

## RISK MANAGEMENT AND PENSION FUND RETURNS: DOES PENSION FUND ADMINISTRATOR OWNERSHIP TYPE MATTER?

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### Abstract

Pension fund returns form an integral component of defined contribution pension plan benefits. However, low and volatile real return profiles of pension funds have been sources of growing concern due to failure to generate adequate returns. This study examined risk management impact on pension fund returns as perceived by pension fund administrators of the Nigerian contributory pension scheme. The study further assessed the interaction effect of PFAs type (open and closed) on the risk management impact on pension fund returns. Data was collected through the administration of survey questionnaires on 197 managers and assistant-managers of all the 24 pension fund administrators. Based on the analyses of survey responses from the survey of managers and assistant-managers of PFAs, results from Ordinary Least Square (OLS) regression and Hayes Macro show a positive and significant impact of risk management on the pension funds returns of contributory pension scheme in Nigeria. The results further confirm a significant interaction effect of PFAs types on the impact with closed PFA reporting a stronger relationship between risk management and pension funds returns of contributory pension scheme in Nigeria. The study recommended that open PFAs intensified their risk management practices in the interest of the employees whom they manage their pension assets.

### 1.0 Introduction

Globally, transitioning from Defined Benefits (DB) to Defined Contribution (DC) plan has become the most dominant approach of occupational pension (OP) reforms over the last four decades. DC pension plans entail an arrangement where the accruable pension benefits of retired employees is the sum of employees and/or employers contributions made towards pension payment during the active employment period and its investment returns. In other words, DC plans offer plan participants what they have contributed during working years plus returns made on the investment of the contribution as post-retirement benefits. While positive returns on pension asset investment increases the retirement benefits payable to retirees in DC plans, negative returns does not only reduce

the benefits payable to retirees (Felix, 2020), but also erodes the pension contribution of employees (Organisation for Economic Co-operation and Development [OECD], 2022a). Among the assumptions of DC schemes is that investment of contributed pension fund would earn adequate investment returns on the investments of pension contributions to facilitate the growth of pension assets for timely payment of adequate pension benefits. Contrary to this assumption, return profiles of many DC schemes do not turn out to be positive often.

Despite the significance of adequate returns as an integral component of DC occupational pension benefits, anecdotal and empirical evidence established that the return profiles of most pension funds have been unpredictably volatile and low (Asher & Bali,

2013). Thus, there have been prevailing threats to the ability of pension occupational pension funds to meet their future obligations to prospective retirees due to adverse effects on pension asset growth (Blake, 2003). For instance, Stewart (2010) reported pension funds losses of between \$5 to \$10 billion due to the 2008 financial crisis. In the same year, the nominal rate of returns on pensions fund in 37 countries (OECD and non-OECD) fell to negative average of -15.4% as the United States, Hong Kong and Ireland posted the worst negative returns of -23% 30%, and -35% respectively. Dorfman et al. (2013) also found that DC schemes earn low rates of return far below the anticipated rate at the time of the reform implementation.

Nigeria implemented a transition to defined contribution (DC) in the form of a contributory pension scheme (CPS) to address the challenges facing the old defined benefits (DB) scheme in 2004. Similar to the global trend, studies have documented abysmally low returns (Ovbiagele, 2015; Henshaw, 2012) and negative real returns after inflation (Casey, 2011; Dostal, 2010) on CPS pension fund assets, for most years since CPS was implemented, to the detriment of plan participants. For instance, in 2008, the Nigerian CPS fund suffered losses of ₦33.21 billion on the Nigerian Stock Market (NSE) (PenCom, 2009). Okoye and Agbawe (2009) also documented a total loss of 34% on pension funds invested in NSE between 2008-2009. OECD (2022b) documented that between 2010-2021, the real rate of returns on CPS fund investment was marginally positive for 2013(4.5%), 2017 (0.1%) and 2020(2.2%) and nil or negative for the remaining nine years. A survey conducted by Imhanlahimi and Joseph (2011) found that 61% of participants in the CPS were dissatisfied with the level of return on the CPS fund. Therefore, the negative return profiles indicate a gloomy reality to the effect that the growth of the CPS might have been driven largely by employees' and employers' contributions.

