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Effect of Fuel Subsidy Removal on Metropolitans' Household Spending in Nigeria.

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Abstract

Usually, developing countries such as Nigeria spend enormous capital on subsidies. This enacts a substantial burden on the economy, which leads to the government budget deficit. This challenge prompted the IMF and World Bank to consider the subsidy concept as politically jittery and conditioned these countries to remove subsidies. Since Nigeria removed fuel subsidies, households have been grouchy due to the high cost of living and economic paralysis. This study investigates the effect of fuel subsidy removal on households' spending in urban areas in Nigeria. The study was restricted to some selected cities in Northwest Nigeria; questionnaires were administered to about 220 households living in urban areas through a simple random sampling technique, and only 180 were returned. Also, the OLS model was employed in the analysis. The study analyses three models. In the model, I, age, education level, income earning, family size, and nature of family expenses are clear demographic variables that affect a household's spending after the removal of fuel subsidies. Model II shows a decrease in a household's savings and occupational opportunities due to spending on other areas needed. Model III indicates transportation, foodstuff, medical, and energy expenses are the major areas in which households spend more. This study suggests that the government should take drastic measures to address the economic challenges facing people.

Keywords: government, household, removal of subsidy, subsidy.

INTRODUCTION

Subsidies in developing countries impose a considerable burden on the economy both in terms of fiscal costs on efficiency and adverse effects. This is because government spends a lot to provide the public with such kinds of subsidies which leads the government to run a budget deficit. This resulted I.M.F World Bank making a strong warning to developing countries against allocating vast amounts of capital to subsidies (IMF, OECD, WORLDBANK, & WTO, 2022). The agency considered the subsidy concept to be analytically and politically jumpy. Disagreements and debates among policymakers over subsidies become a major source of tension. Certainly, the criticism of the efficacy of government funding in subsidies reveals the problems policymakers face when designing subsidy funding schemes (Murschetz, 2022).

According to Evans, Nwaogwugwu, and Vincent (2023) fuel subsidies have been historically documented in Nigeria since the 1970s. He reveals that their long-standing existence was primarily to shield citizens from volatile energy costs against global oil price shocks, given that Nigeria's refineries are in a state of decay despite increasing demand. The country's oil was refined in Europe and then imported back, incurring higher costs. This leads to imported oil prices being higher than they would be if it were refined domestically. The subsidy became deeply rooted, eventually embryonic into a large fiscal burden on the government (Al Jazeera, 2023). The country spent nearly 10 trillion Naira on petroleum subsidies between 2006 – 2018 and N3.92 trillion on petrol subsidies between January 2020 and June 2022. This amount exceeds the combined federal budgets for education, healthcare, and defense. Fuel subsidy was pierced with manipulation, corruption, and mismanagement. The low trade deficit of $20 million recorded in 2022 was due to low crude oil exports which led to the jettison of petrol subsidy by the Nigerian government (Abayomi, 2023).

Nigerians 'perception of subsidy removal is multidimensional and often divided along the lines of efficiency and equity. The advocate of efficiency believed that the removal of fuel subsidies would reduce inefficient resource allocation and address fiscal challenges. The advocate of equity emphasizes the broader social impact, specifically on marginalized and vulnerable populations. These advocates believed complete removal of subsidies may worsen poverty and inequality (Amadi, 2023). The current removal of the fuel subsidy in Nigeria marks an essential instant in the nation's economic, social, and environmental route (Ude, 2023) as it has brought instant economic consequences such as increases in fuel prices, transportation costs, and food inflation. This sudden increase in living expenses. All these are caused by domestic economic challenges, including those worsened by subsidy removal (Evans, Nwaogwugwu, Vincent, & Taiwo, 2023). The immediate removal of subsidies without the provision of effective compensatory measures risks excessively affecting the poorest and most vulnerable sections of society (Evans et al., 2023). The lack of vigorous social protection mechanisms and a high Gini coefficient divide the public into two perceptions (Amadi, 2023).

The impact of removing energy subsidies on households is a perilous factor determining the acceptance of the subsidy reform by society and it is complex (Dube, 2003). Thus, how to evaluate the impact of subsidy removal on different households is of great importance to countries implementing the subsidy reform (Lin & Kuang, 2020). One of the main problems in the evaluation is that different households have different opinions about price variations caused by the reform. However, the Nigerian government claimed to provide safety nets and targeted beneficiaries' policies and other palliative measures. Yet, the level of poverty and income inequality among Nigerians continues to be increasing and widening precisely to those who are living in urban areas. The existence of high rate of poverty and rapid urbanisation have made Nigeria's cities households the most suffering category

people due to poor governance, inadequate infrastructure, high cost of transportation, accommodation, poor healthcare systems, and other living conditions, a massive number of underemployed and unemployed persons because of new city entrants are unfamiliar with the city; they are often semi-literate or illiterate with little or no skills readily needed in the city (Basey, 2021). These and others lead households to meet their financial family responsibilities. It's against this backdrop that this study intends to investigate the level at which this fuel subsidy removal affects households' spending in urban areas in Nigeria.

