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ROLE OF PENSION FUND IN NON-OIL INVESTMENT IN NIGERIA

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Abstract

The contributory pension scheme in Nigeria which its assets has risen from N5.302 trillion in 2015 to N6.164 trillion in 2016 reflecting a significant growth of 16.25% (NBS, 2016) has avail a good opportunity of investible funds for non-oil investment of the economy. This study examined the impact of contributory pension fund on non-oil investment in Nigeria spanning over the period 2007Q1 to 2016Q4. The study employed Augmented Dickey Fuller (ADF) and Phillip Perron Unit Root Tests, and Bound testing Co-integration test, as pre-estimation technique. ARDL model was employed to estimate both long run and short run coefficients. The study conducted residual diagnostic tests; using Breusch-Godfrey test for serial correlation, Breusch-Pagan-Godfrey test for heteroskedasticity and Jarque-Bera test for normality test. The findings in long run model, shows that Pension fund (PNF) and GDP growth rate (GDPgr) are significant and have positive impact on non-oil investment in Nigeria, and nevertheless, the coefficients of market capitalization (MCAP) and real effective exchange rate (REER) were negative and significantly influence non-oil investment within the period. The study therefore, concludes that with good risk and portfolio management by pension fund administrators and custodians, the contributory pension has the capacity to boost the non-oil investment of the Nigeria economy especially in the long run.

Keyword: Pension Fund, Non-oil Investment, Capital Market, Accelerator Theory & ARDL Model.

JEL Classification: J3; M5

1. Introduction

Nigeria, since in the 70s has been a mono-cultural economy relying heavily on oil as its major source of income. The implication is that the dynamics of the economy is at the whims and caprices of the price of oil, which for the most part has been volatile (Enoma & Mustafa, 2011). The major fallout of this fragile structure of the Nigerian economy is a situation where the economy has been growing without creating jobs and reducing poverty (Onodugo, 2013). A primary driver of these socio-economic problems is the country's underdeveloped transport and electrical infrastructure among others, which was found to be the major bottleneck to inclusive growth in the country (AfDB, 2014). The adverse consequences of over dependency on oil revenue for all its economic needs have propelled Nigeria to faced its worst recession in decades in 2015/2016.

This has become imperative to diversify Nigeria economy away from oil to non-oil sector. Onwualu (2012) maintains that the value chain approach to just agriculture as a component of non-oil sector has the potentials to open up the economy and generate various activities which are capable of creating jobs and enhancing industrialization, making the non-oil sector to hold the aces for future Nigeria sustainable economic. Given this importance, the need to put into consideration the financial match to investment maturity which in turn requires a developed financial market especially the capital market that will provide the needed medium to long term finance cannot be overemphasized. The development of Capital market

and apparently the stock market provides opportunities for greater fund mobilization, improves efficiency in resource allocation and provision of relevant information for appraisal (Inanga & Chiedozie 1997). Pension funds as an institutional capital, is required to facilitate long-term investment when high contributions from it are accumulated in financial markets (Meng & Pfau, 2010; Davis, 2005). Raisa (2012) argues that no other investor is able to match the long term nature and investment scale of pension assets. The growth of a pension funds could be used as a catalyst for investment expansion, induces competition, financial innovation, improves financial regulations and corporate governance, modernises the infrastructure of securities markets and an overall improvement in financial market efficiency and transparency (Davis, 1995). The Pension Reform Acts (PRA) of 2004, amended in 2014 in Nigeria was to aid financial markets developments among other reasons (Zubair, 2016).` The contributory pension scheme in Nigeria which its assets has risen from N5.302 trillion in 2015 to N6.164 trillion in 2016 reflecting a significant growth of 16.25% (NBS, 2016) has avail a good opportunity of investible funds in non-oil sector of the economy. Although, the contributory pension scheme (CPS) has successfully generated a pool of long-term funds, there are still questions on whether the introduction of the CPS has actually addressed the problems of scarcity of funds for long term investments in Nigeria (Nwanne, 2015) as a large proportion of the pension funds are still being taken as Government Bonds (PenCom, 2016).

In 1960s, Nigeria's revenues were predominantly from non-oil sector with agricultural commodities accounting for an average of about 58.0% of the GDP (CBN, 2008). However, in the 1970s, when the price of crude oil in the international market sky rocketed, attention was shifted from non-oil sector to the oil sector and consequently, the share of non-oil contribution to the economy began to fall and have remained low ever since. Worthy of note is that, crude oil constitutes only 20 per cent of the country's Gross Domestic Product, but accounts for over 80 per cent of government revenue and 90 per cent of its foreign exchange earnings (Riti, Gubak & Madina, 2016). Once there is a shock in the global oil market price, the Nigerian economy got destabilised. This underscored the need for diversification of the Nigerian economy into non-oil sector investment.

