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CONTRIBUTORY PENSION FUNDS AND CAPITAL MARKET DEVELOPMENT: EMPIRICAL EVIDENCE FROM DEVELOPING AND EMERGING MARKETS IN AFRICA

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ABSTRACT: Capital market development in Africa, particularly in developing and emerging markets, has been underexplored in terms of the specific factors that drive its development and stability. This study investigates how contributory pension funds influence capital market development in Africa, focusing on the effect of pension fund assets (PFA) and pension fund investments (PFI). Four African countries such as Nigeria, South Africa, Egypt, and Ghana was the focus of the study, this study employs a panel data regression analysis to explore the relationship between pension funds and capital market development over a period from 2003 to 2023 using e-view 12 analytical tool. The results indicate that both pension fund assets and pension fund investments have a significant positive effect on market capitalization, suggesting that pension fund investments. The study concludes that pension funds, particularly those with well-diversified portfolios, can substantially contribute to capital market development in African economies. It is recommended that policymakers encourage pension funds to diversify their investment strategies and focus on increasing their equity investments, which would help optimize the role of pension funds in market development while promoting long-term economic stability.

Keywords: Pension Fund Asset, Pension fund investment, Capital Market Development, Market Capitalization and Gross Domestic Product

I. INTRODUCTION

The capital market is a vital component of a country's financial system, facilitating the efficient allocation of long-term capital to various sectors of the economy. It plays a crucial role in fostering economic development by providing businesses with the means to raise funds for expansion while offering investors opportunities for portfolio diversification ((Wanger *et al.* 2024). In the global financial ecosystem, contributory pension funds have emerged as crucial institutional investors and stabilizers of capital markets. These funds not only ensure retirement income security but also serve as long-term sources of capital, contributing significantly to economic development. According to the Organisation for Economic Co-operation and Development (OECD), global pension fund assets stood at approximately US $56 trillion by the end of 2020**,** with some developed economies such as the United States, the Netherlands, and Canada recording pension assets that exceed 100% of their GDP**.** These countries exemplify how well-structured pension systems can serve as pillars for thriving capital markets, infrastructure development, and sustained investment in corporate growth.

In developing markets particularly Africa, many emerging markets are still in the early stages of unlocking this potential. Though many African countries have introduced pension reforms to shift from pay-as-you-go (PAYG) systems to contributory pension schemes (CPS), the penetration of pension assets into the broader financial markets remains relatively shallow. The African continent, despite its young population and rapidly growing labor force, holds pension assets averaging around 15% of GDP**,** with substantial disparities between countries. For example, Namibia and South Africa boast pension assets equivalent to nearly 100% and 68% of GDP**,** respectively, while Nigeria, Ghana, and Egypt trail behind at 8%, 5%, and 1.5%**,** respectively (OECD, 2023; RisCura, 2022).

In Nigeria, Africa most populous country, Following the enactment of the Pension Reform Act of 2004, Nigeria adopted the Contributory Pension Scheme (CPS), replacing the old defined-benefit system. As of December 2024, pension assets under management (AUM) had grown to approximately ₦22.51 trillion (US $14.6 billion)**,** up from ₦18.36 trillion in 2023, according to the National Pension Commission (PenCom). Although about **84%** of these assets are invested in government securities, regulatory efforts are underway to diversify portfolios into equities, infrastructure, and private equity. This is a strategic move given Nigeria's staggering US $878 billion infrastructure deficit**,** which could be partially addressed through efficient pension fund investment (PenCom, 2024; Infrastructure Concession Regulatory Commission, 2023).

Pension funds in South Africa are deeply integrated into capital markets. The country boasts Africa's most advanced and liquid financial system, with the Johannesburg Stock Exchange (JSE) serving as a major hub for equity and debt instruments. As of 2024, South Africa's pension assets represent approximately 57% of GDP, and the Government Employees Pension Fund (GEPF)—the largest in Africa—holds assets exceeding ZAR 2.7 trillion (US $142 billion). Managed by the Public Investment Corporation (PIC), the GEPF is a key institutional investor across asset classes, including domestic equities, bonds, and alternative investments. Recent amendments to the Pension Funds Act in 2024 have further enhanced fund flexibility and governance, paving the way for increased contributions to infrastructure and ESG-aligned investments (National Treasury of South Africa, 2024).