Among scholars, there is a consensus that risks negatively impact pension fund investment returns, if not well-managed.

Consequently, risk management has become an essential part of managerial tools aimed at reducing the impacts of all risks affecting firms in all sectors including pension funds. The risk level faced differed not only within an industry but also across industries. For instance, whereas the level and type of risks facing the pension industry broadly differ from that of the insurance and banking industries, it has also been reported that the level and type of risks differed between Islamic and conventional banks (Abu Hussein & Al-Ajmi, 2012). Besides, the impacts of risk management have remained inconclusive on banks (Kithinji, 2010; Kolapo, Ayeni & Oke, 2012).

Given the documented significance of risk management from empirical literature, this study contributes to the literature on the impact of risk management on pension assets returns by assessing risk management impact on the Nigerian CPS fund returns as perceived by the PFAs managers. The study further assesses the interaction effect of the difference in the type of pension fund administrators: open PFAs and closed PFAs. Conducting a study on risk management impact on pension asset returns and the interaction effect of PFA type of CPS fund is in the interest of creating awareness among Nigerian CPS stakeholders on the importance of the CPS operators to improve their management level to realise the optimal benefits of CPS pension reform. The remaining sections of the study were organized as follows: the literature review was presented in Section 2. Section 3 explained the study methodology. Data analyses and discussion were presented in Section 4, while Section 5 concluded the study.

## **2.0 Literature Review**

### **2.1 Pension Fund Returns.**

International Public Sector Accounting Standards Board [IPSASB] (2012) defines pension fund return as

“interests, dividends or other similar distributions revenue derived from the investment plan assets including realized and unrealized gains or losses on the plan assets, less any

costs of administering the plan (excluding those included in the actuarial assumptions used to measure the defined benefit obligation) and less any tax payable by the plan”.

A substantial number of pension funds report low returns on their investment that minimise their balance sheet value leading to freezing and curtailment of pension benefits to participants. Ramaswamy (2012) established that poor returns have become a major challenge for the sponsors of OP schemes for years. OECD (2022a) reports have alerted policymakers and pension managers on the low level of pension assets return. Investment markets behave cyclically which leads to earning low returns over an extended period (Chen, Matkin & Kang, 2021). Gros and Sanders (2019) stated that not realising adequate returns on pension fund investment has two-dimensional risks of short-term return volatility and long-term likelihood that the fall in return would persist over a longer period. The long-term dimension threatens the ability to sustain payment of pension obligations in long term. Thus, the negative impact of low returns cannot be ignored as one of the parameters of the valuation of DC pension plans (Li & Klumpes, 2013).

Extant literature has focused on the impact of size of funds on their returns among others. Chen, Paulraj and Lado (2004) examined the relationship between mutual fund size and return in the USA between 1962-1999. Results from data over the study period showed an inverse relationship between the fund return and one-month-lagged fund valuations. Their study also found that bigger-size funds exhibit a diseconomy of scale relative to returns. A study by Ferreira et al. (2013) indicates the significance of country-specific characteristics as possible factors accounting for the fund size-return relationship. From a sample of 16,316 pension funds (12,577 active and 3,739 failed funds) selected across 27 countries including the USA, Ferreira et al. (2013) found that pension fund size was negatively related to pension fund performance in the sample of US pension

funds while a positive relationship was found for the non-US funds.

