

# Performances of the Industrial, Oil and Gas and the Insurance Sectors in Nigeria – A Correlational Analysis

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## Abstract

This paper comparatively examines the performances of Nigeria's Oil and Gas, Insurance and the Industrial Sectors using their Market Capitalization for a period of 2009-2015 sourced from the Nigerian Stock Exchange. Augmented Dickey-Fuller Test was used to ensure the stationarity of the distribution by means of differencing, ANOVA for the analysis of variances while Pearson Correlation was employed to empirically establish the direction and strength of relationships between sectors' performances. Findings showed that the industrial sector's market capitalization consistently reduces as that of the oil and gas sector increases, given a significant strong negative correlation coefficient of -0.738 for the relationship between them. As trend analysis also showed that the performances of the oil and gas sector has been declining since the latter years under review (2014/2015), the paper recommended economic diversification through development of other sectors, particularly the industrial sector.

**Keywords:** Oil and Gas Sector, Insurance Sector, Industrial Sector, and Market Capitalization

**JEL CLASSIFICATION:** G10, G15, G19,.

## I. INTRODUCTION

The nation's oil sector has experienced tremendous growth in the past in terms of crude prices and market capitalization. This development increased the government focus and concentration on oil sector thereby laying less emphasis to other sectors, such as Industrial, Agricultural, Insurance, Entertainment etc. The recent dwindling oil prices raises a lot of concern for Nigerian government because the price of oil is the basis for determining the country's annual budget hence the need for this study to emerge.

Also, a lot of efforts have been channeled into reforming the insurance sector. The Insurance Industry in Nigeria is facing a lot of challenges due to undercapitalization and withdrawal of foreign interest. The Market Capitalization of the Insurance sector hardly recorded any significant effect on the economy. The complimentary role of the Insurance sector in the case of any loss is very beneficial to all the sectors of the economy. A well harnessed and vibrant Insurance sector will contribute positively to the economic growth of any economy. However, with the current slump in international oil prices and the resultant pressure on the nation's currency occasioned by declining foreign exchange earnings, the nation is increasingly coming to terms with the fact that industrial development is a way out of the economic quagmire. Industrial development remains a catalyst for economic growth of any nation. The provision of basic infrastructural facilities and policies by the government will encourage entrepreneurs and other investors to improve the industrial capacity in the country.

Furthermore, growth in the financial sector (e.g. insurance) and influx of technological equipment occasioned by activities in the oil and gas sector have been established to have significant effects on other sectors (particularly the industrial sector) of the economy (Lucy 2012). Therefore, there is need for a correlational analysis of the performances of these sectors to determine the direction and strength of the performances of one (industrial sector) occasioned by others (insurance and the oil and gas sector).

This paper will expose the latent reality the economy is facing currently, given the continued decrease in the oil prices which is a benchmark for the nation's budget. The direction and strength of the key sectors were analysed and examined accordingly. The results of the Correlation analysis showcase the need for rapid and urgent steps to diversify the economy given the reality of further declining oil prices.

The main objective of this paper is to empirically establish the relationship (if any) between the performances of the oil and gas, insurance and the industrial sectors,. All the data were sourced from the Nigerian Stock Exchange for the period under review (2009 – 2015).

The paper is organised as follows: Section One introduces the paper. Section Two discusses the Literature Review; Methodology is in Section Three. While Section Four presents the Results and Discussions of Findings and Section Five Concludes the paper.

## 2. LITERATURE REVIEW

### Nigeria's Oil and Gas Sector

The Nigeria's oil and gas industry has been vibrant since the discovery of crude oil in 1956 by the Shell Group. However, the sector was largely dominated by multinational corporations until the early 1990s when Nigerian companies began to make a foray into the industry. Local participation was boosted with the implementation of

the Nigerian Content Directives issued by the Nigerian National Petroleum Corporation (NNPC) about a decade ago (KPMG 2014). In terms of structure, the NNPC was composed of the Upstream Sector, Downstream Sector and Services Sector. Recently, however, the corporation was further divided into Upstream, Downstream, Gas and Power, Refineries, Ventures, Corporate Planning and Services and Finance and Accounts, each headed by Chief Executive Officers who would report to the Group Managing Director (Ibe 2016).

