

## FINANCIAL SUSTAINABILITY AND PENSION FUND PERFORMANCE IN NIGERIA: THE EFFECTS OF INFLATION RATES

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### ABSTRACT

*This study examines the effect of inflation rates on financial sustainability and pension fund performance in Nigeria with a view to determine what role inflation play in financial sustainability and pension fund performance for period of 10 years (2011 – 2020) with a data set of fifteen sampled pension funds. Using panel regression model, the fixed effects results indicated that size, age and inflation rate has significant effects on financial sustainability and performance of pension fund in Nigeria. However, while size and age were having positive and statistically significant, inflation was found to be having negative and statistically insignificant on the financial sustainability and performance of pension fund in Nigeria. Also, net income was found to have insignificant negative effect of the financial sustainability and performance of pension fund in Nigeria. Hence, the study concluded that size and age are good indicator of financial sustainability and performance of pension fund in Nigeria while, inflation rates appears to have eroded the gain made by this organizations. Therefore, there is the need for the pension fund manager to watch keenly the trend of inflation rate while striving to sustain the financial stability and the performance of the pension funds in Nigeria. Also, there is the need for the pension funds continuity as the size and age of the pension funds help to sustain their financial stability and pension fund performances.*

**Key words:** Pension Fund, Sustainability, Performance, Inflation.

### 1. INTRODUCTION

One of the essential determinants of provision of safe and reliable pension for the retirees is financial sustainability and pension fund performance because it is the parameter that translates into estimate of revenue and measures the performance of pension fund. However, there has **not** been much understanding on the significant of

this variable because of its different dimension the concept assumed when viewed from both short and long term respectively. Therefore, financial sustainability and pension fund performance are both important precondition in order to be able to make adequate and effective provision for pension in the future. However, the prevailing macroeconomic factor such as inflation rate seems to have significant effects on the units of measuring financial sustainability and pension fund performance in Nigeria. For instance, inflation rate appears to cause distortion on pension funds size, age and net income of pension funds thereby reduce their financial sustainability and pension fund performance, **(Zuhaib & Nizam, 2015)**.

However, to assure the future of retirees, the need to evaluate the financial sustainability and pension fund performance in Nigeria is quite paramount because the financial sustainability and pension fund performance is what will assure the pensioners that their tomorrow's life after retirement could be guaranteed. Therefore, if the future pensioners could be secured, there is the need to factor out the effect of inflation rate when evaluating the financial sustainability and pension fund performance. This is to ensure fair value of the true position of their financial sustainability and performance. Therefore, the questions begging for answer is what is the moderating role of inflation rate on the financial sustainability and pension fund performance using pension size, net income and pension age as the units of measurement?

Scholars such as Christen (2002) and Woller and Schreiner (2002) made efforts to determine the factors affecting financial sustainability of pension fund administrators using large and well -developed pension funds in various countries. Their study failed to incorporate the incidence of inflation rate effects in their analysis, too narrow sample size were among factors that limit their findings.

In Nigeria for instance, the study of Ije, (2001); Arun (2005), Gbitse (2006), Sulaiman (2006) study failed to captured the aspect of financial sustainability of pension fund administrator thereby leaving a gap to be filled. Hence, the thrust of this study, is to investigate the moderating role of inflation on the financial sustainability and pension fund performance in Nigeria in order to fill the identified gaps in the reviewed literature. The study covers a period of 10 years (2011 – 2020) and the main objective of the study is to investigate the moderating role of inflation rate on the financial sustainability and pension fund performance in Nigeria. Therefore, the study hypothesized that inflation rate has no significant effects on financial sustainability and pension fund performance using pension size, net income and pension age as unit of measurement. This study may benefit pension fund administrators, policy makers,

pensioners and other relevant stakeholders as it brings limelight on the effects of inflation rate on the financial sustainability and pension fund performance in Nigeria.

## **2. LITERATURE REVIEW**

This section presents the empirical review of previous studies that tends to examine the subject matter. For instance, the study of Beredugo (2015), Ahmed, Abayomi and Nureni (2016), Agbata, Ekwueme and Jeroh (2017), Ameh, Ajie and Duhu (2017), Ojiya, Ajie, and Isiwu (2017), Nwawolo and Nwogwugwu (2019), Saheed (2020) and Uwakwe and Louis (2020) are some of the reviews done in this study. The essence is to bring their perspective into bear while linking it to the present study.

