Review Article

Subsidy Management: The Role of Government Refineries' Commercialisation Using the NLNG Model

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ABSTRACT

The continuous gulp of scarce Federal Government resources in Nigeria is worrisome, as significant proportion of NNPC oil generated revenue is absorbed in the form of oil subsidy payments while, abandoning a 450 thousand refining capacity project for importation of refined petroleum products. Hence the study into Subsidy Management: The Role of Government Refineries' Commercialization using The NLNG model. Techniques of Autoregressive Distributed Lag was deployed to examine Oil price subsidy payment(OPSP) on corporate governance quality(CGQ), economic value added proxy of NLNG dividend payment to NNPC (Dv-NLNG); while controlling for institutional quality(ISQ),external reserves (ER) and output per capita (GDPPC).The estimate result revealed that lagged value of OPSP showed that continued disbursement of subsidy payments from Nigerian Federation Account results in promotion of subsidy regime without recourse to refineries rehabilitation. Corporate governance quality exhibited an inverse relationship with oil price subsidy payments. The weak corporate governance of NNPC pave way for harsh consequences of subsidy payments and unattended issues of moribund refineries in Nigeria. Dividend received from NLNG accounts for 53 per cent, on average, to subsidy payments and empowering refinery rehabilitation. Controlling for stochastic effects of Institutional quality on subsidy management as well as capacity to revamp refineries. The finding result revealed that, weak regulatory power and lack of policy transparency hampers refineries rehabilitation, and encourages continuation of subsidy regime in spite of the allegation of corruptions. It was recommended that, the PIA should be revisited with clauses with respect to the Board of the NNPC Limited, limiting the power and discretion of the President to appoint members of the board. In this way, the firm may be completely separate from any outside influence or financial ties, allowing it to follow the guidelines of good corporate governance.

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Introduction

Subsidy payment to priviledged oligarchy has constituted one major problem that has led to economic failure, neglect of capital expenditure and extended poverty. Government spends about N4trn or almost $10bn in just one year for subsidizing petrol in Nigeria. Yet, in 2022, over $3.7bn was expended to rehabilitate the refineries' hitherto, no meaningful result commensurate to the huge sums expended to contractors [1]. The Port Harcourt, Warri, and Kaduna refineries' restoration projects each received awards for $1.5 billion, $900 million, and $1.3 billion, respectively. For almost two decades, Nigeria has had to rely heavily on imports of refined petroleum products (RPPs) due to the poor performance of state-owned refineries. Unfortunately, as indicated by repeated shortages in the supply of petroleum products, this dynamic has continued to pose major hurdles to the Nigerian economy.

According to the National Bureau of Statistics-NBS, Nigeria accounts for about half of West Africa's population with an estimated 202 million now estimated above 220 million people [2]. The country recorded an aggregate GDP of N56.76 trillion as at Q4 2022, while real GDP stood at N21.04 trillion in Q4 2022 [3]. Nigeria is the ninth largest crude oil producer and sixth largest crude oil exporter in the world, and more than 90% of the country's foreign exchange revenues come from the petroleum industry. However, gasoline subsidies has evolved into a contentious political issue over time. Since its inception in 1973, the country's petrol subsidy has been used as a social transfer mechanism to ease the burden of high fuel prices on the masses. Originally, the subsidy was intended to cushion the landing cost of petroleum products delivered to refineries, due to the need to perform Turn-around Maintenance (TAM) on them. About N4 trillion (US$9.6 billion) was paid out in subsidies in 2022, and the practise had mushroomed into a multibillion-dollar industry rife with fraud and corruption. After widespread Occupy Nigeria rallies in 2012, the Nigerian government rapidly reversed its decision to eliminate gasoline subsidies.

The export price (FOB - Free on Board) or the import price (CIF - Cost, Insurance, and Freight) is the marginal opportunity cost (MOC) used to calculate fuel subsidies. Group CEO Mele Kyari recently stated that Nigeria spends over N400 billion per month on petroleum subsidy, as NNPCL pays a difference of close to N202 per litre of PMS, and daily consumption stands at 66.5 million gallons. This was announced during the final cutover ceremony of NNPC in February 2023, marking the birth of NNPCL (Nigerian National Petroleum Company Limited). Kyari said that NNPCL

has borne the enormous burden of fuel subsidies for many years as the sole importer of petrol into Nigeria. He claims that other private oil marketers stopped bringing petrol into Nigeria because they couldn't get their hands on the US dollars needed to import PMS.

According to NBS, the pump prices of the various petroleum products at February 2023 are: premium motor spirit - N263.76 per liter, automotive gasoline oil - N836.93 per liter, dual purpose kerosene- N1,173.89 per liter, and liquefied petroleum gas - N4,600 per 5kg [3]. This shows that only PMS currently being subsidized in Nigeria. However, the report of a Presidential Committee on Verification and Reconciliation of Fuel Subsidy Payments between 2009 and 2011, revealed that the government wasted up to ₦667billion (about $4.3b) annually subsidizing millions of liters of petrol that Nigerians never used, or even needed. The government owned refineries (Port Harcourt, Warri, and Kaduna) has installed capacity of 445,000 bpd, however, these refineries have not been effectively operational for some time now. A pivotal cause of the unending subsidies on petroleum products, is the poorly performing refineries in Nigeria.

It is expected that the operationalization of the following refineries: Dangote Refinery (650,000 bpd), Waltersmith in Imo (200,000 bpd), Niger Delta modular refinery in Rivers State (11,000 bpd) and Edo modular refinery (21,000 bpd) will bridge the current supply gap for petroleum products and improve the situation, where modular refineries are crude oil processing facilities with capacity of up to 30,000 bpd.

According to Onyekwena et al [4]. the price of petroleum products in Nigeria has been fraught with issues as a result of the opaqueness and inefficiency in the administration of the subsidy system. Scholars here argued that these controversies have important implications, such as whether or not the benefits of the current subsidy regime are skewed in favour of the rich, whether or not the money spent on petrol subsidies diverts resources away from critical projects and programmes, and whether or not the massive foreign exchange demands of the oil marketing companies undermine macroeconomic stability. Because of these problems, vandals in the oil-rich-region are becoming more active, sabotaging crude oil installations (to get their hands on some of the oil riches for themselves), which worsens income loss for the government [5, 6]. Therefore, this study assesses the role of government refineries' commercialization using the NLNG funding model, as panacea to the subsidy maladministration in Nigeria.

