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Evaluating the Impact of Nigeria's Fuel Subsidy Regime

Estan Beedell

University of Ottawa
Graduate School of Public and International Affairs
Supervisor: Professor Nicholas Rivers

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Abstract

Nigeria, since early in its history as an independent country, has been one of Africa's main oil exporters. As oil came to dominate its economy, the Nigerian government adopted interventionist policies in the sector. Price ceilings on refined petroleum products have been supported by a complex subsidy regime combining partial nationalization of the upstream and downstream oil sectors with subsidy payments to private suppliers. The increasing fiscal burden of the subsidies, combined with international pressure to eliminate fossil fuel subsidies in light of evidence of the destructive effect of greenhouse gases, has pushed the Nigerian government to attempt to reform the subsidy regime several times. However, popular and political resistance has prevented the complete removal of price ceilings and subsidies. This paper looks into the major arguments in favour of subsidies, and tests their validity by evaluating the economic, social and political impacts of Nigeria's subsidy regime. Analysis is based on a literature review supported by data collected by the Nigerian National Bureau of Statistics and other organizations. Findings suggest the subsidy regime has created economic inefficiency, exacerbated negative externalities associated with fossil fuels, and worsened macroeconomic stability through procyclical government spending. It has not achieved its desired social benefits, as the subsidies are regressive, and has not improved access to energy, as subsidies divert investment from public power infrastructure. Lastly, the interplay between subsidies, rent-seeking, and patronage has likely worsened Nigeria's quality of governance. Nonetheless, the subsidy regime enjoys widespread popularity as a tangible means by which natural resource wealth is redistributed.

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Introduction

In January 2012, Nigerians took to the streets in a massive general strike that brought major cities across the country to a standstill.¹ Their outrage was provoked by an overnight price increase of 117% on gasoline. Prices had been kept artificially low by a country-wide price ceiling, supported by subsidies to fuel suppliers. With high oil prices and widespread fraud, the subsidy regime had become increasingly unsustainable—payments in 2011 hit a record high, amounting to 19% of the federal government budget.² That year Ngozi Okonjo-Iweala, fresh from having served as Managing Director of the World Bank, returned to her home country to take the job of Finance Minister, aspiring to reform a government widely criticized for poor finances. On the chopping block was the subsidy regime for fossil fuels. The World Bank had for decades argued that these subsidies were unsustainable and economically inefficient. With growing evidence of the devastating effects of climate change, calls from international organizations to remove fossil fuel subsidies had only intensified. Yet a mere two weeks after the lifting of the price ceiling, the Nigerian government was forced to reverse course and restore the subsidy scheme. During those two weeks, demonstrations had erupted in diasporic Nigerian communities across the globe, Okonjo-Iweala had received multiple death threats, and security forces in Nigeria had killed 16 protestors.³ Why was resistance to reform so fierce?

Opposition to reform drew on the subsidy regime's argued impacts in three broad areas: economic, social, and political. In order to inform debate on fuel subsidy reform in Nigeria, this paper seeks to evaluate the success of the subsidy regime in these three areas.

¹ "Nigeria fuel strike brings country to a halt," *BBC*, January 9, 2012, <http://www.bbc.com/news/world-africa-16464922>.

² Centre for Public Policy Alternatives, *Nigeria: Fuel Subsidy* (Lagos: Centre for Public Policy Alternatives, 2011), 13.

³ "The iron lady," *The Economist*, March 3, 2012, <http://www.economist.com/node/21548975>.

To gauge success, impacts of the Nigerian government's intervention in fuel markets must be measured against a clear set of policy objectives. An historical overview at the beginning of this paper serves to elucidate the original motives behind the Nigerian government's intervention in fuel markets. Nigeria's early post-colonial period was marked by civil unrest caused in large part by a belief that the country remained dominated by former colonial powers. The near break-up of the country in the Biafran War of 1967-1970 underscored the need for the Nigerian government to do more to give citizens a sense of ownership over their country, or risk further disaffection and renewed violence. Thus, a series of indigenization policies were implemented beginning in the 1970s, of which key elements were the partial nationalization of the oil sector, and a price ceiling on refined petroleum products supported by subsidies.

The contemporary subsidy regime has been justified as a policy to stimulate economic growth and promote macroeconomic stability. The economic argument holds that low prices increase fuel consumption, and as petroleum products are a major input in most industries, this in turn accelerates gross domestic product (GDP) growth. Evidence, however, suggests that Nigeria's fuel subsidy regime may diminish investment in public electricity, causing unreliable power supply and decreased overall energy consumption. Additionally, below-market fuel prices exacerbate negative externalities associated with fossil fuel consumption, and produce an economically inefficient distribution of resources. The argument that uniform fuel prices can promote macroeconomic stability ignores the practical effects of Nigeria's subsidy regime. Inefficiencies and cartelization of fuel distribution have repeatedly created fuel shortages, a source of cost-push inflation. Moreover, government spending on subsidy payments has been procyclical, likely accentuating swings in the business cycle.

Social arguments point to the subsidy regime's ability to improve living standards for the country's poor through equal access to energy. But evidence shows that the subsidy regime is

in fact regressive. A modeling of the subsidy incidence, according to estimates of fuel demand elasticity and data on fuel imports and prices, shows gains fall more heavily towards producers than consumers. Of consumers, it is the urban and wealthy whom the subsidy benefits most, as they consume far more fuel than the poor rural population. A plausible counterfactual sees the Nigerian government redirecting subsidy payments to poverty alleviation programs that have performed much better in development intervention evaluation metrics. Indeed, at various times the Nigerian government promised to invest in health, education, electricity, and transportation, using savings from subsidy reform. Increased investment in any of these areas would likely produce better outcomes for Nigeria's poor than those under the current subsidy regime.

Lastly, this paper examines political arguments for the subsidy regime, including tacit reasons for political resistance to reform. Nigeria has been characterized as a rentier state, in which an elite manipulates politics to their economic advantage. Collusion between public officials and fuel distributors in pursuit of lucrative subsidy payments show the subsidy regime facilitates and contributes to rent-seeking. The concept of neopatrimonialism gives a complementary framework with which to understand tacit political aims. Opaque channels through which subsidy payments flow provide opportunities to dispense political patronage. By strategically buying loyalty, the political elite has been able to maintain stability despite failing to provide the services and infrastructure associated with a modern state. Though difficult to quantify, it is likely that Nigeria's subsidy regime, by encouraging rent-seeking and patronage, worsens the country's quality of governance. Nonetheless, the subsidy regime enjoys widespread support as a tangible way ordinary citizens can share in the nation's resource wealth.

As of January 2016, the Nigerian government has adopted a policy of price modulation, wherein retail fuel prices remain uniform across the country but ostensibly undergo frequent adjustments to reflect international oil prices. It remains to be seen whether this policy represents a marked

shift in the government's approach to domestic fuel markets. But the impassioned response from civil society to the most recent attempt at subsidy reform shows there is a remarkable level of interest in this ongoing policy debate.

Methodology

This paper largely consists of a literature review of peer-reviewed articles in a ten year time frame (2007 to 2017) using database searches and snowballing. The review initially included natural experimental studies and quantitative research on the economic and social impacts of Nigeria's fuel subsidy regime. The small number of such studies led to inclusion criteria being widened to include qualitative research published within the time frame as well as select seminal studies published outside the time frame. Working papers and other research publications were included if published by credible research organizations. Scholarly literature was supplemented by news articles from established Nigerian news sources as primary sources, and data collected by Nigerian and international organizations. Lastly, a review of online commentary and forum posts informed an understanding of Nigerian perspectives on fuel subsidies.

Writing on Nigerian topics raises some particular methodological dangers. Nigerian universities unfortunately do not have international standards and institutional mechanisms in place to detect academic fraud.⁴ In writing this paper, the journals in which referenced works were published have been checked for signs of predatory publishing and against lists of predatory

⁴ Author's conversations with faculty and students of the African Institute for Mathematical Sciences, May, 2016 - August, 2016.

journals.⁵ Articles published in such journals have not been cited. However, certain articles written by established academics have referenced sources of dubious quality, as there is a lack of scholarship in mainstream peer-reviewed journals. There is thus a grey area as to which articles are acceptable to include.

Secondly, primary data published by Nigerian government organizations, regulatory bodies, and state-owned enterprises such as the National Bureau of Statistics (NBS), the Petroleum Products Pricing Regulatory Agency (PPPRA), the Nigerian National Petroleum Corporation (NNPC) are unreliable. This is due to incentives for misreporting, some caused by the subsidy regime itself, and simple lack of data collection capacity in Nigerian institutions. Specific datum found to be inconsistent with other sources have been noted as such, but it should be recognized that all primary data is of imperfect quality. Where possible, data from international institutions such as the World Bank have been used in place of nationally collected data.

⁵ Carl Straumsheim, "No More 'Beall's List'," *Inside Higher Ed*, January 18, 2017, <https://www.insidehighered.com/news/2017/01/18/librarians-list-predatory-journals-reportedly-removed-due-threats-and-politics>.

1. Context

1.1. Origins of Nigeria's Fuel Subsidy Regime

Since the 1970s, the Nigerian government has exerted influence over domestic fuel prices through a combination of price ceilings and both implicit and explicit subsidies to the oil sector. The evolution of the fuel subsidy regime is closely related to Nigeria's process of decolonization—specifically the increasing importance of oil exploitation to the country's economy and the strong association in the national consciousness between the oil industry and Nigeria's former colonial ruler, Britain. Government intervention in the oil industry received political support as it was framed as part of the project of reclaiming economic power from Britain and distributing Nigeria's resource wealth to its people.

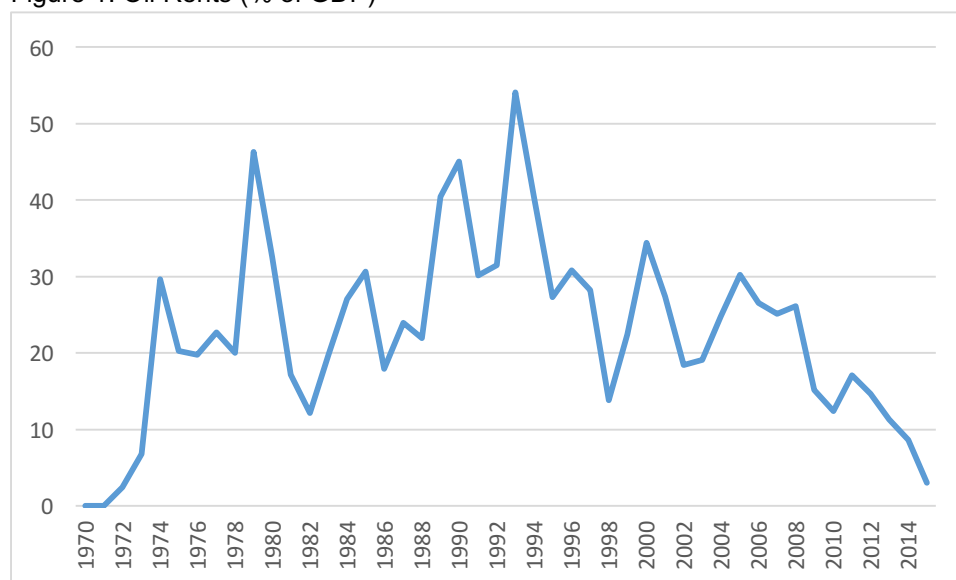
Commercial efforts to drill for oil in Nigeria began in 1937 when the colonial office awarded an exclusive exploration license to a joint venture formed between predecessors of Royal Dutch Shell and British Petroleum (BP).⁶ The first successful well was drilled in Oloibiri in the Niger Delta in 1956, and the Shell-BP consortium began exporting oil from Nigeria in 1958.⁷ In 1960 Nigeria achieved independence from Britain. Shell-BP continued activities throughout the 1960s, though in the early postcolonial period the oil industry did not yet represent a significant source of Nigeria's GDP (see Figure 1).⁸

⁶ Phia Steyn, "Oil Exploration in Colonial Nigeria," (paper presented at the XIV International Economic History Congress, Helsinki, 2006), 14.

⁷ "History of the Nigerian Petroleum Industry," Nigerian National Petroleum Corporation, 2016, <http://nnpcgroup.com/nnpcbuisness/businessinformation/oilgasinnigeria/industryhistory.aspx>.

⁸ Louis Chete et al., "Industrial development and growth in Nigeria: Lessons and challenges," Africa Growth Initiative at Brookings, African Development Bank, United Nations University World Institute for Development Economics Research, *Learning to Compete* Working Paper no. 8, 2014, 16.

Figure 1: Oil Rents (% of GDP)



Source: World Development Indicators

The growth rate of the oil sector was slowed by the Biafran War of 1967-1970, as the breakaway state of Biafra included the oil producing Niger Delta region. In articulating his vision for the secessionist republic, Biafran leader Chukwuemeka Ojukwu emphasized the continuing economic control Britain held over Nigeria through British-owned corporations such as Shell-BP, declaring:

Fellow countrymen and women, we have seen in proper perspective the diabolical roles which the British Government and the foreign companies have played and are playing in our war with Nigeria. [...] We see why the Shell-BP led the Nigerian hordes into Bonny, pays Biafran oil royalties to Nigeria, and provided the Nigerian Army with all the help it needed for its attack on Port Harcourt [the Niger Delta's principal city].⁹

In essence, the Biafran secessionists saw their fight as a second independence struggle, to

⁹ Chukwuemeka Ojukwu, "The Ahiara Declaration: The Principles of the Biafran Revolution," (speech, Ahiara, June 1, 1969), Biafra Land, http://www.biafraland.com/ahiara_declaration_1969.htm.

create a socialist state truly liberated from colonial domination. In this regard, the Biafran secessionist movement was a Nigerian manifestation of a larger drive by post-colonial African states to assert complete domestic control over their economies.

The Biafran secessionist movement was defeated in 1970, but Nigeria's military leader, General Yakubu Gowon, recognized the need to appease economic nationalists to avoid further political dissent. To this end, General Gowon created the Nigerian National Oil Corporation, which later became the Nigerian National Petroleum Corporation (NNPC), and joined the Organization of Petroleum Exporting Countries (OPEC) in 1971.¹⁰ Significantly, the *Nigerian Enterprises Promotion Decree*, otherwise known as the indigenization act was passed in 1972, which aimed to transfer ownership of enterprises formerly controlled by foreigners to Nigerians, and spur investment in secondary and tertiary industries in Nigeria.¹¹ Though Gowon did not nationalize Shell-BP, following the indigenization act the Nigerian government gained an increasing share of ownership in the oil industry. In 1972 in accordance with the indigenization act the Nigerian government increased from 50% to 60% its ownership of the Nigerian Petroleum Refinery Corporation (NPRC)—a consortium that had been formed between the Nigerian government and Shell-BP.¹² The following years saw the Nigerian government negotiate further agreements to increase to 60% its ownership of the domestic oil extraction sector, and construct two nationally owned refineries, all by the end of the decade.¹³

¹⁰ Ann Genova, "Nigeria's Nationalization of British Petroleum," *The International Journal of African Historical Studies* 43 (2010): 117.