Literature has also examined the impacts of investment approaches adopted by fund managers on their returns and documented inconsistent findings. Baker, Logue, and Rader (2005) found that when socially responsible investing (SRI) approach is adopted with full diversification and no political motivations, there is a minimal likelihood of negative impacts of SRIs on pension funds returns. However, Bello (2005) found that mutual funds with SRIs criterion do not show a significantly different returns on fund investment relative to conventional funds despite significant differences in their portfolio diversification from return data of 42 socially responsible and 84 conventional funds. Another study by Rounds Jr. (2005) found that SRIs produce higher returns in the US to confirm that SRI does not reduce returns of pension assets investment returns. Marr, Trimble, and Nofsinger (1994) examined the impact of Economically Targeted Investing (ETI) and documented a significant difference in returns of the US ETI and non-ETI pension fund in the year 1990. Contrary to the results of Marr et al., Nofsinger (1998) conducted yearly cross-sectional surveys of public pension plans in 1991, 1992, and 1993 and revealed no significant difference in returns of pension plans that invested in ETI and those that did not. However, Nofsinger found evidence of a significant difference in time-wise pooled panel data.

Martí-Ballester (2020) assessed the comparative return performance of 1546 pension funds sampled across the globe and categorised into those that invested in sectors associated with sustainable development goals and those that did not between 2007-2018. The results from both Busse and Carhart and Bollen models showed that pension funds that invested in sectors associated with sustainable development goals outperformed those that invested in conventional assets unrelated to sustainable development goals. Further analyses showed that the returns of pension funds investing with sustainable development goals differ across the sectors where they

invested. An Indonesian study by Gunadi et al. (2021) conducted with data extracted from Indonesian pension funds between 2012-2016 showed that the nominal return of Indonesian pension funds over the period was 8.5% return on investments.

Grinblatt et al. (2016) studied 4,822 funds from 1998-2012 and found that pension funds that buy stocks of firms that are past gainers and sell those of past losers earned better returns than pension funds that buy stocks of past losers and sell those of past gainers. Results of simulated data by Bikker, Broeders and de Dreu (2010) showed that fluctuation in pension fund returns is potentially sensitive with as little as a 1 per cent reduction in annual return over the working life cycle of workers translates into a 27 per cent reduction in their accumulated pension assets. Similarly, a hypothetical calculation by Zhang, Zhang and Yao (2018) showed that a 1.5% inflation rate above the rate of return on the pension asset eroded close to one-third of the monetary value of the pension asset over 30 years. Manasan (2009) documented that inflation compounds dismal pension fund returns as plan participants hardly get paid the minimum that members expect to receive from their retirement saving accounts at retirement. Clark and Urwin (2008) reported that the risk management committee improved the rate of return of institutional funds such as pension funds.

Mohan and Zhang (2014) assert that the return of defined benefit plans differed from that of defined contribution scheme pension plans. From an African context, Mungai and Elly (2018) examined the impact of investments asset classes on the returns of Kenyan pension plans. Regression analysis of 90 stratified pension funds revealed a significant impact of diversification on return of pension funds. They further reported concentration of investment in fixed-income government securities and low investment in equities and real estate investment trusts (REITs) among pension funds. In Nigeria, Ezugwu and Alex (2014) compare the relative return rate on different asset classes in which CPS funds are invested. Aggregate PenCom-

reported annual data over 2006-2012 showed that equity investments have the highest return rate. Imhanlahimi & Joseph (2011) reported that 61% of participants and other stakeholders are dissatisfied with the low returns on CPS assets in Nigerian. OECD (2022) and Dostal (2010) found that Nigerian CPS have been earning negative real returns after inflation for most years since the inception.

## **2.2 Risk Management and Pension Fund Returns**

Risk management involves sets of financial or operational activities that maximise the value of a company or a portfolio to reduce the costs associated with volatility (Stulz, 1996). Minimising the risks associated with the pension funds industry has become a standard practice due to the far-reaching impact of risks. In some, it has become a norm to establish institutions or agencies (Pension Benefit Guarantee Corporation in the United States) saddled with the task of minimising the impacts or risk on the pension plan beneficiaries to provide formidable insurance against associated risks (Ambachtsheer, 2008). Given that the Nigerian CPS is yet to establish such insurance in case of failure, risk management remains one of the tools that can minimise the negative impacts of a low return profile. Eckles, Hoyt, and Miller (2014) reported that risk management facilitates the solvency of firms by reducing the volatility of returns. OP schemes associated with risks and efforts taken towards managing risks have been advocated as determinant of the risk-return trade-off of pension funds. Risk management has become a vital strategy for averting the negative impacts of risks on occupational pension funds among pension managers and policymakers charged with the responsibility of efficient management pension funds (Ijeoma & Nwifo, 2015).

