

DOWNSTREAM PETROLEUM SECTOR DEREGULATION AND ECONOMIC DEVELOPMENT OF NIGERIA [2004-2019]

BY

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Abstract

This study investigated the effect of downstream deregulation of the petroleum sector on the economic development of Nigeria from 2004-2019. Ordinary Least Square (OLS) method and regression equations were employed. Unit root test was done using Augmented Dickey Fuller technique (ADF), while cointegration was done using the Johansen test. Vector error cointegration method (VECM) was used to determine both the long and short run term causality between the study variables. The study found the presence of cointegration among the study variables. However, there was no long or short run term causality between oil revenue and development indicators such as education, health, and agriculture. Hence a conclusion that downstream deregulation of the petroleum sector has not yet promoted economic development in Nigeria. The study recommends that corruption, smuggling of petroleum products and inappropriate pricing of oil products be addressed through accountability, capacity building of the police/ judiciary departments through increase of budget and technical means

Keywords: Downstream, deregulation, economic development, Nigeria

Introduction

The Petroleum sector of Nigeria is the backbone of the country's economy since it contributes up to 90% of the country's foreign exchange and 70% of revenue for the national budget (Omoregie, 2019). The petroleum industry is clearly the most dynamic, vibrant and strategic sector of Nigerian economy. The Nigerian petroleum industry is divided into two sectors: the upstream sector (which deals with exploration and production) and the downstream sector (which deals with refining, distribution, and marketing of crude oil for domestic consumption) (Ibietan, Abasilim, & Olobio, 2018). The interest and passion that usually characterize petroleum discourse in Nigeria is due to inexplicable deprivations and sufferings of Nigerians amidst plenty and abundance. According to Beaumont and Abrak (2018), energy-rich Nigeria overtook India in

May 2018 to become the country with the world's highest number of people (87 million) living in extreme poverty, in comparison with India's 73 million people.

And yet Nigeria is blessed with vast quantities of petroleum and is the sixth largest exporter of oil in the Organization of Petroleum Exporting Countries (OPEC) (Olujobi, & Ufua 2020). This has generated billions of dollars in revenue over the past fifty one years since oil was found in Nigeria. But this has not translated into an improved national development (Kadiri & Lawal, 2016). In the bid to solve such problems characterizing the petroleum sector industry in many countries, structural reforms of the petroleum sector has become a necessity hence recourse to deregulation (Godfrey & Oritsematosan, 2015). In deregulation, the role of government in the sector is being redefined, and program markets are being deregulated. The government is intervening in order to increase efficiency and protect consumers from exorbitant prices of petroleum products (Tijjani, 2014).

Deregulation policy has globally been embraced by several developed countries such as Mexico, Canada, India, Brazil, Argentina and United States of America (USA); and developing countries such as Kenya, Uganda, Indonesia, Venezuela, Peru, Pakistan, Philippines, and Thailand. All these countries have systematically dismantled their state-owned oil companies through deregulation (James, Ekperiware & Muritala, 2016). Deregulation of the downstream sector of the Nigerian petroleum industry, as conceived in 2003, involved the removal of government control on petroleum products prices and the removal of restrictions on the establishment and operations including refining jetties and depots, while allowing private sector players to be engaged in the importation and exportation of petroleum products and allowing market forces to prevail (Kalejaiye, Adebayo & Lawal, 2013). The downstream sector operations cover crude oil conversion into refined and petrochemical products and fine chemicals, and gas treatment as well as transportation and marketing of the petroleum products (Chigbu, Ubah & Chigbu, 2016).

In Nigeria, the 2003 deregulation of the sector is expected to give room for competition and maximize supply sources which would transform to price reduction and deflate scarcity. Prior to this moment, attempts were made to invite private firms into the sector. Most of whom, including NNPC itself, sought for the importation of petroleum products instead. Yet still fell out due to regulated domestic prices and a whooping amount as subsidy to the consumers (Kalejaiye, Adebayo & Lawal, 2013). The private investors were also not willing to take over the dilapidated, disrepair and poorly performed state-owned facilities (refineries, depots and pipeline system). Thus, the sector is so plagued by, not only, low capacity utilization of the midstream sector, inadequate distribution (pipeline, rail and road) networks and storage facilities, products diversion and adulteration, black-marketing, fire incidents, smuggling as well as inefficient monopolistic/state control on prices (Chigbu, Ubah & Chigbu, 2016); but also low level of maintenance/investment and non-cost recovery in all the downstream chain.

