

Fuel Subsidy and Public Sector Finance Management in Nigeria

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Abstract

This study examined the effect of fuel subsidy on public sector finance management in Nigeria. The objective was to study the effect of fuel subsidy on public sector finance indicators. Time series data was sourced from Central Bank of Nigeria Statistical Bulletin from 2000-2022. Government revenue, infrastructural finance, exchange rate variation, fiscal deficit and public debt were modeled as the function of amount paid for fuel subsidy and average price of fuel. Ordinary Least Square (OLS), R-square, adjusted R-square, regression coefficient, Durbin Watson, F-statistic and f-probability were used to analyse the effect of fuel subsidy on public sector finance management. The study conclude that fuel subsidy payment have negative but no significant effect on government revenue while average price of fuel have positive but no significant effect on government revenue, that fuel subsidy payment have positive but no significant effect on infrastructural financing while average price of fuel have negative but no significant effect on infrastructural financing, that fuel subsidy payment have positive but no significant effect on naira exchange rate variation while average price of fuel have positive but no significant effect on naira exchange rate variation, that fuel subsidy payment have negative and significant effect on Nigeria fiscal deficit while average price of fuel have positive and significant effect on Nigeria fiscal deficit, that fuel subsidy payment have positive and significant effect on Nigeria public debt while average price of fuel have positive and significant effect on Nigeria public debt over the periods covered in this study. the study recommend that Nigerian government should build more refineries through PPP while effort should also be made to ensure proper maintenance, the strengthening of the fight against corruption and the establishment of a regulatory framework to protect citizens as necessary measures to increased capacity utilization on the existing refineries to stem the tide of petroleum products importation to improve the poor state of Nigeria's economy and society. This will increase revenue through tax and other sources of revenues. Government should create an enabling environment to engender private investor's for the purpose of improving the local refining capacity to meet the ever increasing local demand of petroleum products and indeed for exportation purpose. There is need to use the oil windfall proceeds and the savings

realized by the federal government and from the withdrawal of subsidy to be channeled towards fixing the refineries, building new ones or upgrading and developing of infrastructure within the polity in areas such as water ways, rail and mass transit system, thus providing cheaper alternative transportation methods.

Keywords: *Fuel Subsidy, Public Sector, Financial Management*

INTRODUCTION

Public sector investment is a form of investment that is not profit driven. It is investment undertaken by the government at all levels for the social and economic good of the citizens of a country, state or region. Such investments include building of roads irrigation projects, public parks, electricity installation (Okereke, 2007). Public investment which also means public sector investment primarily entails public or government expenditures. Public expenditure is an important instrument for government to control an economy. It plays an important role in the functioning of an economy whether developed, underdeveloped or developing. From the Keynesian prospective government intervention is justify in financing of direct investment which the private sector would not provide an adequate quantity, the efficient supply of certain public services which are necessary to ensure the basic conditions to display the economic activities and long-term investment and the financing of public activities so as to minimize the distortion from the market system (Usman & Nurudeen, 2010).

Public sector investment according to Okoro (2013) was born out of revenue allocation which refers to the redistribution of fiscal capacity between the various levels of government or the disposition of responsibilities between tiers of government. Broadly speaking, public sector investment (expenditure) affects aggregate resources used together with monetary and exchange rate. Thus, public expenditure refers to the value of goods and services provided through the public sector. According to Nnamocha (2002) public investment in the Nigerian context includes all expenditures on goods and services, transfers and capital expenditure by the Nigerian government. This limits government expenditure then to government expenditure on goods and services, and transfers to the non-government sector of the economy. It is the totality of the final public sector expenditure for whatever purposes. Capital investment no doubt, is an important aspect of public sector investment that transforms and engenders development of a nation. Public sector investment began to be more prominent in the management of the economy following the word of Meynard Keynes. Thus, in Nigeria, governments over the years embark on diverse macroeconomic policies options to direct and redirect the economy on the path of growth and development.

Public sector investment comprises the summation of federal, states and local government spending as well as those of their agencies and financial transfers to the parastatals at the three tiers of governments. The main purpose of public sector investment is to enhance the socio-economic wellbeing of the citizens by way of improving the standard and quality of their living; such as the provision of quality education, health care services, proper housing, social security and amenities and execution of economic development programmes in other to create job opportunities. Public sector investment in the area of human capital development such as

health, education will no doubt reduce poverty and increase the standard of living (Nwinee & Torbira, 2012).

The history of fuel subsidies could be traced to 1970s and became institutionalized in 1977, following the promulgation of the Price Control Act which made it illegal for some products (including petrol) to be sold above the regulated price. While the concept of subsidy itself is noble, its administration in Nigeria has been plagued with serious allegations of corruption and mismanagement. Thirteen years after diesel was deregulated, kerosene subsidy was removed in 2016. However, the subsidy on petroleum motor spirit has proven to be the biggest challenge to the managers of the Nigerian economy. 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, there is a need to have a close look at this scheme. The government subsequently reinstated fuel subsidy in 2012 due to the massive protests. Since then, fuel subsidy payment in Nigeria has grown enormously. In 2022, fuel subsidy reached ₦4 trillion (US\$6.088 billion) which amounted to 23 percent of the national budget of ₦17.126 trillion (US\$25.87 billion) in 2022. As a result, Nigeria could no longer sustain fuel subsidy in 2023, and the government announced that fuel subsidy would be removed in June 2023. Fuel subsidy is a government discount on the market price of fossil fuel to make consumers pay less than the prevailing market price of fuel (Ovaga & Okechukwu, 2022). When subsidies are in place, consumers would pay below the market price per litre of the petroleum product. Globally, there are debates about fuel subsidy because of its huge amount and its effect on citizens' welfare and the fiscal health of a nation. According to a report, households in the bottom 40% of the income distribution account for less than 3% of all fuel purchases. Furthermore, it is reported that three-quarters of all fuel sold in Nigeria is consumed by private firms, public transportation services, government agencies, and other businesses. Most vehicles used for carrying large numbers of people (such as molue) and goods are diesel powered which is already deregulated. Also, Household Kerosene which is mostly used by the poor is no longer subsidised, meaning that the poor are already to a large extent paying market prices for their fuel. This effectively means that the government is subsidising mostly those who can afford fuel (PMS) at market rates and not the poorest of the poor who need subsidy. This is one of the major problems with the way fuel subsidy is being implemented in Nigeria. For the benefit of subsidy to reach its intended recipients, the current structure will need to be reviewed and creatively restructured.