LITERATURE REVIEW

Several studies have been conducted on subsidies with different dimensions. Some studies focus on environment, agriculture, and energy, such as Aryanpur et al. (2022) and Jewell et al. (2018) integrated energy systems modelling. The study proposes that subsidy removal can lead to energy efficiency improvements, economic benefits, and emissions reduction. caution that emission reductions resulting from subsidy removal are limited, particularly in energy-exporting regions. Also, Labeaga, Labandeira, & López-Otero (2021) and Feng, Hubacek, Liu, Marchán, & Vogt-Schilb (2018) studied how subsidy removal and energy taxation can impact income distribution and poverty rates. These studies highlight the importance of considering the equity implications of subsidy removal policies. Bruin & Yakut (2023) examine how removing fossil fuel subsidies can reduce emissions and carbon taxation without making producers and consumers worse off. The study employed a dynamic inter temporal CGE model of Ireland. The results indicate that subsidy removal may lead to improved revenues and trade balance, lower debt, and negative employment impacts. Moreover, subsidy removal results impact specific sectors and households. Evans et al., (2023) highlight the significance of informed decision-making to mitigate negative short-term effects, harness long-term benefits and prevent the vulnerable part of the population.

Lin & Kuang, (2020) investigates the heterogeneous impacts of removing energy subsidies on households in China. The results show both direct and indirect effects. The direct effects show that the removal of energy subsidies has a greater negative impact on poor households than the rich households. At the same time, indirect effect results show that the lower the per capita disposable income, the higher the proportion of consumption to disposable income, and the greater the indirect impact of removing subsidies. The effect is not only related to household income but also to consumer goods. However, the indirect effects of removing subsidies on households vary across energy types. Removing electricity subsidies has the greatest impact on households, followed by transportation fuel and gas.

Harring, Jönsson, Matti, Mundaca, & Jagers (2023) analysed cross-national attitudes towards subsidy removal indicating that attitudes are influenced by socio-economic factors and the context of energy transition. Obinna (2020) assessed the impact of fuel subsidy removal on the socioeconomic characteristics of households in the Maiduguri metropolis, Borno State, Nigeria. The data used consisted of both primary and secondary, where about 370 samples were used, and the simple regression method was used in the analysis. The results indicate that family size, dependency ratio, sex, and education level positively and significantly impacted the household's livelihood in the study area. Also, descriptive analysis indicates that fuel subsidy removal has decreased the level of income and employment of the respondents. Also, subsidy removal reduced occupational prospects and decreased knowledge/skills. Also, Abd Obaida, Ibrahimb, & Udinc, (2020) investigate the moderating role of subsidy removal on SMEs' tax compliance behaviour, suggesting that subsidy removal can shape businesses' tax compliance practices.

Saboohi (2001) evaluated the impact of reducing energy subsidies on the living expenses of households in the Republic of Iran. The study used the Gini coefficient as a quantitative tool for estimation. The result indicates that changes in the living costs of households may

be decomposed into three main factors: direct energy costs of households, rises in supply cost of consumer goods and services, and improved management of money. Widodo et al., (2012) examine the impacts of fuel subsidy removal on the Indonesian economy. Social Accounting Matrix (SAM) was employed. The model shows that removing fuel subsidies affected the income distribution of households, firms, and governments. The study called the attention of the Indonesian government to avoid the total removal of the fuel subsidy, be transparent, and implement a "gradual" program of fuel subsidy reduction. Subsidy elimination might hold long-term benefits. However, it affects the financial resources of households, particularly those who are vulnerable and marginalised (Ude, 2023).

Antimiani et al., (2023) found that the EU climate strategy, which consists of the removal of fossil fuels subsidies, implementation of all instruments, and the reuse of revenues to nurture the technological transition of the energy system, is a win-win solution for a decarbonized and sustainable EU economy**.** Bhattacharyya & Ganguly, (2017) examines the effects of an increase in electricity tariffs with a change in the rate of structure and without changing the rate structure. They also investigated targeting household incomes, food inflation, and general inflation. The study found that removing cross-subsidies will increase inflation, particularly food inflation, causing a decline in household incomes in rural areas. While some studies, like Majekodunmi, (2013) and Chiluwa, (2012) investigate the social and political dimensions of subsidy removal.

From this discussion, we can understand that less attention was given to analysing the real impact of fuel subsidy removal on household spending.

