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### DETERMINANTS OF FINANCIAL SUSTAINABILITY OF PENSION FUND ADMINISTRATORS IN NIGERIA

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#### **Abstract**

*Financial sustainability of pension funds are often cited as essential determinants for ensuring the provision of safe and reliable pension for retirees and pensioners. Whether pension fund administrators will become part of a lasting solution to the pension financing problems in Nigeria or not depends on their ability to continue to grow, expand and sustain themselves over the course of time. Contemporary literatures on pension reforms identified financial sustainability as the key challenge of Pension Fund Administrators. This study, therefore, examines the determinants of financial sustainability of pension fund administrators in Nigeria. A positivism thought to epistemology guided by quantitative parametric pooled regression were used as paradigm and technique of analysis respectively. A data set of fifteen sampled pension fund administrators taking cognizance of Contribution, Size, Net income, Age, Board size And composition and GDP as independent variables were pooled and regressed against Sales scaled by total assets. The results indicate a positive and significant contribution of age, size, net income and contribution to financial sustainability of pension fund administrators. On the contrary, GDP, Board composition and board size, though, not significant displayed a negative contribution to financial sustainability of pension fund administrators in Nigeria. Conclusively, the result inferred that the level of sustainability today will affect the sustainability tomorrow regardless of where the pension fund administrator stands in its life cycle or developmental stage. Therefore, the study recommends amongst others a close monitoring and swift actions to remedying any weakness in Pension Fund Administrators.*

## **1.1 Introduction**

Financial sustainability of pension funds are often cited as essential determinants for ensuring the provision of safe and reliable pension for retirees and pensioners. Yet, the concept of financial sustainability and how it translates into estimates for revenue requirements are frequently misunderstood. The reason is that financial sustainability can take on different levels, particularly if one makes a distinction between a short and long-term horizon. Thus, financial sustainability of pensions systems is a necessary precondition for an adequate provision of pensions in the future, while ensuring adequacy is a precondition for obtaining political support for the necessary reforms of pension system. Nigeria is moving towards financially sustainable pension systems that will be able to provide adequate pensions in future, in particular at the time when population ageing accelerates.

In spite of the proliferations of PFAs, their competence must be questioned. They appear to fail their customers in terms of not providing clear information about their investment strategy. A survey of PFAs websites shows that many have not been updated for at least two years. Moreover, virtually all PFAs breach the PenCom guidelines to publish the rate of return of their RSA Funds at the end of each financial year and to make unit prices of their RSA funds readily accessible on their websites. In fact, only 15 PFAs (out of 26) provide any recent information about the value of their respective RSA units on their websites. Amongst the 15 PFAs, seven offer out-of-date or even undated unit prices that lacked information value. Amongst the remaining seven PFAs that provide some recent data on the value of their RSA units, only three provide sufficient data to calculate approximate rates of return and only a single PFA provide full coverage of the value of the company's RSA unit since its inception which allows calculating the actual rate of return. The silence on rates of return appears to be no coincidence, as it covers up negative returns once inflation and management charges are focused in. Taking the single case in which a PFA company provided sufficient information, the real rate of return after inflation and charges between 2<sup>nd</sup> of May 2006 and 2<sup>nd</sup> of September 2009 was negative. This is significant since the company in question has been an acknowledged industry leader.

Whether future pensions will be adequate depends on the ability to secure a sustainable financing of pension systems in the face of rapidly ageing societies. The future of pension fund administrators in Nigeria to the contributors looks uncertain as they fear the safety of their contributions. While some contributors of pension fund believe that the level of contributions to pension fund is not adequate enough to take care of the retirees and the profit being declared by the PFAs does not guarantee any reliable assurance, others assert that lack of sound

administration of pension funds has led to financial insustainability. Hence, an important question here is what should be done to make these pension fund administrators sustainable and to ensure sustainable provision of pension fund services and sustainable poverty reduction through outreach after retirement.

The literature so far available on social reinsurance has not been based on empirical evidence on the determinants of financial sustainability of pension schemes. In other words, despite all the arguments about the sustainability of pension schemes, there is very little empirical evidence from research to rationalize the discourse. Whether pension fund administrators will become part of a lasting solution to the pension financing problems in Nigeria or not depends on their ability to continue to develop, expand and sustain themselves over the course of time. They will have to prove that they are not simply pension development “meteors” that are destined to shine brightly for a while but are ultimately not sustainable. This therefore, prompted the need to evaluate the situation empirically.