The 2023 removal of the fuel subsidy in Nigeria marks a pivotal moment in the nation's economic, social, and environmental trajectory. This decisive policy shift carries with it a multitude of implications that warrant rigorous investigation to comprehend its far-reaching consequences. The core problem at the heart of this study lies in uncovering the intricate web of impacts positive, negative, direct, and indirect that arises from the subsidy removal and examining their ramifications for both the Nigerian economy and society. The subsidy removal, while driven by the intent to align with global trends of fossil fuel subsidy reduction and enhance fiscal sustainability (Al Jazeera, 2023), presents a host of challenges. Foremost among these challenges is the potential exacerbation of socio-economic inequality, given that subsidy

removal can lead to increased fuel prices and a subsequent rise in the cost of living. This predicament echoes the concern raised by Ude (2023) emphasizing that while subsidy elimination might hold long-term benefits, it can strain the financial resources of households, particularly those already marginalized.

In the literature, several studies have probed into the impacts of subsidy removal (e.g., Nwafor et al. 2006; Osunmuyiwa & Kalfagianni, 2016; Greve & Lay, 2023; and Haring et al., 2023). In the context of assessing the impact of subsidy removal on the poor, Nwafor, Ogujiuba, and Asogwa (2006) employed a computable general equilibrium analysis. Their study digs into the question of whether subsidy removal disproportionately affects the economically vulnerable segments of the population. This research illuminates the intricate balance between fiscal policy, subsidy removal, and social equity, indicating that while subsidy removal can have fiscal implications, it is crucial to consider its distributive effects. Also, Osunmuyiwa and Kalfagianni (2017) delved into the broader energy context, examining whether Nigeria's fuel subsidy reforms can act as a catalyst for energy transitions. Their research underscored that subsidy removal can lead to shifts in energy consumption patterns, affecting government revenue and expenditures through changes in the energy sector's dynamics. By exploring the complex relationship between subsidy removal, energy transitions, and fiscal dynamics, this study emphasizes the need for a comprehensive understanding of how policy changes reverberate throughout the economy. While these previous studies have shed light on the economic and environmental consequences of various subsidy removal efforts, there is limited exploration of the effects of the 2023 subsidy removal in Nigeria. Understanding these potential challenges, opportunities, and the need for holistic approaches is crucial for devising effective strategies that garner public support, mitigate potential social unrest, and ensure the long-term sustainability of the policy change.

However, previous attempts to remove the PMS subsidy had mostly been accompanied by hoarding and general scarcity which invariably amplified the impact of the price increase beyond just the subsidy removal. Fuel subsidy payment diverts part of the resource for developmental purposes towards consumption. Hence, the resources that should have gone into infrastructure, education, health, and security with positive externalities are going into consumption. The ever-growing fuel subsidy bills continue to hit deep into government resources. With revenue shortage, fuel subsidy payment means the government will need to borrow to invest in order aspects of governance. By nature, subsidy deviates the prices from market clearing prices. Coupled with the opaqueness in the process, the activities in the market are often disrupted as players wait on the government for clearance. The product is often unavailable, and people often buy at higher prices than the market price.

The study makes significant contributions to our understanding of the multifaceted implications of fuel subsidy removal. The study's holistic analysis and nuanced insights into the diverse dimensions of subsidy removal offer a comprehensive foundation for informed decision-making, fostering equitable economic growth, social welfare, and environmental sustainability. By providing a comprehensive analysis across economic, social, and environmental dimensions, the study equips policymakers with a nuanced perspective to navigate the complexities of subsidy reform. The findings offer valuable insights into potential challenges, opportunities, and the need for holistic approaches that balance economic

development, social welfare, and environmental stewardship. From the above, this study examined the effect of fuel subsidy on public investment in Nigeria

LITERATURE REVIEW

Fuel Subsidy

A subsidy is defined as any measure that keeps prices for a good or product below market level for consumers or producers. Subsidies can take different forms like grants, tax reduction or exemption and price control (Alozie, 2009). Oxford Advanced Learners Dictionary (2001) defined subsidy as money paid by a government or an organization to reduce the cost of service or that of producing goods so that their prices can be kept low. In addition, Bakare (2012) pointed out that, to subsidize is to sell a product below the cost of production. Thus, when we talk of fuel subsidy within the Nigerian context it means to sell premium motor spirit below the cost of importation. January 1, 2012 cannot be seen nor described as the best New Year's gift to Nigerians when fuel subsidy on Premium Motor Spirit (Fuel) was removed, courtesy of the new policy announced by the Petroleum Product Pricing Regulatory agency (PPPRA). As a matter of fact, the problem of fuel subsidy removal or sustaining subsidy regime had featured as a dominant topic for public debate since January 1, 2012 till date Fuel subsidy, which was initially.

