Effects of Fuel Prices on Economic Activity: Evidence from Nigeria

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Abstract

The study examined how fuel prices affected Nigerian economic activity from 1990 to 2023. The variables that impacted Nigeria's economic growth owing to pricing were estimated; using the t-test and the ordinary least square method. The investigation produced some fascinating results. If the p-value of the fuel price is less than 0.05, the null hypothesis is rejected and established that fuel price has a significant effect on all the variables except the exchange rate. The value of the correlation coefficient is 0.263, and it turns out that whenever fuel prices increase by 1%, gross domestic product (GDP) increases by 0.263% in Nigeria. Each time the level of fuel price increases by 1%, the inflation rate increases by 0.227% in Nigeria. When fuel prices increased by 1%, and per capita Income decreased by 0.579% in Nigeria. Consequential policy actions to improve energy efficiency and boost the availability of affordable and cleaner energy sources could help mitigate the inflationary impact of higher fuel prices. Policy decisions aiming at raising fuel prices, particularly in channeling subsidy funds to infrastructural and developmental projects, should also factor in the knock-on influence on inflation, which has significant distributional effects.

Keywords: *Fuel prices, Economic growth, inflation, Economic activity*

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Background to the Study

Petrol as become an essential component of our everyday existence, and one cannot imagine living without it. But fuel prices are soaring, which eventually impacts everything we use daily. These educated people will surely become immobile as impoverished folks are already struggling to make ends meet. The cost of fuel has increased threefold in only one year and is still rising. It's only putting more fuel on the fire. The cost of daily necessities that are frequently transported is impacted by the rising cost of fuel. Price hikes will have a big effect because food accounts for more than half of the income of impoverished households, whereas fuel makes up only 10% of their income. It's a chain reaction, once set off; it will affect everyone. Petrol price increases drive up transportation costs, which in turn drive up product prices, making consumers loosen their purse strings even more, and so on. The ups and downs drive more individuals into poverty and leave those who are already impoverished in a pitiful situation. There's little doubt that this has worried regular people who are having a hard time making ends meet. In contrast to the higher-paid salaried class, price hikes have only affected middle-class families on fixed or low incomes. The current middle class is squeezed, and many of those trying to reach the middle-class standard find it stubbornly out of reach. The wealthy and politically corrupt are unconcerned about it. The business class will transfer the burden so that they too can be safe. When doing business, ordinary people should transfer the burden onto their customers and create a chain reaction. Government employees will also demand an increase in minimum wage, consequently leading to a rise in inflation rate.

Nigeria began producing crude oil in 1956. Based on estimated daily production of 1.5 million barrels per day, it ranked seventh globally in 2023 (OPEC, 2023 and statista, 2023). Nigeria surpassed Angola, Libya, and Algeria to become the continent's top producer of crude oil in May 2023. This information was taken from the most recent revenues information sheet released by the Organization of Petroleum Exporting Countries (OPEC), which also projected that the country's earnings would increase to nearly $29 billion in the same period of 2024.

Fuel is only one of the numerous ways that Nigeria's economy has suffered over the years. After the Price Control Act was passed, making it unlawful to sell certain goods—including gasoline—for more than the set price, fuel subsidies started in the 1970s and were formally implemented in 1977. Although the idea of subsidies is admirable in and of itself, there have been numerous, significant accusations of corruption and poor management surrounding their administration in Nigeria. Kerosene subsidies were eliminated in 2016, thirteen years after diesel was deregulated; however, the Petroleum Motor Spirit (PMS) subsidies have proven to be the most difficult for Nigerian economic managers to handle. Each year, a significant amount of the country's income is allocated to the subsidy program. There are several factors contributing to the extraordinary increase in the number of subsidies—the price of crude oil on the global market, the amount of PMS consumed—which is subject to debate (Aniemeke, 2024; Aduloju, 2023).