The major disadvantage of oil deals in Nigeria is that its discovery and price booms had led to near outright neglect of other sectors, particularly the agriculture and industrial sectors (Nwaoshai 2006). Proceeds from oil constitute the major foreign exchange earnings; a situation that exposes the nation's currency to serious pressures each time there is slump in international oil market. Despite the negative environmental effects of oil spillage and gas flaring occasioned by exploration activities which has significantly depleted several water resources, the earnings from oil have hardly translated to the development of other sectors, particularly the industrial sector as a way of diversifying the economy. A country that failed to diversify its economy by growing other sectors when oil prices peaked at about \$115 per barrel mid-year 2014 now struggles with the drastic slump in oil prices selling below \$40 per barrel. This trend constitutes great concerns for this work and is therefore a major focus to examine the market capitalization of the oil and gas sector alongside those of other selected sectors to establish the empirical relationships between their performances as this will give evidence-driven suggestions towards diversifying the country's economy for growth and development.

### **Merger and Growth in the Nigeria's Insurance Industry**

The thorough reform of the insurance industry in Nigeria followed hard-on-the-heels of the nation's banking reforms. The country's then 104 insurance companies, many undercapitalized, were to raise their capitalization thresholds by factors of over 1,000%. This led to a spate of mergers and acquisitions which saw 71 stronger companies emerged (Niyi 2014). The 71 companies that increased their capital to the required level, according to Alaye (2015) comprised 43 non-life underwriting firms, 26 life insurers and two reinsurance companies. This capitalization was the first ever imposed in the industry's history with any semblance of regulator enforcement.

Oderemi (2015) noted that potentially, Nigeria has the biggest insurance market in Africa but weaknesses in the industry meant that most of the large insurance business was underwritten by foreign companies. To arrest this undesirable trend, however, the National Insurance Commission (NAICOM) embarked on a number reforms, the primary tool of which was merger and acquisition aimed at putting the sector at the threshold of the new era where the industry will be able to meet the dreams and aspirations of the Federal Government to achieve growth in the sub-sector of the economy (Chukwulozie 2013).

### **The Industrial Sector - A Tool for Economic Diversification**

Investopedia (2016) explained the Industrial Sector as comprising the manufacturing, textile, automobile and others involved in the production and manufacturing of equipment and products for use by people, other industries, companies and service organizations. When a nation acquires competence in the manufacturing of equipment and products required for sustainable development, such is said to have attained industrial development (Odeyemi 2014). Technology is considered the prime factor in this regard. Industrial development and technological development are interdependent and interrelated. While technological development is prerequisite for industrial development; the industrial sector is the major propelling force for technological development and innovation, Atser (2013) concluded.

Development crisis affecting Africa is often anchored on poor industrial development and technological infrastructure. Technology infrastructure is a vital prerequisite for economic, industrial and technological development and growth. (Emeka 2008).

Industrial development, which in turn depends on technological infrastructure such as power supply, energy, transportation, communication, water supply etc. is a vital prerequisite for economic growth and development (Okafor 2013). These infrastructures are largely in poor conditions in Nigeria thereby making the contributions of the industrial sector to the nation's output far below potentials. This has made for a continued dependence on the proceeds from oil and gas sector (Makoju 2015).

For example, Adeyemi (2015) classified the state of the manufacturing industries in Nigeria at the end of Jonathan's administration on May 29, 2015 as 35 percent closed down, 55 percent ailing and 10 percent operating at sustainable level. According to sectoral analysis;

*"Those in ailing category include; textile firms, vehicle assemblers, cable manufactures and paint manufacturers. Others are steel and petrochemical firms. Also firms operating on the sustainable level are those in the food, beverages and tobacco sector, leather sub-sector and household products such as detergents and cleaning materials, and toothpaste among others, Companies in the closed down group cut across all industrial products, but most affected are products such as chalk, candle, dry cell and automobile batteries, shoes polish, matches, etc."*

However, with the recent slump in oil prices and the consequential effects on the Nation's foreign

exchange earnings with the continued pressures on the currency (Naira), there seems a national re-awakening on the need to revamp the industrial sector, particularly the agro-allied industries that rely on agricultural produces for their inputs. This will lead to increases in the industrial sector's Market Capitalization and eventual growth in the economy occasioned by the non-oil sectors.