The rationale behind fuel subsidy removal according to some government officials is that, the cost of the fuel subsidy has continued to grow exponentially. This is partly due to the rising cost of fuel which meant that the government had to spend even more to keep domestic prices low and also due to Nigeria's increasing population which resulted in increased fuel consumption; together these pressures made the cost of the fuel subsidy unsustainable. The price of crude oil increased from 30.4 dollars per barrel in 2000 to 94.9 in 2010 over the same period Nigeria's population increased from about 123 million to 158 million. By 2011, the fuel subsidy accounted for 30 percent of the Nigerian government's expenditure and it was about 4 percent of GDP and 118 percent of the capital budget. Nigeria's fuel subsidy continues to crowd out other development spending. By comparison, Nigeria's total allocation for education is about \$2.2 billion and it is not much higher for health care.

Infant mortality in Nigeria remains unacceptably high at 90.4 per 1,000 live births. In 2004, it was estimated that only 15 percent of the country's roads were paved. The \$8 billion from the fuel subsidy could help to address some of these issues (Bakare, 2012). In addition, keeping the domestic price of oil artificially low with the fuel subsidy has discouraged additional investment in Nigeria's oil sector. This is especially problematic given that the oil sector is the lifeblood of the Nigerian economy. Since 2000, Nigeria has issued at least 20 refinery licenses to private companies.

The decision of the government to eliminate subsidy sparked massive protest and unrest across the country as fuel costs was skyrocketed officially from 67 naira per litre to 141 naira per litre. Lagos, the second most populated city in Africa, was a characteristic ghost town as a result of this ugly experience of Jan. 1, 2012 (Onyishi, Eme & Emeh, 2012). In 2011 alone, Nigeria's fuel subsidy cost the country an estimated \$8 billion and the price tag for 2012 was expected to be even greater. In 2010, Nigeria earned \$59 billion from oil exports (Donovan, 2011). According to Zainab Ahmed, the Executive Secretary, Nigerian Extractive Industries Transparency Initiative (NEITI), as reported by Salau (2015), the huge amount recovered from oil exports was good enough to repair the faulty refineries and build new ones.

She added that the federal government has spent 4.8 trillion naira in the last seven years as subsidy on petroleum products imported into the country and also from the last NEITI Audit Report (2012), a total of 1,355 trillion naira was processed for payment as subsidy. Out of this amount, 690 billion naira was actually paid, putting a debt burden of 655 billion naira on the federal government. The breakdown shows that 116,554 billion naira was paid from 2006 to 2008, 3 trillion naira from 2009 to 2011 and 690 billion Naira in 2012. NEITI believes that the amount paid as subsidy is more than enough to repair refineries or build new refineries which could ordinarily reduce the barrels and cost of barrels refined outside and possibly preclude the marketers from importing refined products, yet Nigeria has continued to rely on refined fuel imports to meet more than 70 percent of her domestic needs as she refunds importers a third of the cost of supply.

This attitude of paying subsidies discourages private investors who obtained refining licenses because of concern that accrued costs may not be recovered without market-determined fuel prices. Keeping also the domestic price of oil artificially low with the fuel subsidy has discouraged additional investments in Nigeria's oil sector. Since 2000, Nigeria has issued at least 20 refinery licenses to private companies but, not one refinery has been built because investors could not recoup gains for their investments under the artificially low price structure. Furthermore, subsidy has resulted in the diversion of scarce public resources away from investment in critical infrastructures, while putting pressure on government resources and lastly, the huge price disparity caused by the fuel sub has encouraged smuggling of petroleum products across the borders to neighboring countries, where prices are much higher than Nigeria. Hence, a study such as this is therefore motivated to draw a finding on the impact of fuel subsidy on the Nigerian economy.

Fuel Subsidy and Infrastructure Development

A positive macroeconomic implication of the removal of fuel subsidy in Nigeria is that the funds that would have been used for fuel subsidy payment could be channelled to the development of critical public infrastructure in Nigeria. There is a consensus among academic economists that the funds used for subsidy payments can be channelled to public infrastructure spending (Bazilian and Onyeji, 2012; Majekodunmi, 2013). Prior to the removal of fuel subsidy, Nigeria did not have sufficient money to fund the development of critical public infrastructure (see figure 1). The lack of sufficient funds led the government to incur huge debts to finance the budget. However, with the removal of fuel subsidy in 2023, the government could use these funds and channel them appropriately for the purpose of developing critical public infrastructure in Nigeria. This outcome can only occur if the government is transparent, honest and is held to account, to ensure that the saved funds from fuel subsidy removal are channelled to the development of critical public infrastructure.

Other studies suggest that the savings from fuel subsidy removal could be channelled for the development of other sectors of the economy (Gidigbi & Bello, 2020; Ogunode, Ahmed and Olugbenga, 2023). In addition to developing Nigeria's critical public infrastructure, the removal of fuel subsidy can free up financial resources for the development of other sectors that require significant government intervention and funding. The funds that would have been used for fuel subsidy payment could be channelled to sectors such as agriculture, healthcare, tourism, education and to fund the implementation of the Student Loan Act. Prior to the removal of fuel subsidy, many sectors of the economy did not perform optimally due to weak

private sector investment and an abysmal level of public expenditure into those sectors due to insufficient government revenue. With the removal of fuel subsidy, it is hoped that the Federal Government would channel the freed-up resources into other sectors that need government funding.

The removal of subsidies has been a subject of considerable debate due to its potential economic implications, particularly concerning government budgets and fiscal dynamics. In Nigeria, this has been a salient issue, as highlighted in recent research. Akinyemi et al. (2017) conducted a simulation study using a dynamic Computable General Equilibrium (CGE) approach to analyse the impact of fuel subsidy removal on the agricultural sector. Their findings revealed that subsidy removal could have far-reaching effects on various sectors, with repercussions for government revenue and expenditure patterns. This study emphasizes the importance of understanding the intricate interplay between subsidy removal, sectoral performance, and fiscal dynamics. The economic implications of subsidy removal for government budgets and fiscal dynamics are multifaceted. On the one hand, subsidy removal could lead to increased government revenue if the savings from subsidy elimination are allocated efficiently.