Several studies have been conducted to determine the factors affecting financial sustainability of pension fund administrators using large and well developed pension funds in various countries. The life cycle theory posits that the sources of pension fund financing are linked to their respective stages of developments, and thus, their sustainability. It is reasonable to assess financial sustainability of pension funds based on their respective stages of development. The level of significance of these variables- Age, Size, Net income, Contribution and GDP growth as carried out by some pension scholars is affecting the financial sustainability of pension fund administrators, however, varies with studies. While some of the determinants are found to be significant in one economy or applicable to a set of pension funds, some are not significant.

Most of the previous studies were biased as they examined only successful pension funds. The number of the observations were also too small to draw statistically reliable conclusions. Moreover, the use of a simple regression model by some researchers ignores the simultaneous effect of other relevant determinants of financial sustainability. Some other studies combined both pension fund custodians with pension fund administrators. In this regard, differences in pensions fund background and operations may land their studies to be biased as more than 60% of the studied pension funds were representing pension custodians which used a model different from other pension fund administrators studied. Consequently, the factors affecting the financial sustainability of these pension fund administrators are not generally agreed upon by the scholars.

Besides, applicability or limitations of the findings from other studies to the Nigeria PFAs have not been documented. In addition to this, the contradictions among these studies pose a knowledge gap as to whether for pension in Nigeria, the age of pension fund administrator is relevant in determining outreach or not, and how the same affects its sustainability. This study therefore sets out to bridge this knowledge gap. Focusing on PFAs in Nigeria, the study uses the accounting profitability approach and the life cycle theory to determine the factors affecting the financial sustainability of PFAs in Nigeria.

The main objective of this study is to examine the determinants of financial sustainability of pension fund administrators in Nigeria. Few questions are raised to achieve the objectives;

What is the level of dependence of financial sustainability on age of pension fund administrator in Nigeria?. To what extent is financial sustainability of pension fund administrator dependent on pension fund contributions in Nigeria?. Has size of pension fund any impact on financial sustainability of pension fund administrators in Nigeria?. At what level does financial sustainability of PFAs depend on net income of pension fund in Nigeria?. To what extent is financial sustainability dependent on GDP growth rate in Nigeria?

The following hypotheses are formulated and tested.

Pension fund administrator's age has no significant effect on financial sustainability in Nigeria.

Pension fund contributions have no significant impact on financial sustainability in Nigeria.

Pension fund administrator's size has no significant impact on financial sustainability in Nigeria.

The net income of pension fund administrator has no significant impact on financial sustainability in Nigeria.

## **2.1 Literature Review**

Several empirical studies have attempted to assess the performance of pension funds and explain the determinants of financial sustainability. All the researches in the reviewed literature used quantitative data analysis approach to determine factors affecting financial sustainability. For example, Christen & Dralle (2002) conducts a study on eleven successful pension funds using several simple

regression (one independent variable) models with eleven observations each. This study however was biased in that it examines only successful pension funds. The number of observations was also too small to achieve statistically reliable conclusions and, therefore, generalizability is questionable. Moreover, by using a simple regression model it ignores the simultaneous effect of other relevant determinants of financial sustainability.

Woller (2000) studies factors driving the financial self-sufficiency of nine pension funds. He uses financial ratio analysis and a series of bivariate correlations between financial self-sufficiency in the sample funds. The methodological weakness of this study is that, the simple correlation just indicates whether or not two variables move together in the same or opposite direction. It does not necessarily mean that one should be causing the other (Mendenhall & Sincich, 1989; Dietman, 1991; Whitehead & whitehead, 1992; McClave, 2008; and Sincich, 2008). Two variables may be positively correlated just because a third variable causes them to behave that way.

Christen (2000) modifies the methodology from simple to multiple regression model to determine factors influencing financial sustainability of pension funds using financial parameters on data. Following this trend, Smetters (2002) expands the outreach variable to what he called seven aspects of outreach by integrating the financial and social parameters in pension fund financial sustainability.

Woller & Schreiner (2002) examine determinants of financial self-sufficiency using thirteen pension fund operators (8 pension fund custodians and 5 PFAs). This study improves on the previous methodology by adding the number of pension funds to thirteen and time period of study to three years, and focusing on aspects of outreach proposed by Schreiner (2002). However, differences in pension fund backgrounds and operations may lead this study to be biased as more than 60 percent of the studied pension funds were representing pension custodians which use a model different from other pension fund administrators studied.