Nigeria's cardinal economic objective presently is to diversify the economy into non-oil sector, in order to foster sustainable growth and development. In pursuit of this objective, the Nigeria monetary authority has adopted several policy options, in line with neo-liberal thinking (Uwakaeme, 2017). In spite of these efforts, the performance of the non-oil sector has remained very low and continued to perform below its full potential (Riti, Gubak & Madina, 2016). In the light of the above statement of the problem, the following research question is raised; what impact has contributory pension scheme on non-oil investment in Nigeria? The findings of this work will be useful to pension regulatory authorities and other stakeholders in their policies formulation. It will also be beneficial to different groups of people such as; the academics, investors, capital market operators and financial market. Finally, this study can be used as a basis for any future study which can further expand the frontier of knowledge.

The main objective of this study is to examine the role of pension fund in non-oil investment sector of the Nigeria economy. The specific objective is to examine the impact of contributory pension fund in non-oil investment in Nigeria.

The rest of this study is sectioned as follow: Section two contains the literature review that include; conceptual and theoretical framework, empirical evidence and gap of the study. In sections three methodology and four data analysis and results interpretation were discussed respectively. Section five was dedicated to the summary, conclusion and recommendations of the study.

2. Literature Review

2.1 Conceptual issues

Investment: Investment is the production of capital goods, which are not consumed but instead used in future production. Usually, it is measured in terms of physical capital formation, in which case, investment is regarded as an addition to the stock of capital. In other words, gross capital accumulation is the driving force of any national investment (Nnanna et al, 2004). The Gross national investment comprises of public and private sector investments. The public or government

sector investment is defined as all units of government investment that implement public policy by providing non-market services, which is determined collectively through a decision making process and whose allocation is based according to the pressing needs of the final consumers. This is in contrast to the private sector that engages in production and sale of private goods where consumers' preference can be ascertained through effective demand (Mordi et al, 2010).

Non-oil Investment: Non-oil investment is an investment in the non-oil sector of the economy. In Nigeria, it is generally described as those groups of economic activities that are outside the petroleum and gas industry or not directly linked to them. These include: agricultural activities; industry (less oil activities); building and construction; wholesale and retail, and services etc. (Mordi et al, 2013 & NBS, 2016).

Capital Market: Capital Market has been described by Akigbounde (1996) as a market where medium to long term finances are raised. Ekezie (2002) revealed that it is a market for dealings (i.e lending and borrowing in long term loanable funds). Capital markets channel the wealth of savers to those who can put it to long-term productive use, such as companies or governments making long-term investments.

Contributory Pension Scheme (CPS): The CPS is a fully funded scheme. In other words, CPS is a form of mutual consensus between the employer and the employee, to save certain percentage of the employee's income for future consumption which eventually comes at retirement. Maduekwe (2015) defined CPS as a type of retirement plan in which the amount of the employer's contribution is specified. Based on this, a retirement saving account is opened for each employee with a Pension Fund Administrator (PFA) of their choice. Thereafter, contribution is been remitted into this account. Any earning(s) from the investment of the employee is also being remitted to same account. In 2004, when the CPS was introduced, the contribution of employees to the scheme was 7.5% of their basic salary, housing and transport allowance while for the Military it was 2.5%. On the part of the employers, it was 7.5% for public sector while 12.5% for the Military. It was 7.5% each for employers and employees in the private sector (PRA, 2004). But at present, the employers contribute 10% while the employees contribute 8% to the scheme from the employees' salaries, housing and transport allowance (PRA, 2014).

2.2 Theoretical Reviews

Accelerator Theory of Investment

The accelerator theory basically postulates that investment is a linear function of changes in output. This investment is made possible in the sense that the savings/income generated, is the money invested. However, a more general form of acceleration theory assumes that the larger the gap between the existing capital stock (infrastructure, human resources and physical assets) and the desired capital stock, the greater the country's required revenue to be generated and the required rate of investment. In the context of growth, the accelerator principle suggests that increase in output leads to increase in investment, thus relating investment to GDP (Zebib & Muoghalu, 1998 & Lensink & Morrissey, 2001).