Public Investment

Investment has been defined as an asset or item obtained with the aim of generating income or appreciation. Also is the procurement of goods that are not consumed today but used in the future to generate wealth. Ajayi (2017) also defined investment as monetary asset acquired with the idea that the asset will provide income in the future or will be sold later at a higher price for a profit. He also opined that public investment involves funding and allocating resources for projects and services that the private sector cannot effectively deliver on its own. These projects are usually large in scale and the private sector does not get involved in most of them. Hoag and Hoag (2016) also emphasized that public investment is the key channel through which the government development goals can be met which will help grow the economy. In essence it involves government spending today in order to grow the economy. UN (2019) defined public investment to any expenditure whose productive life expands into the future. Hence, much public investment takes the form of infrastructural outlays for road and rail networks, ports, bridges, energy -generating plants, telecommunications structures, water and sanitation networks, government buildings which can have a productive life of several decades. Such outlays range from small, one -off, limited infrastructural projects that can be implemented within a year to more complex projects that take place over decades.

Human Capital Development

Human capital development is any activity which improves the quality of the worker. Therefore, training is an important component of human capital investment. This refers to the knowledge and training required and undergone by a person that increases his or her capabilities in performing activities of economic values (Zehri, Abdelbaki & Bouabdellah, 2012). Human capital investments involve an initial cost such as tuition and training course fees, forgone earnings while at school and reduced wages and productivity during the training period through which the individual or firm hopes to gain a return in future such as increased

earnings or higher firm productivity. As with investments in physical capital, this human capital investment will only be undertaken by the wealth maximizing individual or firm if the expected return from the investment or net internal rate of return is greater than the market rate of interest

Public Investment on Education

Human capital investment in education and health enhanced human capital development in developing countries like Nigeria. The critical elements of human capital development are predicated on investment in education and health sectors. Investment in education is the hunger that creates new skills, knowledge, and inducement which drive economic expansion through making individuals more proficient and generate a productive economy. Expenditure on education creates new technology, invention and innovation leading to wealth formation and human capital development.

Oluwakemi et al. (2018) stated that public expenditure on health, education, social community services, agriculture, transfer services and research and development accelerate human capital development in Nigeria. Edeme et al. (2017) noted that an increase in public expenditure improves the level of human capital development. This led to the fact that advancement in human capital development leads to a healthier life and greater life expectancy. Public expenditure on education and health sectors help to improve life, reduce poverty and increase employability and productivity leading to an increase in human capital development. Schultz (1961), asserts that investments in human capital such as expenditures on education and health account for most of the rise in real earnings per workers.

Public Health Expenditure

According to WHO (2010), public health expenditure consists of recurrent and capital expenditure from government budgets, external borrowings and grants (including donations from global agencies and NGOs), as well as obligatory health insurance finances. History is a witness that fundamental breakthroughs in public health, diseases control and enhanced nutritional intake have given rise to great takeoffs in economic growth. Nigeria's health transformation agenda is well expressed in the National Economic Empowerment and Development Strategy (NEEDS), engineered by the National Planning Commission (NPC, 2004). The aim of this health restructuring is to advance the health condition of Nigerians in order to achieve an internationally satisfactory rank of poverty reduction. Aranda (2010) stated that the major reason for health expenditure is the expectation of improved health status, and that health position is governed by health investment. The demand for health care is derived from the demand for health itself. Both health care spending and enhanced health conditions are means to an end; the end is improved output and nationwide growth.

Human Capital Development

Human capital has been renowned internationally as one of the foremost factors that is accountable for the wealth of a nation. According to Smith (1776), he underlined the significance of "the acquired and valuable abilities of all the residents or members of the public in their works." Romele (2013) defined human capital as the entirety of knowledge and skills which have been accumulated throughout life, through education, training, and work experience and which influence labor productivity. Onakoya (2013) as cited in Adeyemi & Ogunsola (2016) described human capital as a vital issue used in converting all resources to benefit mankind. Human capital is represented by the aggregation of investment in activities, such

aseducation, health, on-the-job training and relocation that enhance an individual's output in the labor marketplace. Frank & Bemanke (2007) as cited in OECD (2009) defines that human capital is 'a combination of factors such as education, experience, training, intellect, energy, work habits, steadfastness, and inventiveness that influence the worth of a worker's marginal product. Hence, human capital refers to the method of acquiring and growing the quantity of citizens who have the skills, good health, schooling and experience that are vital for fiscal growth.

Human Development Index

Nzotta & Okereke (2009) stated that human development index (HDI) is a composite index which includes health, education, income live hood, security and other indicators, in other words human development, health life, knowledge and decent standard of living. Nseabasi(2012) stated that the chief aim of human development is to provide nations with complete measure of environment they offer for their citizens in terms of opportunities for personnel accomplishment. Ogen (2003) noted that the higher the human development index the better the conditions the company created for its citizens to live and work. Lawal (1997) is of the review that the main idea of human development index is as follows: people are the real value of any nation, and the richness of human life is what every nation's government should worry about.

Human Development Index measures long-term progress in three basic areas of human development namely: access to safe and healthy life, access to education, and a decent living standard (United Nations Development Programme (UNDP), 2014). Human Development Index (HDI) is a move towards a more holistic view of development *which* had previously focused more on per capita income. United Nation's Human Development released Human Development Index (HDI) first as part of her 1990 Report. The report stated that "development is much more than just the expansion of income and wealth; it should be a process of enlarging people's choices" (UNDP, 1990).

Human Capital Development in Nigeria

The trend now is that human capital development is measured in terms of composite indices of development which takes account of different aspects of development. As earlier pointed out, several such indices have been developed and include –physical quality of life index (PQLI), Human Development Index (HDI), Human Poverty Index (HPI), Coefficient of Variation, Theil Index, Kuznets Hypothesis, Gini-Coefficient etc. Measuring human development index is a concept that is complex with many facets. This therefore means that any index on human development incorporates a range of indicators to address the complexities. However, the new acceptable and widely used approach of human development is the Human Development Index (HDI).