Olivares-Polanco (2005) focuses his study on commercialization and outreach on 28 Latin American pension funds. The study uses Ordinary Least Square multiple regression analysis to investigate whether there exists trade-off between depth of outreach and financial sustainability by exploring the determinants of disbursement size. The methodological weakness of this study is that analysis did not have multi-period observations and was dominated by a simple regression approach. It included only an observation from each pension fund for two different years.

The study by Makamme & Murinde (2006) was set to explain cognitive dissonance around pension fund outreach and sustainability. Specifically, the study was meant to show how the pension fund outreach and their sustainability levels are explained by commercialization factors. Their study is built on the work by Olivares-Polanco (2005). Instead of a single period cross-section analysis, they introduce a balanced panel analysis to overcome the methodological weaknesses in Olivares-Polanco (2005). Their study is based on data obtained mainly from pension fund information exchange (PIX) organization for 33 pension funds in five East-African Countries. The study therefore, excludes pension funds which are non-members of the market Pix which could have enriched it.

Hauner et al (2007) as with Woller & Schreiner (2002) use multiple regressions model with a relatively large sample compared to previous studies. Their sample size was 124 pension funds made up of large pension funds from 49 countries. This study, however, focuses most on financial performance and outreach, using three dependent variables (financial self-sufficiency, operational self-sufficiency, and return on asset), one at a time, with a limited number of independent variables.

A study by Kyereboah-Coleman & Osei (2008) examine how governance indicators impacts on pension funds' outreach and profitability data analysis based on secondary data from 52 conveniently sampled' pension funds operating in Ghana for at least ten years. This study however, focused only on the role of governance on profitability and outreach of pension funds. Thus, other factors that could impact on outreach and profitability were not covered in this study.

Reviewing pension fund literature that we have to-date one would say there is but few (if any) systematic study with focuses specifically on how pension funds' efficiency affects their financial sustainability. Few studies that we know have indicated the relationship between efficiency and financial sustainability by looking at various costs and revenue elements (Christen et al, 1995; Rosenberg, 1996; Christen, 2000; Woller, 2000; and Hauner et al, 2007). Some studies have also used the personnel productivity measures as part of their analysis ( Woller & Schreiner, 2002). Other studies have linked pension fund efficiency with commercialization (Richardson & Lennon, 2001; and Hishigsuren, 2007) and still some relate it with pension fund best practice (CGAP, 1996; Gonzalez-Paramo, 2005; Woller et al, 1999; and Woller, 2000).

### **2.1.1 Size and Financial Sustainability**

One of the factors that affect the level of outreach of a pension fund is its size. The size of pension fund administrator is measured by the value of its assets (Bogan, Hartarska, 2005; Lafourcade, Isern, Mwangi & Brown, 2005; Johnson & Mhlanga, 2007; Hermes, Lensink & Meesters, 2008; and Mersland & Strom, 2009). According to Hauner et al (2007), the size of a pension fund is significantly positively linked to its financial performance. Large pension fund administrators have lower measures of outreach, (Hauner, et al, 2007). This is probably due to scaling up of pension fund whereby most pension funds motivated by higher profit motives (Chriten, 2000 & Dralle, 2002). This is consistent with the worry that the move towards financial self-sufficiency could lead to mission drift, where the beneficiaries are not served.

Hauner et al (2007) suggest that whether or not large institutions serve an absolutely greater number of the retirees can be well answered with disaggregated data. Getting disaggregate data, however, has not been an easy task. As a result, studies have used the number of retirees to measure the relationship between outreach (number of retirees reached) and profitability (Schreiner, 2000; Woller, 2000; Hishgsure, 2004; Lafourcade et al, 2005; Hermes et al, 2008; Kyereboah-Coleman & Osei, 2008; and Mersland & Storm, 2009;). They also use the number of retirees to measure whether the size of pension fund affects its outreach (Lafourcade, et al, 2005; Hermes, et al 2008; and Mersland & Storm, 2009).

While Hartarska (2005) finds that the size of a pension fund administrator did not significantly affect its financial sustainability, recent studies by and Bogan et al (2007) Mersland & Storm (2009) report that the size of a pension fund administrator is associated with its financial sustainability. Furthermore, the size of pension fund administrator could also imply that large pension fund administrator have larger capital and therefore, can reach a relatively bigger number of clients than small pension fund Kyereboah & Osei (2008) supports this. In their study on outreach and profitability of pension fund administrator in Ghana, find that the size of a pension fund administrator had significant positive impact on profitability.