Justification of NLNG Model
Table 1.1: Comparative Analysis of Nigerian Refineries and NLNG: Profitability Forecast of NLNG

Refineries	Net Profit or Loss N'000		Equity and Reserves N'000		ROE1 %	
	Year: 2020	Year: 2021	Year: 2020	Year: 2021	Year: 2020	Year: 2021
PHRC(N)	(28,674,284)	(48,867,851)	(534,977,684)	(306,030,018)	5.35	15.10
WRPC(N)	(23,843,879)	(35,309,482)	(435,216,092)	(331,685,983)	5.48	10.65
KRPC(N)	(55,773,415)	(22,891,061)	(594,296,278)	(443,174,461)	9.38	5.16
NLNG($)	4,333,362,544	5,653,653,299.7	542,132,646.11	722,436,140.42	794.9	782.5

NLNG Financial Transparency Culture and Dividend Forecast

Year	Div-NLNG to NNPC (US'$)	Forecast period	Proportion of Div-payment ability	Proportion of Forecast Error
2005	57,425,460.17	2022	100.	8.1
2006	332,979,540.83	2023	93.4**	8.8
2007	842,956,858.80	2024	92.7**	8.9
2008	2,613,170,000.00	2025	92.7**	8.9
2009	848,680,000.00	2026	92.7**	8.9
2010	1,401,400,000.00	2027	92.7**	8.9
2011	2,509,780,000.00	2028	92.7**	8.9
2012	2,768,990,000.00	2029	92.7**	8.9
2013	1,260,704,340.00	2030	92.7**	8.9
2014	1,389,908,436.93	2031	92.7**	8.9
2015	1,043,764,965.12	N/A	N/A	N/A
2016	356,126,898.44	N/A	N/A	N/A
2017	798,140,840.45	N/A	N/A	N/A
2018	904,498,502.96	N/A	N/A	N/A
2019	915,645,702.33	N/A	N/A	N/A
2020	542,132,464.11	N/A	N/A	N/A
2021	722,436,140.42	N/A	N/A	N/A
Total	19,308,740,150.56			

**Cholesky Ordering: DPNLNG CGQR. ROE1 Global Benchmark: >20.00%

PHRC Port Harcourt refinery corporation; WRPC = Warri refinery corporation; KRPC = Kaduna refinery corporation; NLNG= Nigeria liquefied natural gas limited; ROE1 = Returns on equity.

Variance Decomposition of CGQ to NLNG Dividend –NNPCL
CGQ = Corporate Governance Quality; NLNG = Nigeria Liquefied Natural Gas Company; NNPC = Nigeria National Petroleum Corporation; Div-NLNG = Dividend payments to NNPC.

Source: Authors' Computation (2023)

The summary Table 1.1 demonstrates the relative financial strength of NLNG vis a vis NNPCL in commercialization of Nigerian National Refineries. Evidence from financial records of the companies revealed that, NNPC has been a loss making venture over the review period. Hence, the returns on equity falling short of 20% global benchmark. But, the NLNG that is built on sound corporate governance structure records a dramatic growth sustainability in terms of returns on equity far above the global benchmark rate. However, the NLNG unique culture of transparency resulted in huge dividend payments to its shareholder in excess of 40billionUSD, which 40% accrued to NNPC; amounting to about 19.6billion from 2004 to 2021 financial period. More so, the NLNG reserves the capacity to pay shareholders' dividend effortlessly for the next decade. Based on the financial underperformances of operator of national refineries, NLNG model is suggestive of remedial path in commercialization bid of NNPCL refinery operations.

The NLNG Model
For the purpose of exporting Liquefied Natural Gas (LNG) and Natural Gas Liquids (NGLs), Nigeria LNG Limited (NLNG) was established on May 17, 1989 as a limited liability company under the laws of the Federal Republic of Nigeria. The horse-power of NLNG relied heavily on sound corporate governance structure built on independent as well as de-politicized ownership, consisting of the Federal Government of Nigeria, represented by NNPC Limited (49%), Shell (25.6%), Total Gaz Electricite Holdings France (15%) and Eni (10.4%). Self – funding and financial sustainability is another success factor of NLNG. The ability of NLNG to source for project funds through an integrated partnerships and borrowings, set the pace for actualization of corporate objectives. It unarguably true to say that, most projects of NLNG are financed with ease, such projects as includes but not limited to

Financing the Trains
NLNG's stockholders paid for the USD3.6 billion Base Project (Trains 1 & 2) out of their own pockets. The cost of the third train for NLNG's expansion project (Expansion Project) was $1.8 billion. Similar to the Base Project's finance strategy. In addition to fresh capital from the company's owners, the Expansion Project benefited from the reinvestment of Base Project earnings and savings. Third-party lenders covered a large portion of the price tag for the brand-new LNG vessels. Ship acquisition was not included in the USD2.2 billion price tag for the NLNGPlus project (Trains 4 and 5). A total of USD1.06 billion was used, split between money made in-house and loans from outside sources. Four loans from international commercial banks were guaranteed by the Export Credit Agency (ECA), for a total of US$620 million; another international bank loan was for US$180 million; a loan from a Nigerian commercial bank was for US$160 million; and a facility from the African Development Bank was for US$100 million. A consortium of 19 multinational banks led by BNP Paribas, Citigroup, Credit Lyonnais, MCC, and West LB received guarantees from four export credit agencies (ECAs). Both the

ECA-backed and African Development Bank-backed facilities were eight years in length. As of 15 December 2010, the facilities were paid in full, with just a USD20 million short-term 'place holder' loan outstanding. In July of 2004, a Final Investment Decision (FID) was made at a cost of $1,748,000,000 for NLNGSix. Money from within the company was used primarily to build Train 6. Production began on December 23, 2007, and launch was on December 14. NLNG has just inked a USD3 billion multiple-sourced finance contract with 30 respectable institutions to help fund the construction of Train 7. Export Credit Agencies, Development Financial Institutions, International Commercial Banks, and Nigerian Banks all participated in the transaction, which was advised by Sumitomo Mitsui Banking Corp. (SMBC) and Guaranty Trust Bank of Nigeria.

