ASCERTAINING THE RELATIONSHIP BETWEEN SUBSIDY REMOVAL ON PETROLEUM PRODUCTS AND INFLATIONARY TRENDS IN NIGERIA

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Abstract:
Prior to the 29th of May, 2023, the Nigerian economy was trudging on with a no clear sense of direction., but this state of malaise was shattered by the inaugural broadcast of President Bola Ahmed Tinubu, where he announced that the era of fuel subsidy was over .Confusion, and uncertainty were let loose. The price of petrol and other petroleum products skyrocketed overnight with its attendant negative impact on transport fares and other facets of the economy. While most Nigerians are groaning in pains over this development, some technocrats are of the opinion that; money that would have been set aside as subsidy is better utilized in the provision of basic infrastructures. With the aid of monthly data for the period, August 2022 to April 2024; this study investigated the impact of subsidy removal on the prices of petroleum products and the level of inflation that it may have triggered. Outcome of the study using a Descriptive statistics as well as a VEC model indicate the existence of relationships. The percentage increase in the price of petrol (PMS) has a positive long run relationship with inflation (INF). Percentage increase in the price of Diesel (AGO), may have a positive long relationship with Inflation (INF), but the evidence is not statistically significant. A percentage increase in the price of Kerosene (DPK); does not have a statistically long run relationship with inflation (INFL). Changes in petrol and Diesel prices have significant short run effects on inflation. Petrol and Diesel prices were seen to granger cause inflation, indicating a directional relationship. Lastly, the post subsidy removal era in fuel prices brought with it a higher level of inflation in Nigeria. In line with the above research findings, the study recommends that Nigeria should strive to become self-sufficient and reliant in the refining of petroleum products and energy production. Since our existing refineries have become comatose; there is the need to licence, build and to operate new modular refineries in each of the oil producing states in Nigeria as the demand for petroleum products have by far outstripped the supply. That is the way to go!

Keywords: *Subsidy, Petroleum products, Petrol, Diesel, Kerosene, Inflation*

Introduction

In 2003, the price of diesel (AGO) was deregulated. In 2016, the subsidy on Kerosene (DPK) was removed. However the removal of subsidy on Petrol (Premium Motor Spirit (PMS)) has proven to be the biggest challenge to managers of the Nigerian economy. President Bola Ahmed Tinubu, in his inaugural speech on the 29th of May, 2024, declared that "fuel subsidy is gone", a move that has generated mixed reactions, given the stark hike in fuel costs nationwide. In less than 24 hours

after his inauguration, the cost of fuel jumped from the official price of 185 naira to between 350 to 550 naira. In the more recent times, it has shot up to about 800 naira per litre. Successive administrations attempted to remove the subsidy but failed to do so because it is widely popular among citizens, many of whom consider it their major – or only – benefit from the federal government. It gradually became a heavy burden to the government as the cost of maintaining the subsidy increased over the years

Before the inception of present administration, the Nigerian government spent ₦400 billion monthly subsidizing petroleum imports, covering the difference between the projected market price and the pump price. This in itself was a drain pipe n the economy. It is noteworthy to state here that, the concept of fuel subsidy is inherently a noble cause in the first instance; but its administration in Nigeria has been plagued with serious allegations of corruption and mismanagement. According to the central bank of Nigeria, on an annual basis, a substantial portion of the national inflow is committed to funding the subsidy scheme. Of course there are good reasons for the astronomical growth in subsidy amount - price of crude oil in the international market, volume of PMS consumed albeit debatable, and Naira devaluation are some of the drivers. In view of the significance of the amount committed to funding the subsidy regime, the government had no alternative than to take closer look at this scheme and this brought about the removal of subsidy on petrol with its attendant economic woes.

Statement of the Problem

In Nigeria, the price of petroleum products is a major driver of the cost of living, as it is used by all, including small businesses and many households given the unstable electricity supply. Therefore, any increase in fuel price could directly and immediately impact the prices of goods and services across the country. There is also the psychological impact that it tends to have because of the strong sentiment attached to cheap and affordable petroleum products.