The index captures health, education and standard of living with many sub-variables such as life expectancy, adult literacy rate, gross enrolment ratio, and Gross Domestic Product Per capita income. According to Kairo et al ((2017), considering that the HDI includes quality aspects, the approach of HDI focuses on all of individuals' life quality and economic situation. In Nigeria, statistics have shown that key human capital indicators are not only poor when

compared to some other developed and developing economies in the world, but are deteriorating in some cases. In a study by UNDP (2013) and Ese et al (2014), a comparison between Nigeria and selected countries that have attained the 20th position in the list of top economies in the world since 2009, shows that as at 2010, net primary school enrolment in Belgium, Poland, Saudi Arabia and Sweden range between 93 and 99%. Nigeria's rate of 57.6% in 2010 was actually a fall from its 2008 value of 58.8%. At 10,545,105, Nigeria is one of the countries with the highest number of children out of primary school in the world (UNDP, 2013; Ese et al 2014).

Multiple Theories

Analysing of subsidies involves the application of diverse theoretical frameworks that encompass economic, political, and social dimensions. These frameworks provide valuable insights into the complexities of subsidy removal, shedding light on both anticipated and unintended consequences. Economic theories play a crucial role in understanding subsidy removal's economic implications. One such framework is the Rational Choice Theory, which posits that individuals act to maximize their self-interests within constraints (Van Valkengoed & Van der Werff, 2022). In the context of subsidy removal, this theory can explain how consumers react to price increases by altering their consumption patterns. Data from Nigeria's 2012 subsidy removal protests reveals shifts in consumer behavior due to sudden fuel price hikes (Apeloko & Olajide, 2012). Political theories offer insights into how government decisions on subsidy removal are influenced by power dynamics and public opinion. The Public Choice Theory argues that political actors aim to maximize their interests, leading to policies that may not always align with the public's welfare (Obasi et al., 2017).

This theory can explain the rivalry between citizens' interests and government decisions in both the 2012 and 2023 cases of subsidy removal in Nigeria. Social theories illuminate the societal repercussions of subsidy removal. The Theory of Social Conflict explains how societal groups with differing interests may engage in conflict when policies threaten their well-being (Apeloko & Olajide, 2012). The Theory provides a lens through which an analysis of the tensions and clashes that arise when policies like subsidy removal have differential impacts on various societal groups can be carried out. It underscores the importance of considering not only the economic implications of such policies but also their social and distributional effects. By understanding these dynamics, policymakers can anticipate and address potential conflicts, striving for policy solutions that are more equitable and socially acceptable.

Empirical Review

Ozili and Obiora (2023) offered some insights on the implications of the 2023 fuel subsidy removal in Nigeria. Using the discourse analysis methodology, we offer some insight into the macroeconomic and microeconomic implications of the 2023 fuel subsidy removal in Nigeria. The positive implications are that fuel subsidy removal would 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. The negative implications are that fuel subsidy removal may decrease economic growth in the short term, increase inflation, increase poverty, increase fuel

smuggling, increase crime, increase the prices of petroleum products and loss of jobs in the informal sector. It is recommended that the government should carefully evaluate the impact of fuel subsidy removal on individuals and businesses and provide palliatives and other economic relief programs to cushion the adverse effect on individuals and firms.

Harring et al. (2023) analysed cross-country attitudes towards fossil fuel subsidy removal and found that the public would have positive attitudes towards subsidy removal if there were optimal use of the saved fiscal revenues. In Malaysia, Chatri (2014) assessed the economy-wide effect of gas subsidy removal in the power sector and found that gas subsidy reduction led to increase in the price of electricity followed by a decline in demand for electricity by other economic sectors and a decrease in gross domestic product. Antimiani et al. (2023) showed that fossil fuels are still highly subsidised in EU countries, and there are deliberations to remove fossil fuel subsidies and reuse the revenues to foster the technological transition to a sustainable and decarbonised EU economy. Sampedro et al. (2017) also argued that fossil fuel subsidy is a barrier to tackling climate change in the EU because it diverts investment away from clean energy sources, and fossil fuel subsidies amounted to US\$233 billion in 2014 which is four times the amount of subsidies allocated to promote renewable energy. However, they showed that fuel subsidy removal would give rise to only a small reduction in CO₂ because people would switch from fuel to coal and gas. Ozili and Obiora (2023) Implications of fuel subsidy removal on the Nigerian economy to coal and gas. Nowag et al. (2021) suggest the use of state aid to phase out fossil fuel subsidies in the EU. Erickson et al. (2017) showed that the removal of tax incentives and other fossil fuel support policies could hasten the attainment of the G20 climate commitments. Lin and Li (2012) examined the case of China and showed that fuel subsidy removal would generate negative externalities in China but would generate positive externalities to other world regions without subsidy removal. In a related study, Ouyang, and Lin (2014) showed that the economic benefits of renewable energy subsidies were lower than the economic benefits of fossil fuel subsidies in China.

Aminu and Ramatu (2022) examined the nature and politics of oil subsidy in Nigeria with the aim of identifying the forces behind subsidy removal. To scientifically analyze the issues raised, the study utilized political economy and public choice theories, an eclectic approach. The paper argued that the removal of fuel subsidy by the Federal Government in 2012 violates the fiduciary responsibility of the State as exposed in the preamble to the 1999 constitution. It showcases the insensitivity of the government to the social concerns of the citizenry and attempt by the oil cabal to privatize Nigeria, given the catalogue of challenges facing fuel subsidy. The paper concludes that, unless the government predicates its legitimacy on the peoples' support and obedience derived from better socio-economic performance, the country might experience another democratic reversal and recommends among others, that political institutions and institutional rules should be strengthened, accountable and made autonomous of cabals and individuals who might want to manipulate them for group or personal interests.