In Egypt, pension funds are still underutilized as drivers of capital market development. Despite pension reforms such as the 2019 Social Security and Pensions Act, the country's pension fund assets remain low at around 1.5% of GDP, reflecting limited coverage and inadequate fund management infrastructure. However, economic reforms and a renewed focus on privatization and public-private partnerships have begun to open new investment opportunities for institutional investors, including pension funds. Egypt's equity and financial services sectors, in particular, are increasingly being targeted by regional and international asset managers as potential growth areas (Financial Regulatory Authority of Egypt, 2023).

Ghana offers a middle-ground case. Following the three-tier pension reform system introduced in 2008, Ghana has seen a rise in private pension fund management. As of 2023, the country's pension AUM stood at around GHS 78 billion (US $4.9 billion). However, only about 16% of these funds are invested in equities, with the majority allocated to fixed-income securities. In November 2024, the government-imposed restrictions on offshore investments by pension funds to manage currency risks and boost domestic capital market liquidity. While this may limit portfolio diversification in the short term, it highlights the growing importance of pension funds as stabilizing forces within the domestic economy (National Pensions Regulatory Authority of Ghana, 2024; Reuters, 2024).

This study is motivated by the need to explore the complex relationship between contributory pension funds and capital market development in Africa, a gap that remains largely underexplored in the existing literature. While extensive research has been conducted on capital market development and pension funds individually, there is a lack of studies that integrate both components, particularly within the context of developing and emerging African markets. This research aims to fill this critical gap in the literature by examining the interplay between pension fund management and capital market development, and how each can influence the other in the African context. Additionally, existing theories on financial markets and pension systems are often not tailored to the unique challenges faced by African economies, which calls for the development of new or adapted theoretical frameworks that better reflect the socio-economic realities and institutional conditions in the region.

Furthermore, there is a noticeable time frame gap in the literature regarding longitudinal studies that track the evolution of pension funds and capital markets over time in Africa. Much of the current research is cross-sectional and does not provide insights into the long-term dynamics between these two sectors. This study intends to fill this temporal gap by investigating both historical trends and future projections, offering a more comprehensive understanding of how pension funds and capital markets have evolved and how they will likely continue to influence each other. Finally, the unique nature of this study, focusing on contributory pension funds and capital market development in Africa, distinguishes it from prior research, which has typically focused on developed economies.

The basic hypothesis underlying this study are stated thus;

Ho_1: Pension fund assets has no significant effect on market capitalization of selected developing market in Africa

Ho_2: Pension fund investment has no significant influence on market capitalization of selected developing market in Africa

II. LITERATURE REVIEW

2.1 Conceptual Framework

2.1.1 Contributory Pension Funds

Contributory pension funds are retirement savings schemes in which both employees and employers make regular contributions over the course of the employee's working life. These funds are typically designed to provide a steady income to individuals during their retirement years, ensuring financial security for the aging population. In contributory systems, the amount accumulated in the fund depends on the contributions made and the returns generated from investments over time. The main characteristic of these pension funds is that they are based on a "pay-as-you-go" or "fully funded" model, where the funds contributed by current workers are invested and grow to provide future benefits for retirees (Ajadi, 2024). This model contrasts with non-contributory systems, where the government provides pensions based on taxation or other sources of revenue.

In many developing and emerging markets, especially in Africa, contributory pension funds have the potential to play a pivotal role in economic development by serving as a source of long-term capital for investment in capital markets and infrastructure. When managed effectively, these funds can contribute significantly to the overall stability of the financial system, providing both economic security for individuals and boosting investment in critical sectors. However, in many African countries, contributory pension schemes are often hindered by structural weaknesses. These include low levels of pension coverage, mismanagement of funds, and inadequate regulatory frameworks (Bayar *et al.* 2022; Adekunle, 2024). As a result, many workers in the informal sector remain excluded from pension schemes, limiting the funds' ability to reach their full potential in contributing to broader economic development.