Beredugo (2015) carried out a study on pension fund accounting and pensioners' wellbeing together with their sustainability and life expectancy. The study was carried out on a sample of 400 pensioners drawn from Oyo, Rivers and Kano States; while, a judgmental sampling technique was used. The Ordinary Least Square (OLS) was however adopted for the hypotheses tests and it was discovered that pension fund accounting significant affect pensioners' wellbeing and that pensioners' sustainability is dependent on collective bargaining between the pensioners and their administrators. It was recommended that organizations should always recognize pension costs along with the plan's assets and obligations in their financial statements; and organizations and/or governments should bear the contribution of low-income earners.

Christian and Wobiaraeri (2016) investigated the relationship between pension fund administration and infrastructure financing in Nigeria. The study answered four research questions and also tested four hypotheses. Correlation research design was used for the study. The population of the study consisted of all the licensed pension fund administrators in Nigeria. A simple random sampling was used to select 108 respondents for the study. The data collected was analysed using descriptive statistics while; the hypotheses were tested using Pearson correlation coefficient. They established that there is significant relationship between the variables under observation.

Ahmed, Abayomi and Nureni (2016) examined some of the justification for the contributory pension scheme as part of its values and determined their implications for public servants' productivity and pensioners' welfare in Lagos State using primary source of information and personal interview. The sample size is one hundred and twenty respondents (120). Simple random sampling method was used in administering the questionnaire. The result of the analyses reveals that there is significant relationship between adequate retirement package and employees' productivity and that it has a positive impact on the organization efficiency. Both empirical study and

oral interview conducted however, found that the contributory pension scheme (CPS) has positive potentials over the defined benefits pension scheme (DBPS).

Agbata, Ekwueme and Jeroh (2017) studied how the administration of the Pension Scheme could be perked up in Nigeria through effective management that would reduce fraudulent practices apparent in the scheme. The study adopted the survey design; a 5-point Likert Scale questionnaire was designed to adduce primary information about pension matters from a sample of 435 knowledgeable respondents. The collected data and hypotheses were tested based on Multiple Regression Analysis models. The findings show that despite the provisions of the Act (the Pension Reform Act - PRA), intents for committing Pension Fraud have not reduced to a significant extent. The study recommended among other things, amendment of Pension Reform Act to discourage acts of pension frauds by instituting severe punitive measures for culprits, and instill moral ethics among public servants in Nigeria.

Ameh, Ajie and Duhu (2017) investigated the impact of contributory pension scheme on economic growth in Nigeria. Data for the study were sourced from various issues of PenCom Annual Reports and World Bank Development Indicators (database). The data were computed with the use of Statistical Package for Social Sciences (SPSS). It was found that pension fund assets and pension contribution/savings mobilized over the years have positive but insignificant impact on economic growth. The study recommended that there should be more emphasis on the management of pension assets in the capital market as well as government bond, real estate and investment trust to boost Gross Domestic Product (GDP) of the country (Nigeria). Products moment correlation at 95% level of confidence. Findings from the study show that there is a significant relationship between Retirement Pension Account and return on economic and social infrastructural financing.

Ojiya, Ajie, and Isiwu (2017) examined the impact of contributory pension scheme on Economic Growth in Nigeria: They concluded that pension fund assets and pension contribution /savings mobilized over the years have positive but insignificant impact on economic growth. The implication of this finding is that the authorities concerned have not been able to use the pension fund asset and savings mobilized to boost economic growth in Nigeria.

Nwawolo and Nwogwugwu (2019) examines the contributors' involvement in pension fund Investments Decision Making and Retirees Standard of Living in University of Lagos, Nigeria. by adopting convergent parallel research design with population being non-academic staff of University of Lagos for the population of 5098 and sample size of 100 respondents using Taro Yamane's (1967) formula. Response

rate of the validated questionnaire was 91%. Descriptive and inferential statistics (linear regression) were employed in analysis of data. The study found that contributors' decision making on pension fund investment exerted a positive significant effect on retirees standard of living

Saheed (2020) Determinants of defined benefits pension fund performance in Nigeria using correlational research design to investigate determinants of defined benefits pension fund performance in Nigeria. The VCE Robust Regression Technique was used for the analysis in order to achieve the study objective. He found that Number of Pensioners on Payroll (NoPoP) and Amount of Pensions Paid (AoPP) had positively and significantly affected defined benefit pension fund performance while Gross Domestic Products (GDP) had negatively and significantly influenced defined benefit pension fund performance in Nigeria over the study period. The findings revealed that Defined Benefits Pension Protection Fund (DBPPF) needs to be established by the Federal Government of Nigeria so as to save funds for the rainy day for pensioners under the Old Pension (Defined Benefit) Pension Scheme in the event of any economic crunch.