Evans, Nwaogwugwu, Vincent, Wale-Awe, Mesagan and Ojapinwa, (2023) highlighted 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.

Aryanpur et al. (2022) and Jewell et al. (2018) focused on the environmental and economic implications of subsidy removal. Integrated energy systems modeling suggests that subsidy removal can lead to emissions reduction, energy efficiency improvements, and economic benefits. However, Jewell et al. (2018) cautioned that emission reductions resulting from subsidy removal are limited, particularly in energy-exporting regions. The distributional effects of subsidy removal are another recurring theme. Bhattacharyya and Ganguly (2017) highlighted how cross subsidy removal in electricity pricing can influence consumption patterns, energy efficiency, and distributional equity. Labeaga et al. (2021) and Feng et al. (2018) explored how energy taxation and subsidy removal can impact poverty rates and income distribution, respectively. These studies underline the importance of considering the equity implications of subsidy removal policies. Some studies, like Majekodunmi (2013) and Chilwa (2015) delved into the social and political dimensions of subsidy removal. Majekodunmi (2013) highlighted the political economy surrounding fuel subsidy removal, including public protests and government decisions. On the other hand, Chilwa (2015) focused on the role of social media in shaping public discourse during fuel subsidy removal protests, illustrating the interplay between technology and social movements. The theme of public acceptance and behavioural aspects is explored by studies such as Harring et al. (2023) and Abd Obaida et al. (2020). Harring et al. (2023) analysed cross-national attitudes towards subsidy removal, revealing that attitudes are influenced by socio-economic factors and the energy transition context.

Abd Obaida et al. (2020) investigated the moderating role of subsidy removal on SMEs' tax compliance behaviour, suggesting that subsidy removal can shape businesses' tax compliance practices. In a nutshell, the literature demonstrates the multifaceted nature of the effects of subsidy removal, spanning environmental, economic, distributional, social, and behavioural dimensions. The studies collectively provide insights into the complexities surrounding subsidy removal policies and underscore the importance of holistic analyses when considering their implementation. While these previous studies have shed light on the economic and environmental consequences of various subsidy removals, there appears to be a limited exploration on the effect of the fuel subsidy removal on public sector finance. The current study fills the gap.

METHODOLOGY

This study is design to examine the effect of fuel subsidy on public sector finance in Nigeria. The research design adopted in this study is the descriptive research method which is largely quasi-experimental. This study collected data from secondary sources. The instrument utilized for the collection of secondary data is documentation. Documentary data were collected via Central Bank of Nigeria (CBN) Statistical bulletin. The study utilizes the secondary source because it provides a basis for purposeful research work and also gives a direction for the research work.

Model Specification

$$\text{PIRI} = \beta_0 + \beta_1 \text{FS} + \mu \quad (1)$$

$$\text{PIHC} = \beta_0 + \beta_1 \text{FS} + \mu \quad (2)$$

$$\text{PIH} = \beta_0 + \beta_1 \text{FS} + \mu \quad (3)$$

$$\text{PIA} = \beta_0 + \beta_1 \text{FS} + \mu \quad (4)$$

Where

FS = Fuel subsidy paid as percentage of gross domestic product

PIRI = Public investment on road infrastructural development

PIHC = Public investment on human capital development

PIH = Public investment on health sector development

PIA = Public investment on Administration as capital expenditure to gross domestic product.

β_0 = Regression Intercept

$\beta_1 - \beta_4$ = Coefficient of the independent variables to the Dependent variable

μ = Error term

Data Analysis Procedure

The main tool of analysis is the Ordinary Least Squares (OLS) using the multiple regression method for a period of 22 years, annual data covering 2000- 2022. Statistical evaluation of the global utility of the analytical model, so as to determine the reliability of the results obtained were carried out using the coefficient of correlation (r) of the regression, the coefficient of determination (r^2), the student T-test and F-test.

Justification of Methods and Techniques the technique deployed for this study is based on the parametric tool. A multiple regression tool has been preferred because it assists the researcher in ascertaining the relationship between the fuel subsidy and public sector finance has been used as indices of economic growth significantly influenced by other independent variables. Overall the technique is appropriate for achieving the set objectives of the study. One of the merits of the model is because it produces optimal results in predicting numeric output when properly structured.

Table 1: Subsidy and Government Revenue

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FPS	-0.011140	0.009269	-1.201799	0.2385
APF	0.002868	0.001624	1.766558	0.0871
C	7.557944	0.454276	16.63732	0.0000
R-squared	0.704020	Mean dependent var		7.696314
Adjusted R-squared	0.626989	S.D. dependent var		0.967573
S.E. of regression	0.904053	Akaike info criterion		2.743352
Sum squared resid	25.33665	Schwarz criterion		2.921106
Log likelihood	-44.00866	Hannan-Quinn criter.		2.804713
F-statistic	5.648564	Durbin-Watson stat		2.069491
Prob(F-statistic)	0.000258			

Source: Extract from E-view 9.0

Analysis of Results

F-Test: The F-calculated value is 5.648564 from the regression results while the P-value of F-statistic are 0.000258 at 5% level of significance, considering the P-value, the chosen level of significance $\alpha = 0.05$ [5%] is less than the P-value of F-statistic. It is concluded that the regression model is statistically significant. This means that the joint influence of the explanatory variables on the dependent variable is statistically significant.

Coefficient of Multiple Determinations (R^2): The computed coefficient of multiple determinations of 0.626989 from the model implies that 62.6 percent of the total variations in the government revenue accounted for, by the explanatory variables while the remainder is attributed to variable that is influenced by other factors not included in the regression model.

Durbin Watson statistics (DW): The computed DW is 2.069491 from the results; show that at 5% level of significance. The value of computed DW is greater than the lower limit. Therefore, there is no evidence of positive first order serial correlation.