2.3 Empirical Review

Riti, Gubak and Madina, (2016) in their study titled "Growth of Non-Oil Sectors: A Key to Diversification and Economic Performance in Nigeria" used Auto-regressive Distributed Lag (ARDL) and VECM Granger causality model to estimate the short run and the long run parameters as well as the direction of causation of the variables. The results showed that agricultural component, manufacturing component and telecommunication component are statistically significant and Granger-caused economic growth at 5 percent significance level. The long run parameters indicated that agriculture and telecommunication components positively contributed to GDP, manufacturing components turned out negative though significant. This is an indication of un-explorative nature and the neglect of the sector.

Ekperiware (2011) examines the sectorial impact of oil and non-oil foreign direct investment on Nigeria economic growth. The research relied on ordinary lease square OLS technique, using data from 1970 to 2008 to empirically illustrate the impact of the extractive (and compared with other sectors) on economic growth. The extractive foreign direct investment (oil foreign direct investment) sector and non-extractive (non-oil foreign

direct investment) sector effect on the Nigerian economy showed substantiates valid and statistically significant values. The findings revealed that non-oil foreign direct investment is more statistically significant and has more positive effect on the Nigerian economy on the average compared to oil foreign direct investment.

Ilegbinosa et al (2012) investigated the impact of macroeconomic variables on Nigeria's economic performance. The study incorporated non-oil export, agricultural sector, manufacturing sub-sector and gross domestic product as the dependent variables. According to the findings; exchange rate, government capital expenditure and government recurrent expenditure positively influenced non-oil export, agricultural sector, manufacturing sub-sector and gross domestic product, while interest rate negatively influenced the dependent variables. They therefore called for more investment in non-oil exports to boost the performance of the Nigerian economy. Also, Adenugba and Dipo (2013) studied non-oil exports in economic growth of Nigeria. The study which looked at the performance of Nigeria's export promotion strategies revealed that non–oil exports have performed below expectations in Nigeria therefore doubting the effectiveness of export promotion strategies that the Nigerian economy had adopted. It however concluded that the country is far from diversifying its export base away from crude oil thereby calling for the expansion of commodity market in the country.

Uwakaeme (2017) examines the relationship between non-oil Private sector investment and some of its generally accepted determinants in Nigeria, spanning through 1980 to 2015, applying Johansen Co-integration technique, Unit root test and Error correction model. The empirical evidence revealed that, in the long run, positive and significant relationship exists between non-oil Private sector investment and non-oil foreign direct investment. Credit to government, foreign exchange rate, inflation rate, government capital expenditure and maximum lending rate are inversely and significantly related to non-oil Private sector investment. While inflation rate, foreign exchange rate depreciation and maximum lending rate, are implied constraint (risk) to return on non-oil Private sector investment. Credit to government had a crowding-out effect on Credit to Non-oil Sector. The speed of the equilibrium adjustment of 15% suggests a lag effect, indicating that non-oil Private sector investment in Nigeria responds slowly to the disequilibrium tendencies in these selected explanatory variables.

Yasiru, (2017) investigates the impact of globalization on non-oil export performance in Nigeria. Using time series data, the paper employed the Autoregressive Distributed Lag (ARDL) approach to analyse the relationship between globalization and non-oil export performance within the periods of 1970 to 2014. The results revealed that there is a long-run relationship between globalization and non-oil export performance in Nigeria.

Mordi et al (2013) in their study on determinants of non-oil investment in Nigeria using Vector Auto-regression model, confirmed that risk (inflation rate and interest rate as risk factors) was an important factor in investment decision, likewise income output for non-oil investment, the lag of the dependent variable (Gross fixed capital formation),. In their outcome, inflation rate turn out to be positively related to non-oil investment while interest rate was inversely related.

3. Methodology

3.1 Model Specification

The determinants of non-oil investment are specified in line with the acceleration principle. Factors that constrain savings such as interest rate and those that constrain inflow of resources like exchange rate are taken into account. According to Mordi et al (2013), non-oil investment ($ninv_n$) is specified as:

$$ninv_n = \alpha_0 - \alpha_1 k_{t-i} + \alpha_2 rny + \alpha_3 rir + \alpha_4 \pi + \alpha_5 tge \quad \ldots\ldots 1$$

where (Δk_{t-i}) is change in total capital formation over its lag, (rny) is real non-oil output, (rir) is real interest rate, inflation rate is (π) and government total expenditure (tge). The model is adapted and therefore specified as given below. Pension fund (PNF) is reduced to logarithm form to make calculation less tedious. The functional and linear mathematical relationships are specified as follows:

NINY= f (PNF, REER, MCAP, MXLR, GDPgr) …….. 2

Where:

NINY = non-oil investment

REER = real effective exchange rate,

MCAP = market capitalisation

PNF = pension fund

MXLR = maximum lending rate

GDPgr = GDP growth rate

From equation (2) the stochastic model is specify as:

$NINY = \beta_0 + \beta_1 PNF + \beta_2 REER + \beta_3 MCAP + \beta_4 MXLR + \beta_5 GDPgr + \mu_t$ 3

Where μ_t is error term at time t, β_0 is intercept of the model and $\beta_1$to β_6, are parameters to be estimated.

