

Conflict and Development in the Niger Delta Region of Nigeria. A Panel Co-integration Approach

Sixtus Cyprian Onyekwere¹ and Nafisah Ibrahim Babangida²

¹Department of Economics, Aduvie Pre-University College, Jahi, Abuja.

Plot 273 B08, Cadastral Zone, After ABC Cargo, Jahi District, P.M.B 5386, Abuja, Nigeria

²Department of Loans, Bank of Agriculture, Abuja Zonal Head Office.

162 Independence Avenue, Central Business District, Abuja, Nigeria.

Corresponding Author: Sixtus Cyprian Onyekwere

Abstract

The paper examines the direction of causality between conflict and development in the Niger Delta region of Nigeria. The famous panel Granger Causality/Block exogenous test was adopted to analyse panel data for conflict and development for two Niger Delta states from 2005-2013. The results show a bidirectional relationship (reverse causality) between conflict and development. That is, while underdevelopment is causing conflict in the Niger Delta, conflict is as well causing underdevelopment. The significance of these findings is that both sides of the argument on this topic are valid. That is, those arguing for causality running from development to conflict and those arguing for causality running from conflict to development. Thus, no side of the argument on its own gives the whole picture. The implication of the findings is that, for the government to stop the armed conflicts in the Niger Delta, adequate development plans have to be consistently implemented by both the government and oil companies located in the Niger Delta. Nevertheless, the limitation of the paper is the small observation used, which may not have been sufficient to carry out a co-integration analysis. Hence, further studies need to be carried out in order to ensure the accuracy of the results.

Keywords: Niger delta, conflict, development, co-integration, crude oil, Nigeria

INTRODUCTION

There is plethora of literature on the causal relationship between conflict and development. A research by UNDP (2010) suggests that agitations and anger from underdevelopment are what result to violent conflict thus, arguing that underdevelopment gives rise to violent conflict. Meanwhile, other papers such as Collier, et al., (2014), Kim & Conceicao (2010), Iyoboyi, (2014), Rodrik (1999), and Okafor (2017) are in opposition to such claims. They maintain that violent conflict hampers development and discourages investments, thus arguing that violent conflict is a major cause of underdevelopment. Although these arguments are on-going in the academic discipline of development economics, majority of papers for Nigeria only focus on the impact of conflict on development or vice versa. They overlook the importance of understanding the direction of causality between the two phenomena, especially in the case of the Niger Delta. This is a serious gap in literature that this research aims to address.

The Niger Delta region of Nigeria, which is made of up nine states has seen so many cases of armed conflict in the past between the government and the communities for control of crude oil in the area. According to

ACLEDDATA, (2016) there has been atleast, 240 cases of armed conflict mostly from Rivers state and Bayelsa state between 2003 and 2013. These cases include, destruction of crude oil pipelines, bombing of government buildings, killing of oil workers and other violent acts. These acts usually lead to major cut in economic activities in the areas thus affects the level of development, which accords with the theory that conflict has negative impact on development. These persistent conflicts have had a negative impact on profitability of businesses in the Niger Delta region.

Problem Statement

The struggle of the Niger Delta people in Nigeria has been a concern since the discovery of oil in Oloibiri-Bayelsa state by Shell-BP in 1956, and in Ogoni-Rivers state in 1957(The Gobal Foundation , 2016). Despite the fact that the Niger Delta holds the secretes to Nigeria's abundant crude oil export, accounting for about 90% of Nigeria's revenue, (Akpan & Akpabio, 2009), local communities in the Niger Delta remain poor. Osuoka, (2003) found that resorting to conflicts by the Niger Delta people has become the only viable way of expressing grievances by the oil rich communities. Since majority of the youth in the Niger