Despite the deregulation of the downstream sector, it is still characterized by increased treasury loss to and poor maintenance of facilities and infrastructure by government; products adulteration and pipeline vandalization; low investment opportunities; sabotage by cartels, large-scale smuggling of crude and refined oil as well as the importation of petroleum products; rampant black markets, etc. due to inefficient market structure caused by the monopolistic control of the

state on price (James, Ekperiware & Muritala, 2016). As a result widespread petroleum products shortage and unending price hikes are the daily reports bringing untold hardship to the rapid growing Nigerian populace.

Therefore, the low petroleum products from local refineries, inadequacy of petroleum products importation at international prices, and particularly, inefficiency of domestic prices of petroleum products set by the state, stand out as the fore setbacks on the downstream. They not only affect government treasury via lower prices in relation to international prices and the lump-sum subsidy cost of #420billion annually, but it also result to low profit margins to the private investors; thence, causing the widespread shortage. Thus, scarcity and market inefficiency fuel up systemic failure of the sector by setting the stage for negative outcomes of the markets such as price discrimination, black-marketing, diversion, sabotage, adulteration, smuggling and the ultimate higher domestic prices; hence, a vicious cycle. Nigeria aspires, via the downstream sector, to ensure domestic self-sufficiency as well as efficient supply and distribution system. More compelling is the fact that, in the last decades the nation had continuously witnessed the trauma of petroleum products scarcity and higher prices (James, Ekperiware & Muritala, 2016). Equally compelling is the need to develop the gas sector which has the potential of doubling the nation's revenue and to come up with alternative(s) to oil. What is the relationship among petroleum products prices, imports, locally refined, sales and domestic demand/distribution in Nigeria? What is the impact of the supply modes and appropriate pricing on petroleum products distribution in the Nigerian economy? Although deregulation has a better future for Nigeria, nevertheless, the big question is, to what extent has this move to deregulate Nigerian petroleum sector contributed to the economic development of the country? This paper thus intended to investigate and provide its findings to that regard.

Statement of the Problem

The monopolistic tendency of Nigerian National Petroleum Corporation (NNPC) providing all the petroleum products created some features which has made justification for the downstream deregulation of the sector (Sayne, Gillies, & Katsouris 2015). The features includes: low level of competition, smuggling of petroleum products, monopolistic and sharp practices, existence of petroleum subsidy, poor maintenance of infrastructural facilities, distortions in products supply and distribution, inappropriate pricing of products supply and high level of fraud and corruption (Godfrey & Oritsematosan, 2015).The government consequently decided to adopt a deregulation policy to address the aforementioned irregularities in the petroleum sector of Nigeria. This paper thus investigates the influence of the downstream deregulation on the economic development of Nigeria for the period of 2004-2019.

Objective of the Study

To determine the effect of downstream deregulation of the petroleum sector on the economic development of Nigeria from 2004-2019.

Hypothesis

Ho: downstream deregulation of the petroleum sector did not positively affect the economic development of Nigeria from 2004-2019.

Empirical Review

Deregulation of the Nigerian Petroleum Sector

Deregulation is a tool for reducing government intervention in economic activities and providing the relevant structure of incentives that would put the economy on the path of recovery and growth (Adetunji, 2016). In addition, Janda, Berry & Goldman (1997) define deregulation as the process whereby government reduces its role and allows the natural market forces of demand and supply to become fully operational. Its effect according to them is freedom in the market place and the best route to an efficient and growing economy (Ibietan et al., 2018). From the foregoing, deregulation could be said to be government withdrawal of control from the working of an aspect of the economy and leaving the same in the hands of the private sector operators for more efficient use of resources and to bring about development in the society.

