



OIL AND NON-OIL SHARE PRICES DYNAMICS: EFFECTS ON ECONOMIC GROWTH IN NIGERIA (1980-2018)

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Abstract: This research paper investigated the effects of oil and non-oil share price dynamics on economic growth in Nigeria for the period 1980 to 2018. The research utilized secondary data which was sourced from the CBN statistical bulletin and the Nigeria Stock Exchange shares price list published on their website. Data for the study comprised of those on oil and non-oil sectors stock market prices; and the growth rate of gross domestic product at constant basic prices. The Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) methods of analysis were adopted using Eviews 11.0. The results of the data analysis showed that long-run co-integration exists among the variables. The result also showed that in the short run, economic growth in Nigeria is not significantly affected by share price dynamics in both the oil and non-oil sectors. The model has an ECM coefficient of -1.098 which implies that the model can converge to long-run equilibrium at a speed of 109.8%. From the above, it was concluded that both oil share price dynamics and non-oil share price dynamics had no significant effect on Nigeria's economic growth. On the other hand, oil share price dynamics and non-oil share price dynamics did not have significant Causal effect on the economy. The study thus recommended that policymakers should channel the high receipts from the export of crude to productive investments through financial institutions that will allocate the resources more efficiently to improve the quality of investment capable of driving economic growth.

Keywords: Oil Price, Non-Oil Price, Economic Growth, Autoregressive Distributed Lagged Model (ARDL), Shocks.

1.0 Introduction

Every sector of an economy has a role to play in the growth and development of that economy though some sectors tend to contribute more to a nation's growth than others in terms of Gross Domestic Growth (GDP), foreign exchange earnings, foreign reserve, etc. This could be due to lack of diversification or overdependence on some sectors.

Since the discovery of oil in Nigeria, oil has been the mainstay of the nation's economy for several years now. This has resulted in the neglect of other sectors especially the agricultural sector which was the major contributor to

the economic growth of Nigeria before the oil boom in 1959. For a nation to achieve sustainable growth, diversification should be encouraged as supported by Adebile and Amusan (2011) who argued that the key to realistic economic growth in Nigeria is its involvement in non-oil export.

The capital market is an integral part of the financial system that facilitates the operations of other sectors of an economy through the channeling of long-term funds from surplus to deficit economic units thereby stimulating capital formation and socio-economic development. In the

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absence of capital market, industrial growth may be hampered, as the money market is not designed to provide such funds. The availability of the secondary market such as the stock market is therefore an important aspect of the capital market, as investors are much more disposed to placing funds in such primary market if their holdings are easily convertible into cash. Hence, the stock exchange market has been the core of the capital market in Nigeria (Okereke-Onyiuke, 2008).

The Nigerian Stock exchange market affords a wide spectrum for the populace, an opportunity to participate in the ownership of corporate establishments/firms which are listed on the exchange market (Okoye & Nwisiyenyi, 2013). The listed firms on the floor of the Nigerian Stock Exchange (NSE, 2019) are numerous and segmented into various industries including Oil and Gas, Agriculture, Conglomerates, Consumer Goods, Industrial goods, Information and Communication Technology (ICT), Services, Financial Services, Healthcare, Construction/real estate and natural resources. Considering the nature of the real sector of Nigeria and the heavy dependence on the oil and gas sector as a major contributor to real gross domestic product, government revenue and foreign reserve; the firms in the oil and gas industry are often distinguished from those on other sectors (non-oil and gas). This categorization often makes firms in Agriculture, Conglomerates, Consumer Goods and Industrial goods feature among the nonoil-based sectors/industries (Emeh & Chigbu, 2014). Considering the importance of the oil and gas, agriculture, consumer good and industrial goods sector/industries to: the nation's foreign reserve; food security; domestic consumption; and infrastructural development respectively; one may be curious to determine how share price dynamic behaviour on the floor of the exchange market and its impact on economic growth. Rasaki, *et al*, (2013) earlier submitted that an efficient stock exchange markets for financing of productive activities is a must-have for every economy to

increase market activities of economic units in the real sector (Rasaki, Saffiyah, Kamilu and Hakeem, 2013).