Delta are unemployed, opportunity cost of fighting becomes extremely low, which further exacerbates the already deteriorating conditions. Data from Opendataforafrica (2016) show that low education attainment, Unemployment and poverty persists in Niger Delta communities. Although the Niger Delta locals claim that the government has not done enough in bringing this situation under control (Omotola, 2007), the Nigerian government has not been completely unresponsive to their demands. For example, Worldbank (2009) reports that several measures have been taken by the government to reduce the conflict, with the establishments of bodies such as the Niger Delta Development Commission (NDDC) in 1999, Oil Mineral Producing Areas Development Commission (OMPADEC) in 1992, Ministry of Niger Delta Affairs (MNDA) in 2008 and the amnesty program by President Yar'Adua in 2009, which were all created as a move to encourage economic and social development and reduce the conflict in the regions (John, 2011). However, adequate effort has not been made in trying to combat conflict using development measures. This may be as a result of ignorance of the theoretical stance on the effect of underdevelopment on conflict, which this paper tries to shed more light on using empirical evidence.

Gaps in Literature

With several reports arguing that conflicts in the Niger Delta is as a result of grievances from slow development in the areas (World Bank, 2009), no empirical evidence has been found for this claim.

Further literature search showed that only one empirical paper was done for Nigeria on this topic. However, the study which was conducted by Okafor (2017) at national level had high level of data aggregation, which may have failed to capture the unique case of the Niger Delta. These present a serious gap in literature which needs to be addressed. Therefore, this study finds this topic worthwhile pursuing, focusing on the time periods 2005-2013, when conflict was rife in the Niger Delta region of Nigeria according to Premium Times (2015).

Research Objectives

With existing arguments as guide, this present paper tries to add to knowledge and bridge this gap by adopting a panel co-integration approach for the Niger Delta using micro-level data with the objective of investigating the direction of causality between poor development level and rising conflicts. Following this objective, the questions for this research is as follows, 'what is the nature of the relationship between conflict and development in the Niger Delta region of Nigeria'?

Significance of Study

This paper is highly valuable to the study of Development Economics. The topic of conflict and development has been under contention since the emergence of Development Economics as an academic discipline during the post-second World War, defined by violent conflict (Ginty & Williams, 2009). Ginty & Williams (2009) opine that earlier researchers were confined to studying developing states, which were prone to conflicts arising from decolonisation, post-independence power struggles and proxy competition among cold Warriors. The authors state that, earlier researchers have by and large overlooked the potential for development to contribute to both war and peace, in the aspect of what the paper enumerate as de-development, underdevelopment and uneven development. A historical evidence for this argument is seen in the Niger Delta case. Ginty & Williams (2009) further sustain that earlier studies on the subject of conflict and development used war and interplay between military and political leaders in different states as basis for their study, not considering the fact that economic conditions within states can induce violent conflict thus, regarding those studies as being myopic and limited in knowledge. As such, this paper will contribute to this ongoing argument by using level of development as recommended by Ginty & Williams (2009) to ascertain the nature of the relationship between conflict and development for the Niger Delta.

Data/Methodological Framework

To achieve the objective set for this research, the famous panel Granger Causality/Block exogenous test approach is adopted. Two development indicators (unemployment rate and education enrolment) were chosen to represent level of development in Niger Delta. The data for conflict (number of reported fatalities as proxy) is obtained from ACLEDDATA (2016), and that for development indicators (unemployment rate and education enrolment as proxy) were obtained from Opendataforafrica (2016). The observation runs from 2005 to 2013 to capture the periods when conflict was very high in the Niger Delta. Nevertheless, due to limited availability of data, only a few states were selected to represent the Niger Delta.

Descriptive Statistics

The main reason for carrying out the descriptive statistics is to examine whether the series follow a normal distribution or not. In econometrics, most of the statistical analysis and hypothesis testing procedures rely on the assumption that the variables follow the Gaussian normal distribution.