President Ahmed Bola Tinubu's first inauguration speech on May 29, 2023, stressed the necessity of eliminating fuel subsidies immediately. This has a number of ramifications. "We
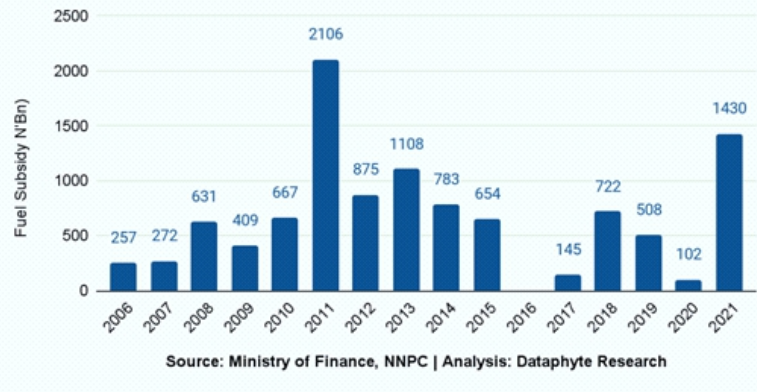
commend the decision of the outgoing administration in phasing out the petrol subsidy regime which has increasingly favoured the rich more than the poor," he stated on the aforementioned day, to quote. With resources running out, subsidies can no longer be justified at their current rate of increase. Instead, we will reroute the money to support greater investments in healthcare, education, public infrastructure, and employment that will significantly enhance the lives of millions of people. With such words, Nigeria's fuel subsidies came to an end (Olugbenga Ige, 2023; National Insight, 2023).

To put it simply, a subsidy is when the government pays a percentage of what consumers should pay in order to ease the burden on them. In other words, the government sets the price of gasoline lower than what it would have been if it had been purchased on the open market. Nigeria first introduced subsidies in the 1970s in response to the 1973 shock to the world oil price. Oil prices spiked worldwide as a result of the shock scenario, forcing the government to impose local price caps on energy-related goods. Previous governments have raised fuel prices in stages for a variety of reasons in the past, albeit with some criticism, rather than taking the fall and going all out. Throughout his tenure, the then-head of state, Ibrahim Babangida, hiked prices from 15.3 kobo to 70 kobo in multiple tranches. This increase occurred particularly in the 1990s. It was raised from 70k to N5 by Ernest Shonekan's temporary administration on its own. However, the Sani Abacha administration first lowered the price to N3.25 before increasing it to N15 and then N20 under Abdulsalami Abubakar. Protests have mostly accompanied these increases (Addeh, 2023).

According to Dataphyte, a subsidy is a sum of money given by the government or a public entity to support a firm or industry in order to keep the price of a good or service low or competitive. Making necessities accessible to the general public is the only goal here. The International Centre for Tax and Development stated in a study brief that Nigeria first implemented subsidies in the 1970s in reaction to the 1973 oil price shock. Specifically, fuel subsidies were implemented in Nigeria in 1977 as a short-term budgetary response to a surge in oil prices that occurred during that time (the 1970s). But what was once meant to be a stopgap has continued to this day. (Amata, 2023)

However, there have been numerous discussions about whether or not the government should keep providing fuel subsidies since 1999. Different levels of experts have shared their opinions on this. The World Bank, the International Monetary Fund (IMF), and other organizations have recommended that the government eliminate fuel subsidies. According to the World Bank, rich households were the main beneficiaries of fuel subsidies. Additionally, one of Dataphyte's data dives supported this. The case for eliminating gasoline subsidies has grown as a result of all the issues raised as well as the enormous sums of money that have been spent on fuel subsidies over the years. (Amata, 2023).

The Nigerian Government paid a total of N10.67 Trillion for Fuel subsidies between 2006 and 2021

Fuel Subsidy N'Bn

2006: 257, 2007: 272, 2008: 631, 2009: 409, 2010: 667, 2011: 2106, 2012: 875, 2013: 1108, 2014: 783, 2015: 654, 2017: 145, 2018: 722, 2019: 508, 2020: 102, 2021: 1430

Source: Ministry of Finance, NNPC | Analysis: Dataphyte Research

Subsidies could not be eliminated despite six significant attempts by six different governments between 2000 and 2022, all of which were thwarted by demonstrations and opposition

Table 1.

In 2020, Nigeria missed the opportunity of the crash in global oil prices to remove all oil subsidies at once			
Price	Target Price Increase	Result	Remarks
2000	From ₦20 to ₦75	Strong political resistance	7 incremental increases spanned the entire 2000 till 2007
2012	From ₦65 to ₦145	Strong political resistance (Occupy Nigeria)	The Government relaxed price back to ₦97
2016	From ₦86.5 to ₦145	Little or no political resistance	The Government succeeded because people had been worn out by long periods of fuel scarcity and long queues for fuel, wherein people were already buying at over the ₦145
2020	From ₦145 to ₦130		Reduction in petrol price was caused by a fall in the global price of crude
2021	From ₦130 to ₦167	Little or no political resistance	Rebound in global oil prices. Price far below the market import price of 233 occasioning another subsidy regime
2022	From ₦167 to the actual market price	Perceived likely resistance to removing all petrol subsidy	The Government reverted to ₦175, and postponed the possible total fuel subsidy removal till 2023.
2024	From ₦254.06 to ₦700	Regardless of the public's level of resistance, the fuel subsidy was removed	Given the depletion of resources, subsidies can no longer be justified by their escalating costs.