Financing the Ships
The business borrowed USD132 million from Citibank in 1990 to fund the purchase of four vessels for the Trains 1 and 2 component of the Base Project. The vessels were originally constructed for a different firm but were never placed into service. BGT purchased three ships after the Third Train Extension. In this case, a syndicated loan for USD160 million was negotiated on December 20, 1999 to help pay for the building of both LNG Rivers and LNG Sokoto. This facility was arranged mostly by Credit-Suisse First Boston, and payments began when the second ship was delivered in 2002. The third outstanding foreign debt of USD210 million was incurred on August 1, 2001, when NLNG was paid in full for the purchase of two ex-Lachmar vessels (LNG Edo and LNG Abuja). Another USD100 million syndicated bank credit for LNG Bayelsa development was obtained in September 2001. CreditSuisse First Boston was once again the main player. Shipment of the vessel occurred in February of 2003. The NLNGPlus Project's extra eight ships were constructed by Hyundai Industries and Daewoo Shipyard for Trains 4 and 5. Four of the eight ships are owned by BGT, and the other four were hired from Bergesen d.y. in Norway. In March of 2003, BGT was able to collect USD460 million, which was used in part to pay the boats' construction. ABN AMRO Bank, Credit Lyonnais, Fortis, ING Bank, HVB, Verein und Westbank, and West LB arranged for this financing. The remaining USD282 million was raised via operations and shareholder capital. In 2006, BGT obtained a USD680 million facility from Standard Chartered Bank to refinance all of the aforementioned third-party facilities. Seven of BGT's ships were used as collateral for this. After the FID was made on Train 6, USD957 million were spent on the construction and delivery of six LNG tankers on long-term charter to NLNG. The ships were constructed in South Korea at Daewoo Shipyard and Samsung Shipyard. The Norwegian company BW GAS Asa chartered four of the tankers, and the Japanese company NYK LNG (Atlantic) Ltd chartered two. Six new ships were ordered by Bonny Gas Transport in April 2013, two from Hyundai Heavy Industries and four from Samsung Heavy Industries. There were a total of six ships delivered between 2015 and 2016. Both a USD310 million, six-year Additional Programme Debt (APD) facility and a USD1,100 million, twelve-year New Vessel Debt (NVD) arrangement were negotiated to finance the six boats. Both the APD and the NVD were new facilities with multiple international commercial banks and Export Credit Agencies as lenders. These institutions included the Korean Export-Import Bank (KEXIM) and the Korean Trade Insurance Corporation (K-SURE). Ink was put to paper on the agreements on March 26th, 2013. The APD and NVD resources have been completely utilised. The APD loan,

which had a tenor of six years, was returned in full on March 29, 2019, while the NVD will need to be paid back in full by March 31, 2025.

Outcome of NLNG's Robust Model

Facts and Figures reports that Nigeria LNG Limited (NLNG) is currently one of Nigeria's top priority economic initiatives [7]. NLNG Dividends, which is responsible for USD37.6 billion, is one of the most successful regions, accounting for 49 percent of the total. Government tax payments from NLNG are a major contributor to national income and economic prosperity in states where the company operates. In 2019, the firm paid the Federal Government of Nigeria around USD943 million in corporate income tax, which included a tertiary education tax of 9%. About USD29.5 billion has been paid to Joint Venture (JV) feedgas suppliers since the company's founding. The Federal Government of Nigeria receives between 55 and 60 percent of this sum due to its ownership stake in NNPC Limited. The company's plant building brought in a sizable amount of FDI (Foreign Direct Investment) for the country. The current value of the project's assets (i.e. property, plant, and equipment) is around USD17.5 billion at cost, with multinational oil corporations owning 51% and the government, through NNPC Limited, owning 49%. Since 2008, the company's operations have directly contributed around 4% of Nigeria's GDP annually. During the height of construction for each expansion project, NLNG provided over 12,000 employment. To complete the Base Project (Trains 1 and 2), the principal sub-contractors collectively hired nearly 18,000 Nigerians for technical positions. During Train 7's development, about 12,000 new jobs are anticipated to be created.

Statement of the Problem

Inadequate subsidy management on the part of the Nigerian government is the focus of this research, as is the question of whether or not state-run refineries can be allowed to operate successfully along the lines of the NLNG model. Poorly targeted subsidy initiatives, it has been suggested, have contributed to a worsening of inequality [1]. Fuel subsidies have many negative effects, as outlined by Clements et al. (2013). Budget deficits will widen, private investment will fall, energy efficiency will decline, and natural resources will be depleted more quickly. Since Nigeria imports 91% of its petrol needs from outside due to insufficient local refining capacity, the government there adopted a fuel subsidy strategy to cushion the economy from the consequences of oil price shocks. To offset the gap between the regulated domestic price and the EOMP1, the government reimburses domestic petrol marketers. This is done by the Petroleum Products Pricing and Regulatory Agency (PPPRA). Between 2006 and 2018, almost N10 trillion was spent on gasoline subsidies. However, the gradual removal of petroleum subsidies has had a major effect on fuel prices, transportation expenses, and the subsequent price increases of other commodities.

This means that reducing subsidies for petrol now has informative, and macroeconomic effects. With each predicted partial subsidy withdrawal, fuel retailers and transportation businesses pass on greater costs for petroleum commodities to consumers. As a result, hike in pump prices significantly dovetailed to global price spiral due to the unexpected demand. As a result, businesses in other sectors factor marginal transportation costs into their overall production costs and price their goods accordingly. Therefore, a wave of price increases is triggered anytime there is news about increases in the price of petroleum. The oil price's effect on transportation costs and commodity costs will have far-reaching consequences for the economy as a whole. Since petroleum products are essential to both transportation and energy generation, a rise in their price increases the price of both, which

in turn increases the price of commodities.

Several reports have examined the results of the Nigerian government's gasoline subsidy plan. According to Umar and Umar and Siddig et al [8, 9]. subsidy regimes skew budgetary priorities, encourage frivolous expenditure, and worsen disparities by rewarding the well-off. Removing subsidies increases GDP but reduces household income, as proven by research by Siddig et al. Ocheni, Odenikinju and Bazilian and Onyeji all find that cutting back on petrol tax subsidies led to higher prices, slowed economic growth, and reduced household incomes in Nigeria [9-11]. However, the country's internal demands may be met and even exceeded the 445,000 daily barrels of petroleum that can be produced at the country's four refineries. Despite this, a significant amount of petrol and other petroleum products enter the nation via net imports. As a result, the naira continues to decline against the world's major currencies, Nigeria's unemployment rate has risen to an alarming 33%, inflation is at over 15% annually, and many businesses are going out of business due to the difficulties they are having keeping afloat.