Extant literature has focused attention on impacts of risks on occupational pension (OP) returns. For instance, Choudhury and Naidu (2010) reported that diversification of pension assets as a risk management strategy minimises the associated risks and maximises

the returns on investments. Mohan and Zhang (2014) noted that under-funded public pension plans with previous low earning profiles tend to aggressively take risky investments in order to raise their return and reduce the negative funding gap. Aebi, Sabato, and Schmid (2012) also found a positive impact of risk management (proxied by presence of credit risk officer) on return of banks. Kolapo et al. (2012) documented that risk management is positively related to profitability of Nigerian banks. Contrarily, Kithinji (2010) found that risks management has no impact on the profitability of Kenyan banks. Abu Hussain and Al-Ajmi. (2012) conducted a comparative study of risk exposures and risk management practices of Islamic and conventional banks in Bahrain and found significant difference.

In a study of Nigerian banks over 2008-2009, Akindele (2012) found a significant positive relationship between risk management and bank profitability based on results from regression technique using data from the annual reports of selected banks. Alshatti (2015) conducted a study on the impact of credit risk management on financial performance among Jordanian commercial banks with data extracted from financial statements over 2005-2013. The results of panel-regression showed that credit risk management significantly impact their financial performance proxied by return on asset and return on equities. Hussain, Ihsan and Hussain. (2016) also examined the impact of risk management on Return on Equities (ROE) of five large and five small banks in Pakistan using proxies of Capital Adequacy Ratio (CAR), non-performing loans, operational risk, liquidity risk and interest rate risk for risk management. Random effects model results revealed significant impact of all the risk management proxies on the ROE of large banks. For the small banks, the study found a positively significant impact of CAR and negatively significant impact of non-performing loans and operational risk while the impact of liquidity risk and interest rate risk were positive but insignificant.

Njuguna and Arunga (2013) identified the strategies used by Kenyan

insurance companies for minimising risks of micro-insurance products include control of moral hazard and adverse selection, use of technology to lower administration costs, thorough scrutiny of claims, development of risk measurement models and continuous monitoring of the clients. Worzala, Sirmans and Zietz (2000) rank various asset classes of pension funds in the US in terms of risks and expected return levels. Paired wise t-test results of a survey of 96 pension fund portfolio managers showed a significant difference in risk-return ranking for eleven out of the twenty asset classes reviewed at 99th percentile and revealed that assets were ranked higher in terms of risk than the expected return levels. The study therefore hypothesise as follows:

**Hypothesis 1.** Risk management practices have a positive impact on the returns of Nigerian CPS funds.

Literature has examined the ownership effects on risk management practice and its linkages with performance. Mairafi, Hassan and Arshad (2018) noted that risk-taking behavioural-based studies have emphasised the effect of ownership structures on the return of firms. DB scheme poses less risk to the employees as the employers bear the risk of financing shortage in paying pension. DB and DC plans represent two extremes of pension plans based on risk shifting on employers under the DB plan and the employees under the DC plan. Exley further asserted the significant effect of ownership pension firms on their return-risk matching optimality. Prior research has established the negative impacts of risks on returns of contributory pension scheme funds in Nigeria.