METHODOLOGY

This study was designed based on cross-sectional data. The population comprises approximately 27000 Nigeria's General Household Survey (GHS) conducted by the

National Bureau of Statistics (NBS) in 2015-2016. Since the study was restricted to some selected cities in Northwest Nigeria. Norwest is one of the six geopolitical zones in Nigeria. The zone comprises six states: Kano, Kaduna, Kebbi, Katsina, Sokoto, Jigawa, and Zamfara. It is the largest populated state in the country. Economically, it is one of the leading poverty zones with over 45.5 million poor residents as it was ranked the poorest in the recent multidimensional poverty index released by the National Bureau of Statistics (NBS). Questionnaires were administered to about 220 households living in urban areas through a simple random sampling technique; only 180 were returned. Additionally, the study interviews responded to gather extra information. OLS model was used in the analysis. The model was written as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + ...+\beta_k X_k + U \qquad (1)$$

The dependent variable y and the independent variables X_1, X_2, ..., and X_k are observable random scalars. Meaning they can be observed in a random sample of the population. While β_0, β_1, β_2, and β_k are the parameters to be measured, and U is the error or unobservable random disturbance. The model was used in many studies (Hemming et al., 2018; Wang, Manjur, Kim, & Lee, 2019). Therefore, this study adopted and modified the OLS model used by Danlami (2014). $= \beta_0 + \Sigma_{j=1}^{1}\beta_j SDC_i + \Sigma_{j=1}^{2}\beta_j SOP_i + \Sigma_{j=1}^{3}\beta_j HHE_i + U \qquad (2)$

y represents the fuel subsidy removal, β is a vector of parameters that relate the independent variables with the dependent variable. SDC represents the socio-demographic characteristics profile of the household, which includes age, educational level, family size, household income (naira) and occupational type. SOP represents household's savings and occupational prospects after fuel subsidy removal. Then, HHE signifies household expenses on transportation, food, education, social recreation and entertainment, house renovation, vehicle maintenance, medical, dressings, and energy.

RESULTS AND DISCUSSIONS

The results were presented in both descriptive and regression results. The descriptive results are indicated in Table 1. This includes age, gender, income level, marital status, educational qualifications, occupational type, and family size.

Descriptive Result

From Table 1, about 87% of the households were male, and 76% of the respondents were married. This may likely have a connection to the bearing of family expenses and responsibilities. Also, the majority (67%) have dependents between 5-7. Though they have a burden of family expenses, only 11% have more than N 111,000 and above. This indicates their income level is less compared to a large number of dependents and family size. Moreover, the respondents indicate traders (32%) are more than farmers (17%). This was connected to the questionnaires that were distributed in the urban areas.

Moreover, Table 2 indicates how households found themselves after fuel subsidy removal. These were shown based on percentage. The majority of the respondents (93%) stated that their income earning has decreased, which means that about 95% of the respondents could no longer save part of their income. Equally, income spending has increased to about 72% due to the increase in the price of goods and services. This leads households to spend more of their income on transportation (98%), food (93%), energy (54%), and educational sectors (63%). Equally, the food sector consumed more due to an increase in the price of ingredients and raw foods. Medical expenses have also increased by 71%.

Regression result

The regression result in Table 3 indicates the estimated results of the effect of fuel subsidy removal on both socioeconomic demographics and household expenses. The aggregate income of the household was represented as the dependent variable. For the study to be

analysed appropriately, the conditions of OLS were tested, and the fulfilment of conditions of the estimation models was. The data was usually distributed using Cameron & Trivedi's decomposition of IM-test and Breusch-Pagan / Cook-Weisberg test for heteroscedasticity tests (indicated in Table 3). The t for heteroscedasticity was conducted to determine the constancy of random error variance. The result has shown there was a problem of heteroscedasticity in the data; as such, the robustness test through the use of the Stata command was used to remove the issues as suggested by scholars (Rosopa, Schaffer, & Schroeder, 2013; Williams, 2020).

Also, the multicollinearity test was conducted to measure the extent of the connection among the independent variables. This study's Vector Inflation Factor (VIF) was approximately 1.34, which did not exceed the value of 5, as indicated in Table 4. This shows, that there was an absence of a high correlation among the independent variables, and therefore 'β' (coefficient) is not inflated at all (Daoud, 2018; Kim, 2019). Therefore, all the variables were engaged for further analysis**.**

The OLS results of the three models are presented in Table 5. The coefficient was presented in each first column, the P-value was presented in astray, and the standard error was under the coefficient value inside the bracket. Moreover, the insignificance results of the variables were not reported in the Tables. Model, I estimated demographic variables. The result shows that an additional increase in household age by 1% (within a productive labour force) may lead to chances to overcome negative consequences of fuel subsidy removal by 2% due to the energetic and skillful stage of age to access various opportunities to earn more income. Also, an increase in education by 3% may likely increase the chances to improve his living conditions by 3%. This is attributed to the ability to be promoted in his place of work, chances to learn and analyse faster the condition finds himself, and a chance to switch to a better occupation to earn him more income. An increase in income earning by 1% may not overcome the challenges of fuel subsidy removal due to a fall in household

earnings by 5%. Also, an increase in household family size by 1% may lead to difficulties in financing the family needs by 2%. An increase in family expenses by 5% may result in an increase in financial suffering to finance family expenses by 28% due to fuel subsidy removal. This means that households could not sustain income to overcome the negative consequences of fuel subsidy removal.