When the price of petroleum increases, small businesses tend to raise their prices to cover the increased cost of operation which can lead to higher prices for consumers. This can make it more difficult for people to afford basic necessities, lead to a decrease in the standard of living and contribute to poverty and inequality. However, previous attempts to remove the subsidy on petrol and other products had mostly been accompanied by hoarding and general scarcity which invariably amplified the impact of the price increase beyond just the subsidy removal.

Overall, the relationship between petroleum products price increase, inflation, and the cost of living in Nigeria is complex and multifaceted. While petrol price deregulation can contribute to higher costs of living and inflation, the impact can be

moderated if complemented with effective policies and well-thought out implementation strategy.

Nigerians cannot afford to live these matter lying low as it has unleashed a plethora of economic woes on the masses and the down trodden. Is there anything the government can do to ameliorate the suffering of the poor masses? That is the attraction towards embarking on this study.

Objectives of the study

Centrally this study is intended to ascertain the impact of subsidy removal on petroleum products and inflationary trends in Nigeria. The specific objectives are to determine the impact of subsidy removal on:

b) Petrol (PMS) and inflation in Nigeria.
c) Diesel (AGO) and inflation in Nigeria
d) Kerosene (DPK) and inflation in Nigeria.

Hypotheses of the study

The following hypothesis were tested in this study

H_{01}: There is no significant long run relationship between the removals of subsidy on petroleum products and the rate of inflation in Nigeria.

H_{02}: Petroleum products (Petrol, Diesel and Kerosene), individually do not have any significant impact on the rate of inflation in Nigeria. .

Significance of the Study

The price of petroleum products is a major driver of the cost of living in Nigeria, as it is used by all, including small businesses and many households given the unstable electricity supply. Therefore, any study on price of petroleum products is of an utmost importance to an average Nigerian.

Scope of the Study

This study is limited to Nigeria, and the period of investigation is delineated from July 2022 to April 2024. - a period of 19 months. This represents a period of 9 months prior to the inception of the present administration and 9 months after they have mounted the saddle of governance.

Literature Review

What is Subsidy?

According to Encyclopedia Britannica .com (2024), subsidy or government incentive is a type of government expenditure for individuals and households, as well as businesses with the aim of stabilizing the economy. It ensures that individuals and households are viable by having access to essential goods and services while giving businesses the opportunity to stay afloat and/or competitive. Subsidies not

only promote long term economic stability but also help governments to respond to economic shocks during a recession or in response to unforeseen shocks.

Subsidies take various forms such as direct government expenditures, tax incentives, soft loans, price support, and government provision of goods and services, Types of subsidies include -Production subsidy, Consumer/consumption subsidy and Export subsidy Others are Import subsidy, Employment subsidy, Tax subsidy, Energy subsidies etc etc. (https:// www.brittanica.com/./ money/distribution-of-wealth-and-income).

Subsidies could be classified as direct and indirect. Subsidy is direct when it involves actual cash outlays targeted towards a specified individual or household.. Subsidies can also be classified as indirect when they do not involve actual payments.

Was there really the need to remove the subsidy on petroleum products in Nigeria?

Oluwabukola (2023), enthused that, subsidy payments could significantly impact public finance and pose debt sustainability concerns in Nigeria. Nigeria's economy depends on petroleum, accounting for 90 percent of its exports and one-third of its GDP. However, the petroleum industry recently recorded zero revenue.

The Nigerian National Petroleum Company released a report in October 2022 that revealed that the agency recorded zero revenue from oil export due to the subsidy payment. Petrol subsidy alone for October 2022 gulped ₦199 billion. Nigeria incurs too much cost to pay fuel subsidies. There is a need to consider removing the fuel subsidy to fund other sectors of the economy.

In Nigeria's 2023 budget, the federal government (FG) allocated ₦3.6 trillion to pay for fuel subsidies for the first half of 2023. This figure shows a huge gap compared to the allocated ₦443 billion subsidy payment for January to June 2022. The FG can utilize the enormous budg*et al*located to fuel subsidies to fund other strategic sectors. One such strategic sector is building good roads to attract investors. Nigeria possesses abundant arable land areas that are uncultivated because they are not accessible. Research has shown that investment in good roads to enable transactions will bring about economic growth. A World Bank report also showed that better road infrastructure reduces transport costs, making it easier for businesses to reach internal and external markets.