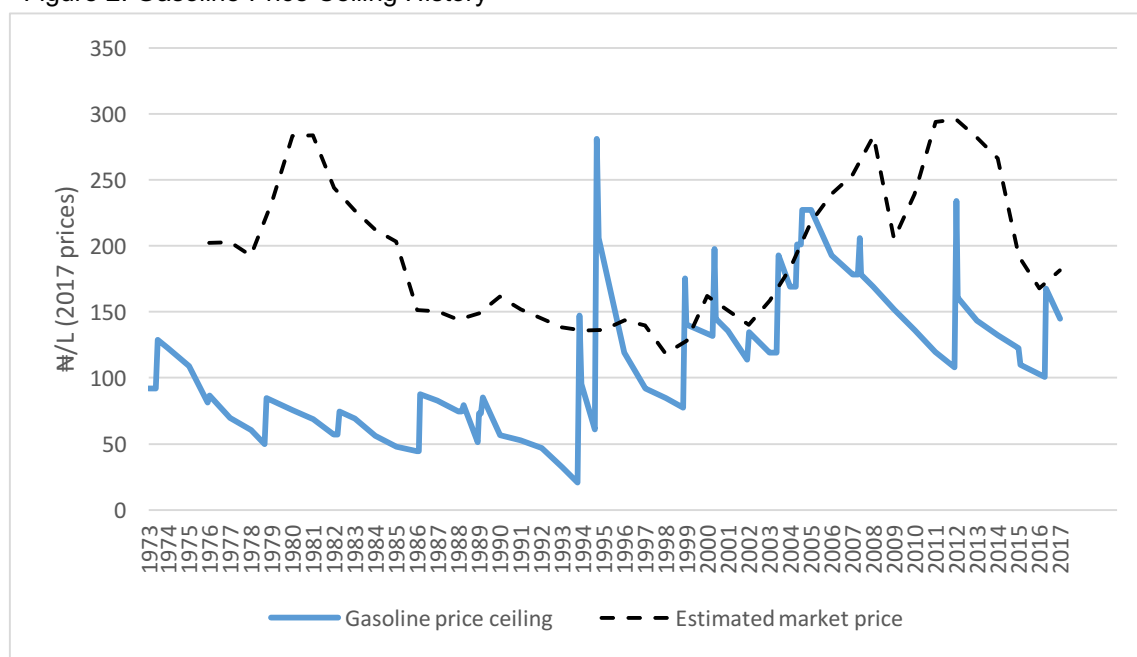
¹¹ Chete et al., "Industrial development and growth in Nigeria," 2.

¹² Genova, "Nigeria's Nationalization of British Petroleum," 118.

¹³ "Imperatives of Sale of Nigeria's JV Assets," THISDAY, October 18, 2016, <https://www.pressreader.com/nigeria/thisday/20161018/281621009863241>; "KRPC At a Glance," Kaduna Refining & Petrochemical Company, 2015, <http://krpc.nnpcgroup.com/AboutUs/KRPCataGlance.aspx>; "Warri Refining & Petrochemical Company Limited," Nigerian National Petroleum Corporation, 2016, <http://nnpcgroup.com/NNPCBusiness/Subsidiaries/WRPC.aspx>.

While the government worked to increase national ownership and control over the upstream and downstream oil sectors, it also implemented policies to keep retail fuel prices low. It claimed this would ensure equal public access to energy, and prevent recessions caused by high energy prices, as was seen in oil importing countries during the 1973 oil crisis.¹⁴ The first government pricing regime for petroleum products was introduced in 1973—the uniform pricing policy mandated an official price for gasoline of ₦0.06/L (current USD 0.40/L) across the country (see Figure 2).¹⁵ Diesel and kerosene were also to be sold at separate official prices. From the outset price ceilings on fuel were inextricably linked to the process of decolonization, as they were promoted as a policy to distribute to Nigerian consumers the benefits of the partial nationalization of the country’s resource wealth.

Figure 2: Gasoline Price Ceiling History



Source: THISDAY, World Development Indicators, U.S. Energy Information Administration¹⁶

¹⁴ Akin Iwayemi, “Energy development and sub-Saharan African economies in a global perspective,” OPEC Review (Spring 1993): 29.

¹⁵ Opeyemi Akinyemi et al., “Fuel Subsidy Reform and Environmental Quality in Nigeria,” (paper presented at the 55th Annual Nigerian Economic Society Conference, Abuja, 2014), 10.

¹⁶ “Economic Implications of Petrol Price Reduction,” THISDAY, February 23, 2015, <http://www.pressreader.com/nigeria/thisday/20150203/281822872214185>; “Regular Gasoline Retail Prices,” U.S. Energy Information Administration, June 6, 2017, <https://www.eia.gov/outlooks/steo/realprices/>.

These price ceilings wreaked havoc on fuel supply chains, creating widespread shortages as private marketers could no longer cover their distribution costs. Long queues, hoarding, fuel adulteration, and smuggling—all activities that had been uncommon before the 1973 price regime—became major issues.¹⁷ Recognizing the need to support the artificial price in order to avoid supply deficits, in 1975 the government created the Petroleum Equalization Fund (PEF) and tasked a new agency with reimbursing fuel marketers' transportation costs.¹⁸ Theoretically this would allow more remote regions of the country to enjoy equal fuel costs, however in practice the establishment of the PEF created incentives for fraud and corruption.

Successive regimes incrementally increased the official price of fuel in attempts to keep pace with inflation and to reign in the fiscal burden of the subsidy, but the general pricing regime remained in place. The inefficiency of the fixed price system during the 1970s had been of little concern to government as their fiscal situation was buoyed by high oil prices.¹⁹ However, beginning in 1980s, a supply glut pushed the price of oil down, sending Nigerian government finances into a precarious state. Continuingly high public spending and stagnant GDP growth resulted in demand-pull inflation, with annual rates of inflation rising above 50% late in the decade.²⁰ Nigeria's balance of payments deficit worsened and in 1986, Nigeria turned to international financial institutions (IFIs) to resolve its fiscal crisis. The structural adjustment program (SAP) of 1986, a package of economic policy reforms as IFI loan conditions, highlighted the government-operated downstream oil sector as area of particular inefficiency.²¹

¹⁷ Adeola Adenikinju and Niyi Falobi, "Macroeconomic and distributional consequences of energy supply shocks in Nigeria," *African Economic Research Consortium* Research Paper 162 (December 2006): 6; "Welcome To Petroleum Equalisation Fund (Management) Board," Petroleum Equalization Fund (Management) Board, accessed May 17, 2017, <http://www.pefmb.gov.ng/>.

¹⁸ *Ibid.*; G. O. Komolafe, "Towards Seamless Petroleum Products Supply in Nigeria (Part 1)," *THISDAY*, December 14, 2015, <http://www.pressreader.com/nigeria/thisday/20151214/281878707319197>.

¹⁹ Chete et al., "Industrial development and growth in Nigeria," 16.

²⁰ "World Development Indicators," The World Bank, 2017, <http://databank.worldbank.org/data/reports.aspx?source=2&series=SI.POV.DDAY&country=>.

²¹ Iwayemi, "Energy development and sub-Saharan African economies," 32;

These policy prescriptions signified the beginning of serious pressure to reform the fuel subsidy regime.

World Bank observers described a situation in which Nigeria's state-owned refineries were over-staffed, mismanaged, and operated at between 50% to 65% capacity.²² Under pressure from the IFIs, Nigeria's government promised to reform the NNPC in 1988, but contract negotiations stalled and the refineries continued to operate below capacity.²³ Moreover, the government did little to change the pricing regime for fuel, with the mandated price averaging as low as 11% of world market prices in the early 1990s.²⁴

The advent of democracy in 1999 did not significantly change the fuel pricing regime. A committee was established in 2000 to provide recommendations for improving efficiency in the downstream oil sector, once again due to problems of fuel scarcity, low refinery capacity utilization, large scale smuggling, infrastructure vandalism and unsafe transportation of petroleum products.²⁵ The recommendations of the committee led to the creation of the Petroleum Products Pricing Regulatory Agency (PPPRA) in 2003, which initially attempted to deregulate petroleum products. After the resulting price increases caused social unrest, the government quickly backtracked, reinstating price ceilings on gasoline and kerosene.²⁶ Only the sale of diesel become fully liberalized, and is currently sold at market prices.²⁷

Chete et al., "Industrial development and growth in Nigeria," 17.

²² World Bank, *Nigeria Structural Adjustment Program: Policies, Implementation, and Impact* (Washington: The World Bank, 1994), 57.

²³ Ibid.

²⁴ Ibid.

²⁵ "History," Petroleum Products Pricing Regulatory Agency, 2017, <http://pppra.gov.ng/history-the-evolution-of-petroleum-products-pricing-regulatory-agency/>.

²⁶ "Shock Therapy," *The Economist*, October 16, 2003, <http://www.economist.com/node/2149502>.

²⁷ Taiwo Oyedele, "The real cost of fuel subsidy and tax implications," PwC, November 2011, 2; Benedict Clements et al., *Case Studies on Energy Subsidy Reform: Lessons and Implications* (Washington: International Monetary Fund, 2013), 48.

After the failed attempt at deregulation in 2003, the PPPRA kept price ceilings relatively stable and as international market prices drifted further from stagnant domestic prices, rising subsidy payments created a growing fiscal burden on the government.²⁸ In 2012, following the advice of finance minister Ngozi Okonjo-Iweala, former Managing Director of the World Bank, President Goodluck Jonathan declared a 117% price increase in gasoline from ₦65/L to ₦141/L.²⁹ After nationwide social upheaval, the government was forced again to partially reverse course, lowering the price 31% to ₦97/L.³⁰

In 2015, the new government of Muhammadu Buhari announced a “price modulation” policy would be adopted wherein price ceilings would remain, but be adjusted to better reflect international market prices.³¹ In May 2016, the PPPRA raised the price of gasoline to ₦145/L where it sits as of May 2017.³² The price ceiling for kerosene was raised to ₦150/L in August 2016.³³ It is unclear whether the “price modulation” policy is a true departure from past practice. Retail prices for gasoline and kerosene remain centrally mandated and are not indexed to inflation or international prices. Without automatic mechanisms in place to adjust the price ceiling, the degree to which petroleum products are subsidized continues to be entirely reliant on the political leadership of the day. Support for subsidies remains strong, with current rhetoric echoing the original motivations behind the introduction of subsidies: cheap fuel to stimulate

²⁸ Akinyemi et al., “Fuel Subsidy Reform and Environmental Quality in Nigeria,” 13.

²⁹ Ngozi Okonjo-Iweala, *Reforming the Unreformable: Lessons from Nigeria* (Cambridge: MIT Press, 2012) 137.

³⁰ Akinyemi et al., “Fuel Subsidy Reform and Environmental Quality in Nigeria,” 12.

³¹ John Adeoti et al., *Compensation Mechanisms for Fuel Subsidy Removal in Nigeria* (Winnipeg: International Institute for Sustainable Development, 2016), 6.

³² Aanu Adagun, “Marketers propose N165 per litre as petrol price hike imminent,” *NAIJ.com*, January 24, 2017; author’s conversation with Zainab Muse reporting on fuel prices in Kano, Nigeria, May, 2017.

³³ Adeoti et al., *Compensation Mechanisms for Fuel Subsidy Removal in Nigeria*, 6.

economic growth, access to energy for the poor, and an extension of indigenization policies to give citizens a sense of ownership over Nigeria's resource wealth.

1.2. Contemporary Pricing and Subsidy Regime

The regime that exists to maintain a price ceiling for refined petroleum products in contemporary Nigeria involves a complex set of implicit and explicit subsidies managed by a number of regulatory bodies. There are two avenues through which subsidized fuel enters the Nigerian market. The most direct supply is through the NNPC. Between 2004 and 2014, the NNPC obtained roughly one million barrels of oil per day—representing between 41% and 53% of Nigerian production—through a combination of oil extracted by NNPC's subsidiary, the Nigerian Petroleum Development Company (NPDC); joint ventures and production sharing contracts between the NNPC and international firms; and royalties paid by international firms directly in oil.³⁴ Of the USD 41 billion in oil the NNPC extracted or obtained in 2013, USD 17.8 billion or 43% was allocated for domestic consumption.³⁵ This share represented 435,106 barrels per day (bpd), close to the 445,000 bpd the Nigerian government mandates for domestic refining equivalent to the combined capacity of Nigeria's refineries.³⁶ However, with refineries operating below capacity, only an average of 105,000 bpd or 24% of this oil was domestically refined. The remainder was either sold internationally, or directly traded (swapped) for products.

NNPC refined petroleum products are distributed to consumers by its subsidiary, the Pipelines and Product Marketing Company (PPMC). The PPMC was established in 1988 with a view to

³⁴ Aaron Sayne, Alexandra Gillies and Christina Katsouris, *Inside NNPC Oil Sales: A Case for Reform in Nigeria* (Natural Resource Governance Institute, August 2015), 16-17.

³⁵ *Ibid.*, 12; US dollars, 2013.

³⁶ Sayne et al., *Inside NNPC Oil Sales*, 4.

improving fuel access with more coordinated national distribution networks and infrastructure.³⁷

However, as of 2015 the PPMC provided only 44% of domestically consumed petroleum products.³⁸

The remaining 56% of gasoline, diesel, and kerosene is distributed by marketers—private firms that must be registered with the PPPRA to import and distribute fuel.³⁹ After selling fuel, marketers submit proof of sale to the PPPRA in order to receive reimbursement payments through the Petroleum Support Fund (PSF). These payments are calculated by adding landing costs (which vary according to international oil prices) to distribution costs (which are periodically determined by the PPPRA).⁴⁰ Since 2003, the PPPRA has had as its mandate the stabilization of prices as opposed to subsidization. When market prices are below official prices, marketers benefit from an “over-recovery” and payments are meant to be made into the PSF. Theoretically these savings are to be used to support “under-recovery” scenarios when official prices are below market prices. In practice, official prices have very rarely been below market prices and the PSF serves mainly to distribute subsidy payments.

Fuel marketers have formed a number of trade associations including the Depot and Petroleum Products Marketers Association (DAPPMA), the Major Oil Marketers Association of Nigeria (MOMAN), and the Independent Petroleum Marketers Association of Nigeria (IPMAN). Through

³⁷ “Welcome to PPMC,” Pipeline and Product Marketing Company, 2015, <http://ppmc.nnpcgroup.com/Home.aspx>.

³⁸ Nigerian National Petroleum Corporation, *2015 Annual Statistical Bulletin* (Abuja: Nigerian National Petroleum Corporation, 2015), 32; National Bureau of Statistics, *PETROLEUM PRODUCTS CONSUMPTION STATISTICS IN NIGERIA: 2015 (Q1-Q4)* (Abuja: National Bureau of Statistics, 2016), 13.

³⁹ Victor Asekunowo, “The economics of Nigeria’s petroleum products’ subsidy removal debate,” *OPEC Energy Review* (September 2012): 304.

⁴⁰ Clements et al., *Case Studies on Energy Subsidy Reform*, 48.

these trade associations, which have been accused of acting as a cartel, marketers lobby the government for more lucrative subsidy payments.⁴¹

This system of publicly funded but privately operated fuel distribution results in periodic clashes between registered fuel marketers and the government. Government auditors have regularly accused registered marketers of over-reporting their costs.⁴² In turn, marketers have frequently demanded subsidy arrears, claiming that government has not met their obligation to refund their distribution costs.⁴³ During these disputes, registered marketers may cease distribution activities. The resulting fuel shortages lead to sudden expansions of the black market for fuel, where it is sold at well above official prices.⁴⁴

In an effort to prevent fraudulent expense claims by marketers, the government has set up a system to increase oversight of fuel distribution. At the importation stage, fuel shipments arriving in Nigerian ports must be witnessed and quantities confirmed by observers from the PPPRA, the Department of Petroleum Resources (DPR), independent surveyors and the Nigerian Navy. After the PPPRA determines payments owed to marketers, all subsidy claims are submitted to

⁴¹ Olakiitan Victor, "Fuel Scarcity: Buhari Urged to Break Cartels in Oil Sector," *This Day*, April 10, 2016, <https://www.thisdaylive.com/index.php/2016/04/10/fuel-scarcity-buhari-urged-to-break-cartels-in-oil-sector/>.