One of the primary challenges facing contributory pension funds in African markets is the underdevelopment of the financial infrastructure and markets in which these funds are invested. Many African countries lack deep, liquid capital markets that offer a wide range of investment opportunities for pension funds. This limits the ability of pension funds to generate the returns needed to meet their long-term obligations to retirees (Morina & Grima, 2022). Additionally, there are often concerns over the governance and transparency of pension fund management, with reports of corruption, inefficiency, and poor investment choices that undermine the potential of these funds to provide reliable financial security for retirees (Dibal *et al.* 2024). These challenges highlight the need for more effective regulatory oversight, improved financial literacy, and better integration of pension funds into the broader financial system to unlock their full economic potential.

2.1.2 Pension Fund Assets

Pension fund assets refer to the accumulated value of the contributions made by employees and employers over time, along with the returns generated from investments in various financial instruments (Yashim & Yohanna, 2025). These assets are managed and invested by pension fund managers to ensure that there are sufficient funds to meet the future retirement obligations of contributors. The primary goal of pension fund assets is to provide long-term financial security for retirees. In many countries, including those in Africa, pension fund assets are often invested in a variety of instruments such as stocks, bonds, real estate, and government securities, depending on the regulatory environment and the fund's investment strategy (Ajadi, 2024). The effective management and growth of these assets are crucial for the sustainability of pension systems, as they directly impact the ability to meet future liabilities.

In Africa, the growth of pension fund assets is constrained by several factors, including underdeveloped financial markets, lack of access to diversified investment options, and insufficient regulatory frameworks. In many African economies, pension funds are often limited in their investment choices due to the narrow range of financial products available and the lack of well-established capital markets (Ehiogu, 2023; Adekunle, 2024). As a result, pension funds may struggle to generate the necessary returns to meet the long-term needs of retirees. Additionally, the lack of investor confidence, political instability, and weak governance structures in some African countries can also hinder the growth and security of pension fund assets. Strengthening the financial infrastructure and governance frameworks in these markets is essential to enhance the performance and sustainability of pension fund assets, enabling them to better contribute to both individual financial security and broader economic growth (Assefuah *et al.* 2023; Yakubu *et al.* 2023).

2.1.3 Pension Fund Investment

Pension fund investment refers to the allocation of the financial resources accumulated through pension contributions into various investment vehicles, such as stocks, bonds, real estate, and other securities. The primary objective of pension fund investment is to grow the fund's assets over time to ensure that it can meet the retirement obligations of contributors. These investments are managed by professional pension fund managers who aim to generate returns that will increase the value of the fund, ensuring long-term financial security for retirees Dibal *et al.* (2024). Pension funds, as institutional investors, have significant potential to influence the capital markets by providing substantial capital for investment in productive sectors of the economy. In many African countries, pension fund investment is often constrained by several factors, including underdeveloped financial markets, lack of investment options, and regulatory limitations. The available investment opportunities may be limited, with few long-term, low-risk instruments suitable for pension funds. Additionally, some pension systems suffer from inadequate governance, mismanagement, and lack of transparency, which undermine the growth of pension fund assets. As a result, many pension funds struggle to achieve the returns necessary to meet their long-term obligations. Moreover, the limited development of capital markets in many African countries restricts the ability of pension funds to diversify their investments, which further limits their growth potential. Addressing these challenges by expanding investment opportunities, strengthening regulatory frameworks, and improving governance in pension systems can help maximize the potential of pension fund investments to foster economic growth (Ajadi, 2024).

Increasing pension fund investment, particularly in emerging markets, has the dual benefit of enhancing the financial security of retirees while simultaneously contributing to the development of the capital markets by providing long-term capital for businesses and infrastructure development. As pension funds grow and diversify their investment portfolios, they can also help reduce market volatility and enhance liquidity, which benefits the broader economy (Morina & Grima, 2022). Therefore, promoting the efficient management and investment of pension funds is crucial for both the sustainability of pension systems and the development of robust financial markets in developing economies.

2.1.4 Capital Market Development

Capital market development refers to the process by which financial markets, where long-term securities such as stocks, bonds, and derivatives are traded, evolve and mature over time. This process is essential for facilitating the efficient allocation of capital, providing businesses with access to funding for expansion, and offering investors a platform to diversify their portfolios. A well-developed capital market enables the creation of financial instruments, enhances liquidity, and promotes transparency, thus fostering investor confidence and economic growth. Capital market development often includes the establishment of robust regulatory frameworks, improvement in market infrastructure, and fostering a competitive environment that attracts both domestic and international investors (Akkutay, 2024; Assefuah *et al.* 2023).

