Investigating The Economic Impact Of Militant Activities On Crude Oil Production In Nigeria

[1]Igbani, S., [2]Okoli, I. and [3]Okpu O. A.
[1, 2, & 3]Department of Chemical and Petroleum Engineering,
Faculty of Engineering,
Niger Delta University,
Wilberforce Island, Amassoma,
Bayelsa State. Nigeria.

[1]Corresponding Author's Email: sundayigbani@gmail.com

Abstract—this study focuses on the economic impact of militant activities on crude oil production in Nigeria. The Niger delta accounts for the huge revenues to the government generated from its oil wealth. Despite oil being the mainstay of the Nigeria economy, the Niger delta is characterised by lack of social infrastructure, poverty, unemployment, environmental degradation, which is as a result of oil spills from the oil exploration activities of oil companies. Data for this study were mainly sourced from publications of central bank of Nigeria, organisation of petroleum exporting countries, and Nigeria national petroleum corporation. The data were analysed using ordinary least square method (OLS) alongside descriptive statistics; the data was regressed using the econometric views 7.0 software package. The result showed that pipeline vandalism, crude oil production, and unemployment rate is negatively and significantly signed at 5% significance level. This study would add to existing literatures and equally asset policymakers in carrying out informed decisions. The study recommended the following: the Nigerian government should upgrade and update the anti-vandalisation laws to ensure admissibility by court of competent jurisdiction in terms of electronic evidence captured by security gadgets, also there should be upward review of oil derivation principles and the Nigerian land use act, again there should be improvement in employment opportunities and youth empowerment schemes through the local content bills favour of the region. Lastly, there should be legislation in place, to formerly recognise those involved in illegal refining of petroleum product, as this will reduce pipeline vandalism.

Keywords—Economic; Militant; Crude oil; Production; Nigeria; impact.

1. INTRODUCTION

Over the years the Niger delta has being engrossed with too many crises be devilling it, Successive government over the last decade has come up with different programmes and solution to mitigate the impact of the crises on the economy of Nigeria and its impact on the environment, due to frustrate young men and women that have taken up arms to demand for total control of their resources, this is evidenced with the blow-up of pipelines. Instead, the region has been rewarded with massive environmental degradation and political and economic marginalisation. This created an environment of anger, desperation and violence. The combination of the activities of the oil companies and the government led to emergence of various armed groups operating under such names as Egbesu Boys, Movement for the Survival of the Ijaw Ethnic Nationality (MOSEIN), Joint Revolutionary Council (JRC), MENBUTU, Arogbo Freedom fighters (AFF), Niger Delta Volunteer Force (NDV) and the Movement for the Emancipation of the Niger Delta (MEND), and the most current group is the Niger Delta Avengers (NDA). The activities of these groups which have included kidnapping of foreign nationals working with the oil companies have created a state of general insecurity in the region. This has negatively impacted the mono-cultural Nigerian economy as it has affected crude oil production which is needed to achieve economic growth and development.

According to Ejibunu (2007:9-20) [1] the major reasons for the Niger Delta crisis includes: structural deficiency of the Nigerian Federation, poverty/deprivation of the means of livelihood, environmental damage, lack of development and unemployment, distortions in the social and economic fabric of the local societies, human rights violations, bad governance/corruption, and alleged insincerity of the Federal Government. Also Joab-Peterside (2007:55) [2], state the following reasons why the militants groups were formed which are to protest marginalization, unemployment and environmental degradation caused by oil companies. Succinctly put, Okengwu (2011:23) [3] blamed the Niger Delta crisis on unemployment, failure to provide basic amenities by the government, dirty politics, security failure, support by traditional rulers and communities etc. The late Saro-Wiwa in 1985, traced the root causes of conflicts in the Niger Delta to inequitable distribution of revenue, uneven development among the Niger Delta region. Apart from the potential danger the crisis poses to the nation's unity, its impact on socio-economic development cannot be over-emphasized. [4] Amazie in the Vanguard (July 15th, 2007: p27) notes that trillions of naira has been lost as a result of the crisis, and that oil production quota has greatly