This study, on the other hand, aims to identify a middle ground in the fuel subsidy withdrawal problem. Instead of completely eliminating the fuel subsidy and the consequences, it advises that the government refineries implement a commercialization programme based on the NLNG model. The reviewed NLNG model has the Federal Government of Nigeria, represented by NNPC Limited (49%), Shell (25.6%), Total Gaz Electricite Holdings (France) (15%), and Eni (10.4%) as the NLNG's four shareholders, with shareholder equity, multilateral financing, and syndicated bank loans funding the NLNG's "trains" and ships. As a result, Nigerian government refineries might pursue commercialization via an initial public offering (IPO) to sell about 51% of government stock in the refineries to the private sector, or keep a 50/50 interest while engaging multilateral and syndicated lenders for loan financing. This concept has the potential to revitalize refineries and close the existing supply gap. Thus, it is hypothesized that, if the NLNG model is used to commercialize the government-owned refineries (Port Harcourt, Warri, and Kaduna) with installed capacity of 445,000 bpd and supported by the complete operationalization of the Dangote Refinery (650,000 bpd), Waltersmith Refinery in Imo State (200,000 bpd), and the modular refineries-Niger Delta modular refinery in Rivers State (11,000 bpd) and Edo modular refinery (21,000 bpd), it will push-up the supply for petroleum products, bridge the current supply gap, likewise, reducing prices for the products as well as easing the financial pressure on government.

Theoretical Framework
Leontief Theory of Input-Output

Leontief theory drew scientific explanations on the effect of a change in production of a final goods with respect to demand for inputs. Input-output analysis demonstrates industrial interdependence in terms of inputs-output relations. Wassily Leontief calculated an input-output table for the American economy. The Leontief table shows estimates of marginal effect of input factors - materials, labour and capital as well as their degree of substitutability in generating a certain level of least cost output. The degree of substitutability took a prime posture in Leontief's theorizing, He specifically explained cost variations of input factors with respect to alternatives. A rise in the cost of one inputs result in the switching cost for producers to adopting alternative inputs whose cost has not risen. If wage rate rises, for example, producers can substitute capital for labour. In line with this theoretical postulation, NNPC limited could switched

to more capital intensive operations to optimally regulate labour activities aimed at curtailing rate of corrupt practices, inefficiencies and gross underperformances that beclouds the industry; so as to increase output in order to reach OPEC set target for Nigeria.

Stakeholder Theory of Corporate Governance
According to stakeholder theory in corporate governance, directors should be elected to the board to reflect interests other than those of shareholders. Stakeholder representation on the Board of Directors are seen as crucial for effectively dealing with stakeholder responsibilities. Academics have argued in favour of non-shareholder director-representation and urged businesses to voluntarily restructure their boards of directors to better reflect stakeholder interests [12].

Dependency Theory
The dependency hypothesis is exemplified in the NNPC fuel export and re-importation deals with foreign refineries. And, the desire to mirror NNPCL operations of refineries to reflect global practices, as well as enable it refrain from capitalistic dependencies is the rational for this theoretical mileage. Howbeit, the main goal is to shed light on why some nations remain economically backward today, what factors contribute to poverty, and what solutions could be possible [13]. First developed in the 1960s in Latin America, dependency theory raised fundamental concerns regarding states' interactions with one another across national boundaries [14]. Initially, it was thought that countries with low levels of development were doing so because of poor economic policies or a corrupt leadership. However, dependence theorists have looked to other sources for explanations of poverty. For instance, if economically underdeveloped nations were unable to progress due to the international economic relations system [14]. The notion of dependence is grounded in global systems of history, society, and capitalism that are frequently asymmetrical and interconnected through domination subordination relationships. The involvement of wealthy nations and multinational corporations in sourcing manufacturing in developing countries as a barrier is another area of attention for the thesis.

Institutional Theory
Specifically, neo-institutional theorists looked at how organisational structure and procedures influenced people's behaviour. In their work, Meyer and Rowan established a central idea that, in addition to its functional aspect, the formal organisational structure has a symbolic aspect, and that this symbolic aspect is influential both in the decision to adopt a structure and in gaining legitimacy and better survival chances for organisations. This idea is re-emphasized by Lawrence and Shadnam [15]. Organisations are isomorphic (having the same characteristics, connections, and routines) because of the institutional environment, which is exposed critically in DiMaggio and Powell. Isomorphism, as seen by DiMaggio and Powell, allows the theory to account for the persuasive, emulational, and normative forces at work in social interactions. That's why isomorphism happens when a company gives in to formal or informal pressure from the government, international organisations, or the surrounding culture. Organisational decision-makers may resort to mimetic isomorphism when they face ambiguity about their own aims, the state of the relevant technology, or the nature of the relevant market. Professions and other organisations charged with setting and enforcing moral norms generate and manage the standards and cognitive frameworks that give rise to normative isomorphism. According to this institutional theory argument, NNPCL needs to emulate successful competitors in the business, boost its own performance, and cater to the needs of its stakeholders.

Conceptual Review
Oil Price Subsidy Payments and NNPCL New Pathways
Payments to cover for adjusted price of retail petroleum product in Nigeria is a pointer to evaluation of corporate capacity and financial sustainability of NNPCL to discontinue petroleum product importation. And, rather rehabilitate refineries to meet the demand of consumers [16]. But, this brave actions cannot be achieved without a brief review on the capacity of NNPCL to achieve sound and semi-autonomous corporate governance structure as well as financial sustainability within the short period of incorporation. Although it was reported that building more refineries would increase product availability and reduce pump prices Ering and Akpan [17].

However, the Figure 2.1 revealed an instability in the ranking of corporate governance quality performance in NNPC from 2005 – 2021, as the scores during the review period is marked with oscillations. Likewise, the NLNG dividend payments accruing to NNPC during the period exhibited erratic trend with high swings in the early periods of 2013; and followed by relatively low swings.
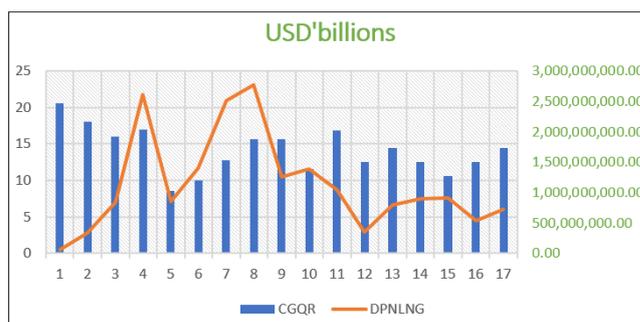
Snapshot of NNPC corporate governance and self-funding schema
Figure 2.1: Sources: Authors' Computation (2023).