On the other hand, the Petroleum Products Pricing Regulatory Agency (PPPRA) submit that deregulation of the downstream sector means opening up of the downstream sector of the petroleum industry to competition among all players in the industry. It means allowing every player the opportunity to refine or import petroleum products for use in the country in-so far as the product so refined or imported meet quality specification. Godfrey & Oritsematosan (2015) defined deregulation of the downstream sector to mean loosening the tight rules governing the administration of the downstream sector by opening up the sector to competition among all players in the industry.

Oyedepi et al., (2019) posits that the purpose of deregulation is to ensure competitive economic system devoid of monopoly and allow price mechanism of demand and supply's principle of economy to prevail. Commenting on the importance of deregulation of an aspect of the economy of a country, Gberevbie, Ibietan, Abasilim, & Excellence-Oluye (2015) argue that when market forces are allowed to play out, and when the private businesses are given pre-eminence in the economy, then the economy would be rejuvenated and sustainable development would consequently ensue. Ibietan et al. (2018) opine that proper management of revenue generated from the deregulation of an aspect of the economy could go a long way in the provision of social amenities, infrastructural development and job creation for the populace. When this happens, it can be concluded that development has materialized in that society.

To overcome the challenge of mismanagement, lack of maintenance culture and corrupt practices on the part of the operators in the oil sector, the Federal Government of Nigeria came up with the idea of total deregulation of the Nigerian petroleum sector justifying the deregulation policy of the Federal Government in the Nigerian petroleum sector. Ibietan et al. (2018), argued that deregulation policy has the capacity to reform and re-orientate the Nigerian public and private businesses to a better value system of transparency and accountability as a way of tackling effectively the menace of corruption.

According to Udibe & Ugwuanyi (2019), the Federal Government of Nigeria deregulated the Nigeria oil industry in order to: ensure that petroleum products are made available to the consumers in an uninterrupted manner, eradicate waste and corruption which are consequences of tightly regulated economy, ensure that the supply and distribution of petroleum products are

orderly and consumer friendly, and channel money realized from the exercise to development projects that will be beneficial to the majority of the people.

Economic Development

Development refers to advancement through progressive changes in economic, social, cultural, technological and political conditions of a society leading to an improvement in the welfare of citizens (Gberevbie et al., 2015). Scholars have argued that no society can claim to be developed if there is a high level of poverty, insecurity, unemployment, illiteracy, malnutrition, child mortality, political instability, deplorable state of infrastructure and inequality in income distribution (Joshua & Jegede 2013; Gberevbie, Joshua, Excellence-Oluye & Oyeyemi, 2017). In the same vein, Kimiri (2018) argues that for development to have taken place in a society; there must be an enhancement of the quality of life of citizens: meeting the basic needs of food, shelter, good health, good education and a general sense of wellbeing amongst the people. Development therefore is a process that entails growth both in infrastructure and in the lives of the people (Gberevbie, 2014).

On the other hand, economic development is the process by which the economic well-being and quality of life of a nation, region, local community, or an individual are improved according to targeted goals and objectives (Krueger & Myint, 2009). Similarly, economic development is a concerted effort on the part of the responsible government of any country to influence the direction of private sector investment toward opportunities that can lead to sustained economic growth (Blakely & Bradshaw, 2002). Sustained economic growth can provide sufficient incomes for the local labour force, profitable business opportunities for employers and tax revenues for maintaining an infrastructure to support this continued growth.

Godfrey and Oritsematosan (2015) examined the role of leadership in the deregulation of the downstream sector of the Nigerian petroleum industry. The survey method using the questionnaire was adopted in collecting data. Tables were used in the presentation of the data while the mean (\bar{x}) and simple percentage (%) were used in the analysis of data. This study highlighted the importance and role of leadership in the deregulation of the downstream sector of the Nigerian petroleum industry. The study revealed that corruption, brought about by petroleum subsidy, is obvious in the petroleum industry and that importation of petroleum products to meet local demand by Nigerians is attributable to leadership problem. Furthermore, Abubakar, Ahmad, Sani & Jinjiri, (2016) conducted study on the impact of oil revenue on the Nigerian economy. Using a multivariate regression analysis, the authors found a high insignificance in establishing the flow of oil revenue into the key economic sectors of education, health, agriculture and transport in Nigeria.

Methodology

This study employed the annual time series data of the Federal Government of Nigeria Gross Domestic Product (GDP) and revenues (*REV*) and real Gross Domestic Product (*RGDP*) for the sample period of 2004 - 2019. This study employed the techniques of cointegration and error correction models (ECMs). The stationarity properties of the time series data was investigated using the Augmented Dickey-Fuller (ADF) test. The Johansen's (1987) cointegration test was conducted to determine whether a group of non-stationary time series variables used for this study

was cointegrated or not. Finally, the direction of causality for the hypotheses using Vector Error Correction Model based causality test was examined.

The empirical data consist of annual time series observations from 2004 to 2019. The study variables are Gross Domestic Product (GDP) (A proxy for economic development), and oil revenue, controlling for development indicators such as Education, Health, and Agriculture. The statistical bulletin of the Central Bank of Nigeria and Nigeria Bureau of Statistics are the sources of data collection, while the empirical analysis is done in STATA v.14. The empirical data consist of annual time series observations from 2004 to 2019. The study variables are Gross Domestic Product (GDP) (A proxy for economic development), and oil revenue, controlling for development indicators such as Education, Health, and Agriculture. The statistical bulletin of the Central Bank of Nigeria and Nigeria Bureau of Statistics are the sources of data collection, while the empirical analysis is done in STATA v.14. Ordinary Least Square method was employed and regression equations were used to determine the effect of downstream deregulation of the petroleum sector on the economic development of Nigeria. The regression models were estimated as follows:

$$GDP_t = \alpha_0 + \beta_1 Ln_ORV_t + \beta_2 Ln_EDN_t + \beta_3 Ln_HTH_t + \beta_4 Ln_AGR_t + \varepsilon_t \dots [1]$$

Where

Ln=Natural logarithm

GDP=real gross domestic product

ORV=oil revenue

EDN= education

HTH= health

AGR= agriculture

t= time period from 2004-2019

ε = error term

To test for stationarity of each series of the variables, the augmented Dickey-Fuller (ADF) Test was used. In order to test the long run association between downstream deregulation and economic development, the study adopted the co-integration Johansen test. A Vector Error Correction model (VECM) was use estimate on the evidence of cointegrating relationship, for long-run causality and short-term dynamics.

Results and Discussions

Table 1: Summary of ADF Unit Root Test

Variables	At Level			At First Difference			Remarks
	t- statistics[z(t)]	5% Critical value	p- value for z(t)	t- statistics[z(t)]	5% Critical value	p-value for z(t)	
GDP	-2.03	-1.771	0.0316	-2.40	-1.782	0.0169	Stationary
ORV	-2.06	-1.771	0.0298	-3.14	-1.782	0.0042	Stationary
EDN	-0.43	-1.771	0.3382	-2.67	-1.782	0.0101	Stationary
HTH	-0.53	-1.771	0.3013	-4.35	-1.782	0.0005	Stationary
AGR	-0.55	-1.771	0.2949	-4.71	-1.782	0.0003	Stationary

Source: Researcher's compilation

The results in table 1 show that GDP and ORV were stationary at Level (at 5% critical value). However, the variables EDN, HTH, and AGR were only stationary after 1st difference at 5% critical value. This therefore implies that the variables have a long run co-integration after 1st difference thus Johansen cointegration was used to determine this fact as indicated in table 2.

Table 2: Johansen Cointegration Test

maximum				trace	5%
rank	parms	LL	eigenvalue	statistic	critical value
0	27	-170.62053	.	961.9046	24.31
1	32	9.148074	1.00000	602.3674	12.53
2	35	170.35271	1.00000	279.9581	3.84
3	36	310.33178	1.00000		

maximum				max	5%
rank	parms	LL	eigenvalue	statistic	critical value
0	27	-170.62053	.	359.5372	17.89
1	32	9.148074	1.00000	322.4093	11.44
2	35	170.35271	1.00000	279.9581	3.84
3	36	310.33178	1.00000		

The results indicated in Table 2 shows that at maxim rank 0, 1, and 2, the trace statistics (961.9046), (602.3674), and (279.9581) respectively exceed the critical values. This therefore rejects the null hypotheses that there is no co-integration among the variables (GDP, ORV, EDN, HTH, and AGR) and upholds the alternative hypotheses that co-integration exists among the study variables. Similarly, for max statistics, the values (359.5372), (322.4093), and (279.9581) exceed the critical values of (17.89), (11.44), and (3.84) respectively, hence suggesting that the variables of GDP, ORV, EDN, HTH, and AGR are co-integrated. This implies that all the variables in the study have a long run relationship.