reduced; consequently, lowering derivation fund by 13% for the states in the region. Furthermore, the crisis has also led to incessant kidnapping and hostage taking in the region. Between 2005 and 2007 about 200 expatriates have been kidnapped, although most were released within weeks in exchange of ransoms, typically hundreds of thousands of dollars. Other dimensions of the crisis include; attacks on the lives and property, the military, waterways, organised crime and illegal oil bunkering. Furthermore, the recent attack on critical infrastructure has made Nigeria's oil production to plummeted from 2.2 million barrel per day to about 1.4 million barrel per day. Nigeria is already losing about N2.79 billion ($14 billion) daily to the closure of the ExxonMobil-operated Qua Iboe terminal, following the evacuation of Exxon-Mobil's workers. This has compounded government revenue losses caused by the fall in global oil prices since mid-2014. Desperate to put an end to the crisis, various policy interventions have been adopted by the various governments, some of which includes upward review of the derivation formula, establishment of the Niger Delta Development Commission (NDDC). Others include the establishment of the Federal Ministry of Niger Delta and the granting of amnesty to militants in the creeks of the Delta area. Although the activity of the militants was curtailed to an extent, it is without doubt that these measures have not in entirety quelled the crisis in the region.

Currently, a new group known as Niger Delta Avengers (NDA**)** publicly announced their existence in March 2016. The NDA has since its arrival into the scene, carried out a series of attacks on oil producing facilities in the delta, causing the shutdown of oil terminals and a fall in Nigeria's oil production to its lowest level in twenty years, hence their claim to relevance. The attacks by NDA has caused Nigeria to fall behind Angola as Africa's largest oil producer, the reduced oil output has hampered the Nigerian economy and destroyed its budget. With Nigeria's revenue seemingly dependent on the oil industry, the NDA has given the nation cause to be on the edge. The NDA has said that it seeks to create a sovereign state in the Niger Delta and have threatened to disrupt Nigeria's economy if their aims are not met. The adoption and implementation of amnesty programme for the militants by the federal government in 2009, has not been able to translate to increased inflow of foreign direct investment six years after, as renewed cases of kidnapping and oil theft and vandalism have continued to underscore the perennial problem of insecurity in the region.

Therefore this brings to the fore the need for a holistic programme aimed at addressing the genuine needs of the region beyond pacifying aggrieved militants or community leaders.

This study is significant in the following ways: firstly, it would contribute to existing literatures on the subject matter by providing an expository analysis of the economic impact of militant activities on crude oil production in Nigeria; which will help in policy formulation and enhance economic stability. Secondly, it would also be an invaluable tool for student, academic institutions and individuals that want to know more about the fluctuation of crude oil price in Nigeria.

Broadly, the aim of this study is to investigate the economic impact militant activities on crude oil production in Nigeria. To achieve this, the following specific objectives are stated: to investigate the impact of pipeline vandalism on the Nigerian economy; to examine the impact of crude oil production on the Nigerian economy; to identify the impact of unemployment rate on the Nigerian economy given the level of crude oil production. Also, the following research hypotheses were used for the study: Ho1: Pipeline Vandalism has no significant impact on economic development in Nigeria; Ho2: Crude oil production has no significant impact on the Nigeria's economic development; Ho3: Militant activities have no significant impact on unemployment in Nigeria.

The research gap disclosed that many studies on the Nigerian oil and gas sector concentrated on theoretical issues without laying more emphasis on empirical techniques to test on the real level of the impact to Niger delta nay Nigeria. Some of these studies are foreign in nature, not more are of the Nigerian background. Consequently, the gap this research seeks to fill is on the impact of militant activities on the economy as using crude oil production, pipeline vandalism, and unemployment.

2. STUDY AREA

Figure 1. Niger Delta Region [Adopted From Fuelling the Niger Delta Crisis (Crisis Group Africa Report No.118, 2006)].