⁴² "Government resumes subsidy payment to petroleum marketers," *Premium Times*, accessed May 19, 2017, <http://www.premiumtimesng.com/business/93664-government-resumes-subsidy-payment-to-petroleum-marketers.html>.

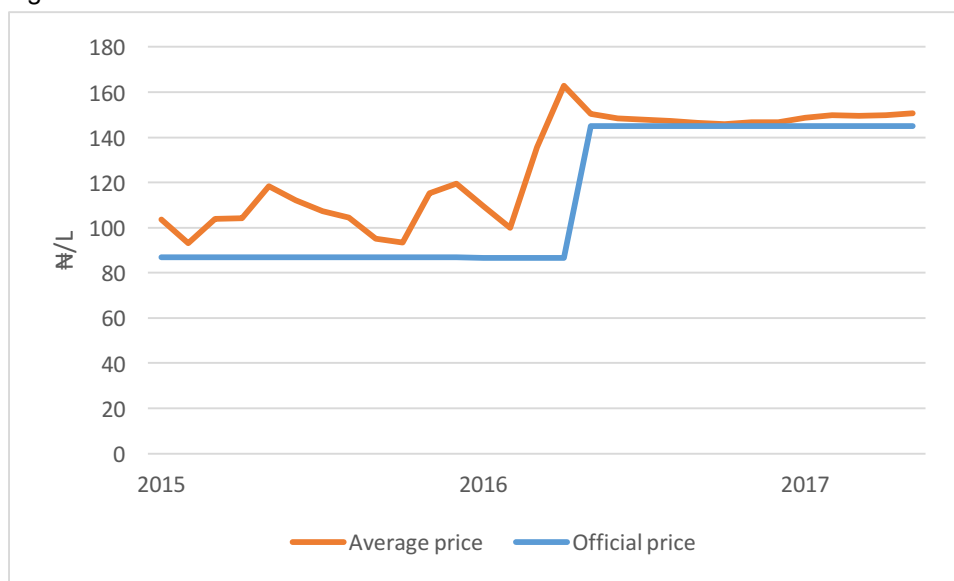
⁴³ Hamisu Muhammad, "Nigeria: Govt Releases N100 Billion Sovereign Debt Note to Marketers," *Daily Trust*, March 5, 2015, <http://allafrica.com/stories/201503051363.html>; "Presidency Orders Finance Minister to Pay Petroleum Marketers N150bn Debt," *This Day*, January 26, 2017, <https://www.thisdaylive.com/index.php/2017/01/26/presidency-orders-finance-minister-to-pay-petroleum-marketers-n150bn-debt/>; "We've not received subsidy payments—Fuel marketers," *Energy Mix Report*, March 14, 2014, <http://energymixreport.com/weve-not-received-subsidy-payment-fuel-marketers/>; "Petroleum marketers: FG owes us N660 billion subsidy arrears," *Ships & Ports*, January 18, 2017, <http://shipsandports.com.ng/fg-owes-us-n660bn-subsidy-arrears-petroleum-marketers/>.

⁴⁴ Adenikinju and Falobi, "Macroeconomic and distributional consequences of energy supply shocks in Nigeria," 1; author's conversation with Zainab Muse reporting on fuel prices in Kano, Nigeria, May, 2017.

the Federal Ministry of Finance to be audited.⁴⁵ These anti-fraud measures have had limited success. Instead, it appears each stage of oversight has been seized as an opportunity to extract bribes.

As shown in Figures 3 and 4, the actual retail prices customers pay are often well above official price ceilings. This is especially the case for kerosene, for which official prices seem to bear almost no relation to retail prices. These figures serve as a reminder that regulatory enforcement in Nigeria is weak. Existing and proposed policies cannot be assumed to operate on the ground as planned.

Figure 3: Price of Gasoline

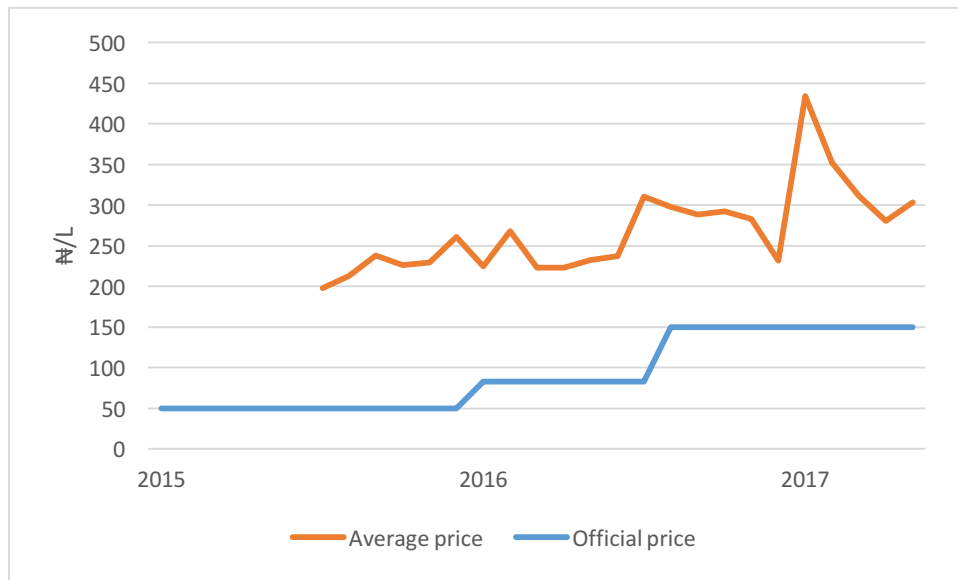


Source: National Bureau of Statistics, news reports⁴⁶

⁴⁵ Asekunowo, "Nigeria's petroleum products' subsidy removal debate," 304.

⁴⁶ "NBS E-library," National Bureau of Statistics, 2017, <http://www.nigerianstat.gov.ng/library>; Izielen Agbon, "Fuel Price Increase- Facts And Figures At The Presidential Villa," *Sahara Reporters*, May 18, 2016, <http://saharareporters.com/2016/05/18/fuel-price-increase-facts-and-figures-presidential-villa-izielen-agbon>; Bassey Udo, "How we arrived at N87 petrol price – PPPRA," *Premium Times*, January 20, 2015, <http://www.premiumtimesng.com/business/175262-arrived-n87-petrol-price-pppra.html>; Deolu, "Breaking: Jonathan Reduces Price Of Petrol To 87 Naira," *Information Nigeria*, January 18, 2015, <http://www.informationng.com/2015/01/breaking-jonathan-reduces-price-of-petrol-to-87-naira.html>; Michael, Eboh, "FG ends kerosene subsidy, pegs price at N83 per litre," January 25, 2016 <http://www.vanguardngr.com/2016/01/fg-ends-kerosene-subsidy-pegs-price-at-n83-per-litre/>.

Figure 4: Price of Kerosene



Source: Ibid.

2. Economic Arguments and Impacts

Since the advent of government intervention in the country's fuel markets, arguments in support of Nigeria's fuel subsidy regime have claimed inexpensive fuel spurs economic growth, and uniform pricing promotes macroeconomic stability. Government interventions in markets are generally based on a belief that market failures—situations in which the free market does not distribute resources efficiently—can be corrected through policies that adjust economic incentives. In the case of subsidies, economic actors are incentivized to increase the rate at which they produce and consume the subsidized product. The quantity consumed thus theoretically moves from market equilibrium towards a socially optimal quantity. To make a compelling case for subsidies, supporters must demonstrate that a link between increased fuel consumption and economic growth means the socially optimal level of fuel consumption is above market equilibrium.⁴⁷

A related economic argument in favour of the fuel subsidy regime holds that it acts as a mechanism for achieving price stability.⁴⁸ As petroleum products are an input in most goods and services, price ceilings on fossil fuels allegedly stabilize prices as a whole, protecting against rising inflation. Unpredictable changes in inflation create macroeconomic instability, hurting GDP growth by discouraging investment.

To test the strength of these economic arguments, this section will examine the cost burden of the intervention to government and society as a whole, relative to any estimated positive effects on economic growth and macroeconomic stability. As will be shown, both economic arguments

⁴⁷ Josiah Aramide et al., *A Citizen's Guide to Energy Subsidies in Nigeria* (Winnipeg: International Institute for Sustainable Development, 2012), 7.

⁴⁸ Masami Kojima, "Fossil Fuel Subsidy and Pricing Policies: Recent Developing Country Experience," Policy Research Working Paper 7531 (The World Bank, 2016), 2.

in favour of subsidies ignore key theoretical considerations, as well as the practical impacts of the regime. Supporters of fuel subsidies have failed to provide a compelling theoretical rationale for how the socially optimal quantity of fossil fuel consumption could be higher than the equilibrium quantity. The literature on fossil fuel externalities suggests the social optimum is in fact lower than market equilibrium. The contention that price ceilings on fuel promote macroeconomic stability is inconsistent with Keynesian theory on inflation when considering the government's pattern of procyclical spending on subsidies. Finally, inefficiencies greatly reduce the subsidy regime's practical ability to provide uniform below-market prices, and in turn increase fuel consumption. The regime may instead act as a drain on Nigeria's finances without delivering the promised economic benefits.

2.1. Cost Burden on Government

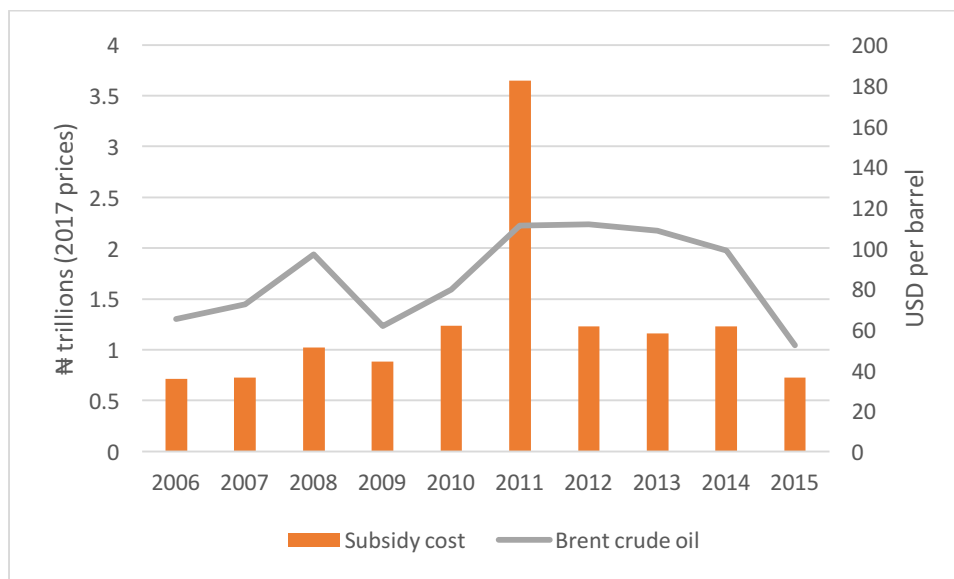
The annual direct cost of Nigeria's subsidy regime varies greatly depending on international oil prices, as shown in Figure 5. 2011 was an abnormally high year due to a combination of high oil prices and widespread fraud, with subsidy payments totalling ₦2.2 trillion (USD 14.0 billion), 521% of the projected cost of subsidies in that year's budget.⁴⁹ Payments subsequently declined to ₦852 billion (USD 5.3 billion) in 2013, and to ₦627 billion (USD 2.3 billion) in 2015 following a drop in the price of oil.⁵⁰ Likewise, the annual cost of Nigeria's subsidy regime varies greatly as a percentage of GDP. In 2005, the World Bank estimated Nigeria's petroleum product

⁴⁹ Adeoti et al., *Compensation Mechanisms for Fuel Subsidy Removal in Nigeria*, 9.

⁵⁰ Ibid.; Elisha Bala-Gbogbo, "Oil's Slump Gives Nigeria Chance to End \$7-Billion Subsidy," *Bloomberg*, December 24, 2014, <https://www.bloomberg.com/news/articles/2014-12-24/oil-s-slump-gives-nigeria-chance-to-end-7-billion-subsidy-2->.

subsidies at 2.2% of GDP.⁵¹ That share peaked in 2011, with estimates of the cost of the subsidy ranging from 3.4% to 4.7% of GDP.⁵²

Figure 5: Subsidy Cost and Oil Price



Sources: EIA, Adenikinju, Adeoti et al, Bloomberg, National Bureau of Statistics⁵³

The most recent data shows that the direct cost of Nigeria's subsidy regime has declined significantly following the adoption of the "price modulation" policy in January 2016. To estimate recent costs to government, a variation of the price-gap approach was used, which multiplies volumes of imported petroleum by the gap between market and official prices.⁵⁴ The PPPRA compensates fuel marketers by paying the difference between price ceilings and landing costs

⁵¹ Bacon et al., *Subsidies in the Energy Sector*, 99.

⁵² "Nigeria," The World Bank, 2016, <http://data.worldbank.org/country/nigeria>; Adeoti et al., *Compensation Mechanisms for Fuel Subsidy Removal in Nigeria*, 9; Clements et al., *Case Studies on Energy Subsidy Reform*, 49.

⁵³ "Europe Brent Spot Price FOB," U.S. Energy Information Administration, June 14, 2017, <https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=p&s=rbrte&f=a>; Adeoti et al., *Compensation Mechanisms for Fuel Subsidy Removal in Nigeria*, 9; "NBS E-library," National Bureau of Statistics; Bala-Gbogbo, "Oil's Slump Gives Nigeria Chance to End \$7-Billion Subsidy"; Adeola Adenikinju, "Energy pricing and subsidy reforms in Nigeria," presented at University of Ibadan, Ibadan, Nigeria, 2009, 4.

⁵⁴ Aramide et al., *A Citizen's Guide to Energy Subsidies in Nigeria*, 8; Robert Bacon et al., *Subsidies in the Energy Sector: An Overview* (Washington: The World Bank Group, 2010), 17.

plus an officially determined distribution margin per litre. Thus subsidy payments were calculated for each month by adding landing costs to distribution margins, and multiplying by monthly volumes of imported gasoline and kerosene, then subtracting expected monthly revenues at official retail prices. Data from the Nigerian National Bureau of Statistics showing monthly import volumes and average landing costs were combined with news reports detailing changes in price ceilings and distribution margins.

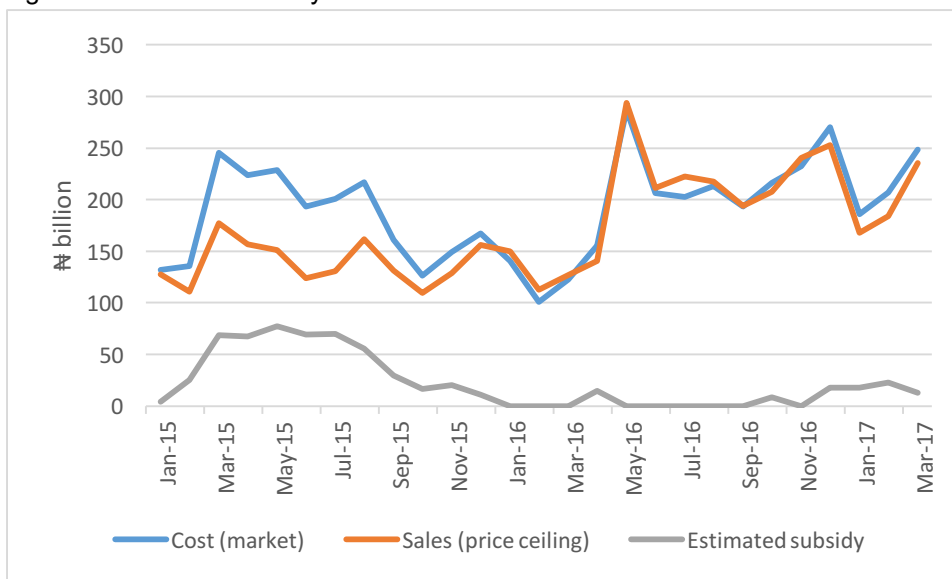
The drop in cost of fuel subsidies following the “price modulation” policy is shown in Figures 6 and 7. It should be noted that the subsidy was estimated assuming payments were issued for officially recorded imports of fuel—actual costs are likely higher due to misreporting and overpayments.⁵⁵ Though the current cost of the subsidy is low, the spread between import prices and official prices could again widen as there is no mechanism to automatically adjust the price ceiling. This is especially plausible given oil prices in 2016 were unusually low.