Table 1: Descriptive Statistics for all Variable

	LCONFLICT	LEDUCATION	UNEMPLOYMENT_RATE
Mean	2.163800	10.60699	31.54667
Median	1.945910	10.55698	27.80000
Maximum	3.951244	11.66151	67.40000
Minimum	0.000000	9.967026	12.10000
Std. Dev.	1.214311	0.515169	15.75966
Skewness	-0.055284	0.721335	1.446363
Kurtosis	2.011486	2.544480	4.159196
Jarque-Bera	0.618366	1.430496	6.069752
Probability	0.734046	0.489071	0.148081
Sum	32.45699	159.1048	473.2000
Sum Sq. Dev.	20.64371	3.715582	3477.137

The Jarque Bera statistics, which shows insignificant p-values for the descriptive statistics placed on table 1 above shows that variables follow normal distribution, which satisfies the assumption for parametric analysis. Note that variables are logged to convert them to percentages except for unemployment rate which is already expressed in percentages

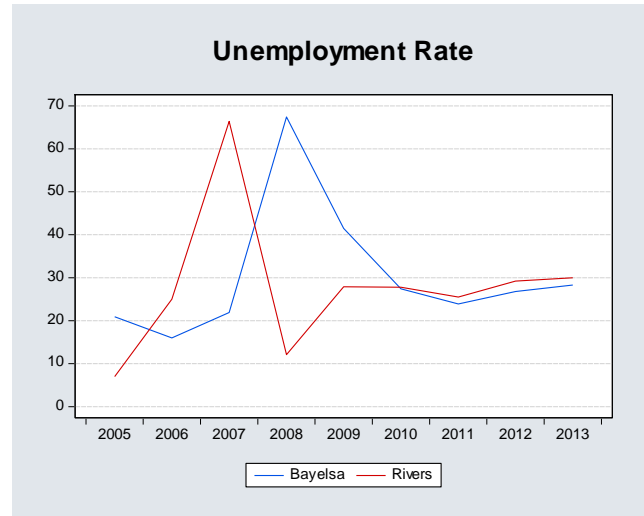
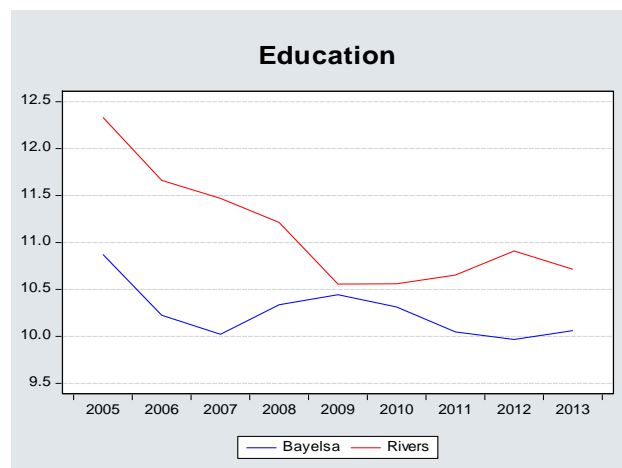


Figure 1: Historical Trend of unemployment, Education and Conflict in the Niger Delta

Data Source: ACLEDDATA (2016) and Opendataforafrica (2016)

The three graphs in figure 1 above show an interesting perspective to the theory being tested. Between 2006 and 2009 when conflict was high in the Niger Delta, it can be observed that education enrolment fell and unemployment was high. As conflict starts to decline towards 2013, education enrolment started rising and unemployment stabilized at around 25% (indication of improving development). However, caution should be taken in reading this graph, as one cannot conclude whether the falling conflict led to the rising development or, the rising development is responsible for the falling conflict. A solid conclusion can only be reached after conducting the appropriate tests, which would determine the direction of causality.

Panel Unit Root Test

A requirement for the use of Granger causality test is that variables must follow the I (1) process that is, they become stationary when differenced once (Gujarati and Porter, 2010). Panel unit root test using Levin, Lin & Chut statistic, Im, Pearan and Shin W-stat, ADF-Fisher Chi-square and PP-Fisher Chi-square is shown below in tables 2-4 for the three variables.