Apriori expectations

These include; $\beta_0 >$ or < 0; $\beta_1 > 0$, $\beta_2 < 0$, $\beta_3 > 0$, $\beta_4 >$ or < 0 and $\beta_5 > 0$

From the above, it means that, a positive signs is expected for β_1, β_3 and β_5, negative sign for β_2, while sign for β_4 is ambiguous and cannot be determined apriori.

Table 1: Measurement and Sources of Data

Variable	Measurement	Sources
NINY	non-oil investment proxy by non-oil gross domestic product in percent	CBN quarterly economic reports 2007-2016
REER	real effective exchange rate in index value	CBN quarterly economic reports 2007-2016
MCAP	market capitalisation in reduced nominal value	CBN quarterly economic reports 2007-2016
PNF	pension fund in nominal value	PenCom (2016). National Pension Commission Data
MXLR	maximum lending rate in percent	CBN quarterly economic reports 2007-2016
GDPgr	GDP growth rate in percent	CBN quarterly economic reports 2007-2016

This study examines the role of pension fund in non-oil investment in Nigeria using quarterly data. The use of quarterly series is premised on two crucial factors. Firstly, sufficient degrees of freedom relating to number of observations is critical, especially when estimating the parameterized models. Secondly, for monetary policy purposes, annual data results could hardly be efficient for a model conceived to track economic developments which, invariably, affect the real sector (Mordi et al, 2013). The study covers the period from 2007 – 2016. This is because the contributory pension scheme which is the core variable was signed into law in Nigeria on the 25th of June, 2004 and the Administrators of the pension scheme were given license on 5th of March, 2005 (Maduekwe, 2015). The area covered by this study is the new contributory pension scheme, with reference to the Pension Reform Act (PRA) 2004 which was repealed and is now PRA 2014.

3.2 Estimation Technique

ADF and Phillip Perron unit root tests were conducted and the result shows combination of I(1) and I(0). The study adopts ARDL bounds testing approach developed by Pesaran et al (2001) to test for long run relationship between non-oil investment and the explanatory variables. This approach has some econometric advantages over the Engle-Granger (1987) and maximum likelihood-based approach proposed by Johansen and Juselius (1990) and Johansen (1991) cointegration techniques. First, the bounds test fit it for any order of integration, whether they are purely I(1), purely I(0), or fractionally integrated. Second, endogeneity problems and inability to test hypotheses on the estimated coefficients in the long-run associated with the Engle-Granger (1987) method are avoided. According to Pesaran and Shin (1999), modeling the ARDL with the appropriate lags will correct for both serial correlation and endogeneity problems. Jalil et al (2008) argue that endogeneity is less of a problem if the estimated ARDL model is free of serial correlation. Third, as argued in Narayan (2004), the small sample properties of the bounds testing approach are far

superior to that of multivariate cointegration (Halicioglu, 2007).

Short run and long run estimated model were provided simultaneously using Error Correction Model. Also, post estimation tests were conducted using Breusch-Godfrey test for serial correlation, Breusch-Pagan-Godfrey test for heteroskedasticity and Jarque-Bera test for normality test.

4. Presentation and Analysis of Results

4. 1 Preliminary Analysis

Figure 1 represents a positive trend of pension fund over the period under study, while figure 2 shows the trend of non-oil investment within the period.