The Niger Delta covers an area of approximately above 70,000 square kilometers, covering the greater part of the South-South region and some part of the South East region of Nigeria. It derives its name from the River Niger and is one of the world's largest wetlands and Africa's largest delta. The Niger Delta is one of the largest deltas in the world, probably the third largest on earth. The region is regarded as one of the nine most difficult deltas of the world comparable to the Mekong, the Amazon and the

Ganges. It is situated in the central part of southern Nigeria. It lies within latitudes 4 degrees north to 6 degrees north, and longitude 5 degrees east to 8 degrees east [5],[6],[7]. The area has a population of about twenty five million people, according to the 2006 national census figures [8] and more than forty ethnic groups with links to the linguistic groups of Ijaw, Edo, Igbo, Efik, Ibibio and Oron. "It is rich in both renewable and non renewable natural resources such as oil, gas, bitumen, etc, accounting for 95% of the total revenue for the Nigerian government, generated from oil and gas exploration and 80% of national wealth" [9]. The NDDC ACT (2000) recognizes nine states, namely; Abia, Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, Imo, Ondo and rivers as comprising the Niger Delta, but the focus of this paper shall be "core Niger delta states" that is Bayelsa, Delta and Rivers states. These are the "states geographically characterized predominantly to an extent with deltaic features" [10]. Prior to the discovery and exploration of oil and gas resources in the Niger delta region, the primary occupation of the people was fishing and farming. Unfortunately, years of oil exploration and exploitation by the Oil companies, has destroyed the subsistence economy of the people. Testimonies from various quarters lend credence to the claim that environmental degradation occasioned by oil spillage has made life extremely difficult for the local people. The destruction of farmlands, fishponds and rivers had radically altered the economic life of the once self-reliant and productive region for the worst [11].

3. RESEARCH METHOD/DESIGN

Method has to do with technique, the way of doing things. Methodology is more than a technique. It is the methodology that gives credibility to an economic research. If there is an empirical problem and we have many competing methods, the justification of choosing a method of solving the empirical problem is called methodology. It is not the methodology that determines the problem; it is the problem that determines the methodology. Therefore this study adopts expost research design or method to test for the efficacy of the historical data set (time series).

3.1 Analytical Technique

The analytical method employed for this study is Ordinary least square regression (OLS) alongside descriptive statistics. The data will be regressed using the econometric views 7.0 software/package.

3.2 Data Collection And Instrument

The instrument mostly used in this work is secondary in nature and is mostly sourced from annual publications of central bank of Nigeria statistical bulletin, organization of petroleum exporting countries (OPEC) and the Nigeria national petroleum corporation.

3.3 Model Specification

The model specification for the relationship in its functional form is stated as follows:

$$GDP = f(COP, PPV, UMR) \quad \ldots \quad (1)$$

Where,
GDP = Gross Domestic Product
PPV = Pipeline Vandalism
COP = Crude Oil Production
UMR = Unemployment Rate

Transforming the functional relationship into econometric form we have:

$$GDP = B_o + COP_1 B_1 + PPV_2 B_2 + UMR_3 B_3 + U_t \quad (2)$$

Where,
B_0 = Intercept
$B_1 - B_3$ = Slope coefficient
U_t = Stochastic variable or error term

Apriori Expectations

The expected sign of the slope coefficient of the variables are:
$B1 > 0, B2 > 0, B3 > 0$