The oil price-growth relationship in Nigeria has been critically examined with more emphasis been laid on crude oil prices changes, and the relationship between oil price shocks and growth while ignoring share prices of oil & gas listed firms. Some other studies examined the capital market's impact on Nigeria's economic growth. As much as these studies contributed to knowledge in an aggregated analytical perspective, the relative share prices –growth effect of individual industries such as oil and gas, agriculture, consumer and industrial goods cannot be easily factored out and compared. This constitutes a knowledge gap in literature which this study aims to bridge by comparatively investigating the effects of oil and non-oil share prices dynamics on economic growth in Nigeria.

2.0 Literature Review

The framework for economic growth has been defined continuously by several theories. The connection between financial markets, the real sector and the public sector has been explained by the financial liberalization theory popularized by McKinnon and Shaw (1973). The effects of oil and non-oil share prices on economic growth have been reviewed in several studies. Papapetrou (2001) investigated the impact of oil price shocks on Greece's economic activity which was measured by the industrial production index and unemployment. His findings showed that unemployment and industrial production were negatively impacted on by oil price shocks, implying that a positive oil price shock tends to induce a depressed real stock return. Erygit (2009) used daily sectoral indices of the Istanbul Stock Exchange (ISE) to examine the effects of oil price changes on the growth of sectoral indices. According to his findings, rise in oil price led to growth in some sectors' indices and a fall in other sectoral indices. In Nigeria, Olomola (2006) examined the oil price shocks' impacts on some macroeconomic variables which included output, inflation and exchange rate. Findings of his study showed that output and inflation are not significantly



affected by oil price shocks in Nigeria. Alley, Asekomeh, Mobolaji and Adeniran (2014) studied the impact of oil price shocks on economic growth in Nigeria for a period of 32 years using the General Methods of Moments (GMM). They found that while oil price significantly and positively affects economic growth in Nigeria, oil price shocks resulted in decelerated economic growth as its contribution to the Nigeria's economic growth was insignificant. Onyeiwu and Oladimeji (2018) investigated the relationship between oil prices and Nigeria's economic growth for 37 years spanning from 1980 to 2016. His findings showed that Nigeria's economic growth significantly and positively affected by oil price changes. The impact of non-oil export on Nigeria's economic growth was analyzed by Ukpere (2015) using the VECM. His study which covered a period of 32 years, found that non-oil export significantly affects economic growth in both the short and long runs. Usman (2010) adopted the multi-linear regression technique in studying the determinants and impacts of non-oil exports on Nigeria's economic growth from 1989 to 2008. Findings of his study showed that Nigeria's economic growth was significantly affected by its non-oil export. Adebile and Amusan (2018) carried out a content analysis to assess the contribution of cocoa export as a non-oil export to economic growth in Nigeria. The study concluded that Nigeria's overdependence on oil export was a major threat to the growth in the nation's GDP and Nigeria's involvement in non-oil export sector will boost its economic growth.

3.0 Methodology

3.1 Study Area

The study was carried out in Nigeria. Nigeria is located on the Gulf of Guinea. It occupies an area of 923,789 square kilometers. It has a population of 151,213,254 million people (World Bank, 2011). Nigeria is the 10th largest producer of oil (Okidim and Ibekwe, 2018) about 70% of the population resides in the rural area and depends on agriculture and artisanal activities as means of their livelihood. It has about 30 million hectares of arable land

for cultivation of arable crops (Okidim and Eze, 2011). Annual time series data ranging from 1980 to 2018 on oil and non-oil market share prices were employed in comparatively examining the effects of oil and non-oil stock prices dynamics on economic growth (proxied by Gross Domestic Product growth rate) in Nigeria. The study adopted the Autoregressive Distributed Lag (ARDL) Error Correction Model (ECM) method of analysis using the Eviews 11.0.

3.2 Model Specification

$$Y_t = bo_i + \sum_{i=1}^p \alpha_i Y_{t-1} + \sum_{i=1}^q \beta_i X_{t-1} + \varepsilon_{it}$$

Specifically,

$$\begin{aligned} \Delta GDPGR = & bo + \alpha_{1i} GDPGR_{t-1} + \beta_{1i} OSP_{t-1} \\ & + \omega_{1i} NOSp_{t-1} \\ & + \sum_{i=1}^p \alpha_{2i} \Delta GDPGR_{t-1} \\ & + \sum_{i=1}^q \beta_{2i} \Delta SP_{t-1} + \lambda ECT \end{aligned}$$

where:

Y_t = dependent variable

Y_{t-i} = lagged dependent variable as exogenous variables

bo = intercept

α_i = coefficients of the lagged dependent variables

X_{t-1} = lagged exogenous variables

β_i = coefficients of exogenous variables

Δ = change operator indicating short run

λ = Error Correction Coefficient/long run coefficient

ECT = Error Correction Term

$\alpha_{1i}, \beta_{1i}, \omega_{1i}$ = short-run coefficients

4.0 Results and Discussion

4.1 Result Presentation

In this section, the descriptive statistics and empirical analysis on pool data from all firms in the oil & gas and non-oil & gas sectors were analysed, summarized and presented.

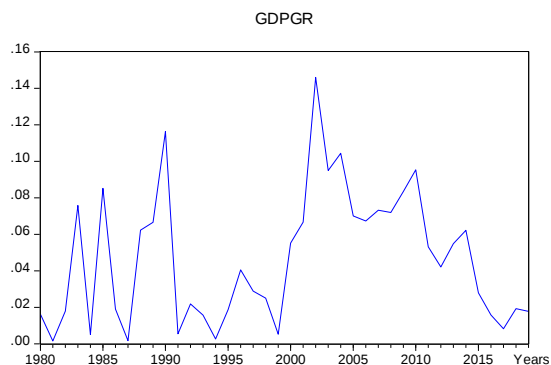


Figure 1: Time Plot on Gross Domestic Product Growth Rate

Figure 1, indicates that GDP growth rate consistently fluctuated from period to period to the point where it was quite difficult to forecast the future growth rate from existing data. For example, GDP growth rate in 1980 was a paltry 1.62%. This reduced further to 0.15% in 1981 before increasing to about 7.58% in 1983. It was 11.63% in 1990 and trended downwards to 0.55% in 1991. The value for GDP growth rate in 2017 was 0.82% before rising marginally to 1.93% in 2018. In all, the rate of fluctuation in GDP growth rate is quite substantial.

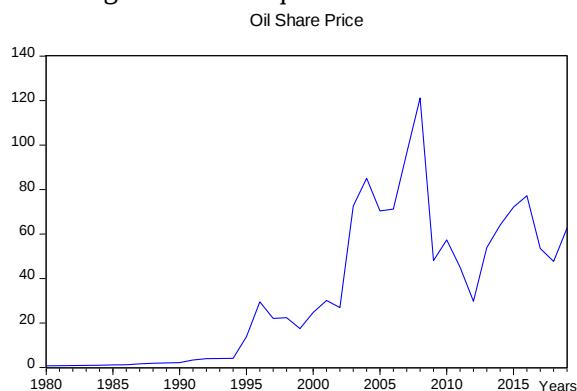


Figure 2: Time Plot on Oil Share Price

On the other hand, the trend in oil share price has tended upwards notwithstanding the few periods of share price fall

for these critical sectors of the economy. A close observation of the data and graph in figure 2 will reveal that oil share price grew from an initial ₦0.74 in 1980 to ₦2.16 in 1990 and ₦24.73 in 2000. It spiked upwards to ₦121.15 in 2008 before reducing to ₦48.02 in 2009 and ₦29.75 in 2012. The fall in 2009 and in subsequent years was likely as result of the global financial crisis. It regained some strength in subsequent years rising to ₦77.23 in 2016 but fell again to ₦47.67 in 2018.