The Nigerian government incurs indirect costs from the subsidy regime through lost opportunities for revenue generation. Oil exploited by the NNPC that could be sold internationally is instead sold domestically at below-market prices. Nigeria’s convoluted system in which much of the oil reserved for domestic refining and consumption is in fact swapped or resold makes estimates of the value of the implicit subsidy difficult. However, estimates have put the cost of the implicit subsidy at 1.8% of GDP in 2002 and 1.42% of GDP in 2006.⁵⁶

⁵⁵ Aramide et al., *A Citizen’s Guide to Energy Subsidies in Nigeria*, 8.

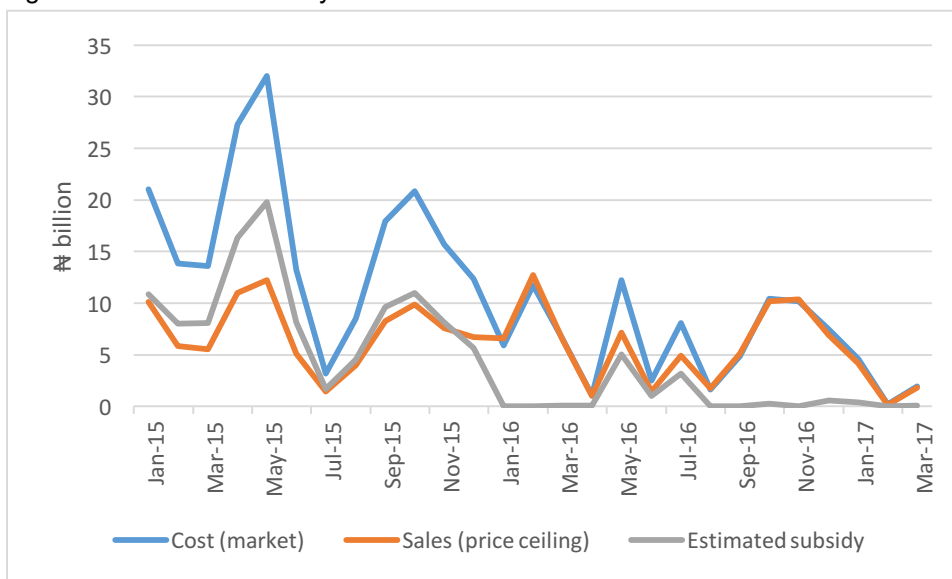
⁵⁶ Victor Asekunowo, “The economics of Nigeria’s petroleum products’ subsidy removal debate: Who is right? Who is wrong?,” *OPEC Energy Review* (2012):

Figure 6: Gasoline Subsidy Estimate



Source: Author's calculation based on data from the National Bureau of Statistics, PPPRA, and news reports⁵⁷

Figure 7: Kerosene Subsidy Estimate

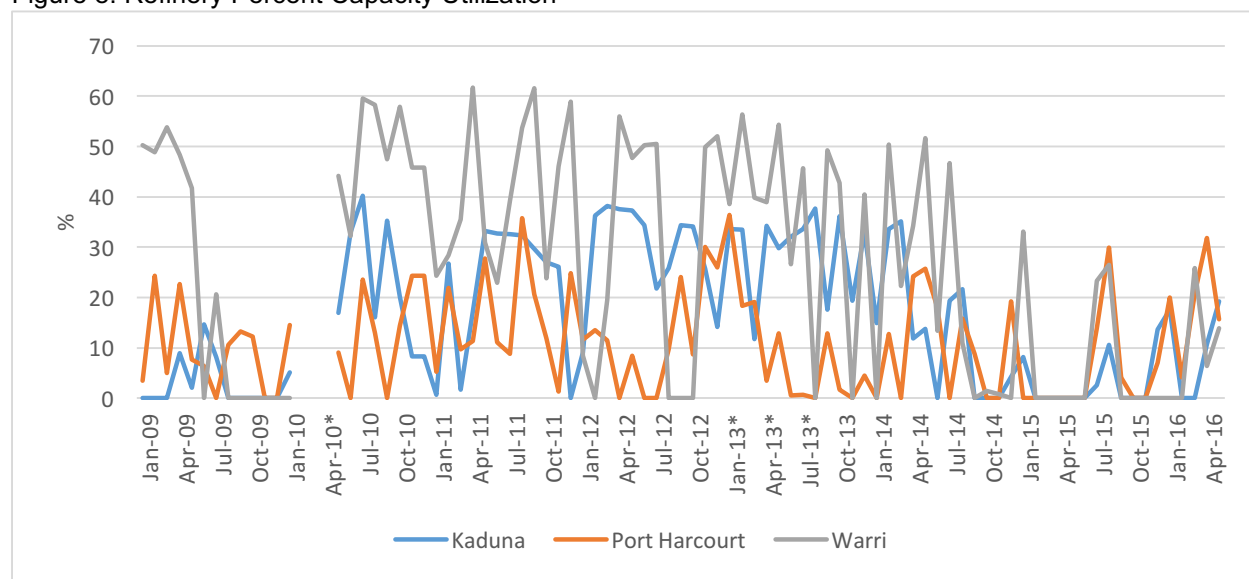


Source: Ibid.

⁵⁷ "NBS E-library," National Bureau of Statistics; "Petroleum Products Pricing Template – Explanatory Note," Petroleum Products Pricing Regulatory Agency, <https://www.proshareng.com/news/Oil%20Sector/Petroleum-Products-Pricing-Template---Explanatory-Note/15914>; Agbon, "Fuel Price Increase"; Udo, "How we arrived at N87 petrol price"; Deolu, "Jonathan Reduces Price Of Petrol To 87 Naira"; Eboh, "FG ends kerosene subsidy."

Additional indirect costs arise from Nigeria’s underutilization of refining capacity, shown in Figure 8. Price ceilings act as a deterrent for existing refineries to improve management and operate at full capacity. In 2015, according to data from the NNPC, Nigeria’s state owned refineries in Kaduna, Port Harcourt, and Warri operated at only 2.9%, 4.6%, 6.9% capacity, respectively.⁵⁸ Using a 2.2 to 1 conversion rate of crude oil to gasoline, at 2015 market prices the refineries’ underutilization represented lost sales of roughly ₦1.09 trillion. Price ceilings have also disincentivized private sector investment in the refining industry. Since 2000, the Nigerian government has issued twenty refinery licenses, none of which have been used to build new refineries.⁵⁹

Figure 8: Refinery Percent Capacity Utilization



Source: NNPC, *periods of conflicting or missing data⁶⁰

⁵⁸ “Monthly Performance Data,” Nigerian National Petroleum Corporation, 2016, <http://nnpcgroup.com/NNPCBusiness/BusinessInformation/PerformanceData/MonthlyPerformanceData.a.spx>.

⁵⁹ Clements et al., *Case Studies on Energy Subsidy Reform*, 50.

⁶⁰ “Monthly Performance Data,” Nigerian National Petroleum Corporation.

Any benefits of the subsidy regime must be weighed against its costs to government. As shown, these costs are highly variable but over the past decade have been substantial. Depending on the nature and existence of market failures, these costs are either offset by a boost to GDP growth, as argued by proponents of the regime, or are further compounded by negative externalities and induced economic inefficiencies.

2.2. Market Failures

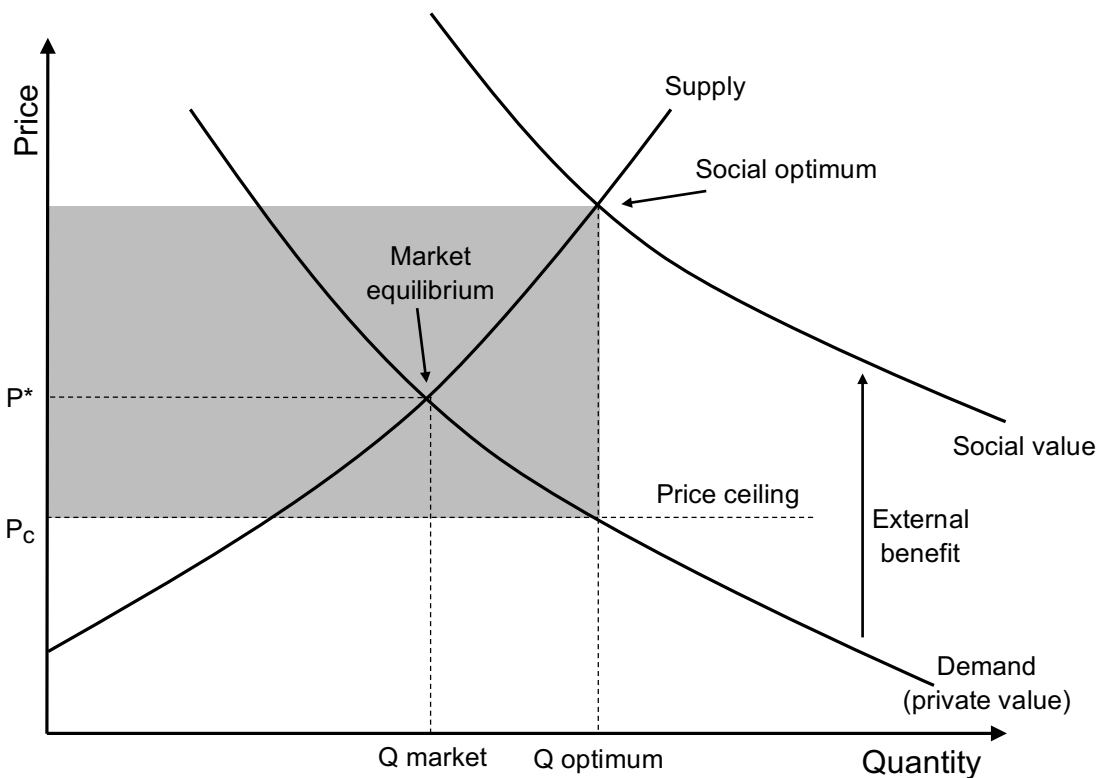
By advocating subsidies to stimulate fuel demand, supporters of Nigeria's fuel subsidy regime imply a free market would fail to reach the socially optimal output and consumption of fuel. Standard economic theory considers subsidies justified in the presence of a positive externality. When the social benefit provided by a good or service is higher than its private value to buyers, private demand fails to generate the socially optimal quantity of that good or service in the market. Subsidies can lower prices, thereby increasing demand and output. This theory is shown in Figure 9. The area shaded in grey represents the cost of the subsidy to government.

As grounds for fuel subsidization, supporters in Nigeria point to a supposed positive and causal relationship between energy consumption and GDP growth.⁶¹ However, it is unclear how such a relationship could constitute a positive externality. An externality's value is by definition not directly priced in markets, and GDP captures market-priced economic activity. Conversely, negative externalities associated with fossil fuel consumption are widely recognized and detailed in the growing literature on greenhouse gas emissions. For this reason the G20,

⁶¹ Aramide et al., *A Citizen's Guide to Energy Subsidies in Nigeria*, 7.

supported by organizations such as the World Bank, has committed to phasing out fossil fuel subsidies.⁶²

Figure 9: Subsidy with Positive Externality



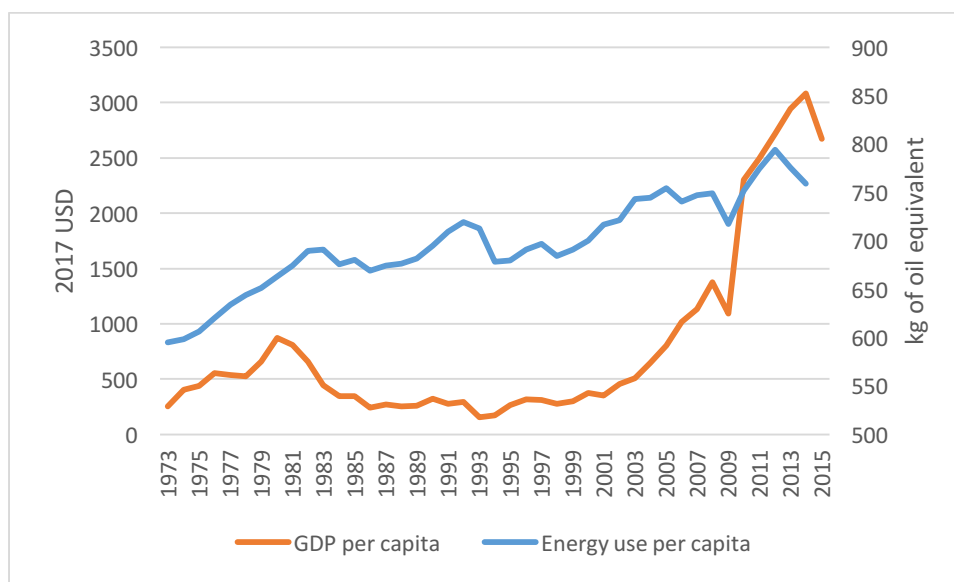
For the economic argument favouring subsidies to be valid, at minimum a causal relationship must be demonstrated between fossil fuel consumption and GDP growth. This is problematic as theorized correlations between energy use and GDP growth are not specific to fossil fuels, and causality is typically found to be bidirectional.⁶³ Studies have found positive long-run relationships between energy consumption and GDP growth in developing countries, but

⁶² Bacon et al., *Subsidies in the Energy Sector*, 8, 15-16; Olufolahan Osunmuyiwa and Agni Kalfagianni, "The Oil Climax: Can Nigeria's fuel subsidy reforms propel energy transitions?," *Energy Research & Social Science* 27 (2017): 96.

⁶³ Usama Al-mulali and Abdul Mohammed, "The relationship between energy consumption and GDP in emerging countries," *International Journal of Energy Sector Management* 9 (2015): 78-79.

regional data shows the strength of this correlation is unclear.⁶⁴ From 1965-1973 the ratio of energy consumption growth to GDP growth averaged 1.18 in sub-Saharan Africa, with no wide gap between oil exporting and importing countries.⁶⁵ However, since 1973 GDP per capita in Nigeria has risen and fallen with trends in world oil prices as well as political changes, whereas energy consumption per capita has been much more stable, as shown in Figure 10.

Figure 10: GDP Per Capita and Energy Use Per Capita in Nigeria



Source: World Development Indicators

As shown in Figure 10, the most recent data shows energy use per capita in Nigeria at 759kg of oil equivalent. Modelled in Figure 11, subsidies increased gasoline consumption by an estimated 340 million litres in 2015 (the effect of kerosene subsidies was unclear). This translates to 1.87L per capita, or 1.53kg of oil equivalent per capita—meaning subsidies increased overall energy consumption by only 0.2%. Even assuming a strong causal relationship, the effect of subsidies in boosting GDP growth would be minimal.