Uwakwe and Louis (2020) examined the post 2014 Pension Reform Act on Nigeria economic growth to ascertain the effects of post 2014: Retirement Savings Account (RSA) portfolio performance by adopting ex-post facto research design. Secondary data was quarterly sourced from National Pension Commission for a period of 2011 to 2019. The Ordinary Least Squares was employed in estimating the hypotheses as stated in the study's model specification. The findings show that retirement savings account portfolio performance; closed pension fund administrators portfolio performance; and contributory pension scheme portfolio performance have positive and significant effect on Nigeria economic growth. This implies that the Nigeria pension industry is contributing significantly to Nigeria economic growth.

## **2.1 Theoretical Review**

Quite a number of theories are reviewed in this study and interestingly, all of the theories tend to explain the subject matter of the study. Such theories are: stakeholders theory, fund theory, theory of financial intermediation and theory of immunization.

## **2.2 The Stakeholder Theory**

This theory was founded by Edward Freeman in 1984. Stakeholders are groups and individuals who benefit from or are harmed by the decisions and actions of an Organization. They include shareholders and other financiers of the business, suppliers and creditors, the workers, consumers and the community.(Fontaine & Stefan, 2016). The main idea of the stakeholder theory is that the organization should be seen as a

collection of stakeholders with the purpose of managing the needs and interests. In the case of a Pension Fund Administrator, the major stake holders are the pensioners and contributors to the retirement savings accounts.

### **2.3 The Fund Theory**

Fund accounting theory was first established by the economist William Joseph Vatter in 1947 in his book “The Fund Theory of Accounting and Its Implications for Financial Reports”.

According to the Dictionary of Accounting Terms, fund theory is a system applied to government organizations as well as non-profit bodies such as charitable organizations and hospitals. The fund includes a group of assets on which restrictions are placed as they are intended for specific purposes. Each fund has its assets restricted for concrete purposes and liabilities determine restrictions against those assets. (Goncharenko, 2013).

### **2.4 Theory of Financial Intermediation**

The theory of financial intermediation was first traced to the 1960’s in the work of Gurley and Shaw (Kigen, 2016). A financial intermediary is an entity that acts as the middleman

between two parties in a financial transaction. It is important that the role of pension funds as intermediaries is examined as well as the way they enhance capital markets.

The enthusiasts of current theory of intermediation stated that although pension funds may not offer liquid liabilities, they play an essential part by influencing the structure of securities markets

and as a result they enhance the efficiency of the financial systems.

### **2.5 Theory of Immunization**

Redington (1952) uses the word "immunization", to indicate the investment of the assets in a manner which the existing business will be immune to a general change in the rate of interest (De Felice, 2000). Tijjani (2014) observed in his work that the supporters of this theory Lucas and Zeldes (2006) theorize that, a pension fund should have enough assets to support liabilities in such a way that the financial factors that have impact on the value of the liabilities will affect the assets in an identical manner. This theory proposes that funds should be “immunized” against loss. This simply means backing the liabilities with such a way that the fund will be protected from the occurrence of any loss.

### 3. METHODOLOGY

The design of this research is correlation. The design is employed because it enables an assessment into the nature and extent of relationship between two or more variables. In this case, correlational research design will provide a basis for understanding the relationship between financial sustainability of pension Funds Administrators and its determinants.

The population of this study comprises all the (20) Pension Fund Administrators operating in Nigeria as at 31<sup>st</sup> December, 2020. In this study, a sample of fifteen PFAs in Nigeria was arrived at using the following filters. The use of filtering was employed in which a PFA is disqualified if it has no any Annual report/financial statement as part of its reports directed by Pension Commission in Nigeria. Based on this criterion, only those PFAs that meet these conditions were selected as sample for this study. The sample size of this study, therefore, is 15 Pension Fund Administrators in Nigeria The research data gathered in this study were from secondary sources only from the annual reports and account of the PFA

#### 3.1 Model Specification

$$FS = \beta_0 + \beta_1 AGE_{it} + \beta_2 SIZE_{it} + \beta_3 NETIN_{it} + INF_{it} + e$$

Where; FS= Financial Sustainability and Performance measured as a ratio growth to total assets . AGE = Age which was measured as the number of years a particular PFA has been in existence, SIZE=Size which is measured based on the number of branches operated by a particular PFA, NETIN=Net Income measured as the proportion of distributable income after the trading period and INFL = inflation rates as provided by Nigeria Bureau of Statistics

### 4. RESULT AND DISCUSSION

This section present that result and discussion of the study as obtained from the data collected and analyzed.