### **Empirical review of previous studies**

Oyelakin (2014) in *Industrial Innovation in Sub-Saharan Africa* examines the engineering and agro-allied sectors and the nature of linkages they form with the insurance sector using a sample of 50 firms in Nigeria. Analysis of Variance and Pearson Correlation were used to analyze the data. There was evidence of significant innovative activities, albeit of adaptive and incremental kinds between the manufacturing and the insurance sectors although linkages between them and others in the industrial sector are mostly on ad-hoc basis. Industrial performance was significantly associated with growth in the Insurance sector. However, in contrast to Niyi (2014), the insurance sector only cannot significantly cause growth in the industrial sector. Other sectors like the oil and gas was a significant co-factor in industrial growth.

Niyi (2014) also appraised the reforms in the insurance sector and effects of same on growth using Granger Causality Test. The study selected one(1) insurance company from each of the six zones as Market capitalization of the insurance sector and economic growth as proxy. The spate of mergers and acquisitions led to the emergence of 71 stronger companies and attracted new entrants into the industry. These companies further strengthened the financial sector and led to overall growth in the economy.

This was consistent with Olopade (2014) who reviewed strengthening the Industrial Sector in Nigeria through Insurance and Risk Management covering 2003-2013 and using amount paid as premium for insurance, manufacturing capacity utilization, total industrial outputs as variable. The analysis finds that the insurance sub-sector has been playing an increasingly important role in industrial sector financing, especially after the major reforms in the sector. It indicates that for the less developed industries, risk management in the event of losses, fire or accident will make them remain in business, even when coping with the costly cost of production. Growth in insurance sector was significantly associated with that of the industrial sector. Stability in the financial sector is a good omen for the industrial sector's growth

In contrast to Olopade (2014), power supply exerted more effects than the financial sector on industrial growth. This was revealed in the works of Emeka (2013), *Power Crisis and Implications for Industrial Sector in Nigeria*. Co-integration was used to test the effects of low power generation on the industrial sector. Industrial output and total power generated were used as variables. Power crisis had serious negative implications for the operations of industrial sector in the country as most organizations spent fortunes generating their own power which was not sustainable. Poor power supply is a major setback for the industrial sector.

In their study of developing a Manufacturing-based economy in Nigeria through Divestment from the Oil Sector, Ilori & Adeniyi (2012) explored ways of generating and applying science and technology in industries through skills acquired from the activities in the oil sector. Pearson Correlation and Johannes's Integration Test were used to analyse capacity utilization in the manufacturing sector. The poor performances of the industrial sector is caused by factors which include high cost of production due to high exchange rate, weak demand for locally produced goods, poor power supply and influx of cheap imported goods. This has led to low market capitalization of the sector. Growth in the oil sector is inversely related to that of the industrial sector.

This conclusion was similar to that of Obi (2015), but slightly contrasts Oyelakin (2014) that found a positive relationship between oil and gas and the industrial sectors. Obi (2015) examined government policies aimed at industrialization and their potency, particularly the Cluster Concept using Industrial policies and their Output as variables. The increasing oil prices had led to almost total neglect of industries in Nigeria. The volatility associated with international oil prices leads the country's resource expectations into difficulties resulting in the resurgence of 'mere' calls for the diversification of the economy. Oil boom, whether in its price or quantity, has been a killer of the Nigeria's industrial sector.

### **3. METHODOLOGY**

Graphical illustration would be employed for the trend analysis of all variables in this paper. To empirically establish the relationship (if any) between the performances of the oil and gas, insurance and the industrial sectors, the standard procedure of time series analysis would be followed. Augmented Dickey-Fuller (ADF) unit root tests would be used to determine the variables' order integration to achieve stationarity. Briefly stated, a variable is said to be integrated of order ' $d$ ', written  $I(d)$ , if it requires differencing ' $d$ ' times to achieve stationarity. Doing this is crucial since regression of a non-stationary time series data on another non-stationary time series may cause a spurious regression or nonsense regression, indicating relationship between variables where such does not exist. Also, ANOVA would be employed to establish if the distributions differ significantly while Pearson Correlation Coefficient would be employed to establish the direction and strength of the relationship between the performances of these sectors using their market capitalization.