Null hypothesis H0: there is no unit root
 Alternative hypothesis Ha: there is unit root

Decision Rule: Accept null hypothesis if probability value is less than 0.05, otherwise accept

Table 2 : D(LNCONFLICT)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.27618	0.3912	1	5
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.18075	0.4283	1	5
ADF - Fisher Chi-square	2.25773	0.3234	1	5
PP - Fisher Chi-square	13.1267	0.0014	1	6

Table 3: D(LNEDUCATION_ENROLLMENT)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-7.68020	0.0000	2	12
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.27741	0.0114	2	12
ADF - Fisher Chi-square	13.0608	0.0110	2	12
PP - Fisher Chi-square	9.70968	0.0456	2	14

Table 4:D(UNEMPLOYMENT_RATE)

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.4966	0.0000	2	12
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.19879	0.0007	2	12
ADF - Fisher Chi-square	16.2999	0.0026	2	12
PP - Fisher Chi-square	18.2906	0.0011	2	14

Results shown on tables 2, 3 and 4 above confirm that all variables follow I (1) process, by showing significant p-values for their first differenced operator.

Cointegration Test

Having found evidence that the variables are integrated of order one, the next step is to test whether they are cointegrated. A test of panel cointegration result is used

to determine the appropriate model to adopt, as Granger causality test can be conducted by either using vector error correction model (VECM) or vector autoregressive model (VAR) (Gujarati & Potter, 2010). Nevertheless, it is more appropriate to first of all, select lag length for the tests. Below is a table which shows the lag selection criteria

Table 5: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-74.40691	NA	80.53421	12.90115	13.02238	12.85627
1	-60.73700	18.22654*	39.99057*	12.12283*	12.60774*	11.94330*

* indicates lag order selected by the criterion

As can be seen on table 5 above, the lag selection criteria using AIC and SC favours the use of only 1 lag.

Thus, lag 1 is selected for the purpose of the panel cointegration test placed on table 6 below.

Table 6: Pedroni Residual Cointegration Test

Series: LNCONFLICT LNEducation_ENROLLMENT

UNEMPLOYMENT_RATE

Sample: 2005 2013

Included observations: 18

Cross-sections included: 2

Null Hypothesis: No cointegration

Alternative hypothesis: common AR coeffs. (within-dimension)

	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-0.309839	0.6217	-0.323353	0.6268
Panel rho-Statistic	0.274849	0.6083	0.358639	0.6401
Panel PP-Statistic	-0.339174	0.3672	-0.155972	0.4380
Panel ADF-Statistic	0.869947	0.8078	0.776195	0.7812

Results from Table 6 above shows that p-values for Panel v-Statistics, Panel Rho-Statistics, Panel PP-Statistics and Panel ADF-Statistics are generally insignificant thus, VAR model is preferred for the study to the ECM model.

The VAR Model

The specification for the VAR model to be used for the test of causality in the variables is given below.

Multivariate Vector Autoregressive (VAR) Model

$$\Delta LConflict_{it} = \beta_0 + \sum_{i=1}^P \beta_{1i} \Delta LConflict_{t-i} + \sum_{i=1}^P \beta_{2i} \Delta LEducation_{t-i} + \sum_{i=1}^P \beta_{3i} Unemployment_{t-i} + \epsilon_t \dots \dots 1$$

$$\Delta LEducation_{it} = \alpha_0 + \sum_{i=1}^P \alpha_{1i} \Delta LConflict_{t-i} + \sum_{i=1}^P \alpha_{2i} \Delta LEducation_{t-i} + \sum_{i=1}^P \alpha_{3i} Unemployment_{t-i} + \epsilon_t \dots \dots 2$$

$$\Delta Unemployment_{it} = \Phi_0 + \sum_{i=1}^P \Phi_{1i} \Delta LConflict_{t-i} + \sum_{i=1}^P \Phi_{2i} \Delta LEducation_{t-i} + \sum_{i=1}^P \Phi_{3i} Unemployment_{t-i} + \epsilon_t \dots \dots 3$$

Where,

Δ = the difference operator

L= natural log of variable

it= panel representation for state i at time t

P = lag of variable which has been given as 2 lags

ϵ_t = white noise error term

$\beta, \alpha,$ and, Φ = coefficient of variables

RESULTS

Assessment of P-Values from the VAR estimate showed significant relationships for conflict, education and unemployment rate at 10%. This shows that results from the research can be relied upon in drawing a strong conclusion.