**Table 4.1.** *Descriptive Statistics*

Variables	Mean	Standard dev.	Minimum	Maximum	Skewness	Kurtosis
FS	0.6688	0.4998	0.005	2.5373	1.1664	4.4469
SIZE	5.4136	1.2204	2.5	8.03	-0.6310	2.9440
NETIN	0.5361	0.5999	-0.86	5.56	6.4706	56.311
AGE	5.3689	2.1282	1.00	9.00	0.6899	1.9155
INFL	12.198	2.9016	8.08	16.52	0.0574	1.7751

Source: Stata 12 output

The mean value of financial stability and pension fund performance stood at 0.6688 and standard deviation of 0.4998 while the minimum and maximum values are 0.005 and 2.5373 respectively. This result suggests that the pension funds under investigation have relative spread in the financial sustainability and pension fund performance. The pension funds size, net income, pension age and inflation rate has mean value of 5.136, 0.5361, 5.3689 and 12.198 with corresponding standard deviation of 1.2204, 0.5361, 5.3689 and 12.198 respectively while, there minimum and maximum values are 2.5, -0.86, 1.00 and 8.08 with 8.03, 5.56, 9.00 and 16.52 respectively. The above description suggests that the entire pension funds under consideration have relatively large sizes as well as spent certain number of ages. However, there was an inconsistency in their net income as indicated by negative minimum value. The skewness and kurtosis result suggests that the data set are relatively normal.

Inferential Statistics

**Table 4.2 Correlation Matrix**

Variables	FS	FSZ	NIT	AGE	INFL
FS	1.0000				
FSZ	0.6126 0.0000	1.0000			
NIT	-0.0740 0.4578	0.0629 0.5283	1.0000		
AGE	0.6250 0.0000	0.4778 0.0000	0.0372 0.7088	1.0000	
INF	0.0701 0.4816	0.1235 0.2140	0.1123 0.2589	0.3536 0.0002	1.0000

Source: Stata 12 output

The table 4.2 below shows the correlation between the dependent variables and independent variables. From the above table, firm size, age and inflation are positively correlated with financial stability and pension fund performance in the value of 0.6126 (0.0000), 0.6250 (0.0000) and 0.0701 (0.4816) respectively while, net income is negatively correlated with financial sustainability and pension fund performance in the value of -0.0740 (0.4578). On the other hand, the relationship between the explanatory variables shows that net income, age and inflation are positively related to firm size in the value of 0.0629 (0.5284), 0.4778 (0.0000) and 0.1235 (0.2589) respectively. Also, the relationship between age and net income and



inflation rate has positive value of 0.00472 (0.7088) and 0.1123 (0.2589) accordingly. Finally, the relationship between inflation and age is 0.3536 (0.0002). The low correlation between the explanatory variables suggests the absence of multicollinearity in the data set.

**Diagnostic Test**

**Table 4.3: Robustness Tests**

Variables	VIF	Tolerance Values
AGE	1.47	0.682587
PSZ	1.31	0.763564
NIT	1.16	0.863331
INFL	1.09	0.979984
Mean VIF	1.34	
Hettest Chi2		14.68
Hettest Sig		0.0001
Hausman Chi2		7.27
Hausman Sig		0.1225

Source: Stata 12 output

The study tests for the existence of multicollinearity using the Variance Inflation Factor (VIF). The result from Table 3 shows that the VIF values are within the acceptable limit of 10 as suggested by **Gujarati, Bernier and Bernier (2004)**. In addition, the tolerance values are consistently greater than 0.10, thus further substantiating the fact that there is no multicollinearity between independent variables. The study also tests for the panel heteroscedasticity using the Modified Wald Test, The result shows the existence of heteroscedasticity based on the chi2 of 14.68 and probability of 0.0001. Also, the study employs the Hausman specification test to decide between fixed or random effect models. The result of the test reveals chi2 of 7.27 and probability of 0.000, indicating that the fixed effect model is most preferred.

**Summary of Regression Results**

The study utilized fixed random effect to analyze the data and the result is presented in the table 4 above.