### Data Source and Measurement

The secondary data for this paper are sourced from the Nigerian Stock Exchange for the period of 7 years (2009 – 2015) under review. The data are sought on the study variables which are the Market Capitalization of the Oil and Gas sector (MOG), Insurance Sector (MIS) and the Industrial Sector (MID).

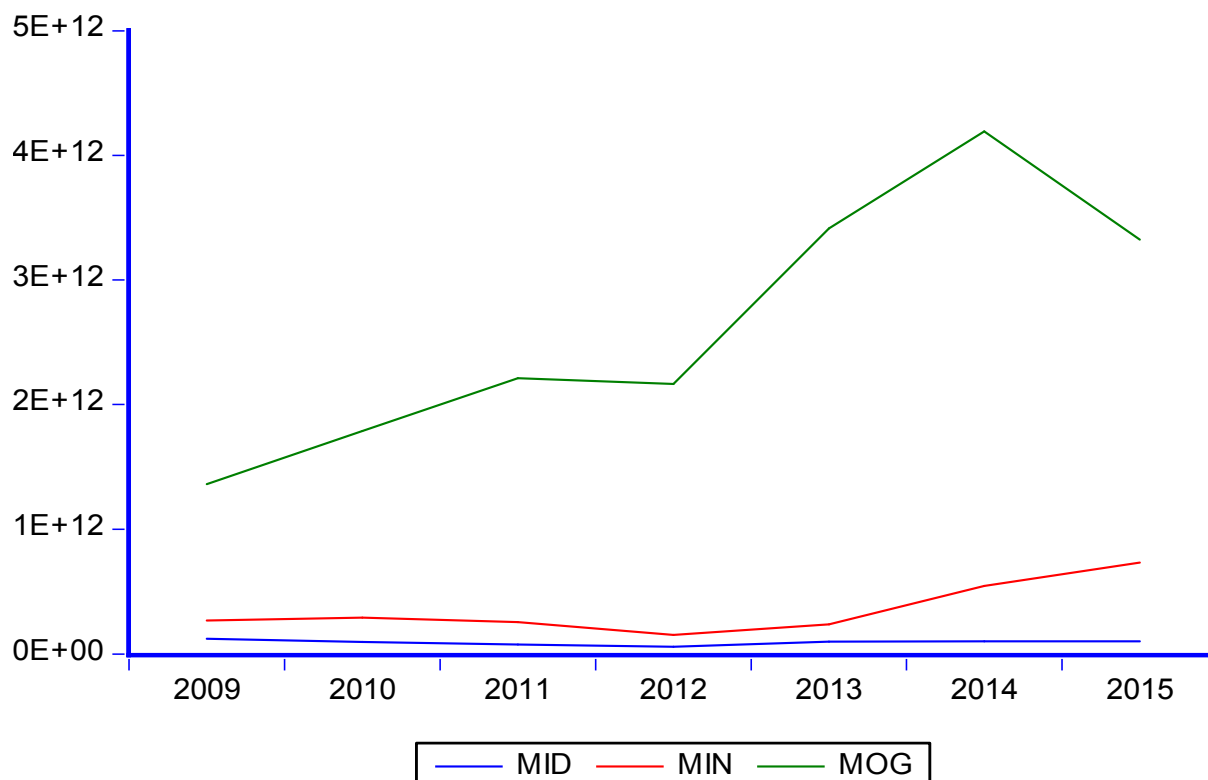
### 4. RESULTS AND DISCUSSIONS OF FINDINGS

The raw data used to compute all estimates in tables and graphs in this paper are presented in the Appendix. Others tables not presented here are referenced in the Appendix as well.