Alternative hypothesis Ha: there is joint causality running from the explanatory variables to the dependent variable

Panel VAR Granger Causality/Block Exogeneity Test

This test is carried out in form of a Wald Test.

Null hypothesis H0:there is no joint causality running from the explanatory variables to the dependent variable

Decision Rule: If probability value is less than 0.05, reject null hypothesis and accept alternative hypothesis, otherwise accept null hypothesis and reject alternative hypothesis.

Table 7: Causality Running from Conflict to Underdevelopment

Dependent Variable	LNCONF LICT	DF	Probability
Explanatory Variables			
InEducation Enrolment	2.466171	2	0.2914
Unemployment Rate	10.68478	2	0.0048
All	11.43468	4	0.0221

Table 8: Causality Running from Underdevelopment to Conflict

Dependent Variable	UNEMPLOYMENT_ RATE	DF	Probability
Explanatory Variables	Chi-sq		
in Conflict	55.45448	2	0.0000
in Educational Enrolment	102.7900	2	0.0000
All	131.9686	4	0.0000



Figure 2: The relationship between Conflict and Underdevelopment in the Niger Delta

Source: Authors Construct

The above representation is a case of bidirectional relationship between conflict and underdevelopment in the Niger Delta. This suggests that while conflict is causing underdevelopment, underdevelopment is at the same time causing conflict.

DISCUSSION OF RESULTS

Causality Running from Conflict to Underdevelopment
 The Niger Delta region of Nigeria has seen so many cases of armed conflict in the past between the government and the people of Niger Delta for control of crude oil in the area. According to ACLEDDATA, (2016)there has been atleast, 240 cases of armed conflict for Rivers state and Bayelsa during the period under study. These cases include, destruction of crude oil pipelines, bombing of government buldings, killing of oil workers and other voilent acts. With these cases of armed conflict in the Niger Delta, it can be ascertained that conflict is the reason behind the underdevelopment in the region. Kim & Conceicao (2010) which are in support of this finding state that development cannot thrive in the face of violent conflict. The paper found evidence of causal effect of conflict on development for Rwanda, following the civil war and genocide in the 1990-2000, which occurred in the country. Rodrik (1999) also reported similar findings, arguing that conflict has adverse effects on economic growth. A research carried out by Collier, Elliott, Hegre, Hoeffler, Reynal-Querol, & Sambanis (2014) for developing countries, highlight violent conflicts to be the primary cause of underdevelopment in the developing countries. Finally, Okafor (2017) using panel estimation techniques also provides evidence for causality running from conflicit to underdevelopment for ECOWAS countries. These previous findings provide support for the findings in

As can be observed from the output in table 7above, null hypothesis for no joint causality running from the two development indicators (education and unemployment rate) to conflict was rejected as p-values were significant at 5%. Again, from table 8, the null hypothesis of no joint causality running from conflict to unemployment rate was also rejected as p-values is significant at 5%. Thus, the inference is drawn that there is bidirectional relationship (reverse causality) between conflict and underdevelopment in the Niger Delta. This means that both variables under investigation are causing each other.

this present paper for the direction of causality from conflict to underdevelopment