**Table 4.4 Summary of Fixed Random Effect**

Variable	Beta coefficient	Z-values	P-Values
FSZ	0.179697	3.94	0.000
NIT	-0.01103	-0.49	0.622
AGE	0.12802	5.22	0.000
INFL	-0.28956	-2.19	0.015
R <sup>2</sup>			0.589
AdjR <sup>2</sup>			0.541
Wald chi2			30.10
F-Sig			0.0000

Source: Stata 12 output

The fixed random effects shows that the  $r^2$  was 0.589 or 58.9% reveal the extent of the fitness of the research model. Also, the summary of fixed random effects shows cumulative  $adjr^2$  of 0.541 which is the multiple coefficient of determination of the proportion of the variation in the dependent variable jointly explained by the explanatory variables. The result suggests that about 54.1% of the variation in financial sustainability and pension fund performance of pension funds in Nigeria is caused by pension fund size, net income, pension age and inflation rates. This was further substantiated by the Wald chi2 of 30.1 which is significant at 1% level of significance.

**Effects of Firm Size on Financial Sustainability and Pension Fund Performance**

The effect firm size in relation to financial sustainability and pension fund performance has a positive coefficient value of 0.170697 with t-value of 3.94 and p-value of 0.000 which is statistically significant at 1% level of significance. The implication of this result suggests there is significant effect of firm size in relation to financial sustainability and pension fund performance in Nigeria. This finding was in line with the study of Mahon and Donohoe (2006) but contrary to the findings of Bikker and Dreu (2009) and Ardon (2006)

**Effects of Net Income on Financial Sustainability and Pension Fund Performance**

The result of the effects of net income in relation to financial sustainability and pension fund performance shows a negative coefficient value of -0.0332218 with t-value of -0.49 and p-value of 0.622 which is statistically insignificant at 1% level of significance. The possible explanation to this negative effect of net income on financial sustainability and pension fund performance could be that inflation has water down whatever gain the pension firms may have made This is in line with the findings

of Ojiya et al (2017) and Nwawolo and Nwogwugwu (2019). However, the findings of Ahmed et al (2016) and Agbata et el (2017) was not in congruence with this outcome.

### **Effects of Age on Financial Sustainability and Pension Fund Performance**

The table below also shows that the effect of age as moderated by inflation rate on financial sustainability and pension fund performance reveals a coefficient value of 0.1280319 with t-value of 5.22 and p.value of 0.0000 which is also significant at 1% significant level. This means age is statistical effects on the financial sustainability and pension fund performance in Nigeria. This could be probably true as the pension funds under evaluation seems to have been in existence for quite number of years in the face of rising inflation rate in the country. The study of Suleiman (2006) reach similar conclusion while that of Tijjani (2014) could found contrary.

#### **Effects of inflation of financial sustainability and pension fund performance**

The regression result reveals that the effects of inflation on financial sustainability of pension fund performances has coefficient value of -2.0251864 with t-value of -2.48 and p-value of 0.015 which is statistically significant at 1% significant level.. This outcome suggests that there is a severe effect of inflation on the financial sustainability and pension fund performance in Nigeria. This is consistent with the study of Chioma Dorothy Oleka (2015) and Pettinger, (2016) who found that inflation has corrosive impact on performance.

## **5. CONCLUSION AND RECOMMENDATIONS**

This study examines the effects of inflation rates on the financial sustainability and pension fund performance in Nigeria for a period of 10 years. The variables of interest in the study that we used as a unit of measurement include size, age, net income and inflation. The finding of the study reveals that firm size and has significant positive effect on financial sustainability and pension fund performance. However, net income and inflation was found to have significant negative effects on financial sustainability and pension fund performance.

The implication of these findings connote that the size and age of the pension fund firms may enhance their financial sustainability and performance while net income and inflation have severe negative effects as a high cost of pricing level in the society.

From the findings of this study, the following recommendations are hereby put forward with the hope that they will be looked into by pension funds administrators.

There should be concerted efforts by the pension fund administrators to ensure that the size and age of the pension firms are managed effectively as these variables proved to an indicator of financial sustainability and pension fund performance. Efforts should be made to ensure that current size of the pension fund industries continues to growth in order to guarantee their sustainability and performance in the long term. However, the inflation rates which have cast worry on the financial sustainability and pension fund performance should be keenly watched by the management in order not to erode completely the gain made from trading activities.

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