Corporate Governance Quality
The phrase "corporate governance" describes the system used to oversee the operations of a company. The paper is concerned with the ways in which banks might safeguard their funds [18]. Why businesses with the same contractual setting may vary so much in their company-level corporate governance quality is a major question in the corporate governance literature [19]. Hence, corporate governance can be measured through:
1. Structure and Governance of Boards
2. Transparency and Disclosure of Information
3. Shareholders' Rights
4. Corporate Social Responsibility
5. Audit and Internal Control
6. Corporate Risk Management
7. Compensation / Remuneration

Economic Value Added OR Dividend Payments
Economic value added (EVA) is a measure of a company's profitability after subtracting its cost of capital. EVA is the net operational profit that remains after taxes after deducting the opportunity cost of all capital spent by a company, and it represents a profit that is more than the minimal return on capital [20]. One of the key factors investors look at when acquiring a company's shares is economic value added (EVA), which is a financial performance assessment based on a value that shows the absolute amount of shareholder wealth created each year [21]. EVA, or economic value added, is the sum remaining after deducting the cost of debt and equity financing from a company's operating profit. Simply multiply the investment's excess return by the initial investment to get the EVA of the project [22]. EVA = NOPAT(investment * WACC)

Institutional Quality

Institutions can be thought of as the social elements, norms, ideas, values, and organisations that work together to encourage consistent individual and societal action, as proposed by Greif [23]. According to the work of Aoki, institutions may be seen as "a contract across time that shapes behaviour." When people interact in a risky setting, problems arise, and those problems are what institutions are designed to solve. From this perspective, institutions are a tool for limiting opportunistic and arbitrary behaviour. In addition, through altering social behaviour, institutions promote social connectedness and collective action, reducing coordination costs.

External Reserve

There are several names for a country's stockpile of foreign money, but all of them refer to the same thing [24]. According to the IMF's 2007 definition, international reserves are "official public sector foreign assets that are readily available to, and controlled by, monetary authorities for direct financing of payment imbalances and directly regulating the magnitude of such imbalances, through intervention in the exchange markets to affect the currency exchange rate, and/or other purposes." Nzotta states that an increase in a country's foreign reserves occurs when the country receives more foreign money than it expends [25].

Per Capita GDP

Gross domestic product is a metric for estimating a country's economic well-being. GDP per capita is commonly used as a proxy for economic well-being or as a gauge of typical living standards, notwithstanding its limitations. The distribution of wealth among citizens cannot be inferred from measures such as the average GDP per capita. Even though GDP per capita increases on average, more people may be hurt if income disparity grows.

Empirical Reviews

The effects of the removal of petrol subsidies on Nigerian households were studied by Tayo et al. [26]. In addition to lowering carbon emissions, the savings from abolishing gasoline subsidies may be invested in infrastructure development, revitalising local refineries, and other variables that would have a profound impact on the Nigerian economy.

Subsidy withdrawal and transport sector growth in Nigeria was studied using co-integration and error-correction models by Soile et al. [27]. Eliminating fuel subsidies may increase transportation industry operating expenses and reduce the country's gross domestic product (GDP), as the results showed a positive and strong relationship between subsidies and the transportation sector. The paper concludes that the best likelihood of success for reform efforts lies with those that are comprehensive, well-planned, well-communicated, and transparent. Reduce local demand and petrol prices by creating more renewable energy options for homes and vehicles. To ensure that all importers (not only NNPC) have open access throughput for discharge and onward distribution to other parts of the nation, the essential policy action in this scenario is to liberalise product imports and unbundle the underutilised PPMC pipelines and storage systems. Increased competition will decrease the monopolistic tendencies and excessive profiteering of current imports.

Akov claims that elite machinations and intrigues have plagued Nigeria's gasoline subsidy patchwork [28]. As a result, Akov looked at the oil-based wealth of Nigeria as a backdrop for an analysis of the country's energy-dependent economy. The study, which relied on secondary data, found that widespread corruption in the country's massive oil business is a major contributor to Nigeria's ongoing economic development slowdown, which in turn has worsened the plight of average Nigerians. Therefore, the research suggests that crucial steps be taken to enhance Nigeria's economy and society, including revamping the country's refineries, intensifying the fight against corruption, and establishing a regulatory framework to defend citizens.

The impact of institutional quality on economic growth in Asia's developing countries was studied by Nabila et al. [29]. From 1990 through 2013, the study made use of panel ARDL. The results point to a positive correlation between institutional quality and economic growth, as well as a causal link between the two.

The research analyses the performance of Nigeria's economy and its institutions, as reported by Yusuf and Malarvizhi [30]. Cointegration and causation are studied using the ARDL model. The results show a correlation between rising growth and per capita income and sustained improvement in high-quality institutions.

Institutions, the structure of government, and economic output in Nigeria are all explored by Udah and Ayara [31]. The investigation use Ordinary Least Squares. The results show that the prosperity of an economy benefits greatly from having an effective, influential government that is held accountable to its citizens.

Alexiou et al. analyse the relationship between institutional quality and economic development using data from Sudan. In this study, we employ the cointegration testing method proposed by Pesaran et al. and based on the ARDL, which covers the years 1972-2008. Using the political freedom score as a proxy for the quality of institutions, the study found a negative correlation between political freedom and economic growth.

Devangi et al [32]. try to find out if the reduction of poverty and inequality in South Asia (China, Indonesia, Malaysia, the Philippines, and Thailand (East Asia), and Bangladesh, India, Pakistan, and Sri Lanka) was caused by economic growth and institutional quality. From 1985-2009, the researchers employed a system Generalised Method of Moments (GMM) estimate. The results show a correlation between corruption, democratic accountability, and poor bureaucratic quality and a narrowing of the wealth gap.

From 1982 to 2009, Cetin looked at how different parts of China's external debt correlated with the country's foreign exchange reserves and economic growth [33]. use an OLS (Ordinary Least Squares) analysis. Using data samples spanning from 1980–2006 and the Vector Error Correction (VEC) model, the authors of this study found a statistically significant correlation between FX reserves and exports. The research also found that the marginal propensity to import is positively related to the level of foreign exchange reserves.