The ownership of Nigerian CPS operators is diverse ranging from institutional investors such as banks, insurance companies, government-own and non-governmental entities that meet the specified requirements. Among the ownership type of PFAs are the close PFAs where some companies have obtained licence to establish, own and operate PFAs to manage the retirement saving accounts of their employees. Similarly, labour

unions at the national level as well as those of universities-based ones have also got the licence to establish, own and operate PFAs to manage the retirement saving accounts of their members in employments who choose to register or transfer the retirement saving to the union-owned PFA. To the best of our knowledge, no empirical study has been conducted to examine the effect of ownership of CPS operators on the effect of risk management to mitigate the negative effect of risks on the return of CPS funds in Nigeria. In view of the above research gap, we hypothesized as follows;

**Hypothesis 2.** PFAs ownership type has interaction effect of the impact of risk management on returns of CPS fund.

### **3.0 Methodology**

#### **Data Collection Procedures and Technique of Analysis**

Following Ijeoma and Nwugo (2015) that surveyed the views of Nigerian CPS managers with questionnaires, the study obtained data with questionnaire administration to managers and assistant managers of PFAs. All the 18 open PFAs and six closed PFAs operating in the Nigerian CPS were samples with a final sample size of all 24 PFAs. Copies of the questionnaire were administered to ten managers and assistant managers as respondents from each of the 24 PFAs making 240 respondents as the units of analysis. The respondents were purposively selected managers and assistant managers of open and closed PFAs after securing the consent of the human resource managers of the PFAs in a cross-sectional survey at their head offices. Summated scales of the remaining usable responses were analysed using OLS regression. The questionnaires contained multi-item scales adapted from previous studies to measure the study variables on a Likert scale of 1 (strongly disagree) to 7 (strongly agree). Measurement items for pension fund return were adapted from Chen et al. (2004) and Njuguna (2012), while the items used to measure risk management were adapted from Arnold et al. (2011). The data collected from the respondents was analysed

using Statistical Package for Social Sciences (SPSS 24) while Hayes Macro was used to test the interaction effect of PFA ownership type.

### **4.0 Data analyses results and discussions**

#### **4.1 Respondents' Profile**

Out of the 240 copies of questionnaires administered to PFAs managers and assistant-managers, 207 were returned. A scrutiny of the returned questionnaires showed that ten (10) of them had above 10% missing values and were dropped from further analyses as recommended by Hair Jr. et al. (2017) leaving 197 usable questionnaires as the unit of analysis. 155 among the respondents worked with open PFAs while the remaining 42 worked with closed PFAs. A total of 68 respondents were full-fledged managers while 129 were assistant managers. In terms of respondents' tenure in managerial position, three had less than one year, 12 had 1-5 years, 117 had 6-10 years, and 65 had above 10 years. The mean tenure of respondents in their current managerial position was 3.87 years with a standard deviation of 2.9 years.

#### **4.2. Results and Discussions**

Prior to testing the hypotheses with the regression model, the reliability and validity of the multi-item measurements adapted were assessed. Pension fund return and risk management practices reported Cronbach's alphas of .833 and .847 respectively which were considered acceptable level of reliability of the measurement items. Similarly, both variables also reported accepted average explained variance of 60.61% and 82.86% for pension fund return and risk management practices respectively above the minimum threshold of 50% suggested by Tabachnick and Fidell (2013). The R-squared of the regression model reports 42.60%. Subsequent inclusion of interaction variable (RISKMGTPFAtype) yield a minimal but significant R-squared change of 2.11% (F value= 7.109, p-value= .008) in the model.

As depicted in Table 1, results of Hypothesis 1 that states that risk management practices have positive impact on the returns

of Nigerian CPS fund report Beta coefficient = .603, t-value = 9.267 and p-value = .000 indicating that the hypothesis is supported. Hypothesis 2 which states there is interaction effect of PFAs type (open and closed) on the impact of risk management on returns of CPS fund also reported Beta coefficient = .396, t-value = 2.666 and p-value = .008 that supported the hypothesis. This results confirm the finding of Odia and Okoye (2012) which reported that the current CPS is operated under improved risk management compared to the old defined benefit OP. The interaction effect estimates from Table 2 also confirmed positive significant impact of risk management of open and closed PFAs. Figure 1 further

showed that the impact of risk management on CPS return was stronger among closed PFAs compared to open PFAs. Based on the regression results from Table 1. The results showed that there is a positive and significant relationship between risk management and return of Nigerian CPS. The findings of the study is consistent with studies (Alshatti, 2015; Akindele, 2012; Abu Hussain and Al-Ajmi, 2012) that reported significant impact risk management on returns of firms but inconsistent with that of Kithinji (2010) that found that risks management has no impact on the returns of kenyan banks.