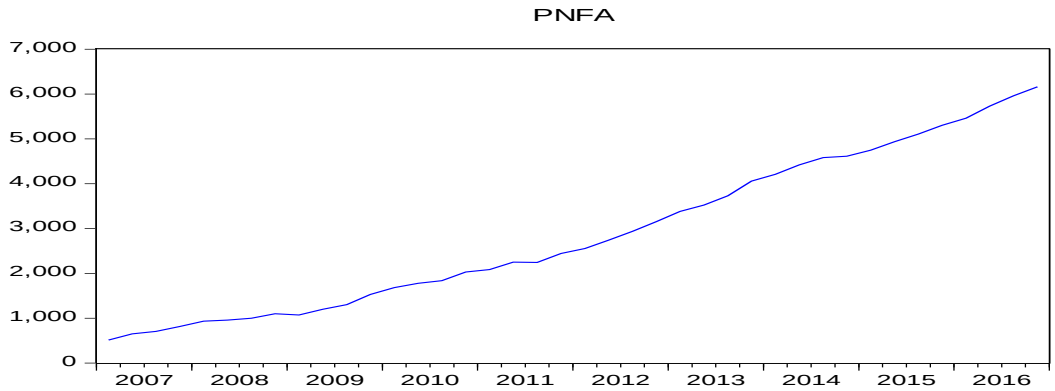


Figure 1: Trend of PNFA

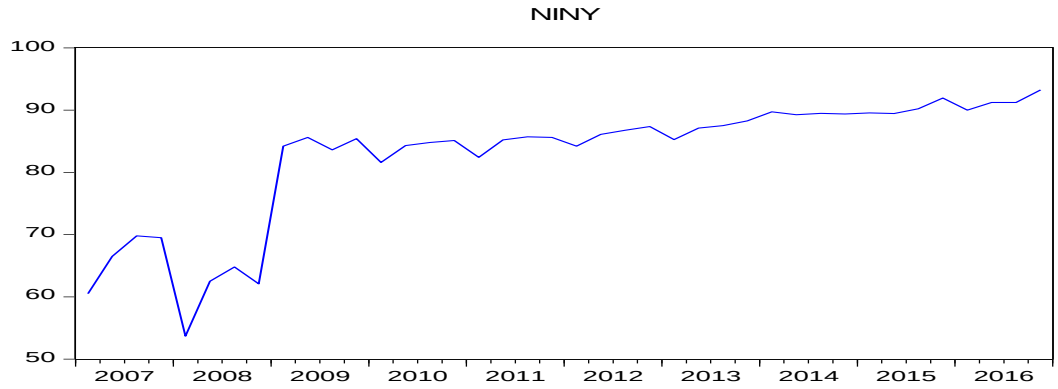


Figure 2: Trend of NINY

4.2. Pre-Estimation Test

4.2.1. Unit Root Test

Table 2: Unit Root Test

Augmented Dickey Fuller Test					Phillip Perron Test			
Variables	ADF Statistic	5% Critical Value	P-Value	Remark	PP Statistic	5% Critical Value	P-Value	Remark
NINY	-1.763267	-2.941145	0.3924	NS	-2.174976	-2.938987	0.2182	NS
D(NINY)	-7.508506	-2.941145	0.0000	I(1)	-7.696815	-2.941145	0.0000	I(1)
GDPgr	-1.142512	-2.963972	0.9969	NS	0.203998	-2.938987	0.9694	NS
D(GDPgr)	-1.518204	-2.963972	0.5109	NS	-7.501863	-2.941145	0.0000	I(1)
MCAP	-1.439741	-2.938987	0.5530	NS	-1.411182	-2.938987	0.5670	NS
D(MCAP)	-7.389332	-2.941145	0.0000	I(1)	-7.392770	-2.941145	0.0000	I(1)
MXLR	-0.655569	-2.938987	0.8461	NS	-0.508354	-2.938987	0.8788	NS
D(MXLR)	-6.842947	-2.941145	0.0000	I(1)	-6.920511	-2.941145	0.0000	I(1)
PNFA	3.568690	-2.938987	1.0000	NS	3.429972	-2.938987	1.0000	NS

D(PNF)	-4.648318	-2.941145	0.0006	I(1)	-4.812951	-2.941145	0.0004	I(1)
REER	-2.677076	-2.938987	0.0871	NS	-3.020375	-2.938987	0.0417	I(0)
D(REER)	-4.274409	-2.943427	0.0018	I(1)				

Source: Researcher's computation (2018) from E-view (9.0)

The analysis first starts with time series properties of the variables checked through Augmented Dickey-Fuller (ADF) and Phillip Perron unit root testing procedure as summarized in Table 4.2. The result of the ADF test shows that all the variables are I(1) series except GDPgr, while the result of Phillip Perron shows that the variables are combination of I(1) and I(0) series. Thus, ARDL bound test became most suitable for testing for long-run relationship among the variables (Pesaran et al., 2001).

4.2.2 Cointegration Test: ARDL Bound Test

The existence of a long run relationship among the variables in the estimated model is investigated using F-statistics with two sets of critical values, that is I(1) and I(0) as argued by Pesaran et al. (2001). If the estimated F-statistic is greater than the upper bound critical values (that is I1 bound value) at 5% significance level, the null hypothesis of absent of long run equilibrium relationship between non-oil investment and its explanatory variables will be rejected. If the estimated F-statistic is below the lower bound critical value (that is I(0) bound value), the null hypothesis cannot be rejected at 5% significance level. Also, if the estimated F-statistic falls within upper and lower bound critical values, the test is regarded to be inconclusive.

Table 3: ARDL Bounds Test

ARDL Bounds Test				
Date: 05/26/18 Time: 14:39				
Sample: 2008Q3 2016Q4				
Included observations: 34				
Null Hypothesis: No long-run relationships exist				
Test Statistic	Value	K		
F-statistic	12.95804	5		
Critical Value Bounds				
Significance	I0 Bound	I1 Bound		
10%	1.81	2.93		
5%	2.14	3.34		
2.5%	2.44	3.71		
1%	2.82	4.21		

Source: E-views 10.0

The result of ARDL Bound Test in Table 3 shows that the null hypothesis of no long run relationship at 5% significance level will be rejected because the value of F-statistic (12.9) is greater than I(1) upper bound value (3.34) . Therefore, it can be concluded that there exist a long run relationship between non-oil investment and its explanatory variables as modelled in the study. Since ARDL Bound test reveals a long run relationship, the study estimated the short run and long run parameter coefficients of the ARDL.

4.3 ARDL Model Result

The adjusted R^2 (99.6) implies 99% strong predictive power of the model. The values of the Schwartz information criterion for the estimated first 20 ARDL models are presented in Appendix 4.2. Thus, it gives a clear justification that the model with the least SIC is chosen given the maximum lag selected.

Table 4 give comprehensive information on the short run and long run relationship. The lag error correction term CointEq(-1), which measures the speed of adjustment to restore long-run equilibrium in the dynamic model has the expected negative sign, less than one and with a coefficient value of 86%. It is statistically significant at 1% significance level. It shows that the long-run equilibrium relationship

between non-oil investment and its explanatory variables is attainable.

Table 4: Short run ARDL Model

ARDL Cointegrating And Long Run Form				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(NINY(-1))	0.741788	0.184887	4.012117	0.0278
D(NINY(-2))	1.222748	0.364045	3.358783	0.0438
D(NINY(-3))	0.375532	0.228342	1.644604	0.1986
D(NINY(-4))	0.131866	0.138762	0.950302	0.4121
D(NINY(-5))	-0.071769	0.102922	-0.697315	0.5358
D(GDPgr)	0.271192	0.512913	0.528728	0.6336
D(GDPgr(-1))	0.671463	0.641415	1.046846	0.3721
D(GDPgr(-2))	-0.802823	0.485396	-1.653955	0.1967
D(GDPgr(-3))	-0.333582	0.534025	-0.624656	0.5765
D(LOGPNF)	33.623811	16.070242	2.092303	0.1275
D(LOGPNF(-1))	-67.851805	27.090901	-2.504598	0.0874
D(LOGPNF(-2))	45.462554	31.886633	1.425756	0.2492
D(LOGPNF(-3))	31.392442	13.412246	2.340581	0.1012
D(MCAP)	-1.221473	0.425993	-2.867357	0.0642
D(MCAP(-1))	0.513008	0.209659	2.446872	0.0919
D(MCAP(-2))	0.424862	0.292555	1.452250	0.2424
D(MCAP(-3))	-0.781806	0.344280	-2.270844	0.1078
D(MXLR)	-1.174855	1.235305	-0.951065	0.4117
D(MXLR(-1))	1.236763	0.717105	1.724660	0.1831
D(MXLR(-2))	-0.071903	0.524004	-0.137218	0.8996
D(MXLR(-3))	-0.309925	0.563996	-0.549517	0.6209
D(REER)	-0.179284	0.094789	-1.891400	0.1549
D(REER(-1))	0.640013	0.220423	2.903570	0.0623
D(REER(-2))	-0.467684	0.099367	-4.706642	0.0182
D(REER(-3))	0.570024	0.108244	5.266106	0.0133
CointEq(-1)	-0.865657	0.093805	-9.228247	0.0000
Cointeq = NINY - (0.4361*GDPgr + 25.2641*LOGPNF - 1.5754*MCAP -2.7825*MXLR -0.4245*REER)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPgr	0.436069	0.117160	3.721998	0.0338
LOGPNF	25.264093	5.552692	4.549882	0.0199
MCAP	-1.575428	0.274320	-5.743028	0.0105
MXLR	-2.782542	1.426669	-1.950377	0.1462
REER	-	0.119921	-3.540238	0.0384