### **2.1.2 Age and Financial Sustainability**

Sustainability could also relate to the age of pension fund administrator. The age refers to the period that a pension fund administrators has been in operation since its initial inception. Studies indicate that the pension fund administrator's age relates to their efficiency and growth in terms of outreach especially in the early years of operations (Hauner et al, 2007; Gonzalez, 2007; and CGAP, 2009). Robinson (2001) finds that experienced pension fund administrators (those with age above six years) are 102 percent financially self-sufficient. Those which are

in 3 to 6 years of age are 86 percent financially self-sufficient, while it is 69 percent for those in operation for less than 3 years. The findings by Robinson (2001) imply that the age of pension fund administrators can affect its financial sustainability level. Moreover, Bogan, et al, (2007) and Hauner et al (2007) also find that the age of a pension fund administrator relates to its financial sustainability.

In contrast to the findings by Robinson (2001), Gonzalez (2005) and Bogan, et al (2007), a study by Kyereboah-Coleman & Osei (2008) reports that the age of a pension fund administrator is insignificant in determining the level of outreach. The contradictions between these studies pose a knowledge gap as to whether for pension fund in Nigeria the age of pension fund administrator is relevant in determining its outreach or not, and how the same affects its sustainability.

### **2.1.3 Net Income and Financial Sustainability**

As earlier explained, profitability is highly linked to sustainability. In other words, profitability is a stepping stone to financial sustainability (Shreiner, 2002). It has also been widely used as a measure of financial sustainability (Von Pischke, 1996; Woller & Schreiner, 2002; CGAP, 2005; Adongo & Stork, 2006; Armendariz & Mordach, 2007; Hauner et al, 2007; and Gonzalez-Paramo, 2005). Gonzalez-Paramo (2005) argues that, many pension fund administrators are inefficient because they think in terms of levels of speed of collections, not in term of operational costs. Cost reduction is thus, as important as increasing revenue. Few studies have indicated the relationship between efficiency and financial sustainability by looking at the various cost and revenue elements (Rosenberg, 1996; Christen, 2000; Woller, 2000; Hauner et al; 2007 and Christen, et al, 2007).

Interests accrued from the investments engaged in are the major sources of revenue to most PFAs (Takayama, 2003). Armendariz & Morduch, (2007), and Shankar (2007) in their researches find that income of a PFA is made up of all of its own generated income including fees and charges, fines, and interest earned on loans. PFAs expenses are the second item used to determine profitability and financial sustainability. In this regard, PFAs expenses can be categorized into three main categories namely; operating expenses, administrative expenses and financing expenses (Shankar, 2007). Some studies find that Net Income of a Pension Fund Administrator affects financial sustainability (Stickney & Well, 2000; Russell et al, 2001; Upchurch, 2002 and Brock & Herrington, 2007). An efficient pension fund administrator will operate at a reduced financing and overall PFAs expense. The same will also increase profitability and, therefore, lead to its financial sustainability.

#### **2.1.4 GDP Growth and Financial Sustainability**

Whitehouse & Zaidi (2008) conduct a research and find that a one-percentage point deviation in long-term GDP growth would have very strong implications for the poverty alleviation function in a country. They conclude that the impact of lower GDP growth is slightly smaller than that of higher GDP growth. In their words, the substantial changes induced by GDP assumptions to future pension wealth in a country should be noted. If GDP growth in a country is lower than projected, the pension entitlements of future generations will fall very significantly, and vice-versa. All this has implications for financial sustainability. High GDP growth may result in greater fiscal pressures in a country, while claims on future workers are decreased if the place of pension accrual is lower than expected, the drop will not be linear, as minimum pensions provide significant underpins to pension expenditure.

#### **2.1.5 Board Size and Financial Sustainability**

Board size refers to the number of directors on the board. The relationship between board size and firm financial sustainability has attracted the interest of many researchers. While there may be no one size-fits-all recommendation for the optimal size on board, a board size of ten is recommended (Sanda, Mikailu & Garba, 2005). Empirical studies on board size have established that there is a negative relationship between board size and financial sustainability of pension fund administrators. The basic argument is that the cost implication involved in decision making of PFAs with large board size overwhelms its benefit. Jouston (2007) note that large boards are easier for chief executive officers to manage as they place more emphasis on politeness and courtesy. Hence, a reduced number of directors implies a higher degree of coordination and communication between them and managers. If this argument is true, then, we expect board size to be positively related to financial sustainability. However, larger boards are also argued to have better financial expertise and information edge over smaller boards (Yermo, 2007; Xie et al, 2003). These two conflicting arguments present a controversial issue that calls for an investigation of the effect of board size on the financial sustainability in the Nigerian context.

The relationship between board size and financial sustainability in the developed countries is impressive (Jensen, 1993; Zhou & Chen, 2002; Xie et al, 2003; Wang, Rahima & Shuping, 2010). However, the findings have yielded inconsistent results. Zhou & Chen (2002), examine the relationship between board size and financial sustainability in insurance companies. Using 798 U.S insurance companies for the period of 2001-2006, they conclude that board size and

independence influence board efficiency and therefore lead to less financial sustainability.

### **2.1.6 Board Competence and Financial Sustainability**

The competence of the members of board can be used as a tool for improvement in an organization. In other words, boards that are mostly constituted of highly competent members may lead to a better financial sustainability (Yermack, 1996). Xie et al (2003) find that high proportions of competent directors were associated with high level financial sustainability. Garcia, Garcia & Penalva (2005) report that where the competence of a firm's board members does not conform to expect functions of the firm may lead to in sustainability.

Boards of directors who are competent are expected to be able to maximize financial sustainability activities. Chtourou, Bedard & Courteau (2001) provide evidence that firms with experienced external directors show significantly high level of financial sustainability compared to other firms. This is consistent with Xie, et al (2003) who finds that the relationship between experienced board of director with discretionary accruals is low. Years of experience serving as a board member provides an opportunity for the member to understand the firm. This experience would help them developing better governance (Park & Shin, 2004). Chtourou, et al (2001) provides evidence that the length of directorship is negatively related with financial sustainability.

## **2.2 Theoretical Framework**

This study is based on the theory of pooling, intermediation, accounting profitability and life cycle. The theories are adopted firstly, because most of the researches conducted using the theories are in developed economy, hence the adoption of the theories in Nigeria is very imperative. Secondly, the theories are adopted to see whether in Nigeria's situation, they could offer the possibility of investing in large denomination and indivisible assets such as property which are unavailable to small investors. Also, to verify whether pension funds could compensate for the increased risk, by pooling at a lower cost across assets whose returns are imperfectly correlated.

## **3.1 Research 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 the study consists of all the 20 pension fund administrators operating in Nigeria as at 31<sup>st</sup> December, 2012. The study covers a period of 2006 through 2012. This period marks the

beginning of contributions to the pension fund by both the employer and the employee at the rate of 7.5% from each respectively. The population of this study comprises all the (20) Pension Fund Administrators operating in Nigeria as at 31<sup>st</sup> December, 2012. 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 uses data originally meant for different purpose as secondary sources. The sources are divided into: Published and unpublished data. Documentary data have been collected via statistical bulletin, pension funds releases and annual reports from pension funds administrators. Panel data regression model is adopted to estimate the relationship among the variables of this study which is widely used in the literature. The model is estimated using generalized least square method and allow for fixed effect and random effect.

### 3.2 Model Specification

The model is presented as follows:

$Fs (x_1, x_2, x_3, x_4, x_5)$

$$Fs_{it} = X_{it} + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \beta_6 X_{6it} + \beta_7 X_{7it} + U$$

Where;

Fs= Financial Sustainability

X<sub>1</sub>= Age

X<sub>2</sub>=Size

X<sub>3</sub>=Net Income

X<sub>4</sub>= Contribution

X<sub>5</sub>= GDP

X<sub>6</sub> = Bcomp

X<sub>7</sub> = Bsize

Dependent Variable is financial sustainability.

Financial sustainability = Total Liabilities / Total Asset.

**Table 3.1: Independent Variables and Measurement**

S/NO	Variables	Measurement
1.	Age	Measured by determining the years of operations of each PFAs in Nigeria. This gives the number of years each of the PFAs has been in operation.
2.	Size	Measured by log of revenue
3.	Net Income	Measured by net income before tax. Scaled by firm's previous year's sales.
4.	Contribution	From 2006 to 2008, it is retirement saving account balance. Year 2009 to 2010, it is retirement saving account balance plus retiree fund balance. Scaled by previous year's sales.
5.	GDP	Measured directly from statistical bulletin of CBN
6.	Bcomp	Measured by ratio of board members with financial expertise (experience in banking/investment, insurance and/or pension), to total of the board members
7.	Bsize	Measured by the number of board of directors

#### 4.1 Results and Discussions

#### 4.2 Descriptive Statistics and Normality Tests

The model of the study uses eight variables in testing the five hypotheses raised for the work. One dependent variable (Financial Sustainability) and seven independent variables – Age, Size, Net Income, Contribution, GDP growth, BCOMP and BSIZE were used for the model.