Source: Revised Table; taken from Data phyle Research, International Monetary Fund (IMF).

Data from the Nigerian National Petroleum Corporation Limited (NNPCL) and the Nigeria Extractive Industries Transparency Initiative (NEITI) show that the government spent N2.04 trillion on fuel subsidies between January and July 2022. Starting in 2020, there was an annual increase in the amount spent on fuel subsidies, which reached an all-time high in July 2022. However, evidence indicated that the government has consistently failed to meet its revenue objectives, making this implausible. As a result, the government's revenue in 2023, 2024, and 2025 will be 41.39 percent, 32.21 percent, and 28.91 percent, respectively, if fuel subsidies are paid in full. Therefore, even while the subsidies—if they are kept at all—would devour a significant portion of the nation's resources, they will also force the government to keep borrowing money to pay for gasoline subsidies. Remember how the Federal Government was borrowing money to pay for fuel subsidies last year? According to Ms. Zainab Ahmed, Minister of Finance, Budget, and National Planning, this was an entirely unsustainable position (Amata, 2023)

Uche Nwogwugwu, an economics professor, called fuel subsidies a hoax. He pointed out that Nigeria ought to have eliminated the fuel subsidy in 2012 when former President Goodluck Jonathan had suggested it, saying the money being spent on it could finance regional refineries.Professor Jonathan Aremu, a senior lecturer at Covenant University and a former CBN assistant director, claimed that subsidies frequently skewed the market, making it difficult for goods to realize their true value.But in the event that the next administration decides to do away with the fuel subsidies, he called on them to offer incentives that would lessen the suffering of Nigerians (editor@lifeandtimesnews.com 2022).

According to the International Energy Agency, the worldwide fuel subsidy is projected to be worth more than $1.0325 billion in 2018 for all of 2022. The reported number is far greater than the total government revenue of developing nations, particularly those in Sub-Saharan Africa, and far more than the expected value of worldwide aid, which was projected to be over $204 billion in 2022. Due to these costs, proposals have been made to end the world's fuel subsidies so that the money saved can be used for other profitable projects in developing nations (Mouhoud and Couharde, 2020).

The main economic sectors in Nigeria are negatively impacted by low earnings that are already being used up by inflated subsidies. In order to increase local production capacity, eliminate reliance on fuel imports, and improve the trade balance, the $20 million trade deficit that resulted from low crude oil export receipts in November 2022 necessitates the prompt removal of gasoline subsidies (Abayomi, 2023). Corruption, deceit, a lack of transparency, and improper use of public cash marred the fuel subsidies. Between January 2020 and June 2022, N3.92 trillion was set aside for fuel subsidies; this amount is more than the total federal budget for capital infrastructure, healthcare, education, agriculture, and defense combined for the 30-month period.

Between 2006 and 2018, Nigeria spent over 10 trillion naira on petroleum subsidies. N5.82 trillion was consumed in 2021–2022 and N3.36 trillion was suggested for the first half of 2023. These numbers point to a substantial financial burden on the government, limiting its capacity

to make investments in vital fields that could support economic expansion and improve the lives of citizens. Nigeria did not benefit from the increase in oil prices because of its poor oil production and rising fuel subsidy costs. Fuel subsidies might be eliminated, which would support economic growth and beneficial developmental changes in the macro and local economies (Mountford, 2023).

Literature Review
Theoretical Framework
Many theoretical frameworks can be used to assess and comprehend the Nigerian fuel subsidy disagreement. In this paper, I will go over three frameworks that might help clarify various parts of the discussion: political, social, and economic theories

Economic Theories
a.   **Market Failure**: According to this viewpoint, Nigeria's fuel subsidies may be a reaction to market failures and inefficiencies in the energy industry. The government claims that in order to guarantee that fuel prices are reasonable for the general public, especially the impoverished, subsidies are required. Critics counter that subsidies contribute to economic distortions including smuggling and rent-seeking behavior, distorting market forces and creating inefficiencies (World Bank, 2019).

b**.**   **Fiscal Policy**: The government may employ fuel subsidies as a means of social welfare or income redistribution. This strategy sees subsidies as a way to lessen economic disparity and poverty. Opponents of subsidies counter that they put a burden on government coffers and take funds away from other vital areas like healthcare and education.

Political Theories
a.   **Populism**: Populist politics frequently have an impact on the fuel subsidy discussion in Nigeria. Subsidies are a tactic used by populist politicians to stay in power and increase their appeal. Politicians can portray themselves as champions of the people and appeal to the masses by artificially maintaining low fuel costs. But given that it can result in budgetary imbalances and economic instability, this strategy could not be long-term viable (Oyedemi, 2019).

b.   **Rent-seeking**: Rent-seeking theory provides another perspective for understanding the fuel subsidy controversy. Via illegal activity and rent extraction, powerful interest groups such as fuel importers, wholesalers, and dishonest officials may profit from the subsidized regime. As a result, efforts to reform or eliminate subsidies may encounter strong opposition from these rent-seeking individuals, who have a vested interest in keeping things as they are as it enables them to collect economic rents (Transparency International, 2019).

Social Theories
a.   **Social Contract**: The controversy around fuel subsidies is an example of how the people and the government interact on a social contract. The public may view subsidies as a type of entitlement or as a privilege that the state ought to grant. If subsidies are eliminated or

reduced improperly, social upheaval and public discontent may result. However, proponents of subsidy reform contend that the funds saved can be used to fund social initiatives that serve a greater number of people (Adejumo et al., 2020).

b. **Poverty and Inequality**: In order to alleviate poverty and income inequality, subsidies are frequently justified. It is argued that the poor will be disproportionately affected by the removal of subsidies because they spend a higher percentage of their income on fuel. On the other hand, detractors contend that subsidies are regressive, favoring the wealthier classes of society over the intended recipients. They propose that in order to address poverty and inequality, targeted policies and alternative social safety nets might be more successful (Ogbeide, 2018).

Application of these theories can aid in the analysis and understanding of the motivations, interests, and outcomes associated with fuel subsidies in the Nigerian context. It is noteworthy that these theoretical frameworks offer various perspectives and interpretations of the actual debate about fuel subsidies in Nigeria, which is complex and multifaceted with economic, political, and social dimensions (Akinwale, et al. 2013).

Empirical Literature

Given that oil is the primary raw resource utilized by all economies, the price of oil and the rate of inflation may positively correlate. This is due to the fact that decreased final product prices will undoubtedly follow higher oil input costs. Studies in this field show a substantial correlation between the two (Bobai, 2012), while other studies contend that the impact varies with the duration of the pricing period under study (Sek et al., 2015). The situation is significantly influenced by the nation's rate of economic growth (Taghizadeh-Hesary et al., 2016).

The post-war economic effect of energy costs, mainly the price of oil, has been the subject of frequent analyses. A number of studies have indicated that an increase in fuel prices has a significant negative impact on GDP, even while energy importers have a net positive impact (Bildirici et al., 2009). According to (Lafakis et al., 2015; Cavallo, 2008; Nusair, 2019; Lioudis, 2023, Galvin, 2023) Chou and Tseng (2011) discovered that oil prices significantly affected CPI inflation in China, India, Indonesia, Jordan, Korea, Malaysia, Pakistan, the Philippines, Singapore, Taiwan, and Turkey over the long run, even if no short-term effect was seen. Research has demonstrated that oil prices had a long-lasting impact on inflation in Europe (Cuñado and de Gracia, 2003, Ozdemir & Akgul, 2015).

Przekota (2022) asked a simple question: How do gas costs affect the growth of businesses and the economy? From 2000 to 2020, the Polish economy served as the study's foundation. Poland imports energy supplies, thus it needs to react quickly to fluctuations in the price of gasoline. For the fuel costs, maritime commerce, GDP, and inflation of the Polish economy, a VAR model was developed. The outcomes show how adaptable the Polish economy is to shifts in the marketplace. While it makes sense to function more easily when fuel prices are lower, high prices do not always signify a problem.

The correlation between oil proceeds and the Nigerian economy from 1970 to 2009 was studied by Ogbonna and Ebimobowei (2012). They analyzed primary and secondary data using Pearson correlation and they explained measures and evidence using descriptive statistics. The analysis's findings demonstrate that oil money has a favorable influence on Nigeria's GDP and per capita income. But there was a negative link between the price of fuel and the pace of inflation. They recommended that in order to accomplish the long-term development of the nation, oil proceeds should be well utilized.