In developing and emerging economies, particularly in Africa, capital market development faces numerous hurdles. These include poor financial infrastructure, low levels of investor education, and weak regulatory frameworks that hinder market transparency and accountability. Additionally, political instability and a lack of financial products to meet diverse investor needs further slow down the growth of capital markets in these regions. Inadequate market liquidity and the concentration of market activity in a few large companies or sectors also limit the potential for capital markets to effectively contribute to economic development (Bayar *et al.* 2022). Overcoming these challenges requires significant reforms, including improving financial literacy, enhancing regulatory frameworks, and creating diversified investment opportunities. A developed capital market not only supports economic growth but also contributes to greater financial inclusion by providing access to a broader range of financial products and services (Adeyefa & Adeyefa, 2024).

2.1.5 Market Capitalization

Market capitalization refers to the total value of a company's outstanding shares of stock, calculated by multiplying the share price by the total number of outstanding shares. It is an important metric used to evaluate the size of a company in the stock market and serves as an indicator of the market's valuation of that company. Market capitalization is typically categorized into large-cap, mid-cap, and small-cap companies, with large-cap companies being the most established and having higher market values. For an entire economy, aggregate market capitalization is a key indicator of the health and size of its capital markets, and it provides insights into the investment opportunities available within the market (Yashim & Yohanna, 2025). In the context of developing markets, particularly in Africa, market capitalization can be a valuable measure of economic development and capital market maturity. However, many African markets face challenges in achieving high levels of market capitalization due to low investor participation, underdeveloped financial infrastructure, and a concentration of market activity in a small number of industries or companies. This limits the diversification of investment opportunities and reduces the overall liquidity in the market (Adeyefa & Adeyefa, 2024). Furthermore, political instability and poor governance in some African countries often lead to volatility in stock prices, which can deter investors from participating in the market, further suppressing market capitalization growth. Therefore, efforts to increase market capitalization in African economies require structural reforms to improve market access, promote investor confidence, and encourage greater participation in capital markets (Assefuah *et al.* 2023).

2.1.6 Gross Domestic Product (GDP)

Gross Domestic Product (GDP) is one of the most widely used indicators of a country's economic performance, representing the total value of all goods and services produced within a country's borders during a specific period, typically a year or a quarter. GDP is a comprehensive measure that provides insights into the overall economic health of a country and is often used by policymakers to inform decisions regarding fiscal policy and economic planning. There are three primary methods for calculating GDP: the production approach, the income approach, and the expenditure approach, each focusing on different aspects of economic activity (Adekunle, 2024).

GDP is often used to assess the relationship between economic growth and various factors, such as capital market development and pension fund performance. A growing GDP typically reflects an expanding economy, which, in turn, creates more opportunities for investment, including in the capital markets. As economic activity increases, businesses need more capital to expand, which can lead to greater demand for financial services and investment opportunities (Ehiogu, 2023). In many African economies, however, GDP growth often faces challenges from

factors such as political instability, poor infrastructure, and limited access to finance, which can slow down capital market development and pension fund growth. Therefore, improving GDP growth through structural reforms can enhance both capital market activity and pension fund performance, leading to a more stable and sustainable economy (Morina & Grima, 2022).

2.2 Empirical Review

Yashim and Yohanna (2025) examined the impact of pension funds (PFIs) on market liquidity in the Nigerian capital market from 2004 to 2023, using an ex-post facto research design. The analysis uses an autoregressive distributed lag (ARDL) model and multiple regression with an error correction mechanism (ECM) to examine the effects of different PFIs, including pension fund assets (PFAs), pension fund investments in shares (PFIEs) and pension fund investments. in government securities (PFIGS), on key liquidity indicators such as turnover indicators and gross domestic product growth rate (GDPGR). The findings reveal that both PFA and PFIE significantly increase market liquidity, supporting liquidity preference and portfolio theory. Conversely, PFIGS shows no significant impact on market liquidity, suggesting that government securities may not be as effective in stimulating market activity. Based on these results, the study recommends that policymakers encourage pension fund managers to diversify their portfolios by including a wider range of asset classes, especially equities, while reconsidering the heavy reliance on government securities. The aim of these recommendations is to optimize the role of pension funds in managing economic development and market stability.