The results of descriptive analysis for these variables employed are given in Table 4.1.

**Table 4.1: Descriptive Statistics**

	FS	AGE	NETINCOME	SIZE	CONTRI	GDP	BSIZE	BCOMP
N	105	105	105	105	105	105	105	105
Mean	0.655105	5.333333	0.043902	5.391967	36.02626	0.058357	7.152381	1.345238
Median	0.540000	5.000000	0.190000	5.700000	20.89000	0.067000	7.000000	1.320000
Maximum	2.537250	9.000000	5.560000	8.027140	292.6160	0.079000	14.00000	2.100000
Minimum	0.000000	0.000000	-8.9000	2.500000	0.002000	0.007000	3.000000	0.780000
Std. Dev.	0.505012	2.191183	1.114217	1.240562	50.14795	0.023674	2.368791	0.249114
Variance	0.328395	5.377747	0.210125	1.028115	3936.579	0.000198	6.318335	0.077196
Skewness	1.133628	-0.08286	-3.89882	-0.64576	2.979879	-1.39529	0.541424	0.859373
Std. Error	0.289167	0.289167	0.289167	0.289167	0.289167	0.289167	0.289167	0.289167
Kurtosis	4.380216	2.141453	46.24795	2.900112	14.18967	3.586500	3.278974	4.356345
Std. Error	0.570925	0.570925	0.570925	0.570925	0.570925	0.570925	0.570925	0.570925
Range	2.53225	9	14.46	5.52714	292.614	0.072	11	1.32

Source: author's computation using SPSS

From Table 4.1, it is observable that the mean of each respective distribution is not exactly situated at the middle (median) of the distribution. Except for CONTRIBUTION, the mean of every other data set is not far away from their respective medians values. This indicates that majority of the individual firms have observations for each respective variable, close to the average observation. This is true as regards to every variable other than CONTRIBUTION, whose mean is far above its respective median, suggesting that the majority of the PFAs have contribution figures lower than average contribution. This presupposes that only few PFAs carry the large proportion of the total contributions in the industry. It suggests high concentration or dominance of few on the many, thereby making competition difficult for the smaller PFAs or PFAs that might have newly enter the industry.

Looking at the standard deviation on the basis of the assertion that 60% of a normally distributed data set falls within the range of  $\pm 1$ , it is evident that FS, GDP and BCOMP satisfied this while AGE, SIZE, NETINCOME, CONTRIBUTION and BSIZE have standard deviation values out of this range. On the basis of standard deviation therefore, it can be concluded that FS, GDP and BCOMP are normally distributed, while AGE, SIZE, NETINCOME, CONTRIBUTION and BSIZE are not normal. Except for FS, CONTRIBUTION, BSIZE and BCOM, the skewness indices for all the other data sets seem to be negative, indicating more observations to the right of the normal curve. As it is, data outlier is normally associated with negative skewness. With regards to kurtosis, all the variables have extreme peaks that are above normal peak, as their kurtosis figures are above the normal kurtosis of 0 or near 0. On the basis of skewness and kurtosis, none of the data sets can be qualified as normally distributed.

**TABLE 4.2: Summary of Result**

Variable	Random Effect			Fixed Effect		
	Coefficient	t-Statistic	Prob.	Coefficient	t-Statistic	Prob.
C	-0.408406	-1.008851	0.3156	0.353250	0.563397	0.5747
AGE	0.088785	3.250411	0.0016**	0.158904	3.104403	0.0026**
SIZE	0.188437	3.838836	0.0002**	0.202158	3.684336	0.0004**
NETINCOME	0.062013	2.383752	0.0191**	0.067561	2.449356	0.0164**
CONTRI	0.034033	2.005694	0.0477**	0.033758	1.944319	0.0552
GDP	-2.287754	-1.344500	0.1819	-3.051126	-1.536605	0.1282
BCOMP	-0.330650	-1.154742	0.2510	-0.399689	-1.252551	0.2139
BSIZE	0.010870	0.251497	0.8020	-0.138988	-1.417350	0.1601
R <sup>2</sup> Square		0.566574			0.534301	
F-Statistic		20.42122			6.681905	
Prob(F-stat)		0.000000			0.000000	
Durbin-Watson		1.685555			1.6888085	

\*\* indicates significance at 5% level (i.e.  $p < 0.05$ )

Source: author's computation using Eviews 7

From the Table 4.2, for the random effect result, the coefficient of the intercept is negative. This indicates that at any given point of time where these explanatory variables are held constant, the financial sustainability of the pension fund administrators are at jeopardy- i.e. it assumes negative value. This shows that without these variables, the pension fund administrators will not be financially sustainable. However, this result is not significant as the likelihood ratio of such happening (as indicated by p-value of 0.316) is infinitesimally low.