Olomola (2006) examined the effects of shocks to the oil price on Nigeria's overall economic activity, including output, inflation, the real exchange rate, and the money supply. Using quarterly data from 1970 to 2003, the results showed that, in contrast to earlier empirical findings, oil price shocks have little impact on Nigeria's output and inflation. Shocks to the oil price, however, were found to have a major impact on the real exchange rate. According to the author, shocks to the price of oil might result in a wealth impact that would increase the value of the real exchange rate and could squeeze the tradable sector, which would lead to the Dutch Disease.

Methodology and Hypotheses
The World Bank Database is the source of the data used in this study, which was gathered between 1990 and 2023.The method of analysis used in this study is econometric based. Thus, the effect of the correlation between fuel price and a number of economic variables in Nigeria, including GDP growth rate, inflation rate, per capita income, poverty index, and exchange rate are analyzed using Least Square (LS) techniques. The study hybridized on the approach of Abdulrahman (2023) that empirically investigated the impacts of fuel prices on economic activity in Sudan.

The main hypothesis is: There is a statistically significant effect of fuel prices on economic activity.
While the sub-hypotheses are:
    i.   There is a statistically significant effect of fuel prices on the economic growth rate.
    ii.   There is a statistically significant effect of fuel prices on the inflation rate
    iii.   There is a statistically significant effect of fuel prices on the per capita income.
    iv.   There is a statistically significant effect of fuel prices on poverty index.
    v.   There is a statistically significant effect of fuel prices on exchange rate.

Model Specification
Four sets of equations are estimated for this purpose. The sets of equations tested for the relationship between fuel price rate and other economic variables in the Nigerian economy. Thus we have the following:

$$GDP = f (FPR, OPN, UNEP, DFC) \tag{1}$$
$$INFL = f (FRP, PCY, OPN, EXR) \tag{2}$$
$$PCY = f (FPR, INFL, UNEP, EXR) \tag{3}$$
$$PI = f (FRP, PCY, INFL, UNEP,) \tag{4}$$

$$EXR = f(FPR, OPN, DFC, INFL) \tag{5}$$

Re-specifying our models empirically based on the equations above, we have:

$$GDP = a_o + a_1 FPR + a_2 OPN + a_3 UNEP + a_4 DFC + Ut \tag{6}$$
$$INFL = b_o + b_1 FPR - b_2 PCY + b_3 OPN + b_4 EXR + Ut \tag{7}$$
$$PCY = c_o + c_1 FPR - c_2 INFL + c_3 UNEP + c_4 EXR + Ut \tag{8}$$
$$PI = d_o + d_1 FPR + d_2 PCY + d_3 INFL + d_4 UNEP + Ut \tag{9}$$
$$EXR = e_o + e_1 FPR + e_2 OPN + e_3 DFC + e_4 INFL + Ut \tag{10}$$

The variables in the above models are represented by the following algebraic symbols:

GDP =   Gross Domestic Product
INFL=   Inflation Rate
PCY=   Per Capita Income
PI =   Poverty Index
TRD =   Trade Dispute
UNEP =   Unemployment Rate
EXR =   Exchange Rate
FPR =   Fuel Price
OPN =   Openness (X-M)/GDP
DFC =   Domestic Fuel Consumption
Ut =   Stochastic error term

a_o, b_o, c_o, d_o, e_o, are intercepts. $a_1 - a_4, b_1, - b_4, c_1 - c_4, d_1 - d_4$, and $e_1 - e_4$, are the parameters for equations

Results and Discussion of Findings

This section focuses on the empirical analyses of specified models of the study and the interpretation of the model estimation results.

Econometric Methods

This study has six different models that seek to address the impact of specific explanatory variables on different dependent variables

Table 2: Overall Summary Statistics

	Observations	Mean	S.D.	Minimum	Maximum
Gross Domestic Product	2,352	56.25	7.25	45.57	3,520.35
Fuel Price	5,149	6.75	17.28	-68.17	70.51
GDP Growth Rate	7,221	3.82	7.91	15.45	42.72
Poverty Index	6,244	54.21	32.72	-74.57	77.63
Trade Dispute	5,716	19.57	18.53	-30.24	94.32
Per Capita Income	4,520	7.92	38.22	0.11	42.75
Openness (X-M)/GDP	4,144	5.75	7.26	-97.69	27.52
Unemployment Rate	6,832	4.76	12.36	-68.12	84.21
Exchange Rate	6,720	17.21	21.23	-5.75	57.23
Inflation Rate	5,253	25.27	5.27	18.73	97.65
Domestic Fuel Consumption	7,282	72.55	5.28	19.97	52.35

Source: Authors' estimation

The results in Table 3 show that the standard deviation values indicate that there is no significant difference between the variable values and their mean.

Table 3: Results for Correlation Matrix.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) GDP	1.000						
(2) INFL	−0.258	1.000					
(3) PI	−0.026	−0.022	1.000				
(4) TRD	0.056	0.522	−0.250	1.000			
(5) PCY	−0.027	0.238	0.168	0.152	1.000		
(6) UNEP	0.291	0.225	−0.251	0.277	−0.065	1.000	
(7) EXR	0.020	−0.352	−0.155	0.005	0.025	0.106	1.000

Source: Authors' estimation

Presentation of the Unit Root Test

Table 4: Summary of the Unit Root Test

Variables	Difference	ADF statistic	Critical Value (5%)	Order of Integration	Remark
GDP	GDP	-2.234751	-3.552973	I(0)	Non-Stationary
FPR	FPR	-2.024734	-3.552973	I(0)	Non-Stationary
	D(FPR)	-5.732953	-3.552973	I(1)	Stationary
PI	PI	-8.532475	-3.552973	I(0)	Stationary
TRD	TRD	-2.232955	-3.552973	I(0)	Non-Stationary
	D(TRD)	-7.583772	-3.552973	I(1)	Stationary
PCY	PCY	-1.935961	-3.552973	I(0)	Non-Stationary
	D(PCY)	-5.408264	-3.552973	I(1)	Stationary
UNEP	UNEP	-6.833682	-3.552973	I(0)	Stationary
INFL	INFL	-2.742855	-3.552973	I(0)	Non-Stationary
	D(INFL)	-6.242689	-3.552973	I(1)	Stationary
EXR	EXR	-5.068771	-3.552973	I(0)	Stationary
DFC	DFC	-7.152752	-3.552973	I(0)	Stationary

Source: Author's Computation from Eviews

The findings indicate that while fuel price, poverty index, openness, per capita income, and inflation rate are stationary at first differencing, the gross domestic product, poverty index, unemployment rate, exchange rate, and domestic fuel consumption are stationary at level. In accordance with Harris (1995) and Gujarrati (2003) cointegration, both 1 (0) and 1 (1) variables could be carried forward to test for cointegration.

Table 5: Cointegration Test

Hypothesized No. of CE(s)		Eigenvalue	Likelihood Ratio	5% Critical Value	1% Critical Value
None **		0.825670	240.8627	156.00	168.36
At most 1 **		0.825721	166.2761	124.24	133.57
At most 2 **		0.798036	109.5553	94.15	103.18
At most 3 *		0.687214	70.03953	68.52	76.07
At most 4		0.452223	36.58035	47.21	54.46
At most 5		0.266766	16.72412	29.68	35.65
At most 6		0.181763	7.020252	15.41	20.04
At most 7		0.052058	0.400346	3.76	6.65

*(**) indicates four cointegrating equations at the 5% significant level.

Effect of fuel prices on economic indicators in Nigeria (1990-2023)

To examine the influence of the independent variable, namely "Fuel Prices," on various dependent variables such as rate of economic growth, inflation rate, per capita income, poverty index, and exchange rate in Nigeria during the period from 1990 to 2023, a simple regression analysis was conducted. This regression analysis involved calculating the regression equation between the independent variable (Fuel Prices) and each of the dependent variables (economic growth, inflation rate, per capita income, poverty index, and exchange rate) in Nigeria during the specified time period (1990-2023).

a) Impact of the fuel prices on the rate of economic growth in Nigeria (1990-2023):

Table 6: Regression Results of Model 1

Variable	Coefficient	Std. Err.	P-value
GDP	0.689	0.038	0.000
FPR	0.263	0.057	0.012
OPN	0.523	0.546	0.052
UNEP	-0.273	0.957	0.026
DFC	0.527	0.284	0.002
Constant	1.504	0.649	0.162
R- square 0.524970			
Adjusted R squared			0.512754
Durbin-Watson stat			2.37712
Observation			34

Source: Author's Computation from Eview

The significance of the model was evident as the P- value was statistically significant at 0.012, and there was a statistically significant impact of the (Fuel Prices) level on the (gross domestic product) level at 0.01. This supports the validity of the first sub-hypothesis of the study, which states that there is a statistically significant impact of the (Fuel Prices) level on the (GDP) level. It turns out that the independent variables explain 51.27% of the changes that occur in the dependent variable, while the rest of the changes are due to other variables th at were not included in the model. The value of the correlation coefficient is 0.263 and it turns out that whenever the level (Fuel Prices) increased by 1%, (GDP) increased by 0.263% in Nigeria (Table 6).