Yashim and Soepding (2024) explored the impact of contributory pension funds on the development of the Nigerian capital market from 2004 to 2023, employing an ex-post facto research design. The study focuses on the entire range of contributory pension scheme elements and capital market development indicators within this period, including public sector pension contributions, private sector pension contributions, and pension fund investments. Using the Autoregressive Distributed Lag (ARDL) model and Multiple Regression with Error Correction Mechanism (ECM), the study reveals that public sector pension contribution funds have a positive and significant impact on market capitalization in Nigeria. In contrast, private sector pension contributions show a positive but insignificant effect, while pension fund investments have a negative yet significant influence. These findings underscore the substantial role of pension contributory funds in shaping the development of the Nigerian capital market. The study concludes that while public sector pension funds significantly enhance market capitalization, private sector contributions and pension investments require more nuanced approaches to maximize their potential. The study recommended that public sector funds should strengthen governance structures, ensure adequate funding, and promote transparency to strategically leverage these funds for economic growth.

Dibal *et al.* (2024) assessed the effect of pension fund investments and capital market development in Nigeria: the moderating role of inflation. This study investigates whether inflation enhances or reduces the effect of pension fund investment on capital market development in Nigeria. Monthly time series data from January 2013 to February 2020 were utilized using the ARDL model. The findings revealed that pension fund investments have a long- and short-run effect on capital market development in Nigeria. The study also established that inflation reduces the negative impact of total domestic debt securities on total market capitalization both in the long- and short-run, which is the novelty of this study. The study contributes to the Modern Portfolio Theory, thereby establishing the role of inflation in determining the effect of pension fund investment on capital market development in Nigeria. The study recommended that Federal government needs to implement monetary policies to strengthen economic stability to boost institutional investors' confidence in the local financial system.

Wanger *et al.* (2024) investigated the impact of the investment of pension funds on human capital development in Nigeria and by extension the attainment of the United Nations' SDGs. Granger Causality and Ordinary Least Squares techniques were used to analyse data on the Human Development Index (HDI), annual pension savings (PEN_S), annual pension investment (PEN_I), growth of Real GDP per worker (GDPGR), Financial Development Index (FIN_DI), consumer price index (CPI), as well as access to renewable energy (Renewable), from 2003 to 2023. Findings indicate that the investment of pension funds though diversified, has no significant impact on human capital development. It was concluded that the current investment template of pension funds does not support the attainment of the SDGs towards attaining the Agenda 2030 of the United Nations. It therefore recommended a retirement postponement besides wage increases, and most importantly the tagging of a percentage of the investment of pension funds to education and healthcare to ensure a developed human capital for a decent retirement living and the attainment of the SDGs.

Assefuah et al. (2023) investigated the effect of pension funds (PF) and institutional quality (IQ) on capital market development in 48 African countries. Using a system GMM regression, the study found that the interaction between PF and IQ significantly negatively affects capital market development. The results of the study suggest that PF in Africa contributes positively to overall financial development, and pension fund managers (PFM) seem to be

focusing more on other financial market assets than capital markets. It was concluded that IQ may act as a risk management tool. It is therefore recommended that policies on strong IQ should be put in place to enable fund managers to meet their obligations towards the principal (contributor) during retirement. The study recommends that policymakers should integrate the capital markets by ensuring the cross-listing of some of the national exchanges and cross-border investment and also encourage investments in alternative asset classes.

Yakubu et al. (2023) examined the impact of pension funds on capital market development in Nigeria from 1995-2022 using ex-post facto research design. Data were collected from the Central Bank of Nigeria statistical bulletin and annual report of the pension fund commission. Data were analyzed using descriptive statistics, unit root test and auto regressive lag model (ARDL). The findings show that there is a long run relationship between market capitalization as a ratio of gross domestic product and selected pension fund variables in Nigeria. