EFFECT OF PENSION INVESTMENT ON FINANCIAL ACCESS IN NIGERIA

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Abstract

This study investigated how pension investments affect financial access in Nigeria. Ex-post facto research design was employed, analyzing data spanning the years, 2007 to 2020. The study collected data from various sources including the World Bank Database's World Development Indicator (WDI), the Central Bank of Nigeria (CBN) statistical bulletin, and the Pension Commission. The Autoregressive Distributed Lag (ARDL) testing technique was utilized to explore both short and long-term relationships among the variables, using Eviews 12 software. The findings from the long-term model reveal a positive relationship between, FGN securities, pension investments in equities, mutual funds, and financial access. This suggests that increases in these types of pension investments would likely lead to an expansion of financial access in Nigeria. Conversely, the research uncovered a detrimental link between pension investments in nearby money market securities and financial accessibility. In contrast, upon short-term examination, mutual funds and pension investments in FGN securities exhibited a favorable correlation with financial accessibility, while investments in equities and nearby money market securities displayed an adverse association with financial accessibility. This study, however, suggests the ease of access to financial services which includes deposit, saving, payment, insurance, and other risk management services for both the unbanked and underbanked categories will promote the significant impact of pension investment, therefore, improving public credit guarantee schemes for investment.

1. INTRODUCTION

Nigeria has N7.5 trillion in pension funds as of December 2017 compared to N6.1 trillion in December 2016, marking an increase of approximately 18% within a year (Odey, 2018). This upward trend signifies the continuous growth of Nigerian pension assets, leading to a rise in the pension business in the country. Pension funds are extremely essential in the Nigerian economy (Ajibade, Jayeoba & Aghahowa, 2018).

Pension systems have emerged as a source of macroeconomic instability, hindering economic growth and presenting challenges in the provision of retirement income from multiple providers (World Bank, 2006). Similarly, the collection of pension funds has been linked with the underdevelopment of financial markets, particularly evident in nations employing an accumulated pension fund structure (World Bank, 2006). The implementation of reforms is evidenced by the substantial growth of pension assets, providing stability to the financial market. Additionally, this growth enables institutional investors to access enhanced corporate governance, fosters innovation in financial instruments, and enhances the productiveness of the financial market. Consequently, this positively influences the development of financial institutions, integral components of overall financial development.

The liberalization of financial markets, along with the subsequent proliferation of financial institutions and a diverse range of financial instruments, coupled with enhanced regulatory and supervisory measures within the financial sector, is anticipated to drive financial deepening. This is characterized by a notable expansion in the accumulation of financial savings, encompassing liabilities within both the financial and banking sectors. Financial development constitutes a key component of strategies aimed at fostering private sector growth, poverty alleviation, and addressing inherent inefficiencies within the financial system.

This involves improving five core roles performed by the financial system: generating information, overseeing corporate governance, managing risks, channeling savings, and facilitating transactions. Financial efficiency, indicated by the ratio of traded values to overhead costs, is influenced by the banking system's overhead expenses relative to its assets. It serves as a metric for assessing the efficacy of financial intermediaries and markets. Maintaining financial stability is imperative within the financial sector, enabling resilience against economic shocks and ensuring the robustness of financial markets and institutional frameworks.

It has been suggested by scholars (Quisser, 1999; Okeiga, 2015) that pension funds accumulated are in various classes of investment heads in line with the relevant regulation of the Pension Commission over time. This is one of the outcomes of

Nigeria's pension restructuring. The ripple effect of pension reforms on the investment of accumulated pension funds has catalyzed the expansion of the capital market, resulting in enduring impacts on savings and overall output levels over the long term., translating into higher economic growth (Okeiga, 2015).

However, Quisser (1999) injected a dialectical perspective into the discussion concerning the correlation between financial development and pension funds, suggesting that the influence fluctuates based on the maturity of the financial system. Additionally, it was noted that the implementation of private pension funds might foster the growth of the financial industry, especially in economies where the financial system is underdeveloped, but regulatory frameworks are in place. An effectively developed financial sector is a crucial component of the economy, fostering the exchange of goods and services, facilitating economic mobilization, resource allocation, and risk mitigation (Gelbard & Leite, 1999). Generally, financial development entails an increase in the provision of financial services by banks and other intermediaries, along with heightened activity in capital markets (Hussain & Chakraborty, 2012). Numerous studies underscore the usefulness of assessing the financial system and its effect on economic growth. Financial markets and institutions are suggested to significantly influence economic development, stability, and poverty alleviation (Hussain & Chakraborty, 2012; Levine, 2005). Hence, the need arises to assess the effects of pension investments on financial accessibility in Nigeria.

2. LITERATURE REVIEW

2.1. EVOLUTION OF PENSION IN NIGERIA

The origins of the global pension system can be linked to Germany, as noted by Njuguna (2010) and Ekpulu, and Bingilar (2016). They credit previous German Chancellor Otto Von Bismarck with this advancement, as he implemented a compulsory savings program for employees of major corporations in 1889, in reaction to socialist ideologies. The main aim of such pension schemes was to provide workers with a means to ensure their retirement security, enabling them to maintain a lifestyle similar to what they had during their working years. Akhiojemi (2004) describes it as the combined framework of strategies, protocols, and lawful arrangements aimed at allocating resources to meet employers' social responsibilities to their workers upon retirement or in the event of demise. Odia and Okoye (2012) depict the pension scheme as a pay-as-you-go (PAYG) arrangement.