**Figure**

**1**

**TREND ANALYSIS OF VARIABLES**



KEY: *MID=INDUSTRIAL SECTOR; MIN=INSURANCE SECTOR; MOG=OIL AND GAS*

**Table 1 ANALYSIS OF VARIANCE (ANOVA)**

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27401038316280.074	2	13700519158140.037	37.945	.000
Within Groups	6499042636744.924	18	361057924263.607		
Total	33900080953025.000	20			

Dependent List: *Sector's Market Capitalization*

**Table 2 PEARSON CORRELATION**

		MCAP OF INDUSTRIAL SECTOR (MID)
MCAP OF INSURANCE SECTOR (MIN)	Pearson Correlation	-.026
	Sig. (2-tailed)	.457
MCAP OF OIL AND GAS SECTOR (MOG)	Pearson Correlation	-.738
	Sig. (2-tailed)	.000

Level of Significance: *0.05*

### **Trend analysis of sectors' market capitalization**

The figure 1 illustrates the trends in market capitalization (MCAP) of the three sectors under review. The pattern shows that the Oil and Gas sector, fluctuating though, maintained a consistent lead while the Industrial Sector consistently recorded the least of the three sectors in terms of market capitalization. The MOG has been rising since 2009 until 2011 when it fell only slightly. Another fall in MOG began in 2014 and the trend continued till 2015, the last year under review. Furthermore as demonstrated in the figure, market capitalization of the Insurance Sector exhibited a quasi-stable trend rising and falling only slightly during the periods under review. The industrial sector had the least performance as indicated by their market capitalization during the period under review.

### **Analysis of variance of sectors' market capitalization**

The mean MCAP (in Million Naira) are 354,450 (INSURANCE), 92,726 (INDUSTRIAL) and 2,636,113 (OIL AND GAS). The Mean Plot showed that the mean MCAP of the Oil and Gas sector far outweighs those of the other two sectors (see appendix). Also, the One-way Analysis of Variance of the sectors' MCAP showed that the variances differ significantly having had an F-value of 37.945 at  $p=0.000$  (see table 1). This value, which is less than the 0.05 level of significance, shows that the distribution, mean and variances of the MCAPs for the sectors differ significantly. The direction and strength of their relationships is therefore examined in table 2 using Pearson Correlation Coefficients.

### **Pearson correlation of sectors' market capitalization**

Table examines the direction and strength of the relationship between the performances of the Oil and Gas, Insurance and the Industrial Sectors. The MID and MIN have a correlation coefficient of -0.026 but not significant at  $p=0.457$  since the p-value is greater than 0.05 level of significance. This weak negative correlation shows that as the value of one increases, the value of the other decreases and vice versa. Furthermore, the correlation coefficient of the relationship between the distributions of MCAP for Oil and Gas and the Industrial Sectors gave -0.738 at  $p=0.000$  which is less than the 0.05 level of significance. This indicates a significant strong negative relationship between the distributions of the variables. Consequently, increases in the performances of the Oil and Gas sector have been leading to reduction in the performances of the Industrial sector and vice versa, as demonstrated by their market capitalization.

## **5. CONCLUSION**

The neglect suffered by other sectors of the Nigerian economy occasioned by the rising oil prices and market capitalization has been of great concerns. The disparity in the performances of the oil and gas sector and other sectors is clearly evident and unhealthy for the economy. The industrial sector's market capitalization consistently reduces as that of the oil and gas sector increases, given a strong negative correlation coefficient of -0.738 for the relationship between them. The industrial performance was poor during the period under review due to over reliance on proceeds from oil and gas. This trend was same for the insurance sector which hardly recorded any significant increases in its market capitalization. A weak insignificant negative relationship existed between the insurance and industrial sectors. This means the activities/performances of each of these sectors hardly exerted any negative effects on each other. Improvement in the performances of the industrial sector is healthy for other sectors, particularly the insurance sector.

This paper concludes that the performances of the oil and gas sector have been reducing lately (between 2014 and 2015) while that of the insurance and industrial sectors hardly changed during the period under review. Over reliance on the Oil and Gas sector spells doom for the industrial sector of the economy as the strong negative correlation coefficient of the relationship between their performances is significant at  $p=0.000$ . Performances of the oil and gas sector impair the performances of the insurance and Industrial sectors as indicated by their market capitalization. The economy needs to be made less dependent on the oil and gas sector through diversification.