In FPR-based GDP estimation in Equation 1, we added trade openness (OPEN), Unemployment Rate (INFL), and Domestic Fuel Consumption (DFC). The results show that all four variables are statistically significant in estimating the equilibrium level of the GDP.

b) Impact of the fuel prices on the rate of inflation (1990-2023):

Table 7: Regression Results of Model 2

Variable	Coefficient	Std. Err.	P-value
INFL	0.856	0.095	C
FPR	0.227	0.751	0.002
PCY	0.594	0.839	0.002
OPN	−0.227	0.372	0.006
EXR	−0.207	0.229	0.022
Constant	1.583	0.677	0.267
R- square 0.484970			
Adjusted R squared			0.469540
Durbin-Watson stat			1.734512
Observation			34

Source: Author's Computation from Eview

The significance of the model was evident as the P-value was statistically significant at 0.05. There was a statistically significant impact of the (Fuel Price) level on the (inflation rate) level at 0.05. This indicates the validity of the second sub-hypothesis of the study, which states that there is a statistically significant impact of the (Fuel Price) level on the (rate of economic growth) level. It turns out that the independent variables explain 46.95% of the changes that occur in the dependent variable, while the rest of the changes are due to other variables that were not included in the model. The value of the correlation coefficient is 0.227, and it turns out that whenever the level (Fuel Price) increased by 1%, (inflation rate) increased by 0.227% in Nigeria (Table 7).

In FPR-based INFL estimation in Equation 2, we added Per Capita Income (PCY), trade openness (OPN), and Exchange Rate (EXR). The results show that all four variables are statistically significant in estimating the equilibrium level of the Inflation rate.

c) Impact of the fuel prices on the Per Capita Income in Nigeria during the period (1990-2023):

Table 7: Regression Results of Model 3

Variable	Coefficient	Std. Err.	P-value
PCY	0.789	0.465	0.000
FPR	−0.579	0.846	0.002
INFL	− 0.427	0,744	0.017
UNEP	−0.552	0.382	0.008
EXR	−0.988	0.221	0.003
Constant	1.587	0.532	0.185
R- square 0.635163			
Adjusted R squared			0.625920
Durbin-Watson stat			1.725721
Observation			34

Source: Author's Computation from Eview

The significance of the model was evident as the P value was statistically significant at 0.05, and there was a statistically significant impact of the (Fuel Price) level on the (Per Capita Income) level at 0.05. This indicates the validity of the third sub-hypothesis of the study, which states that there is a statistically significant impact of the (Fuel Price) level on the (Per Capita Income) level. It turns out that the independent variable explains 62.59 % of the changes that occur in the dependent variable, while the rest of the changes are due to other variables that were not included in the model. The value of the correlation coefficient is 0.579, and it turns out that whenever the level (Fuel Prices) increased by 1%, (Per Capita Income) decreased by 0.579% in Nigeria (Table 7).

In FPR-based PCY estimation in Equation 3, we added Inflation Rate (INFL), Unemployment Rate (UNEP), and Exchange Rate (EXR). The results show that all four variables are statistically significant in estimating the equilibrium level of the Per Capita Income.

d) **The fuel prices and their impact on Poverty Index in Nigeria (1990-2023):**

Table 8: Regression Results of Model 4

Variable	Coefficient	Std. Err.	P-value
PI	0.789	0.064	0.000
FPR	−0.263	0.163	0.252
PCY	0.533	0.839	0.013
INFL	0,284	0.222	0.009
UNEP	0.556	0.311	0.001
Constant	1.247	0.739	0.156
R- square 0.562753			
Adjusted R squared			0.542285
Durbin-Watson stat			2.272355
Observation			34

Source: Author's Computation from Eviews

The significance of the model was evident as the F value was statistically significant at 0.05, and there was a statistically significant impact of the (Fuel Prices) level on the (Poverty Index) level at 0.05. This indicates the validity of the fifth sub-hypothesis of the study, which states that there is a statistically significant impact of the (Fuel Prices) level on the (Poverty Index) level. It turns out that the independent variable explains 54.2% of the changes that occur in the dependent variable, while the rest of the changes are due to other variables that were not included in the model. The value of the correlation coefficient is 0.263, and it turns out that whenever the level (Fuel Prices) increased by 1%, (Poverty Index) increased by 0.263% in Nigeria (Table 8).