To enhance Nigeria's pension system, the Nigerian Stock Exchange (NSE) introduced on January 2, 2013 the NSE Pension Index, and made it available on Thursday, July 2, 2015 to investors. Nigeria has explored various financial products in its endeavor to develop its pension system, adhering to PENCOM guidelines, which encompass Exchange Traded Financial Instruments (ETPs), Pension Fund Administrators (PFA), Index Futures Contracts, and Certified Pension Fund Administrators (CPFA). Furthermore, the NSE Pension Index functions as a

benchmark for assessing performance and providing reports to owners of national Retirement Savings Accounts (RSA) (Proshare Ecosystem, 2016). The NSE Pension Index as of December 31st, 2016, comprises 40 companies having liquidity and market capitalization. This study utilized a variance-comparison test to scrutinize pension investment funds in Nigeria's non-contribution (pre) and contribution (post) schemes. The subsequent sections of this study delve into previous literature on pension schemes, presenting justifications, findings, discussions, conclusions, and recommendations.

In Nigeria, pension arrangements are categorized into two main schemes: the old and new pension plans. The "Old Pension Plan" is governed by Pension Law No. 102 of 1979, while the "New Pension Plan" is defined by the Pension Reform Act of 2004, which was further refined by the 2014 amended Pension Act. The old pension plan operated as a non-contributory defined benefit scheme, where employees solely contributed to the fund, and retirement benefits were predetermined based on a percentage of the final salary at retirement including the length of service with the employer. Conversely, the new pension plan operates as a contributory scheme, where retirement benefits depend solely on the total contributions in the retirement savings account of the employee and accrued interest at the time of termination of employment.

Before the enactment of the Pension Reform Act in 2004, the oversight of pension activities in Nigeria was divided among three regulatory bodies: the National Insurance Commission (NAICOM), the Securities and Exchange Commission (SEC), including Joint Tax Board (JTB). NAICOM was responsible for licensing and regulating insurance organizations within Nigeria, while SEC was entrusted with licensing fund managers. The JTB, empowered by Schedule 3 of the Personal Income Tax Decree 104 of 1993, sanctioned and supervised non-public pension schemes. Retirement benefits, referred to as pension or gratuity, were disbursed to retirees based on their final payment, which was subject to the consolidated revenue fund of the federation.

The Pensions Decree 102 of 1979, enacted in the same year, served as the foundational pension legislation in Nigeria's public sector, from which various pension regulations were derived (Akhiojemi, 2004). While specific professional organizations have their laws, such as the Armed Forces Pensions Act 103 of 1979 as well as Pension Rights of Judges Act No 51 of 1988, 29 of 1991, and 62 of 1991, they largely incorporate the core elements of Decree 102 of 1979.

Until June 30th, 2004, all pension schemes in the public sector operated on a non-contributory basis, with employees not required to contribute from their salaries towards pensions or gratuities, as noted by Akhiojemi (2004). The government solely bore the responsibility of budgeting for pension amounts in addition to the salaries of current employees. However, as the number of pensioners increased, governments encountered difficulties in meeting pension obligations.

In response to these challenges, the government enacted the 2004 Pension Reform Act, which brought about a unified law for pension administration in both the public and private sectors. This Act mandated pension contributions from both employers and employees, aiming to ensure timely retirement benefits for all individuals who have served in the public sector of the federation, including the Federal Capital Territory (FCT), and those in the private sector.

The key objectives of the 2004 Pension Act include guaranteeing that retirees receive their benefits promptly, assisting individuals in saving for their retirement, and establishing uniform policies for retirement benefits administration in both sectors. The Act requires all workers in the Federation's Public Service and Federal Capital Territory including employees in the private sector with five or more employees, to participate in the contributory program upon commencement. Existing pensioners and employees with three years or less until retirement were exempted from the scheme.

Employees' contributions are deducted from their salaries and funneled into designated retirement savings accounts, ensuring the existence of pension funds from the outset and facilitating timely payments. Every employee sets up a "Retirement Savings Account" with a selected Pension Fund Administrator, which remains theirs indefinitely, regardless of employer or administrator changes. Withdrawals from this account are only permissible at age 50 or upon retirement thereafter, with options including deliberate monthly or quarterly withdrawals or the purchase of a lifetime annuity from an authorized life insurance company. These options guarantee that the pensioner has ample funds for their later years, with the remaining balance after a huge sum withdrawal being enough to procure an annuity or fund withdrawals which are programmed to generate a minimum of 50% of the retiree's monthly income. Additionally, employers are mandated to adopt a Group Life Insurance Policy for their employees, with coverage set at a minimum of three times the employee's annual total emolument. Even though the Pension Reform Act (PRA) of 2004 overlooked the public service of State and Local governments, the PRA 2014 rectifies this by including them under Section 1 (a), thus expanding coverage to all levels of government employment alongside the private sector.

Section 8(2) of the PRA 2014 states that those listed in section 291 of the Constitution of the Federal Republic of Nigeria 1999 are entitled to exemption from the Scheme. Additionally, Section 5 (a) of the PRA 2014 exempts Members of the Armed Forces, Intelligence, and Secret Service. Mandatory contribution now applies to businesses with 15 or more personnel, a change from the previous requirement of 5 employees under the PRA 2004. This adjustment reduces the number of employers and employees eligible for the scheme, seeming counterproductive. Oyedele (2014) highlighted gaps in the PRA 2014, noting that only employers with at least 15 employees are obligated to contribute to the new Scheme. The law allows for the inclusion of private corporations with fewer than three employees based on guidelines from the National Pension Commission (PenCom). However, it remains

silent on how the scheme applies to private enterprises with more than three but fewer than fifteen employees. As per Section 4(1) of the PRA 2014, employers are required to contribute at least 10% of the employee's monthly salary to the pension fund, while employees must contribute a minimum of 8%. This marks an increase from the repealed PRA 2004, which mandated a minimum contribution of 7.5% from both employers and employees in the Public and Private Sectors, excluding Armed Forces members who had rates of 12.5% by the employer and 2.5% by the employee. Consequently, the current contributions by employers and employees in the two sectors earlier mentioned have risen by at least 2.5% and 0.5%, respectively.