	0.424548			

In the short run, lags of the first two years of the dependent variable (non-oil investment) are significant and have positive influence on the current status of non-oil investment in Nigeria. This corroborates Bayraktar and Fafack, (2007) assertion that in time series, evidence has always revealed that lags of output are highly correlated with investment. Also GDP growth rate (GDPgr) was positive in both short run and long run but only significant in the long run. This coefficient of GDP growth rate is consistent with the accelerator theory which states that investment increases with an increase in output. The result shows that a unit growth in the gross domestic product increases the non-oil investment by 0.44 units. Pension fund (PNF) was not significant in the short run, but positive and significant in the long run which is in line with Supply Leading Theory of Finance and also substantiates Raisa (2012), Meng & Pfau, (2010), and Ahmad, (2007) assertions that pension fund has the capacity to facilitate long-term investment. A percent increase in pension fund increases the non-oil investment by 25 units. It is evidently clear that among the explanatory variables, Pension fund is found to be the most stimulating variable for improving the non-oil investment. This implies that Pension fund holds potency for expansion of non-oil sector investment of the economy if it is adequately channelled into non-oil investment. This in turn will broaden the production and revenue base of the Nigerian economy and consequently strengthen GDP growth, increase exports and reduce imports of goods, causing a rise in the nation's foreign reserve and stabilization of both exchange rate and prices in the economy.

On the other hand, both market capitalization and real effective exchange rate exert negative influence both in short and long run on non-oil investment but were significant only in the long run. The negative effect of market capitalization on non-oil investment may not be far from Gunu and Tsado, (2012) opinion that over 70% of the total market capitalization belongs to the top twenty companies; as a result, there would be a pool of funds chasing few quality investments. It could be that the top twenty companies are mostly oil sector based. Thus, a unit rise in stock market capitalization leads to decrease in non-oil investment in Nigeria by 1.6 units; perhaps, more funds in market capitalization is channelled into oil or other sector because of its dominance over the years. The coefficient of real effective exchange rate revealed that a unit rise in it reduces investment in non-oil sector by 0.42 units. The behaviour of real effective exchange rate is in consonance with the studies of Ayodele (2014) and Olufayo and Fagile (2014) which revealed a negative relationship between exchange rate and GDP in Nigeria. Elsewhere in Italy, Nucci and Pozzolo (2001) result supported the view that a depreciation of the exchange rate has positive effect on investment through the revenue channel, and a negative effect through the cost channel. The coefficient of maximum lending rate (MXLR) was negative in line with the result of Mordi et al (2013) and Uwakaeme (2017) for Nigeria, but not significant in both short run and long run.

4.4 Residual Diagnostic Test

4.4.1 Testing for Serial Correlation

When a regression model includes lagged value of dependent variable as a regressor (Autoregressive), the use of Durbin-Watson ***d*** test to detect serial correlation will be bias in such model. The hypothesis of the test is as follows:

Ho: Error terms are serially independent.

H_1: Error terms are serially dependent.

Table 5: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.648095	Prob. F(2,1)	0.6599
Obs*R-squared	19.19285	Prob. Chi-Square(2)	0.0001

Source: Researcher's computation (2018) from E-view (9.0)

The result of Breusch-Godfrey test shows that H_0 cannot be rejected because the P-value of F-Statistic (0.66) is greater than 0.05 significant levels. Therefore, the results from the model were void of serial correlation.

4.4.2: Testing for Heteroskedasticity

Heteroskedasticity test checks for the behavior of the error term overtime; when it varies overtime it causes the estimates of the standard error to be biased, leading to unreliable hypothesis testing. Breusch-Pagan-Godfrey test is used in this study. The hypothesis of the test is stated as:

Ho: There is no heteroskedasticity

H_1: There is heteroskedasticity.

