b>	3633.832	7	519.119		
<b>Total</b>	10746.186	10			

- a. Dependent variable: petroleum  
b. Predictors: (Constant), Millet, Maize, Rice

#### Coefficient<sup>a</sup>

Model	Unstandardized coefficients		Standardize coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. error	Beta			Lower Bound	Upper Bound
<b>(Constant)</b>	101.400	133.234		.761	.471	213.649	416.449
<b>Maize</b>	-.172	.634	-.068	-.271	.794	-1.671	1.328

<b>Rice</b>	-.132	.258	-.224	-.513	.624	-.742	.477
<b>Millet</b>	.190	.083	1.001	2.280	.057	-.007	.387

a. Dependent Variable: Petroleum

### Coefficient Correlations<sup>a</sup>

Model		Millet	Maize	Rice	
1	<b>Correlations</b>	<b>Millet</b>	1.000	-.482	-.861
		<b>Maize</b>	-.482	1.000	.470
		<b>Rice</b>	-.861	.470	1.000
	<b>Covariances</b>	<b>Millet</b>	.007	-.025	-.019
		<b>Maize</b>	-.025	.402	.077
		<b>Rice</b>	-.019	.077	.066

a. Dependent Variable: Petroleum

### Data Analysis

The result indicates that there is a positive correlations between prices of food items and petroleum in the country, which states that as the price of petroleum increases so also the prices of food items increases. It also shows from our ANOVA table that our F-value = 4.567  $\geq$  F-table = 1.96 at  $\alpha = 0.05$ .

### Summary

This study found an average per capital increment on the various types of food items as the prices of petroleum increases. Data collected on the various types of food items saw 30% and 10% increment on maize per 5% increase in the price of petroleum in 2011 and 2012 respectively while there is a little increment on the price of millet compared with that of rice and maize.

### Conclusion

There is always an increment in the various prices of food items whenever there is an increase in the price of petroleum and it was noted that mostly the price of food items so much depends on the price of petroleum/crude oil in the country. It was also found in the course of the

research that most prices of food items tends to always be at an increasing rate at any festive period and so also goes for the price of petroleum, so if precaution could be taken against such occurrence will be of good to individuals and the country at large cause it will boost the economy of the nation.

### **Recommendations**

The government should create an enabling policies to see to the fact that the price of petroleum do not always affect the prices of food items in the country. This will ensure the economic utilization of the petroleum resources that abound in the country rather than the present situation of the policies. To this end government should seek the partnership and expertise of relevant petroleum institutes in the country and make sure that the various refineries in the country are been put in good order so as to allow for adequate production of the crude oil.

Secondly, individual that deal with the sales of food items should also make sure that food items are been distributed to the final consumers at the designated or regulated prices that government has instruct them to be sold and not always take the advantage that there is scarcity of petroleum product to increase the various price of food items so as to make improper profits/gains.

Thirdly, private sectors or individuals should also assist the government in production and distribution of petroleum so as to allow for adequate and regulated prices of these items.

Lastly, measures should also be taken by authorities concerned to allow the present subsidy on petroleum as obtained in the country trickle down to the ordinary people by curbing the excesses of corrupt officials who connive with touts to make the resources in-accessible to the people.

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## APPENDIX

Year	Price of Petroleum	Price of Maize	Price of Rice	Price of Millet
2006	65.00	193	250	237
2007	65.00	170	250	337
2008	94.10	159	220	317
2009	60.86	155	250	171
2010	77.38	159	250	177
2011	107.46	162	220	179
2012	109.45	166	270	273
2013	105.89	170	250	307
2014	96.29	193	250	487
2015	49.49	170	350	639
2016	40.68	159	400	639