⁶⁴ Ibid.

⁶⁵ Iwayemi, "Energy development and sub-Saharan African economies," 34.

Siddig et al. (2014) estimated the economic effects of removing Nigeria's oil subsidies using a general equilibrium model incorporating detailed Nigerian household data taken from the Nigerian social accounting matrix of 2006, which included a range socio-economic indicators.⁶⁶ Nigerian data was combined with global macroeconomic data to model the economic impacts of four subsidy removal scenarios: full subsidy removal; partial subsidy removal; partial removal of import subsidization with increased subsidies to domestic refineries; and partial subsidy removal with government transfers to poor households.⁶⁷ The authors estimated costs of refined petroleum products would rise by 19% following full subsidy removal. However, the cost burden would most be felt by consumers indirectly as a greater proportion of household income is spent on goods and services relying on subsidized fuel as a major input. For example, transportation and communication prices, in which petroleum products represent 31.7% of input costs would see price increases of 11.1% following a full removal of subsidies assuming 2012 figures.⁶⁸

A significant finding was that all four scenarios produced increases to real GDP, with a 0.18% increase following a full removal of subsidies. However, without redistribution policies, household income would decline.⁶⁹ The increase to GDP following subsidy removal would be due to substantial increases in government consumption. The authors thus suggested adopting a subsidy removal program that includes transfers to the poor, with a caveat that the benefits of transfer schemes may be overestimated due to the prevalence of corruption. A weakness of the study was its failure to address fuel price volatility. Estimates were made assuming constant oil prices.

⁶⁶ Siddig et al., "Impacts of removing fuel import subsidies in Nigeria on poverty," *Energy Policy* 69 (2014): 167; "A 2006 social accounting matrix for Nigeria," International Food Policy Research Institute, 2010, <http://www.ifpri.org/publication/2006-social-accounting-matrix-nigeria>.

⁶⁷ Siddig et al., "Impacts of removing fuel import subsidies in Nigeria on poverty," 169.

⁶⁸ *Ibid.*, 170.

⁶⁹ *Ibid.*, 173.

The World Bank also argues that long-run economic growth potential is diminished by energy subsidies, including fossil fuel subsidies. Energy subsidies affect economic actors' decisions concerning the allocation of factors of production.⁷⁰ Energy intensive production processes are favoured, with the costs of inefficiencies imposed on society as a whole. Subsidies may likewise draw investment towards uncompetitive industries while sectors that could enjoy a comparative advantage internationally remain underdeveloped. This inefficient use of resources equally holds true for consumption decisions. Moreover, the absence of market price signals creates a difficult environment for the innovation of exportable technologies.⁷¹ Business strategies and production methods reliant on subsidized inputs will be unviable in the international market. In sum, energy subsidies prevent the achievement of Pareto efficiency—the optimal distribution of resources in an economy.

The argument that conflates fossil fuel consumption with GDP growth misses an additional point. Nigerians' consumption of energy may be low due, not to the cost of fossil fuels, but an inadequate and expensive electricity supply. Across the country, public power supply is unreliable, leading individuals and firms to rely on private generators. Reliance on subsidized fuel for generators has been a factor in political opposition to subsidy reform. At the same time, the subsidy regime may weaken incentives for investment in electrical grid, as firms and individuals—especially the wealthy and politically influential—have adapted to intermittent public power. The interplay between fuel subsidies and investment in the electrical grid will be further examined in section 3.3.

⁷⁰ Bacon et al., *Subsidies in the Energy Sector*, 39.

⁷¹ *Ibid.*

The argument for fuel subsidies to promote GDP growth is thus weak on several counts. Firstly, there is no theoretical explanation for how the socially optimal quantity of fuel output would be above market equilibrium, as a standard justification for subsidies would require. Evidence points to a correlation between energy consumption and GDP growth, however the causality is considered bidirectional and the strength of this correlation in the region appears weak. The weight of literature instead suggests that fuel subsidies push fossil fuel consumption above the socially optimal quantity, worsening greenhouse gas emissions and creating economic inefficiency. As resources are directed away from their most productive uses, GDP growth is diminished.

2.3. Macroeconomic Stability

A final economic rationale for the subsidy regime holds that maintaining uniformly low fuel prices promotes macroeconomic stability. As oil is a major input in almost all sectors of economic activity, advocates of subsidies argue higher fuel prices would create cost-push inflation combined with economic stagnation.⁷² This phenomenon was widely observed following the 1973 oil shock. In practice, the relationship between the fuel subsidy regime and inflation in Nigeria is more complex. Inefficiencies in the subsidy regime, conflicts between the government and private marketers, and Nigeria's lack of refining capacity have all caused fuel shortages at licensed stations, pushing consumers to the black market where prices are high. Even during periods of high spending on subsidies, the desired price stabilization may not be achieved.

Secondly, the procyclicality of the subsidy regime has likely accentuated swings in the business cycle and worsened inflation. Government expenditures on subsidies increase during economic

⁷² Siddig et al., "Impacts of removing fuel import subsidies in Nigeria on poverty," 167.

expansions, and decrease during recessions. This would occur even without changes to the price ceiling—high international oil prices are an economic boon to Nigeria, an oil-exporter, and simultaneously widen the gap between the market price of fuel and the price ceiling. Keynesian economic theory holds that changes in aggregate output below full employment equilibrium adjust through changes to the unemployment rate, whereas changes above equilibrium adjust through demand-pull inflation.

Government policy has in fact accentuated the procyclicality of the subsidy regime. The cost of the fuel subsidy regime as a share of GDP peaked in 2011, while Nigeria's economy grew at a strong rate of 4.9% as the country benefited from exports of high-priced crude oil. In 2016 following an extended period of low oil prices, Nigeria's economy entered a recession. Concurrently, the government dramatically scaled back spending on fuel subsidies. A Keynesian approach, in accordance with the government's stated policy objective of improving economic performance, would increase government spending during recessions in order to combat unemployment. When aggregate demand is below full employment equilibrium, government spending can induce GDP increases, proportional to the slope of the demand function. This effect is referred to as the economic multiplier.

However, the presence of an economic multiplier is reliant on government spending being countercyclical. Increased government spending at full employment equilibrium, rather than increasing aggregate output, raises the price level. In order to improve a country's potential economic growth, government policies must address structural problems in the economy. Extended periods of high government spending without doing so will create rising inflation and unsustainable debt.

This scenario has played out, evidenced by worsening national debt in recent years after oil prices declined. Annual government deficits increased by roughly 2.5 times between 2014 and 2016 as a share of GDP, leading the IMF to propose fiscal reforms including the removal of fuel subsidies.⁷³ Worsening debt means subsidy payments are amplified with interest—as of 2016, the deficit had grown to ₦2.2 trillion (USD 10 billion) and federal government interest payments were worth 66% of revenue.⁷⁴

Far from insuring against inflation and recessions, it appears the fuel subsidy regime contributes to macroeconomic instability. Asekunowo (2012) reviewed economic arguments for and against the removal of Nigeria's fuel subsidies and provided a framework for evaluating the pricing and subsidy regime consisting of four economic standards: efficiency, countercyclicality, fiscal sustainability, and equity.⁷⁵ As highlighted in the previous section, the literature suggests the subsidy regime worsens economic efficiency. On two more economic standards, the impact of the fuel subsidy regime discredits pro-subsidy arguments relating to macroeconomic stability. Spending patterns have been procyclical, exacerbating economic volatility. As they fail to address structural constraints to economic growth, subsidy payments worsen Nigeria's government debt and are unsustainable. The following section will address the question of equity.

⁷³ International Monetary Fund, *IMF Executive Board Concludes 2016 Article IV Consultation with Nigeria* (Washington: International Monetary Fund, 2016), 1; "IMF Executive Board Concludes 2017 Article IV Consultation with Nigeria," International Monetary Fund, March 30, 2017, <https://www.imf.org/en/News/Articles/2017/03/30/pr17105-nigeria-imf-executive-board-concludes-2017-article-iv-consultation>.

⁷⁴ Osunmuyiwa and Kalfagianni, "Can Nigeria's fuel subsidy reforms propel energy transitions?," 100; "IMF Executive Board Concludes 2017 Article IV Consultation with Nigeria."

⁷⁵ Asekunowo, "The economics of Nigeria's petroleum products' subsidy removal debate," 314.

3. Social Arguments and Impacts

A stated aim of Nigeria's subsidy regime is the empowerment of the poor through access to energy.⁷⁶ Supporters point to the direct effect of fuel subsidies on the living standards of the poorest Nigerians, by lowering consumption costs of household necessities such as cooking fuel. Equally, fuel subsidies may lower costs of entry into more productive economic activities for the poor. With fuel as a primary input for most sectors of business, cheaper fuel should facilitate the founding of small and medium-sized enterprises. This would accelerate the transition of Nigeria's poor from subsistence to investment-driven economic activity. In contrast, the World Bank has argued for the removal of subsidies citing the reduced ability of governments to provide services to low-income groups during economic downturns.⁷⁷

Two approaches can be used to measure the impact of the fuel subsidy regime in terms of its equity and social objectives. Firstly, the subsidy incidence can be estimated by graphing supply and demand curves, and price ceiling as compared to market equilibrium, to determine changes to consumer and producer surpluses. A profile of fuel consumers' income and rates of consumption then indicates what share of the change in consumer surplus goes to the poor. The increase in consumer surplus must be weighed against government expenditures and deadweight loss resulting from the subsidy, as well as negative externalities associated with fossil fuel consumption. This approach is theoretically attractive, but simplifies much of the complexity of the regime and is highly inaccurate. Leakages and corruption, examined in section 4, are main factors cited for preventing Nigeria's subsidy regime from effectively targeting the poor, and are not properly captured in a standard subsidy incidence graph.

⁷⁶ Siddig et al., "Impacts of removing fuel import subsidies in Nigeria on poverty," 166.

⁷⁷ Bacon et al., *Subsidies in the Energy Sector*, 39.

Secondly, the social impact of the fuel subsidy regime can be contrasted with plausible counterfactuals—outcomes had the government pursued alternative policies to alleviate poverty. Government interventions in the domestic economy for the purpose of socioeconomic development can be evaluated based on the OECD Development Assistance Committee (DAC) evaluation criteria: relevance, effectiveness, efficiency, impact, and sustainability.⁷⁸ Using this framework, arguments in favour of subsidies that allege a social benefit are compelling only if the subsidy regime performs better than alternative poverty alleviation policies. The literature points strongly towards other interventions being stronger, according to the DAC criteria, as strategies to alleviate poverty. Specifically, investment in public electricity would more broadly provide access to energy.

3.1. Subsidy Incidence and Equity

Subsidy incidence refers to the division of subsidy benefits between consumers and suppliers. In Nigeria, subsidies are used to support a price ceiling. A price ceiling increases benefits to consumers while decreasing benefits to suppliers. By compensating suppliers for the difference between market prices and price ceiling, Nigeria's subsidies theoretically afford suppliers the benefits, or producer surplus, they would otherwise attain in a free market. Depending on the elasticity of supply and demand, a change in price will have more or less of an effect on consumer surplus—the aggregate difference between prices consumers are willing to pay and the actual price of the good. The higher the elasticity of demand, the less price changes will affect consumer surplus. In energy markets, high demand elasticity indicates substitutability of energy sources or the use of energy for luxury purposes.

⁷⁸ "DAC Criteria for Evaluating Development Assistance," Organisation for Economic Co-operation and Development, 2017, <http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>.

Iwayemi et al. (2010) applied multivariate cointegration regressions to data from 1977 to 2006 on income, fuel consumption, and fuel prices in Nigeria. They estimated the short-run price elasticity of gasoline (-0.25), diesel (-0.42), and kerosene (-0.03).⁷⁹ The lower elasticity of kerosene reflects its use as a necessity good. In the long-run, demand was less elastic at -0.11 for aggregate petroleum products.⁸⁰ Other estimates of price elasticity include: Nwachuku and Chike (2011), short-run price elasticity for gasoline (-0.886); Omisakin et al. (2012), long-run price elasticities for gasoline (-0.016) and kerosene (-0.205); and Rentschler (2016), aggregate short-run price elasticity for petroleum products at -0.3.⁸¹ The elasticities estimated by Iwayemi et al. will be used due to the strong methodology of their study.

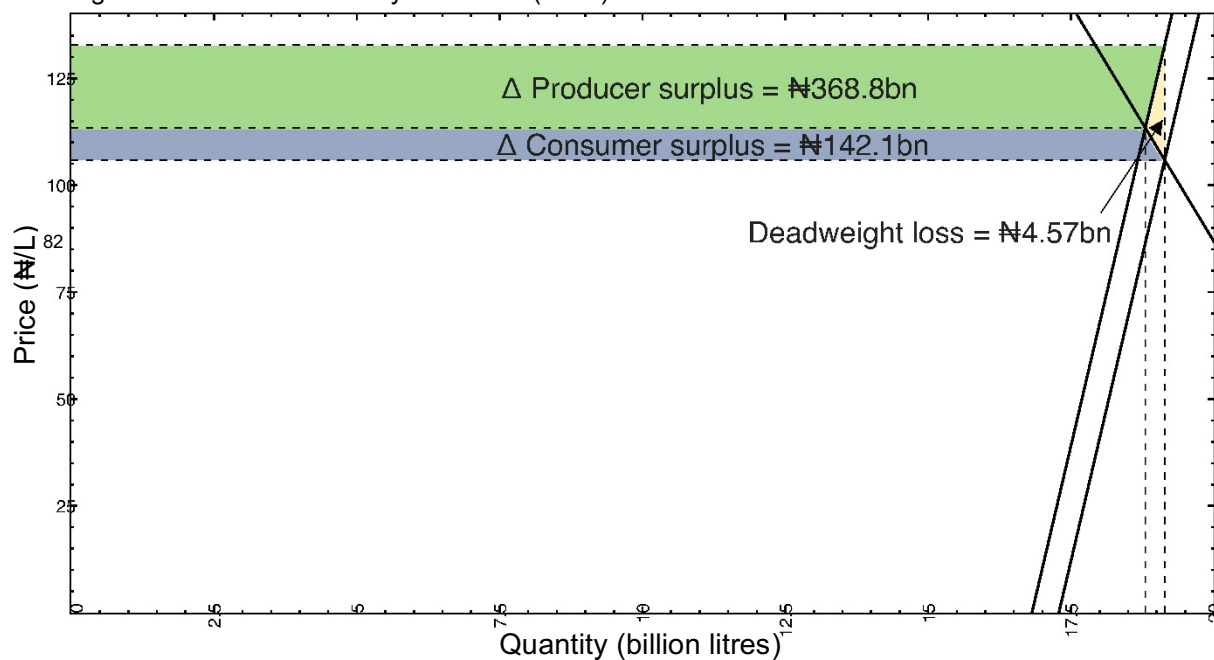
Shown in Figures 11 and 12, an estimate of subsidy incidence has been calculated using the average price, market equilibrium (according to landing costs and distribution margins), and subsidy cost (using the price-gap method) for gasoline in 2015. For simplicity, supply and demand functions are linear. The demand function is calculated using a point elasticity of -0.25 at P_{subsidy} . The initial supply function can then be calculated between P^*Q^* and $P_{\text{producer}}Q_{\text{subsidy}}$. When supply costs are subsidized, the supply curve shifts outwards to $\text{Supply}_{\text{subsidy}}$, producing an increase in both consumer and producer surplus, as well as a deadweight loss. It should be noted that the graphs do not capture the implicit subsidy and supply from domestic refineries. However, as Nigeria's three refinery sites operated at very low capacity or were out of operation in 2015 as shown in Figure 8, they accounted for an insignificant portion of supply.