Table 6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.393423	Prob. F(31,2)	0.9050
Obs*R-squared	29.20996	Prob. Chi-Square(31)	0.5583
Scaled explained SS	0.265035	Prob. Chi-Square(31)	1.0000

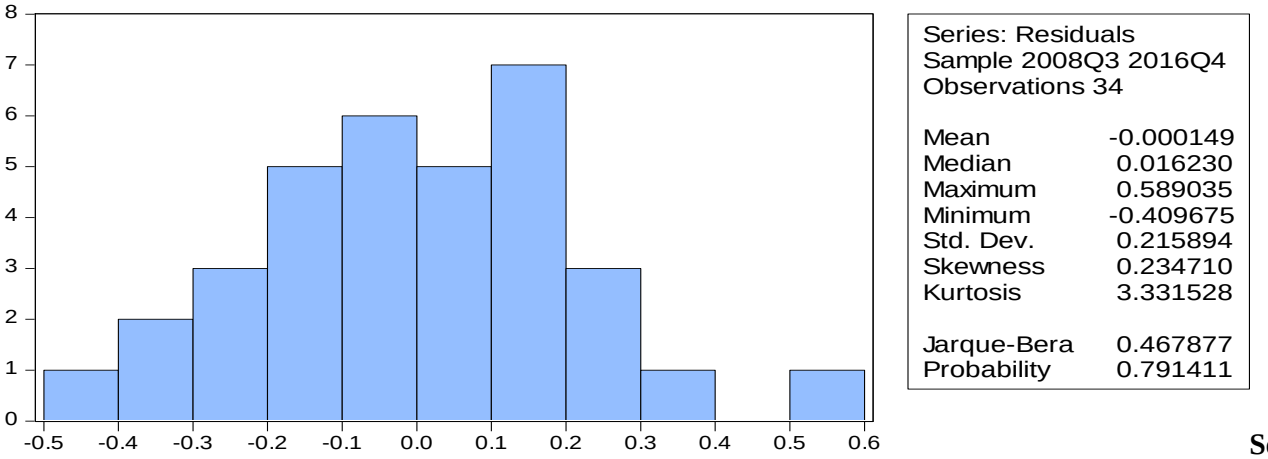
Source: Researcher's computation (2018) from E-view (9.0)

The result shows that all the criterion (F-statistic, Obs* R-squared and Scaled explained SS) agrees that the estimated ARDL in this study is free from the problem of heteroskedasticity because the P-values (0.9050, 0.5583 and 1.0000) are greater than 0.05 significant. Therefore, results from the estimated model are void of heteroskedasticity.

4.4.3: Normality Test: Jarque-Bera Test

Ho: Errors are normally distributed.

H_1: Errors are not normally distributed.



Source: Researcher's computation (2018) from E-view (9.0)

Figure 3: Normality Test

Jarque-Berra test shows that the error terms of the estimated ARDL model is normally distributed because its p-value of 0.791411 is greater than the 0.05 significance level. Accept the null hypothesis of a no normal distribution problem. Hence, the time series data of all the variables are properly distributed (as shown in Figure 3).

5. Conclusion and Recommendations

This study examined the impact of contributory pension fund on non-oil investment in Nigeria spanning over the period 2007Q1 to 2016Q4. The analytical techniques employed include Augmented Dickey Fuller (ADF) and Phillip Perron Unit Root Tests, Bound testing Co-integration test, ARDL model, and residual diagnostic post estimation tests using Breusch-Godfrey test for serial correlation, Breusch-Pagan-Godfrey test for heteroskedasticity and Jarque-Bera test for normality test. Short run and long run estimated model were provided simultaneously using Error Correction Model. The findings in long run model, shows that Pension fund (PNF) and GDP growth rate (GDPgr) are significant and have positive impact on non-oil investment in Nigeria, and nevertheless, the coefficients of market capitalization (MCAP) and real effective exchange rate (REER) were negative and significantly

influence non-oil investment within the period. From the short run model, with the exception of the lag of non-oil investment which significantly impact non-oil investment in Nigeria positively, every other explanatory variable was statistically insignificant at 5% level within the period under study. The study therefore, concludes that with good risk and portfolio management by pension fund administrators and custodians, the contributory pension has the capacity to boost the non-oil investment of the Nigeria economy.

Based on the findings of this research work, the following recommendations were proposed:

- More support from government is needed for optimum performance of pension fund as engines of non-oil investment and economic growth in general. Clearer guidelines should be developed on investments into alternative asset classes like Private Equity Funds while some forms of guarantee are needed to be given, especially by the Federal Government, to encourage PFAs utilize pension fund in non-oil sector to boost non-oil investment.
- The National Pension Commission should draft regulations essentially expand the scope of investment windows available to the PFAs, to tailor more investment fund towards the development of small and medium scale businesses to align with the government in its diversification efforts. This is paramount since small and medium scale take higher percentage of the non-oil sector in Nigeria.
- The pension fund administrators should embark on proper monitoring in order to ensure that ear-marked fund for real sector goes into the designated subsector, most importantly, the small and medium scale business which are germane to the growth of gross domestic product in Nigeria.

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