However, Section 4(4) of the Act stipulates that an employer has the option to assume full responsibility for the Scheme by contributing at least 20% of the employee's monthly salary. Furthermore, Section 4(3) permits employees to opt for voluntary contributions to their retirement savings accounts, on top of the combined total contributions of 18% made by both the employee and employer. Contributions are based on the concept of 'monthly emoluments,' encompassing all components of pay outlined in the employment contract, which could potentially broaden the contribution base compared to previous practices (KPMG, 2014). In the event of a job loss, the six-month waiting time has been shortened to four months for employees to access their benefits. As per Section 16(5), employees who voluntarily retire or are discharged before reaching 50 years of age and fail to get an alternative job within four months may withdraw up to 25% of their RSA balance, with the remainder accessible upon reaching 50 years of age. Employers are mandated by the Act to provide group life insurance coverage worth at least three times the annual salary for each employee. Section 8(1) specifies that in the event of an employee's death, the entitlements under the group life insurance policy should be disbursed to the named beneficiary by an underwriter. Furthermore, the PFA is responsible for disbursing the deceased employee's RSA funds to their appointed representative or as directed by a court of competent jurisdiction in accordance with the employee's will.

2.2. THEORETICAL REVIEW

2.2.1. PENSION FUND HYPOTHESIS OF FINANCIAL DEVELOPMENT

Sun and Hu (2014) posited that pension assets have a quantitative and qualitative influence on financial development. Pension funds contribute to the capital supply in the financial market through quantitative means, while their role as institutional investors can enhance qualitative aspects such as corporate governance, transparency of information, and transaction efficiency. Additionally, pension fund sizes vary across diverse pension systems, and an increase in their assets can significantly impact market value, potentially explaining variations in financial development across countries. Sun and Hu (2014) highlighted that the influence of pension funds on financial development is particularly notable in civil law as well as in developing nations. They also suggested that endowment, pension funds, and legal

origin perspectives are not contradictory but rather complementary. According to them, while a country's legal origin and endowment may remain constant, modifying pension policies and reforming social security systems, alongside implementing a pension system that is funded with accumulated assets, could facilitate financial development and economic progress.

Numerous nations are often associated with endorsing the legal origin hypothesis and the resource endowment hypothesis. Nonetheless, these rationales fall short of elucidating the disparities among countries, with certain outliers like Switzerland posing challenges. Davis and Hu (2008) suggested that the scale of funds generated from pensions could elucidate variations in economic development among nations, particularly those undergoing transitions. Introducing an accumulation plan within pension system reforms could yield substantial stock market returns and bolster a nation's economy. Consequently, Sun and Hu (2014) propose a revision of the legal origin hypothesis by La Porta et al. to acknowledge pension funds' role in fostering economic growth through support to the real economy. This underscores the significance of the pension fund perspective alongside other factors such as religious, cultural, political, and militaristic perspectives in understanding financial development differences, particularly in extraordinary cases. The influence of pension funds on financial markets, especially securities markets, varies across countries. Given that the legal origin and endowment hypotheses fail to explain these observations, while the pension hypothesis does, it underscores the importance of pension investment in financial development (Sun & Hu, 2014). This study aligns with Sun and Hu's assertion that pension and capital markets mutually benefit and contribute positively.

2.2.2. REVIEW OF PREVIOUS EMPIRICAL STUDIES

Ajibade, Jayeoba, and Aghahowa (2018) undertook a study aimed at investigating how various attributes of pension funds affect their financial performance in Nigeria. Their examination spanned from 2010 to 2016 and utilized secondary data sourced from 11 PFAs and the National Pension Commission. Employing panel data and ordinary least square analysis through the Eviews9 statistical software, their model exhibited statistical significance, with an overall F-statistics probability of 0.0000, indicating significance at the 5% level. The results revealed that the age of the fund had a positively significant impact on financial performance, as evidenced by a p-value of 0.0000. However, spending did not demonstrate any significant influence on financial success, with a 0.4819 p-value. Contribution density showed a negative significant influence on financial performance, with a 0.0002 p-value. Conversely, idle contributions were found to have a notable positive impact on financial performance, with a 0.0131 p-value. The study concluded that older pension funds, those managing smaller contributions, and those with a higher proportion of idle contributions tend to achieve better financial performance in Nigeria, as measured by unit price.

Micah and Obah (2016) explored the connection between pension fund management and infrastructure funding in Nigeria. Their research revealed a link between retirement pension funds and the returns on Economic and Social Infrastructural Financing in Nigeria, including a correlation between Superannuation Pension Accounts and Economic and Social Infrastructural Financing. Investing in infrastructure projects emerges as crucial for Nigeria's economic expansion, given the substantial pool of pension funds available.

Obasa (2022) scrutinized whether the relative performance of various investment strategies adopted in the pension scheme offers a solution for its sustainability in Nigeria. Employing an exploratory methodology, the study addressed doubts among retirees regarding the effectiveness of the new Contributory Pension Scheme (CPU) in Nigeria as a solution to pension management challenges. The study suggested implementing a robust institutional framework for the pension fund industry and employing extensive market surveillance as proficient measures for mitigating operational risks associated with funded pension fund schemes in emerging economies.

Afolabi and Erasmus (2023) assessed the financial performance adequacy of pension fund administrators in Nigeria. They utilized Autoregressive Distributed Lag (ARDL) cointegration and ordinary least square techniques for data analysis. Findings from the research work showed that in both short-term and long-term analyses, additional costs incurred by pension fund management result in reduced benefits for retirees. Moreover, higher administrative costs are associated with increased benefits paid out, as heightened administrative costs stimulate greater contributions, and investing in federal government bonds, particularly Treasury bills, results in higher investment income.

Mgbada, Nwite, Ele, Uguru, and Tebepah (2023) conducted a study investigating the influence of the Nigerian pension scheme on the economic growth of Nigeria using data from 2007 to 2021. The specific objectives of the research were to assess the influence of total pension fund contributions on Nigeria's Gross Domestic Product (GDP), analyze the effects of pension fund investments on the nation's economic growth, and evaluate how the inflation rate affects pension fund contributions to economic growth. Utilizing an ex-post facto research design, data were gathered from the statistical bulletin of the Central Bank of Nigeria and subjected to analysis through Autoregression Distributed Lag (ARDL). The results unveiled a noteworthy positive correlation between overall pension fund contributions and GDP, alongside favorable ramifications of pension fund investments on the economic advancement of Nigeria. Conversely, the examination identified an adverse influence of the inflation rate on economic growth, indicating that the prevailing inflationary levels in the nation are impeding Nigeria's economic progress.

In a separate investigation, Oyedokun, Akingunola, and Somoye (2022) delved into the impact of pension investments on financial depth within Nigeria.

Employing an ex-post facto research design, the study spanned from 2007 to 2020. Time-series data were collected from various sources including the Central Bank of Nigeria statistical bulletin, the Pension Commission, and the World Bank Database. Utilizing the ARDL bounds testing method, the researchers scrutinized the interplay among the variables. The results showed a positive correlation between pension investments in equities and financial deepening, suggesting that augmenting such investments could bolster financial depth in Nigeria. Conversely, investments in FGN securities, mutual funds, and local money market securities exhibited a negative correlation with financial depth, indicating that a rise in these investment types might diminish financial depth. Furthermore, in the short term, pension investments mutual funds, and equities displayed a positive yet statistically insignificant relationship with financial depth, while investments in local money market securities and FGN securities showed a negative and statistically insignificant relationship with financial depth.

Onyebuchi (2020) investigated the indirect impact of pension funds on Nigeria's economic growth by examining their influence through the financial system. Utilizing the ARDL model, the research revealed that pension fund contributions effectively stimulate growth by investing in portfolios yielding short-term returns. This underscores the dependence on a robust financial system for pension fund contributions to positively affect economic growth. Consequently, the study suggests that PFAs should diversify investments towards portfolios with short-term returns, recommending the reallocation of a significant portion of funds from federal government securities to such portfolios.

In a study by Kigen (2016), the correlation between fund size and the financial performance of pension funds in Kenya from 2011 to 2015 was examined. The research investigated six aspects of fund size, such as contribution density, accumulated fund assets, membership count, administrative costs, and investment costs. Findings revealed that administrative expenses, investment expenditures, pension contributions, and accumulated fund assets were key factors significantly impacting the financial performance of pension funds in Kenya.

Achimugu, Ocheni, and Akubo (2015) emphasized the significance of pension investments within Nigeria's new contributory pension fund framework. They highlighted the challenge faced by pension fund administrators (PFAs) in making investment decisions due to limited opportunities, advocating for investments in domestic common stocks, Nigerian government bonds, and real estate to enhance Nigeria's GDP. The study suggested reducing investments in local money market securities due to their detrimental impact on Nigeria's GDP.

Tule et al. (2015) directed their research towards exploring the utilization of pension funds for infrastructure financing in Nigeria. Their study entailed an extensive examination of various models employed by different nations to channel pension funds into infrastructure investments, culminating in the development of a framework based on the lessons drawn from the survey. The investigation revealed

the potential for the Nigerian federal government to issue specialized infrastructure bonds, the proceeds of which could be earmarked for infrastructure projects. Leveraging pension funds in this manner would offer long-term, low-interest financing options, thereby alleviating the need to resort to high-interest bank loans for funding such endeavors. The study concluded by advocating for the adoption of this framework, foreseeing benefits for the Central Bank of Nigeria, pensioners, and ultimately, the advancement of economic growth and national development. While the initial research concentrated on utilizing pension funds for infrastructure financing in Nigeria, the subsequent research shifted its focus to Pension Investment and financial development, conducted in a different setting.

In a separate study, Tijjani (2014) investigated the determinants of financial sustainability among Pension Fund Administrators in Nigeria. The aim was to identify factors influencing the financial stability of these administrators. Seven variables were examined, including Board size, Board members' composition, GDP, Contribution, Net income, Size, and Age. Upon data analysis, the researcher discovered that five variables—age, size, net income, and board size—demonstrated a positive correlation, thus exerting a notable influence on the financial sustainability of pension funds.

Additionally, Adeoti, Gunu, and Tsado (2012) conducted a study aimed at examining the factors affecting pension fund investments. They utilized primary data obtained from questionnaires and employed a simple random sampling method to select respondents from a sample of five AFPs in Nigeria, resulting in 125 completed questionnaires. The analysis unveiled that economic factors, risk, and asset security were the main determinants of pension investment. Notably, the study concluded that variables such as interest rates and internal control systems did not significantly influence pension fund investments in Nigeria. Furthermore, the authors suggested that PFAs should establish robust systems to mitigate the considerable risks associated with their roles as investment managers.

3. MATERIALS AND METHODS

The study employed an ex-post facto research design to examine the trajectory of the Nigerian economy over a 14-year period from 2007 to 2020. Time-series data sourced from secondary outlets such as the Pension Commission, the Central Bank of Nigeria's statistical bulletin, and the World Bank Database's World Development Indicator were utilized. The analysis used the Autoregressive Distributed Lag (ARDL) bounds testing approach, utilizing Eviews 12, to scrutinize both short- and long-term relationships among the variables.

The long-run model is presented as follows:

$$LFDIAC_t = \Upsilon + \propto_1 LPENINVEQ_t + \propto_2 LPENINVFS_t + \propto_3 LPENINVLMMS_t + \propto_4 LPENINVMF_t + u_t \qquad (1)$$

To differentiate between the immediate effects and the prolonged effects, the error correction model framework is formulated as follows:

$$\Delta LFDIAC_t = Y + \sum_{i=1}^{N1} \delta_i \, \Delta LFDIAC_{t-k} + \sum_{j=0}^{N2} \eta_j \, \Delta LPENINVEQ_{t-k}$$

$$+ + \sum_{j=0}^{N3} \beta_j \, \Delta LPENINVFS_{t-k} + \sum_{j=0}^{N4} \theta_j \, \Delta LPENINVLMMS_{t-k}$$

$$+ \sum_{j=0}^{N5} \gamma_j \, \Delta LPENINVFS_{t-k} + \propto_1 LPENINVEQ_t$$

$$+ \propto_2 LPENINVFS_t + \propto_3 LPENINVLMMS_t + \propto_4 LPENINVMF_t$$
$$+ u_t \qquad (2)$$

To ascertain the rate of adaptation within a co-integrating ARDL model, one can modify equation (2) by incorporating an error correction term in the following manner:

$$\Delta LFDIAC_t = \rho \varrho_{t-1} + \sum_{i=1}^{N1} \delta_i \, \Delta LFDIAC_{t-k} + \sum_{j=0}^{N2} \eta_j \, \Delta LPENINVEQ_{t-k}$$

$$+ \sum_{j=0}^{N3} \beta_j \, \Delta LPENINVFS_{t-k} + \sum_{j=0}^{N4} \theta_j \, \Delta LPENINVLMMS_{t-k}$$

$$+ \sum_{j=0}^{N5} \gamma_j \, \Delta LPENINVFS_{t-k} + U_t \qquad (3)$$

Where:

LFDIAC = Financial development index to access, LPENINVEQ = Pension Investment in Equities, LPENINVFS = Pension Investment in FGN Securities, LPENINVLMMS = Pension Investment in Local Money Market Securities, and LPENINVMF = Pension Investment in Mutual Funds. Y represents the intercepts derived from equations 1-2, while δ, η, β, θ, and γ denote the short-run coefficients. The parameters $\propto_1$ through $\propto_4$ correspond to the long-run effects of the independent variables. Additionally, ρ stands for the coefficient of the error correction term, which is expected to be negative. The variable t signifies the periods being analyzed, with U_t representing the stochastic term.

4. DATA AND RESULT

In conducting the bounds test for co-integration within the ARDL framework, determining the optimal lag order is essential. As noted by Enders (2003), including too many lags in the testing equation can reduce degrees of freedom and the effectiveness of test statistics, while too few lags may lead to

misspecification problems. Table 1 shows that the model's maximum lag is three. However, before employing this maximum lag of three, it's crucial to verify the absence of autocorrelation, as detailed in Panel B of Table 1. The results suggest that the no autocorrelation null hypothesis cannot be rejected. Thus, for estimating the ARDL model concerning pension investment and financial access, a maximum lag of three is adopted.

Table 1: *Diagnostic Tests for Pension Investment and Financial Access in Nigeria*

Panel A: Lag Order Selection						
Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-2.34984	NA	9.13e-07	0.282686	0.470306	0.354615
1	224.6895	401.6850	3.87e-10	-7.48806	-6.362340*	-7.056484*
2	253.1467	44.87476	3.48e-10	-7.62103	-5.55721	-6.82981
3	281.5631	39.34581*	3.28e-10*	-7.752426*	-4.75051	-6.60156
4	300.5315	22.61618	4.76e-10	-7.52044	-3.58043	-6.00994
Panel B: Serial Correlation LM Test						
Lag	**LRE* stat**	**Df**	**Prob.**	**Rao F-stat**	**df**	**Prob.**
1	25.91059	25	0.4124	1.045041	(25, 127.8)	0.4160
2	33.38271	25	0.1218	1.384324	(25, 127.8)	0.1241
3	22.22556	25	0.6227	0.884299	(25, 127.8)	0.6258
4	77.64599	25	0.0000	3.814174	(25, 127.8)	0.0000
5	26.28722	25	0.3924	1.061711	(25, 127.8)	0.3960
6	5.603665	25	1.0000	0.209835	(25, 127.8)	1.0000
7	20.14362	25	0.7393	0.795347	(25, 127.8)	0.7417
8	76.33364	25	0.0000	3.730476	(25, 127.8)	0.0000
9	18.38800	25	0.8255	0.721363	(25, 127.8)	0.8273
10	11.04757	25	0.9927	0.421932	(25, 127.8)	0.9928

* indicates lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion and HQ: Hannan-Quinn information criterion

Source: Authors computation, 2024

Table 2: *Pension Investment and Financial Access in Nigeria*

Dependent Variable: LFDIAC				
Panel A: Long -Run Estimates				
Variable	**Coefficient**	**S.E**	**t-stat**	**Prob**
C	1.252	1.474	0.849	0.401
LPENINVEQ	2.346	1.074	2.184	0.035
LPENINVFS	0.087	0.378	0.232	0.818
LPENINVLMMS	-1.952	0.604	-3.231	0.002
LPENINVMF	0.014	0.460	0.030	0.976
Panel B: Short -Run Estimates				
Variable	**Coefficient**	**S.E**	**t-stat**	**Prob**
D(LPENINVEQ)	-0.165	0.134	-1.234	0.224
D(LPENINVFS)	0.222	0.125	1.772	0.084
D(LPENINVFS(-1))	-0.476	0.138	-3.456	0.001
D(LPENINVLMMS)	-1.436	0.371	-3.869	0.000
D(LPENINVMF)	0.689	0.080	8.601	0.000
ECM(-1)	-0.226	0.066	-3.405	0.002

Panel C: Diagnostic Tests		Statistic	Prob.	
Bound Test		11.727	0.000	
Serial Correlation		1.194	0.314	
Heteroscedasticity		1.004	0.217	
Linearity Test		2.112	0.280	
Adjusted R-square		0.693		
		CUSUM		
Stability Test		Stable		

Notes: The contents of Table 2 investigate how pension investments influence financial access in Nigeria. The study concentrates on the Financial Development Index to Access (LFDIAC) as the dependent variable, while examining various explanatory variables such as pension investments in equities (PENINVEQ), FGN securities (PENINVFS), local money market securities (LPENINSLMMS), and mutual funds (LPENINVMF). The research covers the period from the first quarter of 2007 to the fourth quarter of 2020, and analysis was performed utilizing Eviews 12.
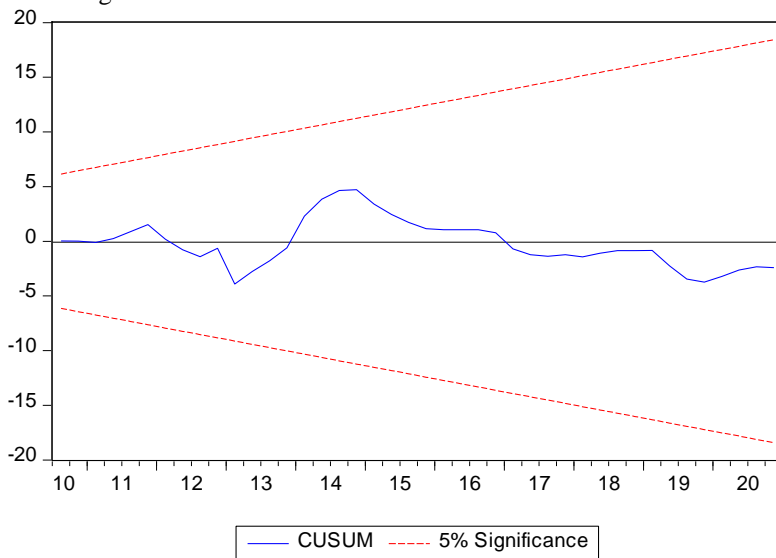

Figure 1: *Stability Test – Plots of Cumulative Sum of Residual*
Source: Author, 2024

INTERPRETATION

Bound Test

The initial phase of exploring the potential enduring connection between pension investment and financial access involves conducting a bound test. The results revealed that the bound test statistics, registering at 11.727, hold significant statistical relevance at the 1 percent level. This significance is due to the statistic of 11.727 surpassing the critical values of 4.26, 3.5, and 3.13 at the 1 percent level. Hence, it implies the likelihood of a sustained cointegrating relationship between pension investment and financial access in Nigeria. With the indication of a plausible

long-term association between pension investment and financial access in Nigeria, the inquiry advances to assess both the long-term and short-term flexibility. The empirical discoveries regarding the model's impact on pension investment and financial access in Nigeria, across both short and long durations, are detailed in Table 2.

The Long-Run Dynamics

The UECM model's long-term coefficients (elasticities) are detailed in Panel A of Table 2, revealing a positive correlation between pension investments in equities, FGN securities, and mutual funds and the expansion of financial access over time. This implies that increasing allocations to these assets within pensions is likely to bolster financial access in Nigeria. Conversely, there is evidence suggesting a negative correlation between pension investments in local money market securities and financial access.

Additionally, there is evidence suggesting a strong and lasting correlation between pension investments in equities and local money market securities with financial access in Nigeria (LPENINVEQ = 2.346, t-test = 2.184, ρ = 0.035, and LPENINSLMMS = -1.952, t-test = -3.231, ρ = 0.000). This shows that the allocation of pension funds to equities and local money market securities significantly influences changes in financial access within Nigeria. Conversely, there is a lack of evidence supporting a sustained significant relationship between pension investments in FGN securities and mutual funds with financial access in Nigeria (LPENINVFS = 0.087, t-test = 0.232, ρ = 0.818; and LPENINVMF = 0.014, t-test = 0.030, ρ = 0.976). This suggests that pension investments in FGN securities and mutual funds do not play a significant role in influencing changes in financial access in Nigeria. Regarding the estimated parameters' magnitude, a 1 percent rise in pension investment in equities, FGN securities, and mutual funds corresponds to 2.346, 0.087, and 0.014 percent rise in financial access, respectively, while a 1 percent rise in pension investments in local money market securities leads to a 1.952 percent decrease in financial access in Nigeria over the long term.

To evaluate the hypothesis for objective one, the bound test resulted in a value of 11.727, which is statistically significant at the 1 percent level. Consequently, the null hypothesis suggesting no significant effect of pension investment on financial access in Nigeria was rejected, and the alternative hypothesis positing a significant effect of pension investment on financial access in Nigeria was accepted.