The findings in table 2 show that there is a long run effect of downstream deregulation of the petroleum sector on the economic development of Nigeria from 2004-2019. This is because as the petroleum sector becomes totally deregulated, the government will be able to earn more oil revenue which when used appropriately can bring about economic development in key sectors such as education, health and agriculture. This study agrees with that of Godfrey & Oritsematosan (2015) who found that good leadership in the deregulation of the downstream sector of the Nigerian petroleum industry promotes economic development.

Table 3: Vector Error Correction Model (VECM)

		Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
D_ORV	_ce1					
	L1.	.1296303	.5729789	0.23	0.821	-.9933877 1.252648
	_ce2					
	L1.	-6.182392	55.6116	-0.11	0.911	-115.1791 102.8143
ORV	LD.	-.561529	1.160835	-0.48	0.629	-2.836724 1.713666
	L2D.	-1.356259	3.152074	-0.43	0.667	-7.53421 4.821693
EDN	LD.	2.252397	49.77536	0.05	0.964	-95.30551 99.8103
	L2D.	-1.602979	32.6645	-0.05	0.961	-65.62422 62.41826
HTH	LD.	18.22457	154.5028	0.12	0.906	-284.5954 321.0446
	L2D.	4.859472	69.99496	0.07	0.945	-132.3281 142.0471
AGR	LD.	-20.85312	25.41161	-0.82	0.412	-70.65895 28.95272
	L2D.	7.198544	40.13546	0.18	0.858	-71.46551 85.8626

R²=0.838, p-value =0.414

Table 3 shows that the R2 value for all the study variables (ORV, EDN, HTH, AGR) does not justify their causality, neither are they significant. Furthermore, both ce1 and ce2 do not have negative coefficients and do not have a significant p-value. Thus implying that there is no long causality between oil revenue and development indicators (EDN, HTH, AGR). This therefore implies that from 2004 to 2019, oil revenue has not contributed significantly to the development of education, health and agriculture sector in Nigeria. It can therefore be argued that the downstream deregulation of the petroleum sector has not yet readily translated into viable economic development in Nigeria. This study is in line with that of Abubakar et al. (2016) who found a high insignificance in establishing the flow of oil revenue into the key economic sectors of education, health, agriculture, and transport in Nigeria.

Conclusion

The findings of this study has demonstrated that the downstream deregulation of the petroleum sector in Nigeria has not yet adequately translated into the promotion of economic development in key sectors such as education, health, and agriculture. It could be that the vices that forced government to opt for downstream deregulation regulation, such as smuggling of petroleum products, distortions in products supply and distribution, inappropriate pricing of oil products, and high level of fraud and corruption, have not been adequately dealt with.

Recommendations

This study therefore provides the following suggestions to allow full benefit of petroleum sector deregulation.

1. The federal and state governments of Nigeria should come up with appropriate and viable methods of fighting corruption and bribery within the oil sector. This could be done by the method of 'name and shame', whereby the names of corrupt officials are publicly published annually. In addition, both the judiciary and police should be strengthened by increasing their salaries and budget for effective fighting of corruption within the oil sector. This will help in the prosecution of even top government officials who are found guilty of fraud.
2. Furthermore, the government should design mechanisms that provide room for accountability to the public on how much revenue is received from the oil sector and how it is budgeted and spent. This can be achieved by hiring international (external auditors) to provide auditing services and publicly publish their findings. This implies that institutions and top officials such as ministers, governors, senators, and directors of oil companies must be held accountable in case of any inconsistency.
3. The federal, and state government should provide capacity building, fresher courses, equipment and proper financing to the police force for them to be able to fight oil smuggling to its core so that the government does not continue to lose billions of dollars to black markets because of smuggled oil products.
4. Last but not least, the government should regulate local market prices for oil products as guided by the international market prices to avoid unnecessary pricing due to hoarding and irregularities in supplies.

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