⁷⁹ Akin Iwayemi, Adeola Adenikinju, and M. Babatunde, "Estimating petroleum products demand elasticities in Nigeria: A multivariate cointegration approach," *Energy Economics* 32 (2010): 79.

⁸⁰ *Ibid.*, 78.

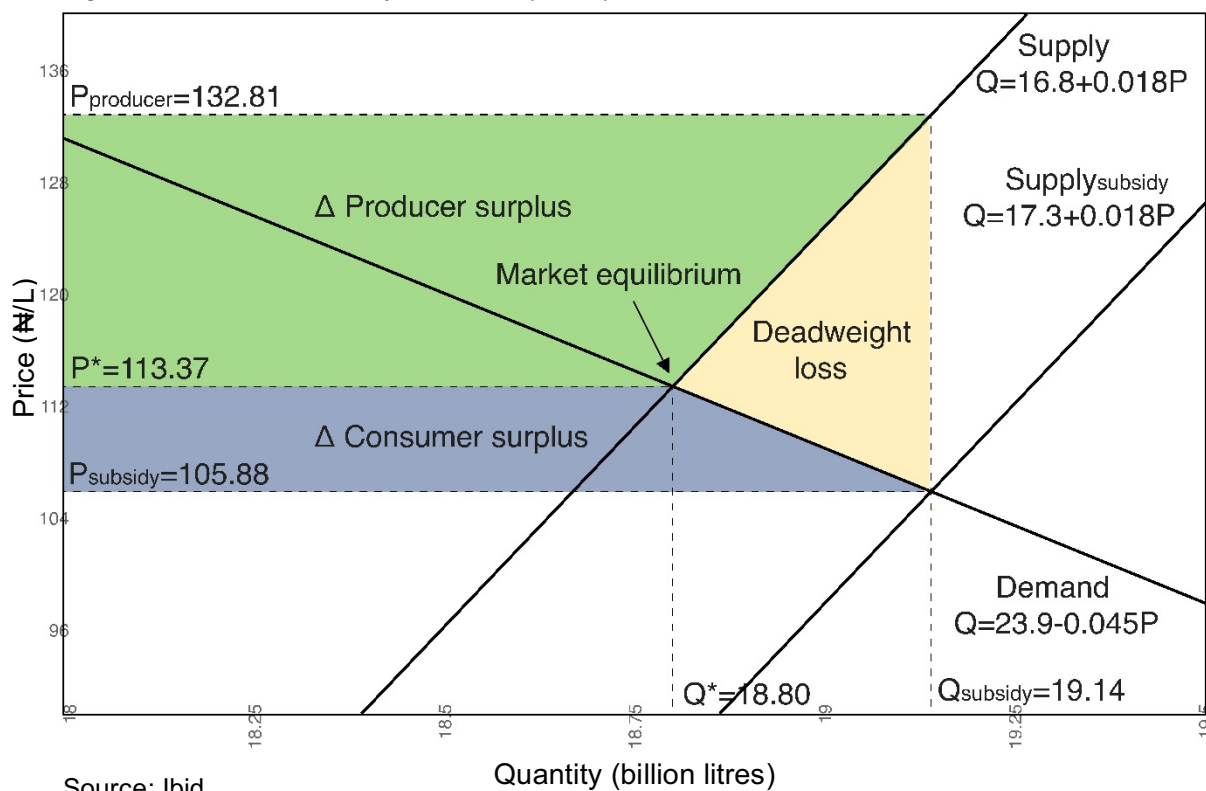
⁸¹ Jun Rentschler, "Incidence and impact: The regional variation of poverty effects due to fossil fuel subsidy reform," *Energy Policy* 96 (2016): 496; Maxwell Nwachuku and Harold Chike, "Fuel subsidy in Nigeria: Fact or fallacy?," *Energy* 36 (2011): 2799, 2800.

Figure 11: Gasoline Subsidy Incidence (2015)



Source: National Bureau of Statistics, PPPRA, news reports⁸²

Figure 12: Gasoline Subsidy Incidence (Detail)



Source: Ibid.

⁸² "NBS E-library," National Bureau of Statistics; "Petroleum Products Pricing," Petroleum Products Pricing Regulatory Agency; Agbon, "Fuel Price Increase"; Udo, "How we arrived at N87 petrol price"; Deolu, "Jonathan Reduces Price Of Petrol To 87 Naira"; Eboh, "FG ends kerosene subsidy."

For the gasoline market, ₦515 billion in subsidies produced a change in consumer surplus of ₦142.1 billion, and a change in producer surplus of ₦368.8 billion, with the remaining ₦4.57 billion being deadweight loss. Thus fuel marketers benefited roughly 2.6 times more from gasoline subsidies than consumers in 2015.

For kerosene, subsidy incidence should theoretically be more weighted towards consumers. As kerosene is used for essential purposes, its demand is inelastic, whereas gasoline is used by the wealthy for non-essential transportation and is relatively elastic.⁸³ However, in practice marketers were found to be appropriating most of the subsidy, with consumers reportedly spending up to five times official prices for kerosene in 2015 (see Figure 4).⁸⁴ Attempting to model subsidy incidence for kerosene revealed a bizarre situation in which the market equilibrium price was lower than the subsidized price. Average landing costs and distribution margins for 2015 gave an expected market equilibrium price of ₦112.9/L, while available data showed the average retail price was ₦227.6/L—far above the official price ceiling of ₦50/L.⁸⁵ It can be concluded that the subsidy regime was entirely ineffective at increasing consumer surplus, and the sum of the estimated ₦111.9 billion in kerosene subsidies went to fuel marketers.

Equity objectives aim to lift disadvantaged groups socially and economically to a level where they may enjoy equal access to opportunities. For a policy to promote equity, it must be progressive—positive impacts must be more pronounced for more disadvantaged groups. Rentschler (2016) studied the distribution of welfare effects of Nigeria’s fuel subsidies using data on fuel consumption from the Harmonized Nigerian Living Standard Surveys of 2009/2010

⁸³ Rentschler, “Incidence and impact,” 493.

⁸⁴ *Ibid.*, 492.

⁸⁵ “NBS E-library,” National Bureau of Statistics.

and concluded the policy was regressive.⁸⁶ Greater rates of fuel consumption, translating to more subsidy benefits, were observed for wealthier groups.

Fuel consumption is greater in urban areas, where median incomes are higher. Urban households in Nigeria consume 67% of petroleum products whereas rural households, despite representing 53.6% of the country's population, consume 33% of petroleum products.⁸⁷ As a share of their income, urban households also spend more on energy than do rural households, at 5% compared to 3%.⁸⁸ The disparity is magnified when consumption is further broken down by income groups. The richest 10% consume 65.8% of gasoline in urban areas and 29.7% in rural areas, while the poorest 10% consume only 0.03% in urban areas and 1.9% in rural areas.⁸⁹ The benefits of an increase in consumer surplus for gasoline thus fall overwhelmingly to upper and middle-class Nigerians. This finding is corroborated by a multi-country study of the distribution of welfare impacts of fuel subsidies by Del Granado and Coady (2012), which found that the top income quintile received 20 times more gasoline subsidy benefits than the bottom income quintile.⁹⁰

No data was found on income levels for fuel suppliers, comprised of marketers and employees of the NNPC. However, the heavily regulated nature of the downstream oil sector in Nigeria suggests a protected industry with high incomes. The requirement that all fuel marketers be licensed by the PPPRA acts as a barrier to entry. As of early 2016, the PPPRA had reduced the number of licensed fuel marketing firms from 58 to 18 "to encourage efficiency."⁹¹ Profits to

⁸⁶ Rentschler, "Incidence and impact," 492-493.

⁸⁷ Siddig et al., "Impacts of removing fuel import subsidies in Nigeria on poverty," 166.

⁸⁸ Rentschler, "Incidence and impact," 493.

⁸⁹ Ibid.

⁹⁰ Francisco del Granado and David Coady, "The Unequal Benefits of Fuel Subsidies: A Review of Evidence for Developing Countries," *World Development* 40 (2012): 2238.

⁹¹ Bassey Udo, "Oil Crisis: Nigerian govt. gets N2.6 billion from NNPC, fuel marketers," *Premium Times*, February 20, 2016

petroleum suppliers—at least licensed ones who benefit from subsidies—are thus highly concentrated and wages theoretically above market equilibrium. Fuel marketing firms have also been accused of acting as a cartel to increase profits.⁹² Despite the lack of data, it is safe to estimate that licensed fuel suppliers include a near-zero share of the country's most impoverished.

As a final note, the equitability of a subsidy is inherently linked to tax incidence. Subsidies are funded by taxes, thus the progressive effects of a subsidy could be negated by a regressive tax structure. In the case of Nigeria, a majority of government revenues are generated by the oil sector.⁹³ Income taxes are progressive but play a minimal role in government finances.⁹⁴ Nigeria's tax structure will be further discussed in section 4.1.

Following this analysis, it is clear that Nigeria's subsidy regime performs poorly in its impact on equity. However, though the poor absorb only a fraction of the benefits of the subsidy regime, it is also the case that they are most vulnerable to changes in fuel prices. The proportional adverse impact of subsidy removal can therefore be greater for the poor, as noted in a synthesis of case studies on subsidy removal that included Nigeria, by Maria Vagliasindi (2012) of the World Bank.⁹⁵ A counterfactual against which to evaluate the subsidy regime's social impact must look at alternative poverty alleviation policies to mitigate the effects of subsidy removal.

⁹² Victor, "Fuel Scarcity."

⁹³ Zahid Muhammad, Hassan Suleiman and Reza Kouhy, "Exploring oil price—exchange rate nexus for Nigeria," *OPEC Energy Review* (2012): 383.

⁹⁴ "Nigeria Individual - Taxes on personal income," PwC, 2017, <http://taxsummaries.pwc.com/ID/Nigeria-Individual-Taxes-on-personal-income>.

⁹⁵ Maria Vagliasindi, "Implementing Energy Subsidy Reforms: An Overview of the Key Issues," Policy Research Working Paper 6122 (The World Bank, 2012), 2.

3.2. Alternative Poverty Alleviation Policies

The success of Nigeria's fuel subsidy regime in achieving its social objectives must be evaluated against alternative policies to which the Nigerian government could direct resources. Between 2009 and 2011, government spending on fuel subsidies was higher than on education, health and social protection combined.⁹⁶ The 2014 budget allocated ₦971.1 billion to subsidies versus ₦495.28 billion on education and ₦262.74 billion on health.⁹⁷ Plans to reform the subsidy regime have expressly earmarked the savings for spending in such areas. In effect, as well as the opportunity costs directly related to lost oil revenues discussed in section 2.1, the subsidy regime imposes social opportunity costs. The subsidy regime can be evaluated against alternative poverty alleviation policies using the OECD DAC criteria: relevance, effectiveness, efficiency, impact, and sustainability.

Relevance measures the extent to which the objectives of a development intervention address the needs to the target group.⁹⁸ In a country sorely lacking reliable power even by regional standards, the subsidy regime's objective of providing access to energy is relevant to the poor. Effectiveness measures the extent to which the intervention achieves its objectives. On this measure, the subsidy regime has only been partially successful in its primary objective of delivering inexpensive fuel, as frequent shortages push consumers to the black market where prices are sometimes many times the official ceiling. The regime has been still less effective in achieving secondary objectives such as increased GDP growth and poverty alleviation. Efficiency refers to an intervention's cost-benefit ratio. As discussed in section 2 and due to leakages and corruption which will be examined in section 4, the subsidy regime is highly

⁹⁶ Simon Commander, "A Guide to the Political Economy of Reforming Energy Subsidies," IZA Policy Paper 52 (Institute for the Study of Labor, 2012), 25.

⁹⁷ Michael Eboh, "Subsidy regime of controversy," *Vanguard*, July 1, 2014, <http://www.vanguardngr.com/2014/07/subsidy-regime-of-controversy/>.

⁹⁸ "DAC Criteria for Evaluating Development Assistance."

inefficient. Impact differs from effectiveness in that it measures the broader consequences, including unintended consequences, of a development intervention on a range of socioeconomic indicators. Structural effects on Nigeria's economy, including inefficient resource distribution; negative externalities from higher fossil fuel consumption such as greenhouse gas emissions; and structural effects on politics, namely the regime's role in increasing corruption, all must be considered. Sustainability measures the extent to which benefits will continue after the conclusion of an intervention. The subsidy regime, even in theory, is largely unsustainable in this sense—a sustainable development intervention requires investment and capacity-building to produce self-sustaining impacts. Nigeria's subsidy regime thus performs poorly on four of the five DAC criteria.

Considering the faults in the current fuel subsidy regime, observers who do not advocate an entirely different approach to poverty alleviation have recommended more effective ways of improving access to fuel for the poor. Asekunowo (2012) argued that the poor would be better targeted by fuel vouchers, an approach that improved results following subsidy reforms in Indonesia.⁹⁹ Ezeani (2014) proposed non-monetary incentives to lower fuel prices, such as decreased port charges or targeted tax-exemptions, in order to reduce the prevalence of illegal financial transactions associated with the subsidy regime.¹⁰⁰

More broadly, studies of Nigeria's fuel subsidy regime have recommended its replacement with investment in areas with stronger evidence of poverty alleviation impacts, such as education and healthcare.¹⁰¹ A 2016 report on subsidy removal recommended seven compensatory mechanisms for Nigeria's poor: transport vouchers; mass transit schemes; an E-wallet program

⁹⁹ Asekunowo, "Nigeria's petroleum products' subsidy removal debate," 313.

¹⁰⁰ Ezeani, "Removing oil subsidies in Nigeria," 388.

¹⁰¹ Aramide et al., *A Citizen's Guide to Energy Subsidies in Nigeria*, 35.

for smallholder farmers; free school meals; improved public health care; cash transfer schemes; and a vocational skills development program.¹⁰² The Nigerian government itself has recognized the social opportunity costs of the subsidy regime, and tried on two notable recent occasions to redirect subsidy payments towards social programs. The ambitious Subsidy Reinvestment and Empowerment Program (SURE-P), slated for 2012, was largely to be funded by projected annual revenue gains of ₦1.123 trillion from the removal of subsidies.¹⁰³ The program had as priority areas of focus: maternal and child health, public works, mass transit, and vocational education including youth training.¹⁰⁴

Funding was initially planned at ₦1.34 trillion, then reduced to ₦426 billion after oil prices dropped from 2011 levels.¹⁰⁵ The SURE-P was canceled entirely in 2012 after the Jonathan administration failed to permanently remove subsidies in the wake of strong civil opposition.¹⁰⁶ More recently, in February 2017 the Nigerian government announced the Economic Recovery and Growth Plan (ERGP). The ERGP document has under energy objectives the prevention of a reversion to the fuel subsidy regime, stating that “oil revenues will be used to develop and diversify the economy, not just sustain consumption as was done in the past.”¹⁰⁷ Of particular focus for the ERGP is improvement to Nigeria’s power grid.¹⁰⁸ The following section will specifically address public electricity, as it is one of the most oft-cited areas to which subsidy expenditures could be redirected.

¹⁰² Adeoti et al., *Compensatory Mechanisms for Fuel Subsidy Removal in Nigeria*, 51.

¹⁰³ Ezeani, “Removing oil subsidies in Nigeria,” 368.

¹⁰⁴ Aramide et al., *A Citizen’s Guide to Energy Subsidies in Nigeria*, 35.

¹⁰⁵ Ibid.

¹⁰⁶ Ezeani, “Removing oil subsidies in Nigeria,” 368.