Short-Run Dynamics

This section serves two primary objectives. Firstly, it aims to evaluate whether the alterations and statistical significance observed in the long-term model are similarly apparent in the short-term model. Secondly, it endeavors to scrutinize the degree of readjustment back to equilibrium through the stochastic correction term. The short-term adjustment mechanism is gauged by the error correction term (ECMt-1), indicating the speed at which variables adapt to disturbances and return

to equilibrium. For stability, it is anticipated that the ECMt-1 coefficient carries a negative value and is statistically significant.

The results revealed that in the short term, pension investments in FGN securities and mutual funds demonstrate a positive association with financial access, while investments in equities and local money market securities exhibit a negative correlation. Moreover, the estimated coefficient for ECMt-1, as presented in Panel B (4.5), is negative and statistically significant (ECM= -0.226, t-test = -3.405, p = 0.000). This indicates that deviations from the equilibrium path of pension investments in equities, FGN securities, local money market securities, and mutual funds are rectified by approximately 23% over the subsequent quarter. Essentially, the adjustment process appears to unfold at a moderate pace in Nigeria. The statistical significance of ECMt-1 indicates that there is a long-run equilibrium relationship between pension investment and financial access in Nigeria. The Adjusted R-square is 0.69, suggesting that pension investments in equities, FGN securities, local money market securities, and mutual funds elucidate approximately 69% of the variations in financial access, while the remaining 31% are ascribed to other unaccounted factors influencing changes in financial access.

Post-Estimation Test

To guarantee the reliability and validity of parameter estimates and to make well-founded conclusions from the findings, four different residual tests were performed. Firstly, a serial correlation test was used to examine whether the error term was uncorrelated. Secondly, a test was conducted to assess the equality of finite variances of error terms, known as the homoscedasticity assumption. Deviation from this assumption, termed heteroscedasticity, was also investigated. Thirdly, a linearity test was performed to ascertain if the model was linearly specified, where the non-significance of the Ramsey RESET test showed linear specification. Lastly, a stability test was conducted using the cumulative sum of residuals (CUSUM), where the CUSUM plot was required to remain within a 5% significance level represented by two straight lines to affirm stability of the estimated model.

The findings showed that there was no evidence of serial correlation among consecutive error terms, as indicated by a non-significant F-statistic probability value of 0.314 (F = 1.194). Consequently, the null hypothesis of no serial correlation in residuals within specified lag orders at 1%, 5%, or 10% significance levels was not rejected. Thus, it was concluded that successive error terms were not correlated in the estimated model concerning pension investment and financial access in Nigeria. Moreover, the heteroscedasticity test produced a non-significant F-statistic probability value of 0.217 (F = 1.004), indicating the inability to reject the null hypothesis of homoscedasticity, suggesting a constant finite variance in error terms covariance.

Additionally, the Ramsey Reset Test generated non-significant F-statistics of 2.112 with a probability value of 0.280, confirming the correct specification of

the model and validating a linear relationship between pension investment and financial access in Nigeria. Furthermore, Panel C and Figure 4.3 illustrate the stability of the estimated model through CUSUM analysis, where the plot of the CUSUM statistic consistently remains within the bounds of a 5% significance level represented by two straight lines.

5. DISCUSSION OF FINDINGS

The study examined the influence of pension investments on financial accessibility in Nigeria. The results from a long-term model indicated a positive correlation between pension investments in equities, FGN securities, and mutual funds, and financial accessibility, suggesting that higher investments in these areas could enhance financial accessibility in Nigeria. Conversely, there is sign of a negative association between pension investments in local money market securities and financial accessibility. Additionally, short-term estimates suggest a positive relationship between pension investments in FGN securities and mutual funds, while investments in equities and local money market securities showed a negative relationship with financial accessibility.

These outcomes resonate with those of Meng and Pfau (2010), who studied the impact of pension funds on capital market development in the OECD using panel data analysis. They found that countries with well-developed financial markets, characterized by robust investment strategies in stocks and bonds, experienced significant growth in their pension funds compared to those with less developed financial systems. Similarly, Li and Liao (2020) investigated the various effects of financial development on green total factor production across 40 countries from 1991 to 2014, focusing on the banking, insurance, and securities sectors. They discovered an inverted U-shaped relationship between financial development and green total factor productivity in developing countries, with value development consistently positively affecting overall green factor productivity. Notably, securities development seemed to have a more favorable influence on improving green total factor productivity compared to banking development.

6. CONCLUSION AND IMPLICATIONS

The results of the study suggested that the involvement of pension funds in equity, FGN securities, local money market securities, and mutual funds significantly influences the development of Nigeria's financial sector. Specifically, pension investments significantly contribute to enhancing accessibility to financial development within Nigeria's financial landscape. This study, however, suggests the ease of access to financial services such as deposit, saving, payment, insurance, and other risk management services for both the unbanked and underbanked categories will promote the significant impact of pension investment, therefore, improving public credit guarantee schemes for investment.

REFERENCES

Achimugu, A., Ocheni, S. I. & Akubo, D. (2015). Evaluation of the contribution of portfolios of new contributory pension scheme on Nigerian economy, *European Centre for Research Training and Development UK,* 3, 1-18.

Adeoti, J. O., Gunu, U. & Tsado, E. (2012). Determinants of pension investment in Nigeria: The critical factors. *International Journal of Human Resource Studies,* 2(4), 42-62.

Afolabi, A. A., & Erasmus, L. J. (2023). Financial performance adequacy of pension fund managers in Nigeria. *Journal of Accounting, Finance and Auditing Studies,* 9(2), 67-81.

Ajibade, A. T., Jayeoba, O. O. & Aghahowa, E. O. (2018). Pension fund characteristics and financial performance in Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS),* 2(7), 540-546.