Regression Coefficient and T-Statistics: The t-statistics shows that fuel subsidy payment have negative but no significant effect on government revenue while average price of fuel have positive but no significant effect on government revenue over the periods covered in this study.

Table 2: Subsidy and Infrastructure Financing

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FPS	0.003852	0.009379	0.410743	0.6843
APF	-6.45E-06	0.001667	-0.003867	0.9969
C	0.159821	0.468966	0.340794	0.7357
R-squared	0.543645	Mean dependent var		0.028029
Adjusted R-squared	0.480699	S.D. dependent var		1.240948
S.E. of regression	0.894258	Akaike info criterion		2.749409
Sum squared resid	23.19125	Schwarz criterion		2.973874
Log likelihood	-41.73996	Hannan-Quinn criter.		2.825958
F-statistic	8.636744	Durbin-Watson stat		2.097348
Prob(F-statistic)	0.000102			

Source: Extract from E-view 9.0

Analysis of Results

F-Test: The F-calculated value is 8.636744 from the regression results while the P-value of F-statistic are 0.000102 at 5% level of significance, considering the P-value, the chosen level of significance $\alpha = 0.05$ [5%] is less than the P-value of F-statistic. It is concluded that the regression model is statistically significant. This means that the joint influence of the explanatory variables on the dependent variable is statistically significant.

Coefficient of Multiple Determinations (R^2): The computed coefficient of multiple determinations of 0.480699 from the model implies that 48 percent of the total variations in the infrastructural financing accounted for, by the explanatory variables while the remainder is attributed to variable that is influenced by other factors not included in the regression model.

Durbin Watson statistics (DW): The computed DW is 2.097348 from the results; show that at 5% level of significance. The value of computed DW is greater than the lower limit. Therefore, there is no evidence of positive first order serial correlation.

Regression Coefficient and T-Statistics: The t-statistics shows that fuel subsidy payment have positive but no significant effect on infrastructural financing while average price of fuel have negative but no significant effect on infrastructural financing over the periods covered in this study.

Table 3: Subsidy and Exchange Rate Variation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FPS	0.370583	0.186480	1.987253	0.0643
APF	0.185003	0.100990	1.831890	0.0856
C	1.265961	1.437481	0.880680	0.3915
R-squared	0.935668	Mean dependent var		0.324400
Adjusted R-squared	0.903502	S.D. dependent var		22.50251
S.E. of regression	6.990200	Akaike info criterion		7.000608
Sum squared resid	781.8062	Schwarz criterion		7.439403
Log likelihood	-78.50760	Hannan-Quinn criter.		7.122311
F-statistic	29.08881	Durbin-Watson stat		2.831714
Prob(F-statistic)	0.000000			

Source: Extract from E-view 9.0

Analysis of Results

F-Test: The F-calculated value is 29.08881 from the regression results while the P-value of F-statistic are 0.000000 at 5% level of significance, considering the P-value, the chosen level of significance $\alpha = 0.05$ [5%] is less than the P-value of F-statistic. It is concluded that the regression model is statistically significant. This means that the joint influence of the explanatory variables on the dependent variable is statistically significant.

Coefficient of Multiple Determinations (R^2): The computed coefficient of multiple determinations of 0.903502 from the model implies that 90.3 percent of the total variations in the naira exchange rate variation accounted for, by the explanatory variables while the remainder is attributed to variable that is influenced by other factors not included in the regression model.

Durbin Watson statistics (DW): The computed DW is 2.831714 from the results; show that at 5% level of significance. The value of computed DW is greater than the lower limit. Therefore, there is no evidence of positive first order serial correlation.

Regression Coefficient and T-Statistics: The t-statistics shows that fuel subsidy payment have positive but no significant effect on naira exchange rate variation while average price of fuel have positive but no significant effect on naira exchange rate variation over the periods covered in this study.

Table 4: Subsidy and Fiscal Deficit

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FPS	-1.996939	0.262264	-7.614245	0.0000
APF	0.501327	0.161394	3.106230	0.0042
C	0.070878	0.190885	0.371309	0.7131
R-squared	0.748708	Mean dependent var		0.028906
Adjusted R-squared	0.731378	S.D. dependent var		2.082318
S.E. of regression	1.079240	Akaike info criterion		3.079451
Sum squared resid	33.77801	Schwarz criterion		3.216864
Log likelihood	-46.27122	Hannan-Quinn criter.		3.125000
F-statistic	43.20188	Durbin-Watson stat		2.142464
Prob(F-statistic)	0.000000			

Source: Extract from E-view 9.0

Analysis of Results

F-Test: The F-calculated value is 43.20188 from the regression results while the P-value of F-statistic are 0.000000 at 5% level of significance, considering the P-value, the chosen level of significance $\alpha = 0.05$ [5%] is less than the P-value of F-statistic. It is concluded that the regression model is statistically significant. This means that the joint influence of the explanatory variables on the dependent variable is statistically significant.

Coefficient of Multiple Determinations (R^2): The computed coefficient of multiple determinations of 0.731378 from the model implies that 73.1 percent of the total variations in Nigeria fiscal deficit accounted for, by the explanatory variables while the remainder is attributed to variable that is influenced by other factors not included in the regression model.

Durbin Watson statistics (DW): The computed DW is 2.142464 from the results; show that at 5% level of significance. The value of computed DW is greater than the lower limit. Therefore, there is no evidence of positive first order serial correlation.

Regression Coefficient and T-Statistics: The t-statistics shows that fuel subsidy payment have negative and significant effect on Nigeria fiscal deficit while average price of fuel have positive and significant effect on Nigeria fiscal deficit over the periods covered in this study.