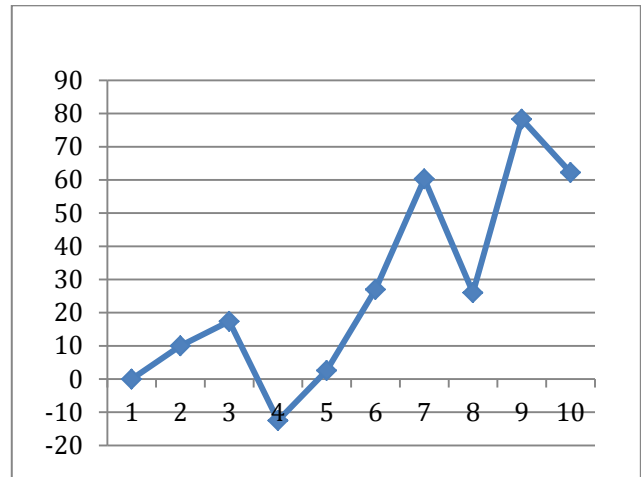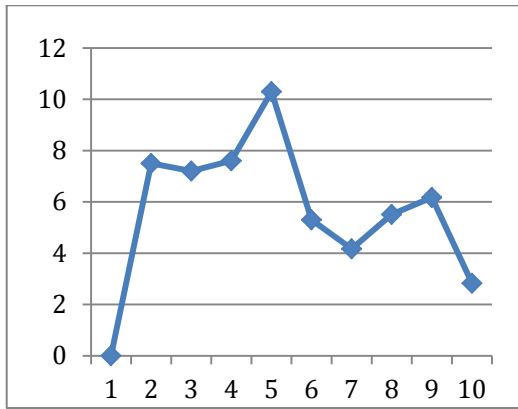## 4. DATA PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Data Presentation

This section is on regression data and discussion of result for the impact of militant activities on the Nigerian economy with selected macro-economic variables of gross domestic product in millions, pipeline vandalism in thousands, and oil production in millions while unemployment is in rates (table 2.). In other to make the data statistically perfect, we converted all values to growth rate as in subsection 4.2.
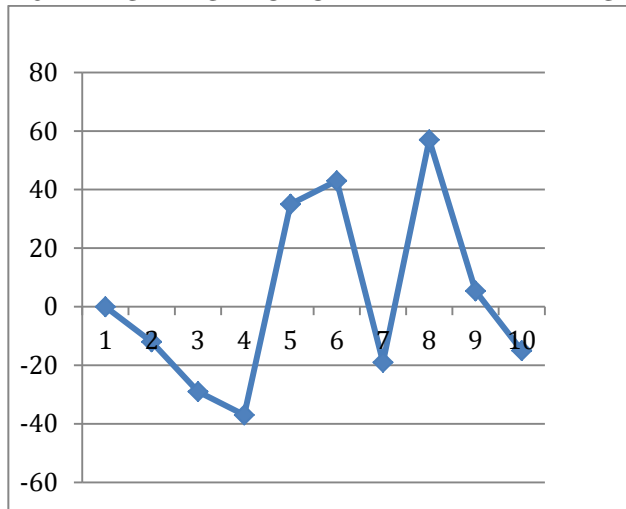
Table 2. Aftermath of Militancy in Niger Delta
(Source: CBN bulletin 2015, publications of NNPC)

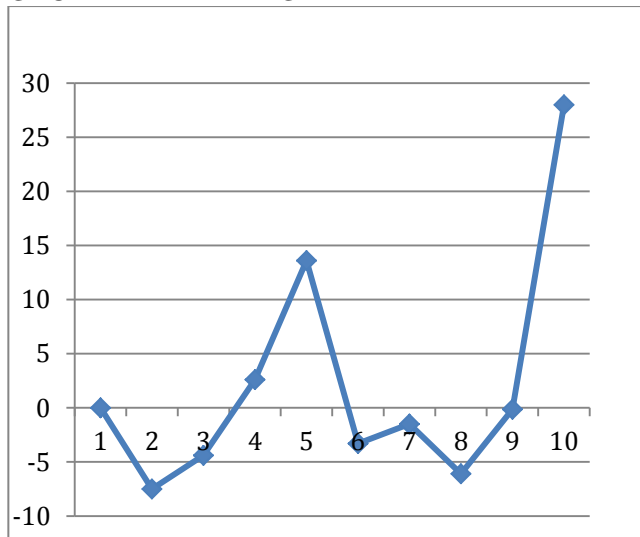| Year	Real GDP growth rate	Pipeline Vandalism (growth rate)	Oil production (growth rate)	Unemployment growth rate
2006	0	0	0	0
2007	7.5	-12	-7.5	10
2008	7.2	-29	-4.4	17.4
2009	7.6	-37	2.6	-12.5
2010	10.3	35	13.6	2.6
2011	5.3	43	-3.3	26.96
2012	4.17	-19	-1.5	60.3
2013	5.51	57	-6.1	26
2014	6.17	5.4	-0.13	78.3
2015	2.83	-15	28	62.25