¹⁰⁷ Ministry of Budget and National Planning, *Nigeria Economic Recovery and Growth Plan: 2017-2020* (Abuja: Ministry of Budget and National Planning), 13, 18.

¹⁰⁸ Joseph-Raji et al., *Nigeria Bi-Annual Economic Update*, 27.

3.3. Investment in Public Electricity

Nigeria suffers from an acute lack of public electricity. Private generators account for up to 20% of the country's total installed electricity capacity compared to the sub-Saharan average of 6%.¹⁰⁹ Due to frequent power outages, the amount on which business relies on private electricity generation is greater still. In the most recent World Bank Enterprise Survey, firms reported obtaining on average 41.2% of their electricity from private generators, while the sub-Saharan average was 13.4%.¹¹⁰ Reliance on private generators has created a paradox for policymakers. Investment in electricity infrastructure has lagged in part because of high government spending on fuel subsidies. However, firms have resisted government attempts to remove fuel subsidies because of their reliance on fuel to run private generators—required due to inadequate public electricity.

It is estimated that intermittent power costs Nigeria 4% of its GDP.¹¹¹ The effects of power outages are not concentrated in Nigeria's very poorest, who are engaged in subsistence agriculture, but disproportionately affect low-income Nigerians working in small and medium-sized enterprises. Larger firms can afford larger and more efficient generators which produce electricity at a lower unit cost.¹¹²

Bazilian and Onyeji (2012) examined the effects of Nigeria's fuel subsidies on businesses and found industrialization to be hindered by high energy costs.¹¹³ Statistics on industrialization

¹⁰⁹ Bazilian and Onyeji, "Fossil fuel subsidy removal and inadequate public power supply," 3.

¹¹⁰ World Bank, "Nigeria (2014)," Enterprise Surveys, 2017, <http://www.enterprisesurveys.org/data/exploreeconomies/2014/nigeria#infrastructure>.

¹¹¹ Rentschler, "Incidence and impact," 492.

¹¹² Victor Oladokun and O. Asemota, "Unit cost of electricity in Nigeria: A cost model for captive diesel powered generating system," *Renewable and Sustainable Energy Reviews* 52 (2015): 39.

¹¹³ Morgan Bazilian and Ijeoma Onyeji, "Fossil fuel subsidy removal and inadequate public power supply: Implications for businesses," *Energy Policy* 45 (2012): 3.

show the importance of reliable power delivery for countries to move from subsistence to investment-driven economies.¹¹⁴ Without a reliable electricity grid, large scale manufacturing providing economies of scale is infeasible. Whereas average energy costs range from 1.4% to 5.6% of production costs for various sectors in developing countries, in Nigeria the input costs of energy are estimated to be far higher.¹¹⁵ The Manufacturing Association of Nigeria estimated energy accounted for an astounding 36% of production costs.¹¹⁶ Studies have shown Nigeria could enjoy a cost per unit advantage in manufacturing over developing countries such as India if it benefited from the same standard of electricity supply.¹¹⁷

Osunmuyiwa and Kalfagianni (2017) studied the effects of Nigeria's subsidy regime on both public and private investment in renewable energy technologies. They examined ten subsidy reform attempts between the years 2000 and 2014 along with renewable energy policies and regulations adopted during the same period.¹¹⁸ The authors concluded that external "landscape factors," such as changes in international oil prices and the global green movement, stimulated simultaneous attempts at subsidy reform and renewable energy investment.¹¹⁹ The sample size is not enough to assert a statistically significant correlation, but the findings do intimate that the environmental benefits of subsidy reform would be complemented by greater efforts to promote clean energy.

Repeated government efforts to redirect subsidy spending to electricity, exemplified by the SURE-P and ERGP, suggest that the subsidy regime has contributed to a lack of investment in

¹¹⁴ Ibid.

¹¹⁵ Ibid., 2.

¹¹⁶ Ibid., 3.; World Bank, "Nigeria (2014)," Enterprise Surveys, 2017, <http://www.enterprisesurveys.org/data/exploreconomies/2014/nigeria#infrastructure>.

¹¹⁷ Bazilian and Onyeji, "Fossil fuel subsidy removal and inadequate public power supply," 4.

¹¹⁸ Osunmuyiwa and Kalfagianni, "Can Nigeria's fuel subsidy reforms propel energy transitions?," 103.

¹¹⁹ Ibid.

electricity and renewable energy. A plausible counterfactual would see Nigerian electricity indicators level with regional standards. Aside from being poorly targeted towards the country's poor, and measuring unfavourably against alternative poverty alleviation programs, the subsidy regime has failed in its most basic objective of providing access to energy. By diverting investment from other energy sources, it has worsened Nigeria's power crisis.

4. Political Arguments and Impacts

A primary political objective of the subsidy regime, as examined in section 1, has been to give citizens a sense of ownership over their country's resources. A sense of ownership had long been absent under colonialism, and in the immediate post-colonial period, the perception that Nigeria's economy was still owned and controlled by outsiders nearly contributed to the breakup of the country. The claim that subsidies constitute the right of all citizens to their country's resource wealth forms the primary political argument for their retention.

As well as this explicit political rationale, the subsidy regime has tacit political aims. Nigeria has been described as a rentier state, characterized by the seeking of economic rent—profits above what would be obtained in the free market. In other terms, economic rent refers to profits to an industry or firm that exceed the sum of the industry or firm's opportunity costs, leading consumers to pay above-market prices. To extract economic rent an industry or firm requires power over markets, either through state intervention, through cartelization, or by gaining enough market share to influence prices. Economic activity in Nigeria thus involves close relations between the private sector and public offices, and the domination of key industries by organized groups of firms in cooperation with government officials, or by the state itself.

A related concept also used to describe Nigeria's political system is neopatrimonialism. In a neopatrimonial system, political loyalty is bought through the targeted disbursement of state wealth. A relation tree branches out from the central federal level to state, municipal, and local levels. On the ground are street gang members who are paid by a local godfather to drum up support, through bribery or intimidation, for a particular candidate.¹²⁰ The democratic ideal sees

¹²⁰ "Miracle in Abuja," *The Economist*, June 18, 2015, <http://www.economist.com/news/special-report/21654364-largely-democratic-and-peaceful-handover-power-miracle-abuja>.

individuals taxed in return for political accountability. Politicians must meet the demands of the populace in order to continue receiving their tax dollars. In a neopatrimonial system, money flows down and accountability flows up. Nigeria's modern political system has its roots in Britain's colonial use of indirect rule whereby existing community leaders were bought off to form a complex puppet state requiring colonial administrators mainly at the central level.

These two concepts can be used as a framework to better understand the political motivations for the preservation of Nigeria's fuel subsidy regime. Though ostensibly a development intervention to stimulate economic growth and grant access to energy to the poor, pressure to keep the subsidy regime intact has been covertly exerted by political and economic elites who benefit from the extraction of economic rent. Leakages in the supply chain of subsidized petroleum products may not be the result of poor management, but rather a built-in aspect of the system to facilitate patronage.

4.1. Rent-Seeking in Nigeria's Oil Sector

For decades, subsidies have interacted with larger trends in Nigeria's economy to prop up an elite at the expense of broad-based economic growth. Before independence, Nigeria had an extractive economy designed to concentrate wealth in the hands of colonial administrators. Independence outwardly changed the face of government but did not deeply transform the country's economic structure. Beginning in the mid-1970s, economic planning prioritized oil-sector growth and ignored formerly strong sectors of the economy such as agriculture.¹²¹ Political elites further consolidated ownership of the economy under the guise of indigenization as sections of the oil industry were nationalized. Subsequent policy decisions, including the

¹²¹ Chete et al., *Industrial Development and Growth in Nigeria*, 2-3.

development of the subsidy regime, served to create an unaccountable oil sector in which private firms and public officials acted in concert to manipulate markets and extract rent.

To understand how the oil sector exerts political influence, it is helpful to review the Nigerian government's revenues. As shown in Figure 1, oil rents reached a high point in the 1970s, during which Nigeria enjoyed a period of strong oil-driven GDP growth, and again during the 1990s creating far fewer positive spillovers.¹²² Whereas the oil sector accounted for a majority of Nigeria's economic activity in past decades, recent growth in other sectors, particularly services, has now reduced the oil sector's role to only 8.4% of GDP as of 2016.¹²³ However, the oil sector still provided 62% of total budgetary revenue in 2016, and the share was forecasted to increase to 72% in 2017.¹²⁴

Of government oil revenues, a majority come directly from the NNPC, which alone provided 61% of total government revenues in 2013.¹²⁵ The NNPC, as a state enterprise with a mandated ownership of a large portion of Nigeria's oil production, is free from market pressures. As the main provider of public funds, it is also largely free from government pressure to be both efficient and accountable. Civil society has demanded accountability from the NNPC with negative publicity, but this does not give the organization a structural incentive to improve the transparency of its finances. The NNPC need not rely on any continued support, apart from the upholding of its legal status as the national petroleum producer, to maintain its lucrative revenue streams. Rather, the government relies on the NNPC, and this direction of dependency has resulted in opaque corporate governance and finances in the NNPC.

¹²² Adeola Adenikinju and Niyi Falobi, "Macroeconomic and distributional consequences of energy supply shocks in Nigeria," *African Economic Research Consortium Research Paper 162* (December 2006): 3.

¹²³ Joseph-Raji et al., *Nigeria Bi-Annual Economic Update*, 10.

¹²⁴ Kunle Elebute, "National Budget 2017 (Nigeria)," KPMG, February 16, 2017, <https://home.kpmg.com/ng/en/home/insights/2017/02/national-budget-2017--nigeria-.html>.

¹²⁵ Sayne et al., *Inside NNPC Oil Sales*, 20.

The subsidy scheme further obscures NNPC finances, as losses due to inefficiencies and malpractice are difficult to distinguish from losses due to the price ceilings on fuel.¹²⁶ With government and civil society unable to measure its commercial performance, the NNPC has little incentive to reform. The NNPC has since its inception practiced poor public accounting. A 2015 independent report highlighted the NNPC's exchange of USD 35 billion of oil in opaque oil-for-product swap deals between 2010 and 2014, and USD 12.3 billion in unaccounted revenue from a single oil well from 2005 to 2014.¹²⁷ On the expenditures side, between 2011 and 2013 the NNPC failed to account for an estimated USD 6 billion a year in discretionary spending, including USD 6.5 billion over the three year period in subsidy payments.¹²⁸ Because subsidies facilitate the NNPC's ability to misappropriate oil rents, it has pushed back against subsidy reform. The NNPC directly defied a Presidential Directive to remove kerosene subsidies in 2009, and has contravened the *Appropriation Act* of 2012 outlining provisions for the reimbursement of subsidy payments into the Federation Account.¹²⁹

Nigeria's ports display a similar lack of transparency, with recurring accusations of corruption among the Nigerian Ports Authority (NPA).¹³⁰ In the most recent World Bank Enterprise Survey (2014), 40.7% of Nigerian firms expected to bribe officials to acquire an import license, compared to a sub-Saharan average of 16.8%.¹³¹ Here as well, subsidy payments have

¹²⁶ Kojima, "Fossil Fuel Subsidy and Pricing Policies: Recent Developing Country Experience," Policy Research Working Paper 7531 (The World Bank, 2016), 17.

¹²⁷ Sayne et al., *Inside NNPC Oil Sales*, 9.

¹²⁸ *Ibid.*, 7.

¹²⁹ National Assembly of the Federal Republic of Nigeria, House of Representatives, Ad-hoc Committee, *To Verify and Determine the Actual Subsidy Requirements and Monitor the Implementation of the Subsidy Regime in Nigeria*, April 18, 2012, 6.

¹³⁰ Musikilu Mojeed, "EXCLUSIVE: Jonathan's aide, three other ex-Nigerian officials named in \$20million bribery scandal in Switzerland," *Premium Times*, June 4, 2017, <http://www.premiumtimesng.com/news/headlines/233016-exclusive-jonathans-aide-three-other-ex-nigerian-officials-named-in-20million-bribery-scandal-in-switzerland.html>.

¹³¹ World Bank, "Nigeria (2014)."

worsened the situation. Government compensation to marketers for the landing costs of fuel has led to over-reporting of fuel imports, and in some cases completely fraudulent claims. In one noteworthy episode, fuel marketers pocketed ₦13 billion in subsidy payments after bribing officials from the NPA, the PPPRA, the Department of Petroleum Resources (DPR), and the Nigerian Navy to forge documentation for fuel imports from fictitious cargo ships.¹³² In another exposed scam, marketers reported fuel imports from ships that existed, but had not docked in Nigeria.¹³³

Ezeani (2014) examined the structure of Nigeria's subsidy regime with a focus towards the institutional attributes of the involved regulatory bodies and agencies.¹³⁴ With the exception of the Central Bank of Nigeria, the author found evidence of malpractice in all agencies, and widespread collusion with marketers to defraud the government.¹³⁵ In relation to the subsidy regime, this malpractice was outlined in detail in a 2012 Nigerian House of Representatives committee report, *To Verify and Determine the Actual Subsidy Requirements and Monitor the Implementation of the Subsidy Regime in Nigeria*. Collusion between public officials and fuel marketers represents lost potential productive economic activity, and in certain cases deliberate prevention of investment. For example, fuel marketers have been accused of preventing the development of Nigeria's refining capacity by buying up refinery licences, in order to maintain their profits through subsidy payments.¹³⁶

¹³² "EXCLUSIVE: Nigeria's biggest oil fraudsters; the worst subsidy scam ever," *Premium Times*, August 16, 2012, <http://www.premiumtimesng.com/business/96716-exclusive-nigerias-biggest-oil-fraudsters-the-worst-subsidy-scam-ever.html>.

¹³³ Ibid.

¹³⁴ Ezeani, "Removing oil subsidies in Nigeria," 387.

¹³⁵ Ibid.

¹³⁶ Ibid., 378.

Osunmuyiwa and Kalfagianni (2017) described in rentier states a “symbiotic relationship” between the distributors of rent (public officials), and organized interest groups (notably fuel marketers).¹³⁷ These two groups—political and economic elites—work together to maintain a stable order benefiting their interests. The necessity of maintaining their relationship for each group’s survival creates regime resistance to reforms that would improve transparency or in any other way inhibit channels of rent distribution and patronage.

The interplay between Nigeria’s governance, economic structure, and subsidies is complex. It is impossible to concretely determine the effect of subsidies on quality of governance. However, the existence of subsidies reinforces a self-perpetuating neopatrimonial system. They are an important avenue through which authorities can dispense state largesse, and hinder the development of accountable government. The system also facilitates rent-seeking, thus disincentivizing productive economic activities. By forming a lucrative controlled market, the subsidy regime creates additional incentives for Nigerian economic actors to pursue a share of existing national wealth rather than creating new value in the private sector. In this way, the subsidy regime exacerbates the struggle to diversify Nigeria’s economy and achieve sustainable broad-based growth.

4.2. Smuggling and the Black Market

The difference between fuel prices in Nigeria and in neighbouring countries has incentivized smuggling on a massive scale. In 2011, the Nigerian government subsidized 59 million litres of fuel per day while domestic consumption was only 35 million litres.¹³⁸ Accordingly, 40% of fuel was either smuggled out of Nigeria, or was over-invoiced in subsidy scams. Of the remaining

¹³⁷ Osunmuyiwa and Kalfagianni, “Can Nigeria’s fuel subsidy reforms propel energy transitions?” 98.

¹³⁸ Siddig et al., “Impacts of removing fuel import subsidies in Nigeria on poverty,” 166.