**Table 1. Regression model results**

|                   | Beta  | se   | t-value | p-value |
|-------------------|-------|------|---------|---------|
| Constant          | 5.392 | .071 | 76.260  | .000    |
| RISKMGTT          | .603  | .065 | 9.267   | .000    |
| PFA_type          | .026  | .155 | .167    | .868    |
| RISKMGTT*PFA_type | .396  | .149 | 2.666   | .008    |

Source: Researcher's Computation (2022)

**Table 2. Interaction effects of Risk Management and PFA ownweship Type**

| PFA_type   | Effect | se   | t-value | p-value | LLCI | ULCI  |
|------------|--------|------|---------|---------|------|-------|
| OpenPFAs   | .603   | .065 | 9.267   | .000    | .474 | .731  |
| closedPFAs | .999   | .133 | 7.477   | .000    | .735 | 1.262 |

Source: Researcher's Computation (2022)

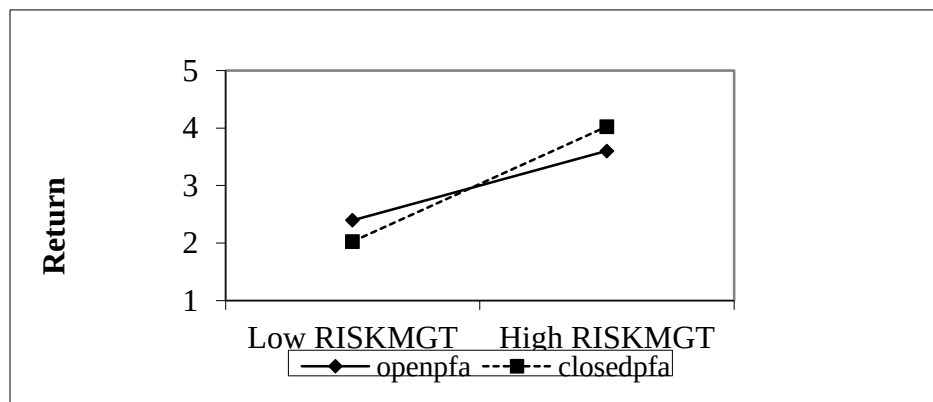


Figure 1 Interaction effects of PFAs ownership type on the impact of risk management on CPS returns

## 5.0 Conclusion

The study examined the impact of risk management on the returns of the CPS. The prevailing poor return profiles of occupational pension funds globally have become an issue that attracts attention among researchers and policymakers that needs to be addressed. This becomes necessary to forestall losses of pension assets which would weaken the ability of pension trustees and administrators to pay retirees their pension benefits as and when due. In view of this, this study examined the impact of risk management on returns of pension funds based on the perception of managerial-level employees of contributory pension fund administrators (PFAs) in Nigeria.

The study further examined the interaction effects of PFAs types(open and closed) on the impact of risk management on pension fund returns. The results showed that risk management by PFAs impact the pension fund returns in the Nigerian CPS. In addition, the results showed that closed PFAs ownership showed a higher effect on risk management impact on pension fund returns. The findings could be linked to the fact that the close PFAs may be more concerned about avoiding collapse of PFAs their employees pension funds .

Besides, Most of the close PFAs were established by multinational corporations with cognate experience in the management of pension funds before CPS implementation in Nigeria. The managerial implication of our findings points to the need for open PFAs to improve their risk management capacity. We, therefore recommend that open PFAs intensify their risk management in the interest of the workers they manage their pension assets.

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