According to the Central Bank of Nigeria, the Federal Government of Nigeria spends about ₦40.1 billion daily, subsidizing every litre of petrol consumed in Nigeria by at least ₦600. It means the government spends about ₦1.24 trillion on fuel subsidies monthly. The country is in massive debt and would need more money to subsidize

fuel. As of March 31, 2022, Nigeria's total public debt stock stood at ₦41.60 trillion ($100.07 billion).

The country needs to consider getting investors into the petroleum sector to boost the country's economy. Since 2000, the Nigerian government has issued at least 20 refinery licenses to private companies. However, not one refinery has been built. Investors could not recoup their investments due to the artificially low price structure caused by fuel subsidies.

To enable a conducive environment for investors, the deregulation of the oil sector is critical. That way, the FG will no longer remain the leading petroleum product supplier. This approach will allow investors to take over the role of supplying petroleum products.

Furthermore, subsidizing fuel usually increases fuel diversion to neighbouring countries and smuggling by corrupt government officials. In 2012, Nigerian President Goodluck Jonathan initially removed the fuel subsidy because of the corruption in the system. The country discharged 59 million litres of petrol by vessel but has a daily consumption of 35 million litres as of 2012. The FG subsidized about 24 million litres of petrol daily, which Nigerians did not utilize. Critics of the subsidy say fuel importers overcharge for fuel using corrupt accounting procedures. The system of subsidizing fuel in the country is corrupt.

Fuel subsidy removal in Nigeria is an economic necessity, as the subsidy funds could lead to major development gains. With the proper structure, such as building good infrastructure and a conducive environment for investors, removing subsidies can be the blessing the economy needs right now.

Consequences of fuel subsidy removal in Nigeria

Analysts are of the opinion that negative implications of fuel subsidy removal may decrease economic growth in the short term, increase inflation, increase poverty, increase fuel smuggling, and increase crime, increase the prices of petroleum products and loss of jobs in the informal sector (Premium Times Newspaper, 12 Oct 2023). Although the fuel subsidy was said to have increasingly favoured the rich more than the poor, its complete removal disproportionately affects low-income citizens. The low-income citizens face greater financial strain to meet their basic food needs

Inflation

Inflation is the rate of increase in prices over a given period of time. Inflation is typically a broad measure, such as the overall increase in prices or the increase in the cost of living in a country.

Basically there are about 5 causes of inflation. This includes increase in wages, increase in the price of raw materials, increase in taxes, decline in productivity and increase in money supply.

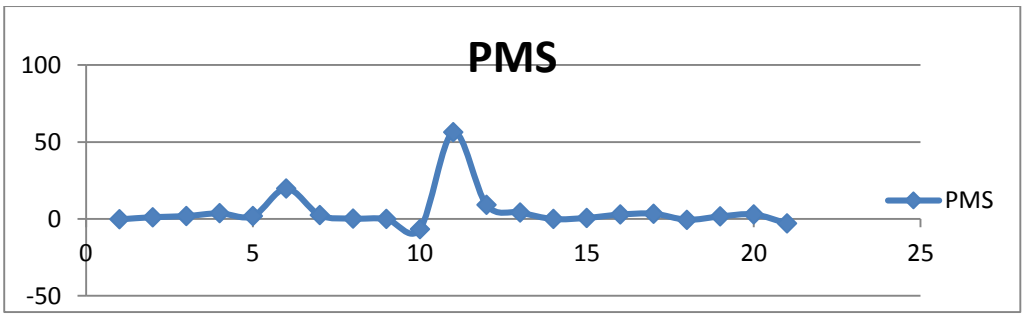
Why do we need to worry about inflation?

The consequences of inflation on an economy could be very adverse and that explains why policy makers are always worried about inflationary trends as high, rising and unstable prices exerts ripple effects on the economy as a whole rendering it unstable , much more than any other macro variable.

Trend of petroleum products pricing in the past 20 months in Nigeria.