60%, a large portion was not purchased by final consumers at official prices. In total, the annual losses to smuggling and domestic racketeering was estimated at USD 4 billion in 2012.¹³⁹

Uneven distribution through licensed channels creates a parallel market for petroleum products in Nigeria. When licensed distributors are operating smoothly, hoarding of fuel is common. During periods of scarcity, often resulting from disputes between marketers and government over subsidy arrears, the hoarded fuel is resold in the black market. In remote rural areas of the country, there are no licensed vendors to begin with and almost all fuel is purchased at above official prices.¹⁴⁰ All theoretical analyses of Nigeria's subsidy scheme must therefore take into account the leakages in the distribution chains of petroleum products, which create a significant gap between the quantity of fuel subsidized by the government and the quantity of subsidized fuel Nigerians actually consume.

As would be expected, fuel smuggling activities rise during periods of greater disparity between Nigeria's fuel price ceiling and market prices for fuel in neighbouring countries. According to a study by Mlachila et al. (2016), roughly two thirds of gasoline consumed in Togo in 2011 was smuggled from Nigeria.¹⁴¹ Data for Benin was unavailable, but assumed to be much higher as it shares a porous border with Nigeria. Conversely, during the 2012 temporary hike in fuel prices, smuggling activities to Togo ceased almost entirely.¹⁴² During periods of high international oil prices, the Nigerian government has in fact subsidized the price of fuel not just in its own country, but to an extent in the surrounding region.

¹³⁹ Aramide et al., *A Citizen's Guide to Energy Subsidies in Nigeria*, 27.

¹⁴⁰ Francis Iloani, "Why petrol is expensive in oil-rich N/Delta," *Daily Trust*, February 5, 2017, <https://www.dailytrust.com.ng/news/business/why-petrol-is-expensive-in-oil-rich-n-delta/183973.html>.

¹⁴¹ Montfort Mlachila, "Unintended Consequences: Spillovers from Nigeria's Fuel Pricing Policies to Its Neighbors," *IMF Working Paper* (February 2016): 27.

¹⁴² *Ibid.*, 14.

Illegal fuel distribution is also widespread within Nigeria. A consumer survey in 2015 found that 90% of consumers paid on average 31% more than official prices for gasoline.¹⁴³ The gap was wider in rural areas, home to the majority of Nigeria's poor whom the regime is meant to benefit.¹⁴⁴ Scarcity resulting from leakages and inefficiencies in the subsidy regime meant consumers in northeast Nigeria—the least developed part of the country—paid more for gasoline than if the regime did not exist.¹⁴⁵ A media investigation carried out in 2016 in the Niger Delta had similar findings. Fuel prices were much higher in remote areas, serviceable only by boat. For example, whereas the official price was ₦145, gasoline sold for ₦230 in the town of Brass, Bayelsa State.¹⁴⁶ As distribution costs to these remote areas were not covered by subsidy allowances to fuel marketers, residents relied on black markets.

Ironically, some of the Niger Delta areas with high prices are the very regions where oil is drilled. Resentment of the oil industry, which has caused severe environmental degradation with little tangible benefits to the rural population, has led to vandalism of pipelines and other infrastructure, creating further environmental damage. Some of this oil is refined in low-efficiency cottage refineries. Extremist groups, which radicalized after the Nigerian government's violent suppression of peaceful environmental activism, use the proceeds of this illegal oil to fund an ongoing insurgency in the region.¹⁴⁷ Liberalization of the oil sector, by reducing scarcity, could lessen the incentives for such clandestine refining.

The primary political argument for fuel subsidies portrays the regime as a mechanism for redistributing natural resource wealth. This raises the question: to whom is the wealth

¹⁴³ Kojima, "Fossil Fuel Subsidy and Pricing Policies," 22.

¹⁴⁴ Akinyemi et al., "Fuel Subsidy Reform and Environmental Quality in Nigeria," 20.

¹⁴⁵ Kojima, "Fossil Fuel Subsidy and Pricing Policies," 22.

¹⁴⁶ Iloani, "Why petrol is expensive in oil-rich N/Delta."

¹⁴⁷ Ibid.

redistributed? The prevalence of smuggling and racketeering in the domestic black market show that much of the wealth is appropriated by middlemen before reaching consumers.

4.3. Effects of Inefficiencies on Consumption

To achieve its stated development objectives, the subsidy regime must improve access and affordability of energy, especially for the country's poor, thus increasing consumption. The existence of leakages throws doubt on the subsidy regime's effectiveness in doing so. If the subsidy regime does not increase consumption, arguments pointing to the theoretical social and economic benefits of increased fuel use are undermined.

Leakages in the supply chain of petroleum products can be understood as shifting the supply curve of fuel inward.¹⁴⁸ To reiterate, a price ceiling creates a gap between quantity demanded and quantity supplied. To avoid the problem of fuel shortages, subsidy payments give suppliers the price associated with the higher level of demand, shifting the supply curve outwards. The prevalence of smuggling, however, reduces the quantity supplied to the domestic market, while leakages to the parallel market further reduce supply at official prices. Consequently, quantity supplied under the subsidy regime is not conclusively higher than what would be supplied without subsidies.

As shown in Figure 11, the theoretical increase in gasoline consumption in 2015 due to subsidy was 340 million litres. However, this model assumed imported gasoline was consumed in Nigeria. Using World Bank data on Nigerian consumption from 1971 to 2011 and the price-gap method of measuring subsidies, Akineymi et al. (2014) found that fuel subsidies had a minimal

¹⁴⁸ Asekunowo, "The economics of Nigeria's petroleum products' subsidy removal debate," 309.

effect on emissions from liquid fuel, a proxy for consumption.¹⁴⁹ The authors' model included exogenous factors for GDP, trade openness, institutional quality, and population density.¹⁵⁰ Adjusting for institutional quality, the model predicted a significant correlation between subsidy and emissions.¹⁵¹ For the subsidy regime to be an effective driver of fuel consumption, Nigeria's public institutions would have to be reformed such that subsidized fuel could be distributed without leakages resulting in scarcity and high prices on the black market.

4.4. Public Perception

As explained in section 1, the introduction of fuel subsidies in Nigeria was part of a larger political effort to give Nigerians a sense of ownership over their country's resource wealth. Nigeria has experienced a long history of foreign ownership of its resources that plays heavily into its national psychology.¹⁵² A popular concept in Nigerian public discourse is that of the "national cake."¹⁵³ It is the sum of national wealth, cut into pieces and ideally distributed as fairly as possible. The metaphor speaks to a zero-sum understanding of the country's economy, and is reflective of Nigeria's history as an extractive economy based on primary resource exports. The centralization of resource wealth—a legacy of the colonial state structure—has created a modern system in which access to public wealth is seen as more viable than the creation of private-sector wealth. Fuel subsidies are a visible means for centralized oil revenues to be

¹⁴⁹ Akinyemi et al., "Fuel Subsidy Reform and Environmental Quality in Nigeria," 19.

¹⁵⁰ Ibid., 15.

¹⁵¹ Ibid., 20.

¹⁵² Nigeria's colonially determined borders encompass an area containing hundreds of distinct cultural groups. The term "national psychology" should not be taken to mean Nigeria's many peoples are a monolith.

¹⁵³ Jibrin Ibrahim, "Learning African Politics Through Chinua Achebe," *Premium Times*, April 1, 2013, <http://www.premiumtimesng.com/opinion/127742-learning-african-politics-through-chinua-achebe-by-jibrin-ibrahim.html>.

distributed, affording ordinary Nigerians their piece of the national cake. For this reason, many see cheap fuel as their right as a Nigerian citizen.¹⁵⁴

This sentiment has manifested in popular reactions against subsidy reform. In 2003, trade unions called a general strike in response to the lifting of the price ceiling.¹⁵⁵ In 2012, the abrupt jump in fuel prices following President Jonathan's removal of subsidies caused a yet more hostile reaction, sparking the Occupy Nigeria movement. Anti-reform campaigns were organized by important advocacy groups including the Nigerian Labour Congress and the National Association of Nigerian Students.¹⁵⁶ Again, a general strike was called which succeeded in shutting down Nigeria's major cities and ports.¹⁵⁷ During the government crackdown that ensued, at least 16 street protesters were killed by security forces.¹⁵⁸ Adopting the language of human rights, Nigerian lawyer Bamidele Aturu brought a case against the Nigerian government, arguing that the removal of subsidies contravened sections of the Nigerian Constitution guaranteeing freedom of movement, and obliging the government to "secure maximum welfare, freedom and happiness of every citizen."¹⁵⁹

Central to the Occupy Nigeria message was a lack of trust in the government's ability to put savings from subsidy reform towards social programs. A history of corrupt governance led many to believe that new revenue would be misappropriated by elites.¹⁶⁰ Writing at the time of the

¹⁵⁴ "Shock Therapy."

¹⁵⁵ Ibid.

¹⁵⁶ Nwachukwu and Chike, "Fuel subsidy in Nigeria," 2800.

¹⁵⁷ "12 killed as subsidy protests turn bloody," *Vanguard*, January 10, 2012, <http://www.vanguardngr.com/2012/01/12-killed-as-subsidy-protests-turn-bloody/>.

¹⁵⁸ Ogala Emmanuel and Ben Ezeamalu, "Occupy Nigeria: One year later, the gains, the losses," *Premium Times*, January 12, 2015, <http://www.premiumtimesng.com/news/114890-occupynigeria-one-year-later-the-gains-the-losses.html>.

¹⁵⁹ Ezeani, "Removing oil subsidies in Nigeria," 380.

¹⁶⁰ Aramide et al., *A Citizen's Guide to Energy Subsidies in Nigeria*, 35; Commander, "A Guide to the Political Economy of Reforming Energy Subsidies," 25-26.

protests, Nigerian journalist Tolu Ogunlesi explained, “the message to President Jonathan and his government is simple: earn our trust with the trillions you already have in your possession, then we can, and will, wholeheartedly hand over this subsidy trillion to you.”¹⁶¹ Despite being founded in solid economic theory, and having the technocratic backing of Minister Okonjo-Iweala and the IFIs, the Nigerian government’s lack of credibility was detrimental to the 2012 attempt at subsidy reform.

As of 2016, opinion polls have shown public attitudes towards subsidy reform have begun to shift, however the perception of fuel as a right and distrust of government both remain major obstacles to reform.¹⁶² The strong public support of fuel subsidies can be considered evidence of the policy’s success in a political objective: the psychological transition to a post-colonial state in which ordinary citizens feel they have ownership over their country and its resource wealth. In framing subsidized fuel as a human right, Nigerians evince a modern view of their government as a protector of their interests, distinct from the colonial and early post-colonial sense that the government acted in the interest of outsiders.

Conversely, public perception also reflects the government’s failure to stem corruption and mismanagement. The very same systemic governance problems relating to subsidies, shown by rent-seeking and patronage in the oil sector, cause concern that reforms may lead to the subsidy regime’s replacement by policies even more intended to benefit a self-serving elite.

¹⁶¹ Tolu Ogunlesi, “The fuel subsidy crisis has woken Nigerians up,” *The Guardian*, January 11, 2012, <https://www.theguardian.com/commentisfree/2012/jan/11/fuel-subsidy-crisis-nigerians>.

¹⁶² Osunmuyiwa and Kalfagianni, “Can Nigeria’s fuel subsidy reforms propel energy transitions?,” 100, 103.

Conclusion

Supporters of fuel subsidies argue the regime has had economic, social, and political benefits for Nigeria. To test the validity of such arguments, this paper has evaluated the subsidy regime's impacts in these three areas. Economic arguments concern increased economic growth and improved macroeconomic stability. Price ceilings and subsidies for refined petroleum products create economic incentives to increase energy consumption, which in turn is thought to promote GDP growth. In this view, Nigeria's fuel subsidy regime lifts the level of fuel consumption from market equilibrium to the social optimum. However, the literature on energy markets highlights negative externalities associated with fossil fuel consumption. No compelling counterargument presents a market failure that causes fossil fuel output to be below the social optimum. Without correcting for a market failure, Nigeria's subsidies simply cause economic inefficiency. Moreover, the theorized correlation between energy consumption and economic growth applies to all forms of energy, and evidence suggests Nigeria's fuel subsidy regime may in fact decrease overall energy use.

As a mechanism to promote macroeconomic stability, the subsidy regime has been ineffective. Government spending on subsidies is procyclical, accentuating swings in the business cycle and producing demand-pull inflation. The subsidies' huge cost burden on government also leaves it ill-equipped to afford stimulus spending during recessions and has contributed to unsustainable debt. Theoretically, uniform fuel prices could help towards price stability, however inefficiencies and leakages in the distribution of petroleum through official channels cause shortages. These drive consumers to the black market where fuel prices are much higher and more volatile, a probable source of cost-push inflation. In practice, evidence points to the subsidy regime having a negative impact on both price stability and overall macroeconomic stability.

As an intervention to improve living standards for Nigeria's poor through access to energy, the subsidy regime is badly designed. There is no targeting mechanism, meaning Nigerians benefit from the subsidy insofar as they consume fuel. Wealthier Nigerians consume far more fuel, making the effects of the subsidy regime highly regressive. Many alternative poverty alleviation policies have been proposed that would better target the country's poor, and have more positive outcomes according to metrics such as the DAC criteria. In particular, investment in Nigeria's electrical grid could go further towards providing uniform access to energy. Simultaneous attempts by the Nigerian government to remove fuel subsidies and invest in new social programs suggest subsidies have deprived more promising programs for the poor of resources.

The strength of political arguments, as measured by the success of the subsidy regime towards political objectives, is more ambiguous. The policy enjoys a strong level of public support, and in the years since its introduction, inexpensive fuel has become widely considered the right of all citizens. This suggests the policy has succeeded to an extent in advancing an important part of the post-colonial nation-building process: creating in Nigerians a sense of ownership over their country's wealth. In light of the near break-up of the country during the Biafran War, this is an important success. However, support for the policy is also driven by a lack of confidence in government to manage any alternative.

Nigeria's government as a whole has been described as rent-seeking and neopatrimonial. Tacitly, the subsidy regime has had, as a political objective, the creation of avenues through which to extract rent and dispense political patronage. Towards this objective, the subsidy regime appears extremely successful, though it is not a success celebrated by the better part of the population. Public officials have colluded with private fuel marketers and importers to manipulate markets, and embezzle funds. In doing so, these groups reinforces their elite

position and provide a modicum of stability through neopatrimonial networks, but prevent the development of accountable government.

Furthermore, widespread fraud and smuggling cast serious doubt on the subsidy regime's actual effect on lowering fuel prices and increasing consumption. Though the government has spent vast amounts on subsidies, much of the wealth has disappeared in the opaque finances of government agencies and state-owned enterprises such as the NNPC, while consumer surveys show retail prices have routinely been far higher than official price ceilings.

Subsidy removal thus does not equate to reduced energy use in the long term. Deregulation of the downstream oil sector, allowing fuel to be sold at market prices, could encourage more private investment in fuel infrastructure. This would lessen the frequency of fuel shortages, and remove incentives for smuggling and reselling fuel on the black market. Market pressures could also create a more profitable NNPC. Government savings from subsidy removal could be invested in electricity, providing more equal and reliable access to energy. Aside from improved social outcomes, reliable power would create a more competitive business environment, boosting GDP.

As with all policy debates, certain considerations are non-equivalent. For instance, public pride in ownership of resources in a regulated and partially nationalized system cannot be precisely weighed against economic growth in a more liberalized system. Assessing the degree to which Nigeria's fuel subsidy regime has been successful fundamentally comes down to a value judgment. This paper does not make definitive statements as to which considerations should be most valued. Rather, in measuring the intervention's impacts relative to its objectives, this paper aims to inform debate.

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