When looking at the relationship between monetary policy transmission mechanisms and industrial production development in African oil-producing nations, Omolade and Ngalawa looked into the impact of exchange rate regimes. The focus was on Libya and Nigeria because of their respective currency rate regimes and their importance as oil exporters. The study made use of a method called structural variance decomposition analysis (SVAR). The results of the study showed that oil price shocks affected the monetary policy tools of both countries significantly. Libya, which

has a fixed exchange rate, saw no improvement in manufacturing production growth as a result of monetary policy, whereas Nigeria saw the reverse.

From 1970 to 2013, Amassoma studied how changes in currency rates affected the growth of the Nigerian economy. The research, which using an error correction model econometric strategy, found that shifts in the value of the naira had a marginally beneficial effect on the growth of the Nigerian economy. The research suggested that Nigerians should buy more locally made goods in order to boost the value of the naira and the economy as a whole.

Abiola and Adebayo looked at how well Nigeria's foreign reserves were used and examined other investment opportunities [34]. Demand for foreign reserves was analysed, which researchers determined to be driven by transactional, precautionary, and mercantilist considerations. The report concludes that Nigeria has sufficient foreign reserves. The research recommended creating four separate investment pools for the country's foreign exchange reserves. Examples of portfolios are the petroleum fund buffer portfolio and the vaccination portfolio. Another example is the liquidity portfolio.

Abdu looked into how FDI influenced the growth of the Nigerian economy [35]. Ordinary least squares estimate was used to determine that FDI has a significant impact on Nigeria's economic growth.

The effects of Nigeria's high level of external debt on the country's GDP growth and development were studied by Ajayi and Oke [36]. Both national and per capita income were shown to be negatively affected by the country's external debt load, according to the ordinary least squares regression analysis utilised in the study. Therefore, the study advised that the loan be placed in a productive firm that would generate an adequate quantity of money for debt payback, and that debt service requirements not be allowed to exceed foreign exchange earnings.

Methodology
The design of the study deployed quasi – experimental approach to examining the diverse subsidy management payments period and its implications on moribund refineries in Nigeria. Subsidy payment in Nigeria is recursive in the pattern of payment administration. There tends to exhibit an arithmetic progression in the proportion of total sum deducted periodically from Federation account to offset cost of petroleum product imports (CIF). The model derivation followed the modification of empirical works conducted by Agbaeze and Abner and IMF country report [37, 38]. However, the uniqueness of our model postulation incorporates corporate governance attributes, financial sustainability variable and control variables of macroeconomic indicators.

The Specification of the Model

$$OPSP = f\ (CGQ, EVA, ISQ, ER, GDPPC)\ 3.1$$

$$\widetilde{y_t} = \alpha_0 + \sum_{i=1}^{n} \beta_1\, y_{t-1} + \varepsilon_i\ 3.2$$

$$OPSP_t = \alpha_0 + \beta_1 OPSP_{t-1} + \beta_2\, CGQ_t + \beta_3 EVA_t + \beta_4 ISQ_t + \beta_5\, ER_t + \beta_6\, GDPPC_t + \varepsilon_i\ 3.3$$

$$\beta_1 > 0;\ \beta_2 < 0\ ;\ \beta_3 < 0;\ \beta_4 > 0;\ \beta_5 > 0\ ;\ \beta_6 < 0$$

$$\alpha_0 = intercept\ term;\ \beta_1 - \beta_6 = partial\ slope\ coefficients;\ \varepsilon_i$$
$$= stochastic\ disturbances$$

Where:
OPSP = Oil Price Subsidy Payments is a measure of subsidy management
CGQ = Corporate Governance Quality is a measure of Corporate governance
EVA = Economic Value Added proxy of Dividend Payments is a measure of self-funding capacity
ISQ_t = Institutional Quality is a measure of sound government
ER_t = External Reserves
$GDPPC_t$ = Per Capita GDP
t = time components
Note: ER_t and $GDPPC_t$ are control variables for government role on subsidy management.

Variables and Description

Variable	Description & Measurement	A priori Expectation
OPSP	OPSP is an expenditure on subsidy of petroleum products. It is measured in billions of naira, the data is sourced from NNPC Financial Reports; NEITI Reports	N/A
CGQ	CGQ as a measure of transparency and disclosure of NNPCL. Government effectiveness is use as a proxy. Data is measured with 0 corresponding to lowest rank, and 100 to highest rank. Sourced from World Governance Indicator(WGI).	-
EVA	EVA is measured with dividend payment of NLNG – NNPC. This measures the degree of shareholders' right & compensation. Data is measures in billions of USD, and sourced from NLNG-financial transparency, Fact& Figures,2023.	-
ISQ	ISQ is represented by regulatory quality, controlling for private sector partnership with NNPCL. It is measured by percentile rank with 0 corresponding to lowest rank, and 100 to highest rank. Data sourced from WGI.	+
ER	External Reserves represents all foreign exchange reserves held by Central Bank of Nigeria as weigh against domestic Naira currency value. It is measured in US\$' Million. Data sourced from Central Bank of Nigeria Bulletin,2019.	+
GDPPC	GDPPC measures output per head in Nigeria. It controls for private consumption and investment expenditure. It is measured in constant 2015 US\$. Sourced from World Development Indicator.	-

Source: Authors' Compilation (2023)

*Corporate Governance is the interaction between various participants (shareholders, board of directors, and company's management) in shaping a corporation's performance.

Empirical Findings

Subsidy management, its commercialization model on NLNG's regulatory structure, and finance capability in Nigeria were all explored using a time series data in this study. Estimates for the dynamics of subsidy payments and the NNPCL refinery rehabilitation power were generated using the ARDL model, which was utilised for this study. The Unit Root test and the Augmented Dickey Fuller/Phillips Perron model specification ascertainment methods. According to the results of the unit root test, there is a complex web of integration between the interrelated variables. The data in Table 1.1 demonstrated that, when controlling for factors like institutional quality (ISQ) and external reserves (ER), which assumed integration of order 1, oil price subsidy payment (OPSP) was not significantly different from other variables. Level integration is applied to the remaining variables, including CGQ and DP-NLNG. In Nigeria, the cyclical behaviour of subsidy payment and refinery rehabilitation prompted a shift to a mixed order of integration.