Causality Running from Underdevelopment to Conflict
 The struggle of the Niger Delta people in Nigeria has been a concern since the discovery of oil in Oloibiri-Bayelsa state by Shell-BP in 1956 and Ogoni, Rivers state in 1957(The Gobal Foundation , 2016).As mentioned in the earlier part of this paper, despite the fact that the Niger Delta holds the secret to Nigeria’s abundant crude oil export, accounting for about 90% of Nigeria’s revenue, (Akpan & Akpabio, 2009), local communities in the Niger Delta remain poor. Osuoka, (2003) found that resorting to conflict by the Niger Delta people has become the only viable way of expressing grievances by the oil rich communities. Since majority of the youth in the Niger Delta are unemployed, opportunity cost of fighting becomes extremely low, which further exacerbates already deteriorating conditions. Data from Opendataforafrica (2016) show that low education attainment, Unemployment and poverty persists in Niger Delta communities. While there are many factors that could cause conflict, many empirical studies find that poor economic performance is associated with higher incidence of conflict, see (Kim & Conceicao, 2010). A report by UNDP (2010) also shows that being poor is correlated with most forms of conflict.

These therefore provide justification for the reverse causality running between underdevelopment and conflict for the Niger Delta.

CONCLUSION/POLICY RECOMMENDATIONS

The objective of this paper was to determine the direction of causality between conflict and development in the Niger Delta region of Nigeria,

using the Panel VAR Granger Causality/Block Exogeneity tests. The results show a bidirectional relationship (reverse causality) between conflict and development for the Niger Delta, which is a recent development on this topic done for the Niger Delta. This finding should encourage researchers to choose to investigate the direction of causality, instead of assessing the obvious. The findings of this paper are therefore summarised in a diagram below for better understanding, so as to recommend suitable policies that can be pursued by the Nigerian government towards the resolution of the persistent violent conflict in the Niger Delta.

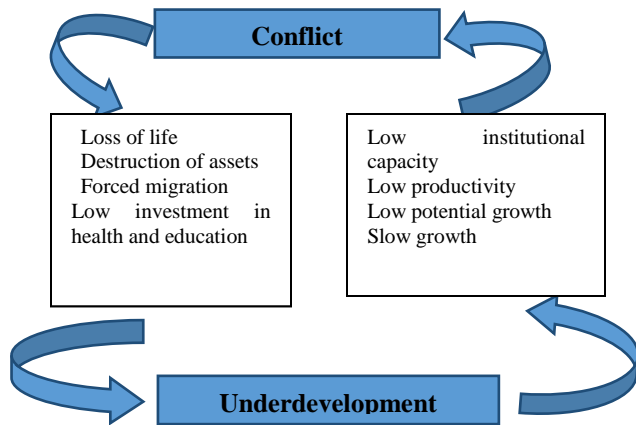


Figure 3: The Niger Delta Situation and Suitable Policies

Source: Authors Construct

The diagram in figure 3 above shows the summary of this paper. From the diagram, the Nigerian government can choose sound policies that would work to avoid factors in box A, or policies to improve factors in box B. The Bidirectional relationship the Niger Delta faces means that by implementing policies that could work to improving the factors in box B, factors in box B would automatically address itself. Hence, it is recommended that the Nigerian government should consider creating jobs and providing basic amenities for the Niger Delta people. The oil companies in the Niger Delta should take care of the environment, initiate adequate corporate social responsibility measures and offer scholarships for locals. Although evidence seen earlier in figure 1 shows that the situation in the Niger Delta has been slightly improving since 2012, implementing the recommendations from this research should further speed up the rate of improvement. This finding is in line with Ginty & Williams (2009) argument that development is also a major source of violent conflict in the modern world worth researching.

Limitations of the Research and Recommendations for Further Study

There are two serious limitations to this study. First is the assumption that data from only two states is sufficient to generalise for the other remaining 7 states

in the Niger Delta. Secondly, according to rule of thumb, the use of Granger causality test is more appropriate when observation is very large. The observation in this paper is not up to 100 which means that the results produced may be bias to some extent. It was very difficult to obtain data on a disaggregated level for all the 9 states that make up the Niger Delta. Therefore, future researchers should try to obtain disaggregated data for the 9 Niger Delta states, which will increase the observation and provide a stronger conclusion.