4.2 Time Series Plot Of Gross Domestic Product Growth Rate Showing Cyclical Fluctuations Properties From 2006 To 2015.

4.3 TIME SERIES PLOT OF PIPELINE VANDALISM

4.4 TIME SERIES PLOT OF OIL PRODUCTION GROWTH RATE IN NIGERIA.

4.5 TIME SERIES PLOT OF GROWTH IN UNEMPLOYMENT RATE IN NIGERIA.

	GDP	PPV	COP	UMR
Mean	5.658000	2.840000	2.127000	27.13100
Median	5.840000	-6.000000	-0.815000	21.70000
Maximum	10.30000	57.00000	28.00000	78.30000
Minimum	0.000000	-37.00000	-7.500000	-12.50000
Std. Dev.	2.862151	31.99219	10.83439	30.27603
Skewness	-0.448021	0.507979	1.553984	0.467822
Kurtosis	2.924174	1.909170	4.314237	1.917878
Jarque-Bera	0.336934	0.925867	4.744451	0.852674
Probability	0.844959	0.629435	0.093273	0.652896
Observations	10	10	10	10

4.6 DESCRIPTIVE/GROUP STATISTICS
Authors own computation from eviews 7.0

The result of the descriptive statistics shows the general behaviour of all the variables in model. To determine the temporal properties of both GDP growth rate and militant activity parameters within the study period, a summary of the descriptive statistics is presented below:

From the group statistics above, the mean value for the GDP growth rate for the 10 year period covered is 5.658000 while the independent variable of unemployment rate possessed the highest average of 27.13100.

The central value otherwise called the median for GDP growth rate and unemployment rate are positive whereas the other variables were signed negative. The standard deviation of the group statistics which measures the degree of dispersion or deviations of the observations from the mean of the distribution is within the range of positive values. In terms of shape of the distribution, skewness which reports asymmetrical nature of a curve reveals that all the data except GDP growth rate skewed to the left. Following the Bowman-Shelton test for normality which is based on closeness to zero of the sample skewness and closeness to three (3) of sample kurtosis. The degree of flatness or peakness for COP is above three, therefore its leptokurtic in nature. In

like manner, the jarque bera statistics drawing its analysis from the tiny values of the group probability, we can procedurally conclude that the data is normally distributed at 5% significant level. Finally the group statistics also depicts a probability value that is not statistically significant drawing from the testable and required 5% level of significance.

4.7 REGRESSION RESULT

The ordinary least square regression is a test mainly used in establishing short run relationship the dependent variable otherwise called explained variable(GDP GROWTH RATE) and explanatory variable; PPV, COP and UMR in the model. The OLS output is presented below:

Dependent Variable: GDP
Method: Least Squares
Date: 09/09/16   Time: 16:39
Sample: 2006 2015
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.316248	1.465425	4.310180	0.0050
PPV	-0.008061	0.035292	0.228407	0.8269
COP	-0.007747	0.106981	-0.072414	0.9446
UMR	-0.024498	0.038054	-0.643775	0.5435

R-squared	0.079397	Mean dependent var	5.658000
Adjusted R-squared	-0.380905	S.D. dependent var	2.862151
S.E. of regression	3.363368	Akaike info criterion	5.552937
Sum squared resid	67.87347	Schwarz criterion	5.673971
Log likelihood	-23.76469	F-statistic	0.172488
Durbin-Watson stat	1.554007	Prob(F-statistic)	0.911184

Authors own computation from r*eviews 7.0*

The regression data for the relationship between gross domestic product proxy for the Nigerian economy and selected correlates for militant's activities when subjected to the econometric software-eviews, unsurprisingly depicts that pipeline vandalism, crude oil production and unemployment rate is positive but insignificantly related to GDP growth rate based on 95% confidence level. Again the autonomous value of 6.316248 is sign positive judging from the probability value-0.0050. The R-square is extremely weak to the tune of 8% with unexplained variations of about 92% which the model cannot account. The adjusted correlation went further to confirm that the explained variation is negative while the standard error of the regression reported a value of 3.363368. The Durbin Watson statistics of 1.554007 tends to the value of two (2) which implies that there is minimal autocorrelation among successive error terms.