On the flip side, descriptive statistics were used to show how individual variables fared in terms of things like mean, standard deviation, and the normality test.

The average value of oil price subsidy payment (OPSP) is over 64.7 USD' billion spread over the review period. Whereas, corporate governance quality is rated relatively low with the ranking of 26.2 which showed degree of inefficiencies Nigerian NNPC corporate governance structure. Also, the a critical; aspect of benchmarking NNPC capacity of actualization of self – sufficiently in terms of dividend payment by NLNG(DP-NLNG) received about 205.6billion USD during the period of study. The quality of NNPC independence from government interference being measured by regulatory quality showed 30.1 ranking; which is low relative to other firms under the regulatory borders of 1CAMA. Furthermore, the 17- years observation yielded the dimensional distribution with a unit root rejecting probability of Jarque – Bera at DP-NLNG while they do not reject at the rest of the variables, including – OPSP; CGQ; ISQ; ER, and GDPPC.

In addition, testing for the presence of multi collinearity amongst variables depicts that, variables interaction reported a low coefficient scores below 0.75 indicating freedom from multi-collinearity. More so, pairwise correlation coefficient showed that negative relationship exists between oil price subsidy payment and corporate governance quality in NNPC. Whereas, increases dividend payments of NLNG to NNPC will increase oil price subsidy payments, as more fund is made available for rehabilitating refineries as well as offsetting the bills of oil price subsidy. Controlling for institutional quality, external reserves and gross domestic products per capital reported positive correlation with oil price subsidy payments.

CAMA company and allied matters act (1990, as amended), law regulating publicly quoted companies in Nigeria.

Table 4.1: ADF Unit Root Test Philips- Perron Test

Variables	Levels	1st Difference	*Critical value @5%	Order of Integration	Levels	1st Difference	*Critical value @5%	Order of Integration	Prob.
OPSP	-2.642611	-5.196364	-3.081002	I(1)	-2.612994	-5.850806	-3.081002	I(1)	0.0003
CGQ	-4.979754	-4.97975	-3.081002	I(0)	-3.318132	-5.382758	-3.081002	I(0)	0.0008
DP-NLNG	-4.302815	-4.134827	-3.081002	I(0)	-4.302815	-5.555134	-3.081002	I(0)	0.0000
ISQ	-0.803104	-3.465591	-3.081002	I(1)	-0.931546	-3.520175	-3.081002	I(1)	0.0226
ER	-3.831159	-6.484107	-3.119910	I(1)	-2.974899	-4.976325	0.0016	I(1)	0.0016
GDPPC	-2.407564	N/A	-3.081002	I(0)	-2.724970	N/A	-3.081002	I(0)	0.000

Summary Descriptive Statistics

	LNOPSP	LNCGQ	LNDP-NLNG	LNISQ	LNER	LNGDPPC
Mean	6.478360	2.621758	20.55649	3.016614	10.52686	7.777398
Std. Dev.	0.791327	0.228195	0.923860	0.206829	0.218730	0.096319
Jarque-Bera	0.890791	0.419025	9.013465	1.142913	0.059461	2.189488
Probability	0.640571	0.810979	0.011034	0.564702	0.970707	0.334625
Observations	17	17	17	17	17	17

Pairwise correlation analysis and summary statistics

	LNOPSP	LNCGQ	LNDPNLNG	LNISQ	LNER	LNGDPPC
LNOPSP	1					
LNCGQ	-0.176***	1				
LNDP-NLNG	0.513***	-0.324***	1			
LNISQ	0.289***	-0.023***	0.331***	1		
LNER	0.260***	-0.196***	0.595***	0.064***	1	
LNGDPPC	0.422***	-0.436***	0.510***	-0.001***	-0.074***	1

Note: ADF & PP critical value <0.5*

***p <0.1

OPSP = oil price subsidy payment; CGQ= corporate governance quality; DPNLNG=dividend payment by NLNG to NNPC; ISQ= institutional quality; ER= external reserve; GDPPC= gross domestic product per capital.

Source: Authors' Computations.

Pre-Estimation Result

Table 4.2: ARDL Bound Test

F-Bounds Test	Null Hypothesis: No levels relationship			
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	1.784954	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Authors' Computations.

Test of long run relationship between oil price subsidy payments and the explanatory variables (CGQ, DV-NLNG, ISQ, ER, and GDPPC) reported short run dynamics hence, the ease of adjustment in case of disequilibrium circumstance is rest assured. This is evidenced by the results in Table 4.2 wherein the value of 1.784 is less than 2.7 at 5% significant level 2 (α=F-statistic <0.5;I(0)series).

Short Run Model Estimation

Table 4.3: Dynamic Model

Dependent Variable: LNOPSP

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNOPSP(-1)	0.088479	0.313020	0.282664	0.7838
LNCGQ	-0.077495	1.038001	-0.074657	0.9421
LNDP-NLNG	0.533301	0.543483	0.981265	0.3521
LNISQ	-0.221877	1.408571	-0.157519	0.8783
LNER	0.957451	1.466458	0.652900	0.5301
LNGDPPC	3.522850	3.624735	0.971892	0.3565
C	-41.78307	35.44609	-1.178778	0.2687
R-squared	0.430082	Mean dependent var		6.516958
Adjusted R-squared	0.050137	S.D. dependent var		0.800581
S.E. of regression	0.780253	Akaike info criterion		2.641240
Sum squared resid	5.479160	Schwarz criterion		2.979248
Log likelihood	-14.12992	Hannan-Quinn criter.		2.658549
F-statistic	1.131959	Durbin-Watson stat		2.196202
Prob(F-statistic)	0.416092			

*Note: p-values and any subsequent tests do not account for model selection.
Source: Authors' Computation.

The core interactive factors in NLNG model: CGQ and DP-NLNG are focal to explaining and predicting the subsidy management dynamics as well as refineries rehabilitation capacity of NNPCL. Specifically, the lag value of oil price subsidy payments increases

continuously $\left(\frac{OPSP}{OPSP(-1)} = 0.8 \right)$, implying that, the continued disbursement of subsidy payments from Nigerian Federation Account

results in promotion of subsidy regime without recourse to refineries rehabilitation. Howbeit, subsidy regime exacts some significant influences on the consumption sector of energy and petroleum products in Nigeria, yet, its economic consequences is somewhat deeply felt by production sector. More so, the result of Table 4.3 revealed that, corporate governance quality exacts an inverse relationship

with oil price subsidy payment $\frac{OPSP}{CGQ} = < 0.07$. By implication, lowered quality of corporate governance resulted in increased

impetus for subsidy payments. The weak corporate governance of NNPC pave way for harsh consequences of subsidy payments and unattended issues of moribund refineries in Nigeria.