REFERENCES

- Acleddata. (2016). *ACLED Version 6 (1997 – 2015)*. Retrieved from Armed Conflict Location and Event Data Project: <http://www.acledata.com/data/version-6-data-1997-2015/>
- Akpan, N., & Akpabio, E. (2009). Oil and conflicts in the Niger Delta region, Nigeria: facing the facts. *Journal of Social Development in Africa*, 4(1).
- Collier, p., Elliott, V., Hegre, H., Hoeffler, A., Reynal-Querol, M., & Sambanis, N. (2014). *Breaking the conflict Trap-Civil War and Development Policy*. Washington DC: The World Bank.
- Ginty, R. M., & Williams, A. (2009). *Conflict and Development*. London & New York: Routledge:Taylor & Francis Group.
- Gujarati, D. N., & Porter, D. C. (2010). *Essentials of Econometrics*. New York: McGraw-Hill/Irwin.
- Ikelegbe, A. (2005). The Economy of Conflict in the Oil Rich Niger Delta Region of Nigeria. *Nordic Journal of African Studies*, 14(2), 208-234.
- Iyoboyi, M. (2014). Economic Growth and Conflicts:Evidence from Nigeria. *Journal of Sustainable Development Studies*, 5(2), 116-144.
- John, I. (2011). *The Impact of Niger Delta Development Commission in the Eyes of the Ordinary Niger Delta People*. Retrieved from The Nigerian Voice (TNV): <http://www.thenigerianvoice.com/nvnews/69436/1/the-impact-of-niger-delta-development-commission-i.html>
- Kim, N., & Conceicao, p. (2010). The Economic Crisis, Violent Conflict, and Human Development. *International Journal of Peace Studies*, 15(1).
- Okafor, G. (2017). The Impact of Political Instability on the Economic Growth of ECOWAS member Countries. *Journal of Defense and Peace Economics*, 28(2), 208-229.
- Omotola, J. S. (2007). From the OMPADEC to the NDDC: An Assessment of State Responses to Environmental Insecurity in the Niger Delta, Nigeria. *Africa Development*, 54(1), 72. Retrieved from <http://connection.ebscohost.com/c/articles/27347227/from-ompadec-nddc-assessment-state-responses-environmental-insecurity-niger-delta-nigeria>

- Opendataforafrica. (2016). *Key Indicators*. Retrieved from Nigeria Data Portal : <http://nigeria.opendataforafrica.org/apps/atlas/Kebbi>
- Osuoka, A. (2003). *Politics and Agenda of Nationality Resistance: The case of the Ijo of the Niger – Delta*. Lagos : Mathouse Press Limited.
- Premium Times. (2015). *Niger Delta militants attack Shell facility, kill guard*. Retrieved from Premium Times : <http://www.premiumtimesng.com/news/headlines/191347-niger-delta-militants-attack-shell-facility-kill-guard.html>
- Ray, D., & Esteban, J. (2017). Conflict and Development. *Annual Review of Economics*, 9, 263-293.
- Rodrik, D. (1999). Where did all the growth Go? External Shocks, Social Conflict and Growth Collapses. *Journal of Economic Growth*, 101(4), 385-412.
- The Gobal Foundation . (2016). *Nigeria, Niger Delta - Communities Say 'Leave Oil in the Soil'*. Retrieved from The Gobal Foundation : <http://www.gaiafoundation.org/nigeria-niger-delta-communities-say-leave-oil-in-the-soil>
- UNDP. (2008). *Human Development Index*.
- Walker, A. (2016). *The day oil was discovered in Nigeria*. Retrieved from BBCNEWS: <http://news.bbc.co.uk/1/hi/world/africa/7840310.stm>
- worldbank. (2009). *Niger Delta Social and Conflict Analysis*. Sustainable Development Department.