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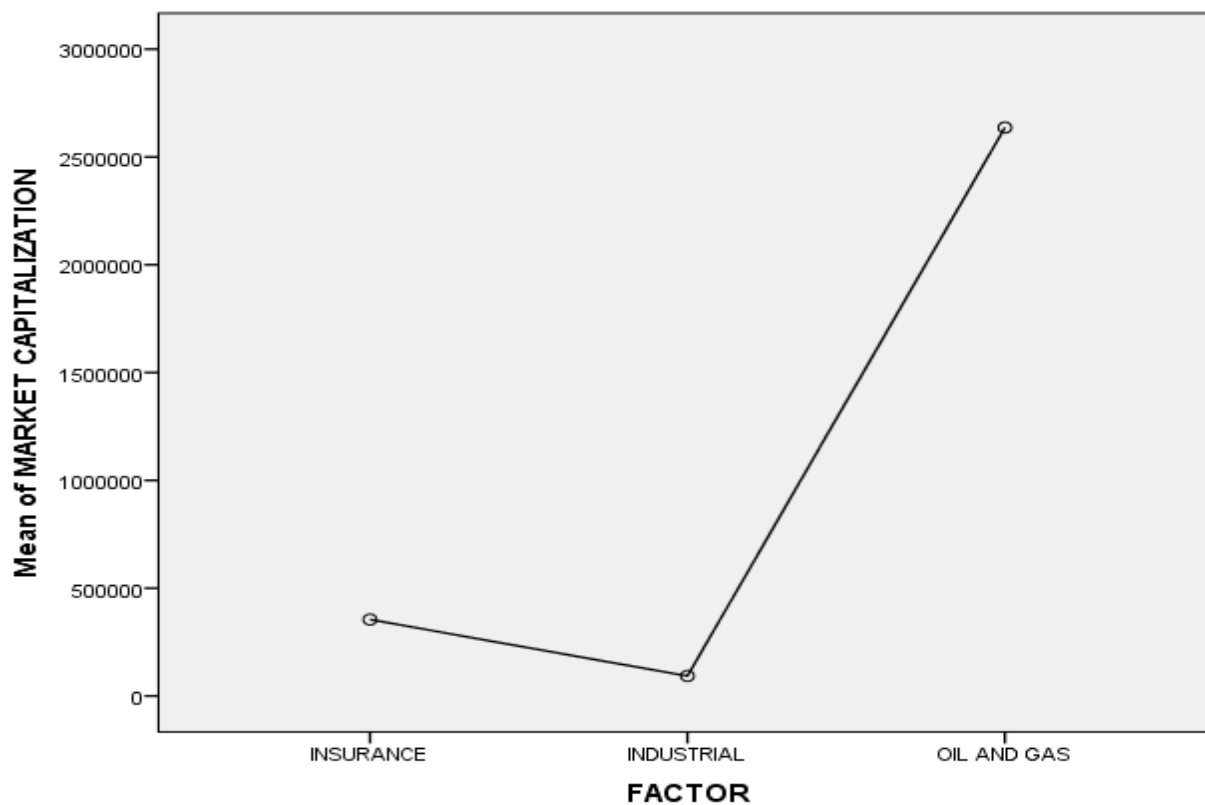
## APPENDIX

### Descriptive

#### MARKET CAPITALIZATION IN MILLION (S)

	N	Mean	95% Confidence Interval for Mean		Minimum	Maximum
			Lower Bound	Upper Bound		
INSURANCE	7	354450.14	163233.11	545667.18	153335	733235
INDUSTRIAL	7	92725.79	73478.11	111973.47	57132	120360
OIL AND GAS	7	2636112.86	1692954.83	3579270.88	1362110	4190880
Total	21	1027762.93	435134.59	1620391.27	57132	4190880

#### MEAN PLOTS OF SECTORS’ MARKET CAPITALIZATION



**Table 4.1.1 Augmented Dickey Fuller Unit Root Test**

Variable	Test	At level	At First Difference	At Second Difference	Order of Integration
MOG	ADF	-1.1986 (0.5973)	-2.7766 (0.0134)	-	I (1)
MIN	ADF	-4.0991 (0.3347)	-3.1267 (0.0395)	-	I (1)
MID	ADF	-1.7553 (0.3574)	-1.7728 (0.0355)	-	I (1)

*P-values at 5% statistical significance*