e) **Impact of the fuel prices on the Exchange Rate in Nigeria during the period (1990-2023):**

Table 9: Regression Results of Model 5

Variable	Coefficient	Std. Err.	P-value
EXR	0.789	0.044	0.000
FPR	−0.263	0.857	0.532
OPN	0.647	0.367	0.001
DFC	−0.528	0.046	0.001
INFL	−0.293	0.086	0.005
Constant	1.247	0.575	0.186
R- square 0.395896			
Adjusted R squared			0.379534
Durbin-Watson stat			1.784587
Observation			34

Source: Author's Computation from Eviews

It turned out that the model was not significant, as the P-value was not statistically significant at 0.05. This indicates the non-validity of the fourth sub-hypothesis of the study. It was found that there was no statistically significant correlation between (Fuel Prices) and (exchange rate) at 0.05, as well as the absence of a statistically significant impact (Fuel Prices) on (exchange rate) at 0.05 in Nigeria during the period (1990-2023)

Policy Implications and Recommendations
The consequences of our findings for policy objectives are quite clear. The government ought to refrain from implementing measures that could lead to economic instability. Since fuel is a necessary energy product for homes and businesses to use in their daily economic operations, the ongoing increase in the price of petroleum products, particularly fuel, should be avoided in order to lower the level of inflationary trend, unemployment, trade disputes, poverty level, and transportation fare and food prices. Additionally, the government should allow private entities to own refineries under the present petroleum subsector deregulation program in order to decrease the reliance on imported fuel, which in turn causes imported inflation.

The price increase of petroleum goods, particularly fuel, was the cause of the rise in the cost of housing, food, transportation, and other services. In addition to having a detrimental effect on the macroeconomic variables of the country and causing widespread price hikes, the recent increase may make the severe poverty that is now raging throughout the nation much worse. Every increase in fuel prices causes tension in Nigeria because the country's workers are enraged by the numerous price hikes, which have frequently resulted in protests and strikes. However, the government has been profiting billions of naira from the export of crude oil, while Nigerians live in extreme poverty. The 2024 budget's prediction of $77.96 per barrel indicates a steady increase in the price of crude oil globally. The fundamental social and economic infrastructure, including the water, electricity, telecommunication, roads, health care, and schools, is completely destroyed. Therefore, it is critical that the government establish an appropriate macroeconomic framework in order to fully optimize the benefits of crude oil, both internal and external, for the general welfare of Nigerians. Additionally, the agricultural subsector and other sectors should receive substantial funding. Nigeria's infrastructure should be funded by the surplus from crude oil sales, both domestically and internationally.

The policy implications are straightforward. Policy decisions aiming to increase fuel prices, notably in response to channeling subsidy funds to infrastructural and developmental project, should also factor in the knock-on effect on inflation which has important distributional implications. Concurrent policy actions to improve energy efficiency (e.g. through technological innovations), and boosting availability of affordable and cleaner energy sources, could help mitigate the inflationary impact of higher fuel prices. Further, improving labor market flexibility, strengthening monetary policy credibility as well as limiting price controls could reduce the risk of a protracted pass-through of fuel prices to inflation, and inflation expectations becoming de-anchored to the upside. The progressivity of the distributional impact reinforces calls for streamlining fuel subsides as they benefit the richest households more than the poorest ones. Nevertheless, as the purchasing power of the poorest households

also dips with fuel price increases, targeted mitigating measures could alleviate this impact. While targeting takes time and efforts to implement, it is achievable.

Conclusion

The policy implications are straightforward. Policy decisions aiming to increase fuel prices, notably in response to channeling subsidy funds to infrastructural and developmental project, should also factor in the knock-on effect on inflation which has important distributional implications. Concurrent policy actions to improve energy efficiency (e.g. through technological innovations), and boosting availability of affordable and cleaner energy sources, could help mitigate the inflationary impact of higher fuel prices. Further, improving labor market flexibility, strengthening monetary policy credibility as well as limiting price controls could reduce the risk of a protracted pass-through of fuel prices to inflation, and inflation expectations becoming de-anchored to the upside. The progressivity of the distributional impact reinforces calls for streamlining fuel subsides as they benefit the richest households more than the poorest ones. Nevertheless, as the purchasing power of the poorest households also dips with fuel price increases, targeted mitigating measures could alleviate this impact. While targeting takes time and efforts to implement, it is achievable.

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