Non-Oil Share Price

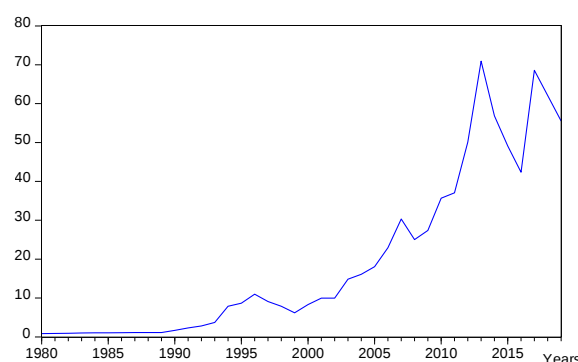


Figure 3: Time Plot on Non-Oil Share Price

Growth in the share prices in the non-oil sector has been slower than in the oil sector and much less volatile too. From ₦0.85 in 1980, it grew to ₦1.66 in 1990 and ₦8.31 in 2000. It grew to ₦35.69 in 2010 and ₦70.94 in 2013 before falling to ₦56.88 in 2014 and further down to ₦42.38 in 2016 before increasing to ₦62.08 in 2018.

4.2 Diagnostic Analysis

4.2.1 Unit Root Test

The Augmented Dickey Fuller and the Phillips-Perron unit root tests were employed to ascertain the unit root status of the variables prior to the empirical analysis as shown in table 4.2 below.



Table 1: Unit Root Test Results

Variable	ADF		Phillips-Perron		ADF		Phillips-Perron		Order of integration
	Levels	Sig	Levels	Sig	1st Diff	Sig	1st Diff	Sig	
GDPGR	-3.740	0.031	-3.636	0.039					I(0)
OSP	-2.528	0.313	-2.417	0.365	-6.803***	0.000	-10.452***	0.000	I(1)
NOSP	-2.873	0.181	-2.911	0.170	-6.809***	0.000	-7.079***	0.000	I(1)

Source: E-views 11.0 output as computed by the authors

Note: *, **, and *** represent significant at 10%, 5%, and 1% respectively

The tests for stationarity was conducted to avoid the problem of spurious regression results. The study used the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) to test the null hypothesis of a unit root. This was rejected in favour of the stationary alternative in each case where the test statistic is more negative than the critical value or the probability value is less than 0.05. The rejection of the null hypothesis implies that that the series do not have a unit root. The result of the test as shown in table 1 above shows that at all variables had mixed order of integrated; I(0) and I(1). Consequently, the OLS cannot be used.

4.2.2: Co-integration Test

After establishing the status of stationarity of the study variables, then extraction was to test for long run

relationship. Cointegration exists in a model if two variables have a long-term or equilibrium relationship. The Johansen maximum likelihood approach for co-integration could not be employed because the unit root test showed a mixed order of integration I(0) and I(1), Tuaneh, (2019) reported that the Johansen technique of cointegration was no longer valid and could not be applied. The bounds test proposed by Pesaran, Shin and Smith was appropriate. The Long Run Autoregressive Distributed Lagged Form and Bounds Test for cointegration was conducted and presented in Table 2 below. Null hypotheses is that there are no co-integrating vectors against the alternative hypotheses that at least 1 co-integrating vector.

Table 2: Long Run ARDL Form and Bounds Test for the Real Gross Domestic Product (RGDP) Model

F-Bounds Test		Null Hypothesis: No levels relationship			Conclusion
Test Statistic	Value	Significance	I(0)	I(1)	
		level			
Asymptotic: n=1000					
F-statistic	8.924019	10%	2.63	3.35	Reject the null
K	2	5%	3.1	3.87	
		2.5%	3.55	4.38	
		1%	4.13	5	

Source: Author's computation with Eviews 10.0.

Table 4.3 showed that the F-Statistics of the long run ARDL form and bounds testis $8.924 > I(1)$ bound at 5% level of significance, consequently, the null hypothesis of no levels relationship was rejected. It is thus concluded that there is long run cointegration between the variables of the study.