4.8 DISCUSSION OF FINDINGS

The regression statistics reported above for the association connecting gross domestic product with some given parameters for militant's activities when subjected to the econometric methods generally reports that pipeline vandalism, crude oil production and unemployment rate is negatively and insignificantly signed at 5% significance level. The inverse relationship between GDP growth rate and pipeline vandalism suggest that the destruction of oil pipeline in the Niger delta oil rich region by militants have added sorrow to the Nigerian economy since the onset of the regions agitation for resource control. The reason behind this result is hinge on the insecurity

problems in the Niger delta region arising from youth unemployment and resource control agitations.

The negatively signed variable-oil production is clear evidence that oil production over the years have contributed insignificantly to the growth and development of the Nigerian economy. This basic fact could be attributed to mismanagement of crude oil revenues otherwise known as the Dutch disease as it's was applicable to the Netherlands economy.

Lastly the existence of a negative relationship is noticed between unemployment rate and GDP growth rate. We can equally ascribe this effect to a number of factors such as corruption, oil pipeline vandalism, backyard economy and increasing number of unemployment rate in Nigeria etc.

The R-square is abysmally weak at 8% with unexplained variations of about 92% which is due to factors alien to the model. This implies that the selected variables of militant activities cannot explain the variations in gross domestic product growth rate. The adjusted correlation coefficient went further to testify that the explained variation in GDP growth rate is negative while the standard error of the regression reported a value of 3.363368, this further implies that the errors made during regression computation is minimal and the data so subjected to econometric test is not by chance but a true representation of Nigerian oil and gas sector.

The Durbin Watson statistics of 1.554007 tends to the value of two which implies that there is minimal autocorrelation among successive error terms thus obeying the classical assumptions and postulations in theoretical econometrics.

5.0 CONCLUSION AND RECOMMENDATION

Summarily the study investigates the nature of relationship between militant's activities correlates and gross domestic product growth rate in Nigeria with time series data spanning the period of 2006 through 2015. The research begins with background issues to the study addressing theoretical underpinning and empirical evidences amidst the oil and gas sector. While basic elements of the study's research methods and materials are highlighted in chapter three inculcating descriptive statistical test to ascertain the trend of the data set as well as OLS to examine the short run impact of these militants activity parameters on the Nigerian economy. In all the statistical OLS result testifies an inverse but short run relationship between the variables which further confirms by group and trend statistics.

5.1 CONCLUSION

Based on the regression output of the ordinary least squares estimation the study conclude by reporting an inverse relationship between GDP growth rate proxy for the Nigerian economy and the selected correlate of militant activities- oil production growth rate, pipe line vandalism and unemployment rate. The descriptive statistics such as mean, standard deviation, median, range, Jarque-Bera are within normalcy and global utility.

5.2 RECOMMENDATION

Based on this statistical result and the persistent report of pipeline vandalization coupled with other militants activities over the years in the Niger delta region of Nigeria, the study therefore recommends the following measures:

1. The Nigerian government should upgrade and update the anti vandalization laws to ensure admissibility by court of competent jurisdiction in terms of electronic evidence captured by security gadgets.
2. There should be upward review of oil derivation principles and the Nigerian land use act.
3. Again there should be improvement in employment opportunities and youth empowerment schemes through the local content bills favour of the region.
4. There should be legislation in place, to formerly recognise those involved in illegal refining of petroleum product, as this will reduce pipeline vandalism.

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