As revealed from this table, the sign of most of the parameters of the model are in line with a priori expectation. While age, size, netincome, contribution and Bsize are positive as expected, GDP and Bcomp are negative but insignificant. This implies that improvement in these five positive variables can give rise to improvement in financial sustainability.

The result indicates that the coefficient of AGE is positive and statistically significant at 5%, indicating that older PFAs are more financially sustainable. This is in line with the argument put forward by Robinson (2001) that the age of a pension fund administrator can affect its financial sustainability level. This is cogent when we consider the number of years covered by this study. While life cycle theory propounded that the effect of age on firm's financial sustainability is more pronounced at their maturity stage (which is 8 years), our study covered seven years for each of the PFAs (which is approximately 8 years).

In support of the above findings and argument, Bogan, Johnson & Millage (2007) find that the age of a pension fund administrator relates to its financial sustainability. Other scholars on the same findings are CGAP (2009); Cull, Demirguc & Morduch (2007) and Gonzalez, (2007). Their findings might not be unconnected to the number of firms and years covered by their studies which is 8 years and above.

Conversely, a study by Kyereboah-Coleman & Osei (2008) report that the age of a pension fund administrator is insignificant. This study therefore, confirms that age as a variable also affects financial sustainability of a pension fund administrator in a significant manner. This is so considering that the p-value obtained by our study, is significant even at 1%. Based on the findings, this study has sufficient evidence to reject the hypothesis raised in respect of age.

The result also shows that the coefficient of contribution has a positive relationship with financial sustainability. This relationship is significant at 5%. Based on this finding, we hereby reject the null hypothesis that states Pension

fund contribution has no significant impact on financial sustainability in Nigeria and accept the alternative hypothesis. This result is in line with Rutherford (1995) findings, that the success of a PFA lies on how well a PFA mobilizes its members (clients) and their contributions. The more contributions by both the employers and employees, the better for financial sustainability of a PFA.

In the same vein, the result reveals that the size of a PFA has a positive coefficient and is significant at 5%. For every one unit change in financial sustainability of these PFAs, 0.18 is attributed to the SIZE of these PFAs in positive direction. The rational explanation to this findings is the position of some scholars that the size of pension fund administrator is measured by the value of its assets (Mersland & Strom, 2009; Hermes, Lensink & Meesters, 2008; Mersland & Storm, 2008; Bogan, Johnson & Mhlanga, 2007; Hartarska, 2005; Lafourcade, Isern, Mwangi & Brown, 2005). According to Hauner et al (2007), the size of a pension fund is significantly positively linked to its financial performance. Amidu (2007) posits that the size of pension fund administrator will determine their capital structure. Robinson (2001) also asserts that a large number of clients depend on pension fund commercial sources of funds, which in turn depends on pension fund sustainability. This suggests that pension fund administrators with higher capital are expected to have more clients than those with less capital. Apart from the volume of capital, that is the amount of capital of a pension fund administrator, the combination of various components of the capital could also affect profitability and therefore, sustainability of pension fund administrators. Based on this finding, we hereby reject the null hypothesis as the study has obtained sufficient evidence. In contrast, Hartarska (2005) finds that the size of a pension fund administrator does not significantly affect its financial sustainability.

On the Net Income, the result shows that there is a significant positive impact on financial sustainability of Nigerian PFAs and the likelihood of such a happening by chance is 5%. The implication here is that the higher the PFAs are able to generate extra income after paying off their operational expenses, the more likely that the PFAs will be financially sustainable. This is cogent given that the term financial sustainability in itself emanates from a firm's ability to generate extra income in excess of its expenses. Some studies conducted by Rosenberg, 1996; Christen, 2000; Woller, 2000; Hauner et al, 2007; Christen et al (2007) unanimously find that there is a significant relationship between efficiency and financial sustainability by looking at various cost and revenue elements. They conclude that an efficient pension fund administrator will operate at a reduced financing and overall pension fund administrator's expenses; that, the same will also increase profitability and therefore, lead to its financial sustainability. In this

regard, their findings confirm our study and stand. Based on this, we reject the null hypothesis.