Table 5: Subsidy and Public Debt

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FPS	1.511318	0.519194	2.910894	0.0086
APF	0.543777	0.222567	2.443202	0.0240
C	0.041681	0.247005	0.168746	0.8677
R-squared	0.917946	Mean dependent var		0.075370
Adjusted R-squared	0.893329	S.D. dependent var		3.911765
S.E. of regression	1.277602	Akaike info criterion		3.546261
Sum squared resid	32.64535	Schwarz criterion		3.882219
Log likelihood	-40.87452	Hannan-Quinn criter.		3.646159
F-statistic	37.29008	Durbin-Watson stat		1.919363
Prob(F-statistic)	0.000000			

Source: Extract from E-view 9.0

Analysis of Results

F-Test: The F-calculated value is 37.29008 from the regression results while the P-value of F-statistic are 0.000000 at 5% level of significance, considering the P-value, the chosen level of significance $\alpha = 0.05$ [5%] is less than the P-value of F-statistic. It is concluded that the regression model is statistically significant. This means that the joint influence of the explanatory variables on the dependent variable is statistically significant.

Coefficient of Multiple Determinations (R^2): The computed coefficient of multiple determinations of 0.893329 from the model implies that 89.3 percent of the total variations in public debt accounted for, by the explanatory variables while the remainder is attributed to variable that is influenced by other factors not included in the regression model.

Durbin Watson statistics (DW): The computed DW is 1.919363 from the results; show that at 5% level of significance. The value of computed DW is greater than the lower limit. Therefore, there is no evidence of positive first order serial correlation.

Regression Coefficient and T-Statistics: The t-statistics shows that fuel subsidy payment have positive e and significant effect on Nigeria public debt while average price of fuel have positive and significant effect on Nigeria public debt over the periods covered in this study.

Discussion of Findings

The study found that fuel subsidy payment have negative but no significant effect on government revenue while average price of fuel have positive but no significant effect on government revenue over the periods covered in this study, the coefficient of the variables proved that fuel subsidy payment reduced government revenue by 0.01 percent but average price of fuel added 0.002 percent to government revenue. The negative effect of fuel subsidy payment on government revenue confirms our a-priori expectations and the positive effect of fuel price on government revenue is also in line with expectations.

Findings of the study revealed that fuel subsidy payment have positive but no significant effect on infrastructural financing while average price of fuel have negative but no significant effect on infrastructural financing over the periods covered in this study. The negative effect of the variables on infrastructural financing while positive effect of the variable contradicts our expectations and could be traced to policies directed to cushion the negative effect of fuel subsidy on infrastructural financing such as public debt. Findings of the study proved that fuel

subsidy payment have positive but no significant effect on naira exchange rate variation while average price of fuel have positive but no significant effect on naira exchange rate variation over the periods covered in this study. The study found that the variables as estimated added 0.37 and 0.18 percent to exchange rate variation. The positive effect of the variables confirm our expectations and in line with theories.

The study found that fuel subsidy payment have negative and significant effect on Nigeria fiscal deficit while average price of fuel have positive and significant effect on Nigeria fiscal deficit over the periods covered in this study. the coefficient of the variables proved that fuel subsidy payment reduced budget deficit by 1.9 while average price of fuel increases budget deficit by 0.5, the negative effect of fuel subsidy payment on budget deficit contradict our expectation and could be blamed on government policies to manage public expenditure while the positive effect of average price of fuel could be blamed on policies to cushion the effect of fuel subsidy in Nigeria. Findings of the study proved that fuel subsidy payment have positive e and significant effect on Nigeria public debt while average price of fuel have positive and significant effect on Nigeria public debt over the periods covered in this study. The positive effect of the variables is expected. Empirically, the findings of the study is in line with the findings of Ozili and Obiora (2023), Harring et al. (2023) that the public would have positive attitudes towards subsidy removal if there were optimal use of the saved fiscal revenues, Chatri (2014) that gas subsidy reduction led to increase in the price of electricity followed by a decline in demand for electricity by other economic sectors and a decrease in gross domestic product, Antimiani et al. (2023) that fossil fuels are still highly subsidised in EU countries, and there are deliberations to remove fossil fuel subsidies and reuse the revenues to foster the technological transition to a sustainable and decarbonised EU economy, the findings of Sampedro et al. (2017).

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study conclude that fuel subsidy payment have negative but no significant effect on government revenue while average price of fuel have positive but no significant effect on government revenue over the periods covered in this study, that fuel subsidy payment have positive but no significant effect on infrastructural financing while average price of fuel have negative but no significant effect on infrastructural financing over the periods covered in this study, that fuel subsidy payment have positive but no significant effect on naira exchange rate variation while average price of fuel have positive but no significant effect on naira exchange rate variation over the periods covered in this study, that fuel subsidy payment have negative and significant effect on Nigeria fiscal deficit while average price of fuel have positive and significant effect on Nigeria fiscal deficit over the periods covered in this study, that fuel subsidy payment have positive e and significant effect on Nigeria public debt while average price of fuel have positive and significant effect on Nigeria public debt over the periods covered in this study.

Recommendations

- i. Nigerian government should build more refineries through PPP while effort should also be made to ensure proper maintenance, the strengthening of the fight against corruption and the establishment of a regulatory framework to protect citizens as necessary measures to increased capacity utilization on the existing refineries to stem the tide of

- petroleum products importation to improve the poor state Nigeria's economy and society, this will increase revenue through tax and other sources of revenues.
- ii. Government should create an enabling environment to engender private investments for the purpose of improving the local refining capacity to meet the ever increasing local demand of petroleum products and indeed for exportation purpose.
 - iii. There is need to use the oil windfall proceeds and the savings realized by the federal government and from the withdrawal of subsidy to be channeled towards fixing the refineries, building new ones or upgrading and developing of infrastructure within the polity in areas such as water ways, rail and mass transit system, thus providing cheaper alternative transportation methods.

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