In terms of economic value of NNPC, dividend received from NLNG accounts for 53 per cent, on average, to empowering subsidy

payments during the review period. Given $\frac{OPSP}{DP-NLNG} = 0.53$. Funding of NNPCL through proceeds of NLNG equity holding is

sufficient enough to support the regime period as well as phase it out to refineries rehabilitation.

Furthermore, controlling for the degree of autonomy of NNPCL to reliably manages itself and the degree to which independence of will exist between government as a private sector regulator and the policies that aide private sector participation in oil and gas ecosystem in Nigeria. Evidence from the result showed that, a weak institutional quality and standards of private sector regulation

led to increase spending on subsidy payment within the review period. Given that $\frac{OPSP}{ISQ} = < 0.22$. Conversely, any meaningful

addition to external reserves from both oil and non-oil revenue sources significantly results in an increasing expenditure on subsidy

payments as well as provides a booster for financing refineries rehabilitation in Nigeria. Given that $\frac{OPSP}{ER} = 0.95$. Indeed, availability of

sufficient foreign exchange reserves could save the crunch financing bits of rehabilitating moribund refineries under NNPCL. Finally, a measure of per capita output with respect to the effect of NNPC productivity per head shows that, an increase in productivity of oil and non-oil activity results in 3.5 per cent subsidy payments which can be replaced with refineries rehabilitation, thereby redoubling productive efforts of domestic economy.

Post Diagnostic Analysis
Parameter stability is demonstrated through cumulative sum squares residual (CUSUM). The coefficient stability of the model revealed significant predictive reliability of the model. The stability is depicted by the movement along the dotted lines within the + 2.5 and -2.5 region.

Figure. 4.1: Structural Stability Test
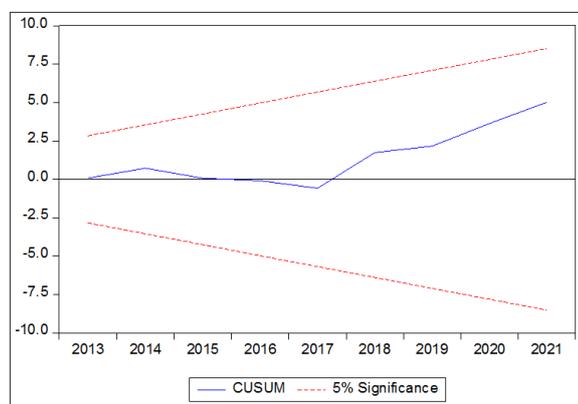
Source: Authors' Computation (2023)

Summary of Findings and Discussion
The Empirical examination on subsidy management: commercialization of government refineries using NLNG model as perceived in Table 4.3 gathered that, continuous supply of Federation account linked subsidy fund, serves as a financial booster to keep to the path of subsidy management without recourse to the rehabilitation of refineries. Although, an effort to attain a shift in the subsidy regime to commercialized corporate governance structure with self – funding ability is crucial to revamping the productive capacity of refineries in Nigeria. Evidence from our findings revealed a weak corporate governance structure adversely impacted capacity to rehabilitate refineries. The domestic economy can be stabilised with the help of the subsidy regime, although this is not without criticism (Omotosho, 2019). Scholarly research suggests that bad governance is a major factor affecting the refineries' efficiency.

The refineries were fully owned by the government prior to this time, and they lack any independent access to or management of their funds. Each request for maintenance funding must pass through several levels of administrative red tape" Ogbuigwe [39]. The measure of self – funding capacity of NNPCL indicated that, the share dividend accrued to federal government from NLNG operations could sustain subsidy payment at the interim but can contribute significantly to about 53 percent to rehabilitating refineries in Nigeria. Corollary to our findings is the empirical study who reported that "one of the major problems in the past was lack of funds for the rehabilitation and maintenance of the refineries and the distribution facilities" [25]. He said that NNPC's low profit margins on manufactured goods were to blame for the company's cash flow problems.

However, controlling for stochastic effects of Institutional quality on subsidy management as well as capacity to revamp refineries, the finding result revealed that, weak regulatory power and lack of policy transparency hampers refineries rehabilitation, and encourages continuation of subsidy regime in spite the allegation of corruptions. Corruption has a major role in almost all of the documented instances of corporate governance failures in Nigeria

Ogbuigwe [39]. This is due to the fact that the management of NNPC now NNPCL sometimes have political connections to high-ranking government officials or may bribe their institution's regulator to avoid penalties. In addition, the rise of external reserves has the potential to increase the government's externally produced revenue by almost 95%. Likewise, the productivity per head increases by 3.5, on average, in Nigeria with increase in refining activities, and gradual withdrawal from oil subsidy payment in Nigeria [40-55].

Recommendations
The research concludes with the following suggestions based on the data summarised above:
- The findings suggest that policy makers should formulate inclusive policy on how best to manage our ailing refineries as well as re-engineering the new NNPCL to attain quasi-autonomy just like NLNG.
- The* PIA should be revisited with clauses with respect to the Board of the NNPC Limited, limiting the power and discretion of the President to appoint members of the board. This can ensure the firm is unaffected by outside influences and follows sound corporate governance practises without fear of political meddling.
- The Nigerian National Petroleum Corporation (NNPCL) needs an Economic Intelligence Unit and a Product Supply and Distribution Unit to keep tabs on consumption trends, union member activity, and the petroleum products supply chain as a whole in Nigeria.
- Government should act as by-stander to regulate NNPCL, routing through policies that will phase out subsidy era; revitalized fiscal regime and attract foreign and domestic investors while curbing extreme concerns of host communities
- NNPC Limited should be partially commercialized at the interim period, and wholly (after gaining full rehabilitation of refineries) through an **IPO to generate revenue and promote transparency
- Dividends accrued from NLNG operations to NNPCL should serve a kiss of life to refineries rehabilitation.
- Subsidy removal should be replaced with people oriented programme to cushion the short term adverse effect of subsidy removal in Nigeria especially on the poor masses and, on infant industrious.

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