GDP growth rate has negative impact on its financial sustainability. However, it is not significant even at 10%. This finding contradicts that of MC Morrow & Roeger (2003) that GDP growths do affect the financial sustainability of a pension fund administrator. As such, the financial sustainability does not depend much on GDP growth. Based on our findings, the study could not obtain sufficient evidence to reject the hypothesis raised in respect of GDP growth.

The rationale behind this could be explained by the fact presented by scholars that, if GDP growth in a country is lower than projected, the pension entitlements of future generations will fall very significantly, and vice-versa. All this has implications for financial sustainability. High GDP growth may result in greater fiscal pressures in a country.

#### **4.3 Implications of the Findings**

The conclusion made on the finding implies that, a PFA's age is inadvertently linked with its financial sustainability. Impliedly, younger PFAs are less sustainable financially. This is plausible because as the saying goes, "it takes more than a generation to build an empire". Firms generally do not grow strength over night. They derive their strength from the accumulated efforts over long years of planning, building goodwill and market confidence. The findings therefore emphasize that this is actually inherent in the PFAs

The finding in respect of SIZE also suggests that PFAs' survival financially, cannot be achieved without adequate revenue (SIZE is measured using sales volume); and that PFAs with larger revenues are more financially sustainable. Here also, there is cogency in the implication, inasmuch as the PFAs need income to cater for their day-to-day operations. The same thing applies to NETINCOME only that while SIZE (sales) provides the basis for generating profit, it does not guarantee the realization of the profit. Thus, sustaining current capacity (market share) as well as expanding the capacity all depend on the extra cash generated above the expended capital. The more extra cash (NETINCOME) a PFA generates, the more chances of financially sustaining itself, as well as expanding/growing itself.

The finding in respect of the CONTRIBUTION suggests that firms with more market share are more likely to be financially sustainable. This could be true considering that CONTRIBUTION could be the foundation upon which a PFA's financial sustainability could be built because it poses as a guaranteed source from

which PFAs derive their income and consequently their profit. By the nature of the business, a fixed sum of money as administrative fees is monthly charged for every contribution received by a PFA. In addition, it is the revenue generated from investing the contributions, that a fixed percentage management fee is charged. Therefore, contribution, as the foundation for PFAs' income and profit, ought to be connected with the PFAs' ability to remain in business, since it serves as the "cow" that provides the "milk" for the "house-hold" to nourish, sustain and grow itself.

### **5.1 Conclusions and Recommendations**

This study focuses on the determinants of financial sustainability of Nigerian PFAs with the aims of ascertaining the significant relationship that exists between the financial sustainability and the variables employed. Having seen the results of the relationship, the following conclusions are made based on the outlined objectives viz-a-viz the hypotheses formulated to test the said objectives.

As revealed from the table 4.2 above, the sign of most of the parameters of the model are in line with a priori expectation. The age, size, netincome, contribution and Bsize are positive as expected, and, as such, we therefore, conclude by rejecting the hypotheses formulated in their respect. The rejection is so because the relationship is strongly significant at 1% and 5% respectively. GDP and Bcomp are negative but insignificant. Based on this, the study could not obtain sufficient evidence to reject the hypotheses raised in respect of GDP. The study concludes that improvement in the five positive variables can give rise to improvement in financial sustainability.

Based on the findings and conclusions, the following recommendations are forwarded:

As implied in the findings, attaining financial sustainability is not a one shot event. The level of sustainability today will affect the sustainability tomorrow regardless of where the PFA stands in its life cycle or development stage. The factors that affects financial sustainability at start-up and growth stage, affects even more the sustainability at maturity stage. Thus, financial sustainability needs to be ensured and monitored throughout the life time of PFAs. That is, any weakness noticed at any stage must be addressed immediately. As the study has shown the extent at which contributions had made a pension fund administrator to be financially sustainable, the more contributions a pension fund administrator could obtain from the contributors, the better for it. Thus, PFAs must geared efforts to ensure that, this is always on the increase.

When looking into the future, the policy makers and contributors need to reassure themselves not only that pressure on constraints is being managed properly, but also that the pension system remains effective and is in a position to achieve the goals for which it is devised. Investment criteria issued by the PenCom should be carefully observed so as not to risk the contributions of the contributors. Moreover, for the policy makers and those advocating the replications in the pension fund best practice, the finding of this study implies the need to scrutinizing what is applicable and what is not before embarking on the replications.

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