Akhiojemi, S. I. (2004). *Contributory Pension fund.* A paper presented on the new pension reform at ASCON Pension Board of Trustees in September. 2004. *Global Journal of Humanities,* 9(3), 71-93.

Akpan, I. T. & Ukpong, M. S. (2014). Pension administration and capital formation in Nigeria, the challenges. *European Journal of Business and Management,* 6(6), 116-122.

Bassey, N. E., Etim, O. U. & Asinya, F. A. (2010). An overview of the Nigerian pension scheme from 1951- 2004. *Global Journal of Humanities,* 7(2), 61-70.

Demirgüç-Kunt, A., & Levine, R. (2008). Finance, financial sector policies, and long run growth. *World Bank Policy Research Working Paper WPS4469, Washington, DC.*

Ekpulu, G. A. & Bingilar, P. F. (2016). Pension fund in Nigeria, an appraisal, *quarterly journal of contemporary research,* 1(2), 196-209.

Iheonu, C. & Nwachukwu, T. (2020). Macroeconomic determinants of household consumption in selected West African countries. *Econ Bull* 40(2), 1596–1606.

Iheonu, C. O., Asongu, S. A. Odo, K. O. & Ojiem, P. K. (2020). Financial sector development and investment in selected countries of the economic community of West African States: empirical evidence using heterogeneous panel data method. Available at https://doi.org/10.1186/s40854-020-00195-0

Kigen, A. K. (2016). Effect of fund size on the financial performance of pension funds in Kenya (Master's Thesis). Retrieved from scholar.google.com

KPMG Newsletter (2014). *The Pension Reform Act 2014.* Retrieved from: *https://www.kpmg.com/Global/en/.../nigeria-july232014.pdf*

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R. (1998). Law and finance, *Journal of Political Economy, 106(6),* 1113-1155.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R. (1999). The quality of government, *Journal of Law, Economics, and Organization, 15,* 222-279.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. & Vishny, R., (2002). Investor protection and corporate valuation, *Journal of Finance 57:* 1147-1170.

La porta., R., Lopez-de-Silanes, F. & Shleifer, A. (2012). Government ownership of banks, the *Journal of Finance, 57(1), available at DOI:10.1111/1540-6261.00422.*
https://www.researchgate.net/publication/5065560_Government_Ownership_ of_Banks

Levine, R. (2005). Finance and growth: Theory and evidence in Aghion, handbook of economic growth, London: *Elsevier 1A,* 6(3), 865-934.

Li, T. & Liao, G. (2020). The heterogeneous impact of financial development on green total factor productivity. *Frontiers in Energy Research*, 6(29), 1-9.

Meng, C. & Pfau, D. W. (2010). The role of pension funds in capital market development. *National Graduate Institute for Policy Studies, Tokyo Discussion papers,* 13(4), 10-17.

Mgbada, F. N., Nwite, S. C., Ele, L. E., Uguru, L. C., & Tebepah, S. F. (2023). EFFECTS OF NIGERIAN PENSION SCHEME ON ECONOMIC GROWTH OF NIGERIA. *African Banking and Finance Review Journal*, *6*(6), 214-231.

Micah, L. C. & Obah, G. W., (2016). Pension fund administration and infrastructure financing in Nigeria, *British Journal of Economics,* 13(2), 1-13.

Njuguna, A. G. (2010). Strategies to improve pension fund efficiency in Kenya. *An unpublished Ph.D. Thesis of Nelson Mandela Metropolitan University, Port Elizabeth.*

Obasa, O. (2022). Pension Management, Risks and Investment Strategies: A Study of Defined Contributory Pension Scheme in Nigeria. *Journal of Management and Social Sciences*, *11*(1), 112-145.

Odey, K. (2018). Pension fund assets hit 7.5trn. Retrieved from https://www.google.com/amp/s/leadership.ng/2018/01/26/pensionfund-assets-hit-n7-5trn/amp/

Odia, J. O. & Okoye, A. E. (2012). Pension reform in Nigeria: A comparison between the old and new scheme, *Afro Asian Journal of Social Sciences*, *3(1), 1-17.*

Okeiga, D. A. (2015). The impact of pension savings scheme on Kenya's investment growth: An empirical analysis. *An Economic Research Paper Summitted In Partial Fulfilment Of The Requirement For The Award Of A Degree In A Master Of Art, Economic Policy Management, School Of Economics, University Of Nairobi.*

Onyebuchi, I. (2020). Pension fund, financial development and output growth in Nigeria. *Bullion*, *44*(1), 25-42.

Oyedele, T. (2014). Pension reform Act 2014: The good, the bad and the ugly. Retrieved from: www.pwc.com/ng/en/.../tax-bites-july-2014.jhtm

OYEDOKUN, G. E., AKINGUNOLA, R. O., & SOMOYE, R. O. (2022). Effect of Pension Investment on Financial Depth in Nigeria: Empirical Investigation. *Annals of Spiru Haret University. Economic Series*, *22*(2), 78-94.

Proshare Ecosystem (2016). *Nigerian Stock Exchange pension index.* Lagos: Proshare Investment Club, 8(3), 1-5.

Quisser, M. (1999). Pension reform: Lesson from Latin America. Law and Business Review of the Americas 8(4), 544-566.

Sun, S & Hu, J. (2014). The impact of pension systems on financial development: An empirical study. Risk governance and control. *Financial Markets and Institutions,* 4(3).

Tijjani, M. S. (2014). Determinants of financial sustainability of pension fund administrators in Nigeria (Ph.D. Dissertation, Ahmadu Bello University, Zaria). Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.827.1383&rep=rep1&type=pdf

World Bank. (2006). The impact of the pension reform in World Bank Report (eds.), *Pension Reform and the development of the pension system*, Washington. D.C