Model II shows that the model's variable level of education is insignificant. At the same time, the remaining demographic variables were significant, as in the first model. Likewise, there is a decline in household savings and occupational chances. These attributed to high costs of living and transportation that led to the closure of many small and medium enterprises and reduced people movement.

Model III indicates an insignificant effect of age, level of education, family size, and occupational opportunities (non-oil occupation). While the level of income earning, family expenses, and savings are significant, as stated in model II. The model indicates that an increase in transportation cost by 3% may likely lead to a rise in the household's difficulty in total spending by 7% due to
fuel subsidy removal. An additional increase in food spending by 2% will affect the total household spending by 5%. This is attributed to the cost of transportation and an increase in foodstuff. Medical expenses may likely affect a household's total expenses, as an increase in medical costs by 2% may likely lead to a rise in total household expenses by 5%. Moreover, an increase in energy expenses by 2% may likely lead to an increase in energy expenses by 4% due to fuel subsidy removal. This is one of the costs households complained bitterly after transportation and food.

CONCLUSION

It has been reported that the removal of fuel subsidies in Nigeria has increased the level of poverty and widened income inequality among Nigerians, specifically urban people, who suffer the most. However, the government insists that the suffering will be short-term. However, the crying of households and economic paralysis due to the removal of fuel subsidies have become an issue. This study examines the effect of the removal subsidy on household expenditure in urban areas of Kano State. The analysis of results that comprise three models indicates that in the model I (demographic variables), age, level of education, level of income earning, family size, and nature of family expenses are clear demographic variables that affect a household's spending after the removal of fuel subsidy. Model II shows a decrease in a household's savings and occupational opportunities due to spending on other areas needed. Model III indicates transportation, foodstuff, medical, and energy expenses are the major areas in which households spend more. This study suggests the government should take drastic measures to address people's economic challenges. The current palliative measures provided include providing some amount of money to a few households and transportation could not absorb the financial and suffering shocks of households. The removal of fuel subsidies in Nigeria has negatively impacted the households' living conditions. Thus, there is a need to revisit the removal of fuel subsidies and provide an alternative policy to address the current sufferings of households. Further study can be conducted to explore the effect of removing fuel subsidies on Small and Medium Enterprises (SMEs).

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TABLES

Table 1. Socioeconomic Characteristics of Respondents n=180

Variables		Frequency	Percentage
Age	<24 years	11	06
	25- 35 years	32	18
	36-46 years	84	47
	47-57 years	30	16
	58 years and above	23	13
Gender	Male	157	87
	Female	23	13
Level of education	Primary	39	22
	Secondary	92	51
	Post-Secondary	26	14
	Informal	12	07
	None	11	06
Occupational type	Civil servants	28	16
	Farmers	31	17
	Traders	57	32
	Industrialist	17	09
	Artists	08	04
	Self-employed	18	10
	others	21	12
Family size	2-4	22	12
	5-7	91	51
	8-10	38	21
	11 and above	29	16
Dependents	2-4	32	18
	5-7	121	67
	8-10	19	11
	11 and above	08	4
Level of income (monthly)	<N30, 000	17	09
	31,000-50,000	42	23
	51,000-70,000	46	26
	71,000- 90,000	34	19
	91,000- 110,000	22	12
	111,000 and above	19	11

Table 2. Impact of Fuel Subsidy Removal on Household's Livelihood

Earning and income status	Frequency	Percentage (%)
Decrease in income level	168	93
Increase in income level	12	07
Decrease in savings	171	95
Increase in savings	09	05
Decline in occupational prospects	134	74
Increase in occupational prospects	46	26
Increase in family expenses	129	72
Items spend more after fuel removal subsidy:		
Transportation	176	98
Food	167	93
Education	113	63
Social recreation and entertainment	112	62
Religious	16	09
House renovation	46	26
Vehicle maintenance	34	19
Dressings	29	16
Medical	128	71
Energy (fuel, cooking gas, cooking coal etc	154	86

Table 3: Normality and Heteroskedasticity Test Result

Source	Chi2	Df	P
Heteroskedasticity	91.87	50	0.000
Normality:			
Skewness	**11.81**	**09**	**0.224**
Kurtosis	**02.01**	**01**	**0.157**
Total	105.68	60	0.000