4.4: Effects of the Oil Share Price and Non-Oil Share Price on Economic Growth

Table 3: Empirical Analysis Results of Auto-Regressive Distributed Lagged Error Correction Analysis for the Gross Domestic Product Growth Rate (GDPGR) Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005225	0.195343	-0.026747	0.9788
D(LNGDPGR(-1))	0.117719	0.167265	0.703787	0.4865
D(LNOSP(-1))	0.714837	0.481572	1.484384	0.1472
D(LNNOSP(-1))	-0.002641	0.811499	-0.003255	0.9974
ECT(-1)	-1.098442	0.234574	-4.682703	0.0000
R-squared	0.520125	Mean dependent var		0.065098
Adjusted R-squared	0.461958	S.D. dependent var		1.428940
S.E. of regression	1.048146	Akaike info criterion		3.054002
Sum squared resid	36.25413	Schwarz criterion		3.269474
Log likelihood	-53.02604	Hannan-Quinn criter.		3.130665
F-statistic	8.941981	Durbin-Watson stat		1.956649
Prob(F-statistic)	0.000052			

Source: Researcher's computation with Eviews 11.0.

Since the unit root test showed mixed order of integration and the co-integration test showed that the model had co-integrating vectors, the Autoregressive Distributed Lagged ECM model was used in the estimation. However, it was necessary to first of all ascertain the appropriate lag length. This was done by the lag length selection criteria 2. The Akaike information criterion (AIC), Schwarz information criterion (SC), Hannan-Quinn information criterion (HQ) and the Final prediction error (FPE) criteria selected lag 1, consequently, the ARDL error correction model was estimated with regressors at lag 1. The result in Table 3 as indicated by the R^2 showed that 52% variation in gross domestic product growth rate was explained by the variations in oil price and non-oil price. The remaining 48% was explained by other variables not included in the model. The results in table 3 also showed the short run dynamic relationship and long run effects of the regressors on gross domestic product growth rate. The error correction term ECT was correctly signed; the negative sign is an indication of the correction of the previous error

in subsequent term. The ECT was also significant ($P < 0.05$). The ECM coefficient of -1.098 implies that speed of adjustment is 109.8% from the previous year to long run equilibrium. This means that the model can converge to long run equilibrium at a speed of 109.8%.

In the short run, neither the log of gross domestic product growth rate to lag 1 [D(GDPGR(-1))], the log of oil share price to lag 1, [D(OSP(-1))] nor the log of non-oil share price to lag 1, [D(NOSP(-1))] had significant effect on real gross domestic product ($P > 0.05$).

Test of Hypothesis

Test of Hypothesis 1

H_{01} : Oil share price dynamics has no significant effect on economic growth in short run in Nigeria.

Oil share price [D(OSP(-1)) $t = 0.003$, $P = 0.997 > 0.05$] consequently the researcher cannot reject the null hypothesis, it is thus concluded that oil share price does not significantly affect economic growth in the short run.



Test of Hypothesis 2

Ho₁: Non-oil share price dynamics has no significant effect on economic growth in short run in Nigeria.

Non-oil share price [D(NOSP(-1)) t = 1.484, P =0.147>

0.05]therefore the researcher cannot reject the null

Table 4: Post Estimation Test on the RGDP Model

s/n	Test	Test Statistics	Value	PV	Conclusion
1	Normality Breusch-Godfrey Serial	Jarque-Bera	1.034	0.596	Normally distributed No serial
2	Correlation LM	F-Statistics	0.081	0.777	Correlation
3	Heteroskedasticity	F-Statistics	0.704	0.594	Homoskedastic

Source: Researchers' Computation with E-views 11.0.

The post estimation results in Table 4 shows that the residual was normally distributed ($P = 0.596 > 0.05$) as also depicted in Figure 4

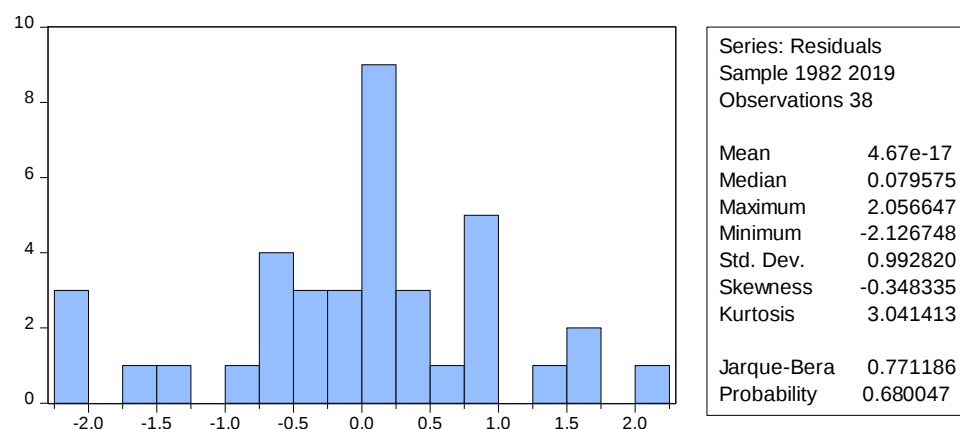


Figure 4: Histogram on Normality Test on the Residual of the RGDP model

Table 4 also showed that there was no serial correlation ($P = 0.777 > 0.05$). More so, the residual was homoscedastic ($P = 0.594 > 0.05$, constant variance of the error term).

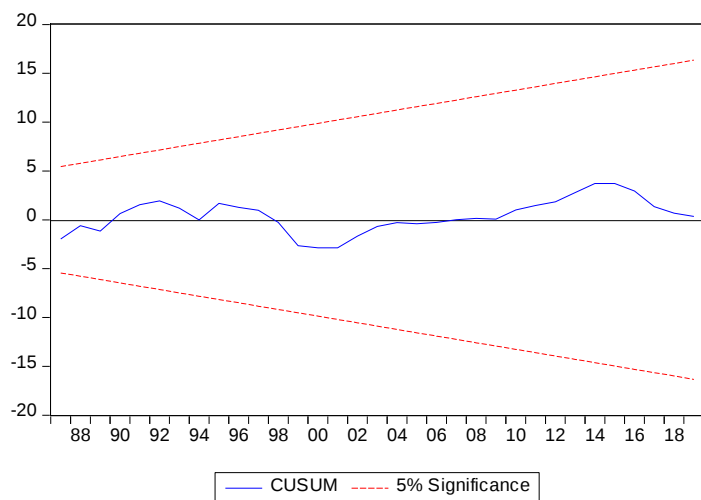


Figure 5: CUSUM Test graph on the Residual of the model

Econometric model is completely described by its parameters. Consequently, model stability which is equivalent to parameter stability is very important. CUSUM test was conducted to investigate the stability of the model parameters. In general if the CUSUM move outside the critical lines of 5% significance level, the null hypothesis is rejected, meaning that the model is unstable. The tests as presented in Figures 5 shows that the CUSUM lies between the 5% level hence it is clear that the model is stable over the period of the study.

5.0 Conclusion and Recommendations

5.1 Conclusion

Nigeria has for over the last four decades depended precariously on oil revenue. However, the recent fall in oil price has led to recourse to economic diversification as the engine of growth and development. As a result, the interest in transforming the oil-dependent economy of Nigeria into a vibrant and technologically driven economy has however led to several economic reforms starting from Structural Adjustment Programme (SAP) in 1986. This study examined the effects of oil and non-oil share price dynamics on economic growth in Nigeria for the period 1980 to 2018. The study concludes that while oil sector share price dynamics had a positive and significant effect

on the economy, non-oil sector share price dynamics did not have a significant on the economy. On the other hand, both oil sector share price dynamics and non-oil sector share price dynamics did not have a significant causal effect on the economy.

5.2 Recommendations

The study has expressed concretely its findings and drawn conclusions on which the following recommendations are made:

- i. Given that Nigeria is an oil dependent economy with the bulk of government revenue coming from oil export, it is reasonable to recommend that government should diversify the economy away from crude oil and natural gas to non-oil revenue generating sectors such as agriculture, mining, services, and spend more on non-oil sector and thus improve economic growth of Nigeria.
- ii. The study therefore recommend that policymakers should channel the receipts from the export of crude to productive investments through financial institutions that will allocate the resources more efficiently to improve the



quality of investment capable of driving economic growth.

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