1) Petrol (PMS)

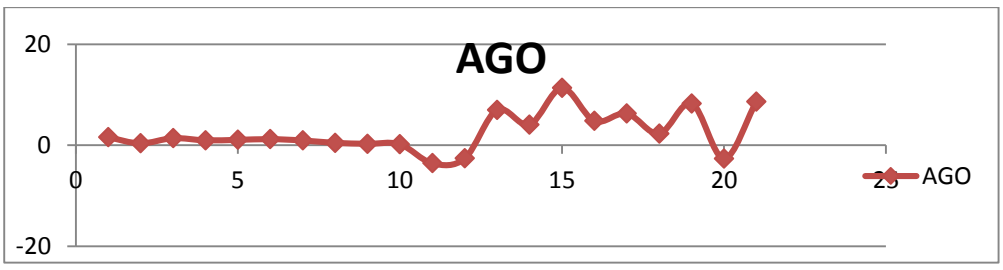
The price of petrol (PMS) was N189.46 in August 2022. It hovered around this price range till around January when it shot up to N257 litre. Upon the inaugural speech of President Tinubu on the 27th of May, 2023, It shot up to N545.83 in June2023 and ever since then, it has maintained a steady rise. As at April 2024, a litre of petrol was sold at over N700. The graph below aptly captures the percentage increase in the price of petrol from August 2022 to April 2024.



Percentage increase/ decrease were computed from data sourced from the NBS

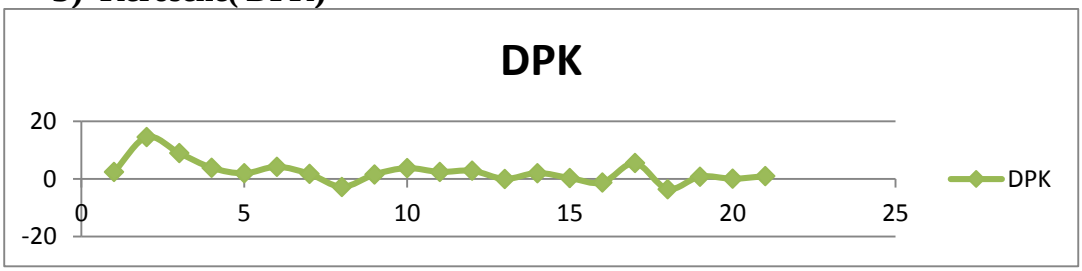
2) Diesel (AGO)

The average price of Diesel per litre was about N786.88 in August, 2022. It gradually rose to about N844.28 per litre in May 2023. It suddenly jumped to N1004.80 in October 2023. The bug of arbitrary increment caught up with it .As at April 2024, the price stood at N1341.16 per litre. The graph below is a pictorial representation of the percentage increase / decrease over the specified time frame**.**



Percentage increase/ decrease were computed from data sourced from the NBS

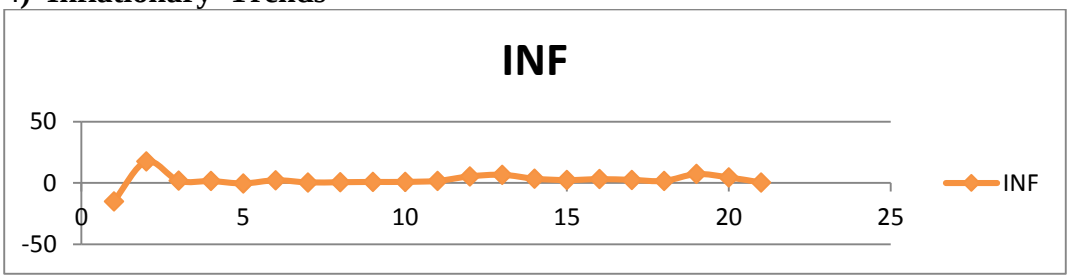
3) Kerosene(DPK)



Percentage increase/ decrease were computed from data sourced from the NBS.

Though the price of Kerosene had been deregulated before now, it was not spared from the price increase. From the above graph, its percentage increase/ decrease appears not to be too erratic.

4) Inflationary Trends



Percentage increase/ decrease were computed from data sourced from the NBS.

Descriptive statistics	Pre- Fuel Subsidy Removal era	Descriptive Statistics	Post –Fuel Subsidy Removal era
Mean	1.028000	Mean	3.708000
Median	0.830000	Median	3.265000
Maximum	17.57000	Maximum	7.260000
Minimum	-15.05000	Minimum	0.300000
Std. Dev.	7.725428	Std. Dev.	2.224389
Skewness	0.093754	Skewness	0.240412
Kurtosis	4.911555	Kurtosis	2.034849
Jarque-Bera	1.537167	Jarque-Bera	0.484462
Probability	0.463669	Probability	0.784875
Sum	10.28000	Sum	37.08000
Sum Sq. Dev.	537.1402	Sum Sq. Dev	44.53116
Observations	10	Observations	10

The average increase/ decrease in inflation for during the pre-fuel subsidy era stood at 1.02%. This jumped to 3.71% during the post fuel subsidy era. There is no doubt about it that the post fuel subsidy era brought with it a higher level of inflationary trend in Nigeria.

Theoretical Framework

Deregulation of the petroleum sector has globally being embraced by several countries, in order to lessen the public sector dominance and for developing a liberalized market while ensuring adequate supply of products. Such is the story of Peru, Argentina , Pakistan, Chile , Philippines, Thailad, Mexico Canada Venezuella, Japan and USA , allof which have symmetrically their state owned oil companies , for a significant turning point in the success story of their oil industry reform efforts Lorreta 2002).

There are two major theoretical underpinnings to this study .They are:
1) **The Neoliberal school of thought**, whose doctrine is based on competition and profit motive founded on free market pricing and freedom from the interfering hands of state regulations.

2) **The Exhaustible resource theory** recognised oil and other exhaustible resources as temporarily available and as such its prices should be treated as user cost or depletion charge , which compensates future generations for a denial of access to products.

On the other side of the divide is the issue of inflation. The major theoretical constructs that readily come into focus are the Demand oriented theories, the supply oriented theories and the structuralist theories on inflation.

Empirical framework

Obasi *et al*.. (2017) examined the political economy of fuel subsidy removal in Nigeria and its implications on the economy in generate and the populace in particular. It addressed the arguments for and against fuel subsidy removal in Nigeria as a political discourse. It was found that rampant corruption in the nation's sprawling oil sector is hugely responsible for the intractable economic development slow-motion that has worsened the plight of ordinary Nigerians. While the country's refineries remain moribund, fuel subsidy has, instead created leeway for the criminally-minded elite to squander the commonwealth. Government has demonstrated little or no political will to stem the decay in the oil sector, as underlined by the reluctance to prosecute oil thieves, some of whom are directly or indirectly connected to the apparatus of the state. Unlike in Ghana where government engaged the people and introduced measures to cushion the harsh effects of fuel subsidy. In Nigeria, government has often increased the cost of petrol before ever addressing its impacts on vulnerable groups. The paper recommends the revamping of the country's refineries, the strengthening of the fight against corruption and the establishment of a regulatory framework to protect citizens as necessary measures to help improve the poor state of the Nigerian economy Omotosho (2019) did a study on the macroeconomic implications of oil price shocks

and the extant fuel subsidy regime for Nigeria. Results of the study revealed that oil price shocks generate significant and persistent impacts on output, accounting for about 22%t of its variations up to the fourth year.

Inegbedion et.al (2020) investigated the implication of petroleum subsidy withdrawal, fuel price hikes and the Nigerian Economy. The purpose of the study was to determine the extent to which the removals of petroleum subsidies stimulate hikes in fuel prices and increases in the prices of products of other sectors in the Nigerian economy. It employed input-output model to determine the value added per sector from the computed table of flow of goods. Subsequently, the impacts of reductions in petroleum subsidies on the prices of products from the other sectors were computed. Results showed that reduction in petroleum subsidies stimulate increases in prices of petroleum products and such increases trigger increases in transport fares; increases in transport fares subsequently lead to increases in prices of other products owing to the degree of interdependency among the various sectors. The need for policy makers to be mindful of the economic implications of subsidy removal was suggested, among others.

Olaniyi *et al* (2023) probed into the complexity arising from the interplay of economic, political, environmental, and societal factors necessitate a holistic approach. The study highlights the significance of informed decision-making to mitigate negative short-term impacts, harness long-term gains, and safeguard the vulnerable segments of the population. Policymakers must adopt a holistic approach that balances economic efficiency, social welfare, environmental sustainability, and inclusive growth. By addressing these multidimensional implications and drawing insights from both domestic and international experiences, Nigeria can navigate the complexities of subsidy removal effectively and work towards a prosperous and egalitarian society.

Ozii and Obiora (2023), offered some insight into the macroeconomic and microeconomic implications of the 2023 fuel subsidy removal in Nigeria. The positive implications includes the fact that it will free up financial resources for other sectors of the economy, incentivize domestic refineries to produce more petroleum products, reduce Nigeria's dependence on imported fuel, increase employment, channel funds for the development of critical public infrastructure, reduce the budget deficit and generate a budget surplus in the near future, reduce government borrowing, curb corruption associated with fuel subsidy payments, increase competition, reinvigorate domestic refineries, and reduce pressure on the exchange rate.

Aniemeke (2024) opined that the government of Nigeria removed fuel subsidy on the premise that fuel subsidy is a drain on government finances, causes macroeconomic instability, and generates adverse social welfare in the country. The

study found out that the removal of fuel subsidy resulted in the increase of premium motor spirit price across the country generating inflationary trend. It improved revenue generation for government expenditure, curtailed cross border smuggling and corruption inherent in the downstream sector of the petroleum sector. It was based on these findings that the paper recommends a proper coordination of the fiscal policies and the Central Bank of Nigeria to effectively manage the macroeconomic effect of the subsidy removal. It is also important for the government to develop an effective communication strategy to engage stakeholders on the necessity for the subsidy removal and put in place an effective palliative measure to alleviate the attendant adverse conditions that it generated.

Sodeeq (2024) examined the impact of fuel subsidy removal on household spending in Nigeria. The findings reveal that while subsidy removal can lead to cost savings for the government and increased efficiency in the petroleum sector, concerns about inflationary effects and affordability of essential goods and services persist. The study recommends that policymakers design subsidy reform plans that protect the poorest and most vulnerable, phase any price increase appropriately, communicate effectively to all groups, invest additional funds in productive sectors, and implement transparency mechanisms. Understanding the dynamics of household spending in the context of fuel subsidy removal is crucial for informed policymaking to mitigate adverse effects and capitalize on potential benefits.

Many more researches are being conducted on the contentious issue of fuel subsidy removal in Nigeria.

3 Research Methodologies

This study made use of a VEC model as well paired data samples for the period August 2022 to April 2024. - a period of 21 months. This represents a period of 10 months prior to the inception of the present administration and 9 months after President Tinubu mounted the saddle of leadership. The study was based on four major proxies name inflation (INF), price of petrol (PMS), Diesel (AGO) and Kerosene (DPK).

Data for this study were extracted from the Bureau of statistics for the relevant months. Data were analysed using the descriptive, inferential and Vector Error Correction (VEC) model.

In this study, we adopted the model: INF = F (PMS, AGO, DPK). Where ‘’INF’’ stands for inflation, PMS is for Premium Motor Spirit (Petrol), AGO is for Automated Gas Oil(Diesel) and DPK for Kerosene

Data Analysis

Preliminary Tests:

Unit Root Test

The above test was carried out to ascertain if the data set is stationary or not. The variables all turned stationery at the second difference.

Variable	T-stat	Critical Value			Order of integration	Significance	
		1%	5%	10%			
INF	-4.12	-3.89	-3.05	-2.67	2nd Diff	0.00	Sig
PMS	-5.71	-3.89	-3.05	-2.67	2nd Diff	0.00	Sig
AGO	-14.02	-3.86	-3.04	-2.66	2nd Diff	0.00	Sig
DPK	-4.66	-3.96	-3.08	-2.68	2nd Diff	0.00	Sig

Source: E-views statistical package version 10

All the four (4) variables turned stationary at the second difference. This calls for the use of a VEC model to ascertain the underlying relationships. Before then, there is the need to run a Johansen cointegration test to ascertain the status of long run relationships.

Johansen co integration test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.776668	62.89015	47.85613	0.0011
At most 1 *	0.654244	34.40730	29.79707	0.0137
At most 2	0.464311	14.22887	15.49471	0.0769
At most 3	0.117226	2.369029	3.841466	0.1238

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.776668	28.48285	27.58434	0.0383
At most 1	0.654244	20.17843	21.13162	0.0675
At most 2	0.464311	11.85984	14.26460	0.1160
At most 3	0.117226	2.369029	3.841466	0.1238

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

While the Trace test indicates 2 cointegrating eqn(s) at the 0.05 level; Max-eigenvalue test indicates 1 cointegrating eqn(s) also at the 0.05 level. In other words there exists a long run relationship between the variables. Thus, we reject the null hypothesis of no cointegration amongst the variables

The Vector Error Correction Estimates

Vector Error Correction Estimates
Date: 05/18/24 Time: 22:00
Sample (adjusted): 4 21
Included observations: 18 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
PMS(-1)	1.000000
AGO(-1)	1.218145 (0.52279) [2.33009]
DPK(-1)	0.771324 (0.80815) [0.95443]
C	-10.00278

Error Correction:	D(PMS)	D(AGO)	D(DPK)
CointEq1	-2.410245 (0.78583) [-3.06714]	0.331942 (0.16018) [2.07230]	-0.156674 (0.14483) [-1.08177]
D(PMS(-1))	1.091784 (0.64918) [1.68179]	-0.316505 (0.13233) [-2.39185]	0.071494 (0.11965) [0.59755]
D(PMS(-2))	0.628034 (0.46351) [1.35495]	-0.087071 (0.09448) [-0.92158]	-0.053648 (0.08543) [-0.62800]
D(AGO(-1))	3.548080 (2.00194) [1.77232]	-1.157651 (0.40807) [-2.83690]	-0.180958 (0.36897) [-0.49045]
D(AGO(-2))	1.502896 (1.67716) [0.89609]	0.166375 (0.34187) [0.48666]	0.190087 (0.30911) [0.61496]
D(DPK(-1))	1.450555 (1.15002) [1.26133]	-0.174952 (0.23442) [-0.74633]	-0.336968 (0.21195) [-1.58983]
D(DPK(-2))	1.219276 (0.88536) [1.37716]	0.038359 (0.18047) [0.21255]	-0.342686 (0.16317) [-2.10012]
C	-1.105860 (6.02968)	-0.385343 (1.22907)	-2.964352 (1.11129)

	[-0.18340]	[-0.31352]	[-2.66748]
INF	0.793762	0.175971	0.850973
	(1.98482)	(0.40458)	(0.36581)
	[0.39992]	[0.43495]	[2.32628]
R-squared	0.697237	0.827057	0.710266
Adj. R-squared	0.428114	0.673331	0.452725
Sum sq. resids	2119.042	88.04472	71.97911
S.E. equation	15.34435	3.127738	2.828017
F-statistic	2.590773	5.380046	2.757873
Log likelihood	-68.45602	-39.82815	-38.01493
Akaike AIC	8.606225	5.425350	5.223881
Schwarz SC	9.051411	5.870536	5.669067
Mean dependent	-0.266667	0.402778	-0.446667
S.D. dependent	20.29054	5.472379	3.822778

Determinant resid covariance (dof adj.)	16596.67
Determinant resid covariance	2074.583
Log likelihood	-145.3603
Akaike information criterion	19.48448
Schwarz criterion	20.96843

Interpretation of the VEC model Output.

- There exists a Cointegrating Equation (long-run relationships):
- PMS (petrol price) has a positive relationship with INF (Inflation).
- AGO (diesel price) has a positive relationship with INF, but the coefficient is not statistically significant ($p > 0.05$).
- DPK (kerosene price) has a positive relationship with INF, but the coefficient is not statistically significant ($p > 0.05$).
- Error Correction Model (short-term dynamics):
- The error correction term (CointEq1) is significant, indicating that the system converges tothe long-run equilibrium.
- Changes in PMS, AGO, and DPK have significant effects on INF in the short term.
- Granger Causality Test (direction of causality):
- Based on the F-statistics and p-values, it appears that PMS and AGO Granger-cause INF, while DPK does not.

In summary, the above results suggest that:

1. Petrol price (PMS) has a positive long-run relationship with inflation (INF).
2. Diesel price (AGO) may have a positive long-run relationship with INF, but the evidence is not statistically significant.
3. Kerosene price (DPK) does not have a statistically significant long-run relationship with INF.

4. Changes in petrol and diesel prices have significant short-term effects on inflation.
5. Petrol and diesel prices Granger-cause inflation, indicating a directional relationship

6) Lastly, the post subsidy removal era in fuel prices brought with it a higher level of inflation in Nigeria

Conclusion

The outcome of the tests are in tandem with our appriori expectations. One can say with certinty that the withdrawal of subsidy on petroluem products prompted an upward increase in the price of petroluem products and this in turn brought about an increase in the level of inflation in Nigeria**.**

Recommendations

In line with the above research findings, the study recommends that Nigeria should strive to become self-sufficient and reliant in the refining of petroleum products and energy production. Since our existing refineries have become comatose; there is the need to licence, build and to operate new modular refineries in each of the oil producing states in Nigeria as the demand for petroleum products have by far outstripped the supply. That is the way to go!

References

Aniemeke (2024) Fuel Subsidy Removal and Macroeconomic Performance in Nigeria, African Journal of Economics and Sustainable Development DOI: 7(2):181-196..

Anyadike N.O.(2013) , Assesment of the implications of full- scale Deregulation of the Downstream Oil Sector on the Nigerian Economy: The new Liberalism Approach : G. Global journal of of political Science science and Adminstration., Vol2, 23-48.

Arinze P.E. (2011): The impact of oil price in the Nigerian economy''.www.transcampus Org/journals, www.ajol.info/journals/jorind JORIND (9)1 Central Bank of Nigeria 2003:Annual Report and statement of Account, Vol 12, CBN Publication.

Britannica, T. Editors of Encyclopaedia (2024, March 19). *Distribution of wealth and income. Encyclopedia Britannica*. https:// www.britannica.com/ money/ distribution-of-wealth-and-income

CBN (2015 – 2023) Annual Reports and Statement of Accounts.

CBN (2022) Economic and Financial Review

Central Bank of Nigeria 2021: Economic and Financial Review.

CBN(2022) Statistical Bulletin

Evans, Olaniyi and Nwaogwugwu, Isaac and Vincent, Olusegun and Wale-Awe, Olawale and Mesagan, Ekundayo and Ojapinwa, Taiwo (2023): *The socio-Economics of the 2023 fuel subsidy removal in Nigeria.* Published in: Biz Econs Qarterly , Vol. 17, (22 : pp. 12-32.

Granger , C.W (1969) , investigating causal relationships Relationships by Econometric Models and Cross – special methods in Onwioduokit ,E.A.(1980) , Fiscal Deficits and inflationary Dynamics in Nigeia : An empirical Investigation of of causal Relationships , CBN Econmic and Financial Review.Vol 37 .No.2.

Inegbedion H.E, E. Inegbedion , E. Obadiaru, and A.J .Asaeye (2020) , Petroleum Subsidy Withdrawal, Fuel Price Hikes and the Nigerian, International Journal of Energy E Economics and Policy. DOI: 10.32479/ijeep.8307

Lorreta .O. (2004), Deregulation of the Nigerian Downstream oil sector keeping faith with a Global Trend. www.pppra- Nigeria..org/article detail .asp.www. vanguardngr.comwhyoil Sector deregulation.

Monsuru Alabi Sodeeq (2024), The Institute of Applied Knowledge, Abuja, Nigeria DOI:10.46609/IJSSER.2024.v09i01.002.URL: https://doi.org/10.46609/IJSSER.2024.v09i01.002

Onyishi.A.O., I.O .Eme and I.E.J.Emoh(2012), The Dynamic and international implication of Fuel Susidy Removal crisis in Nigeria : Kuwait chapter of the Arabian Journal of Business and Management Revival..www.arabianjbmr.com

Victoria U. Obasi1, Esther C. Ezenkwa Doris O. Onwa David M.E. Nwogbaga, African Journal of Politics and Administrative Studies, Vol. 10, 1; March, 2017 P a g e 5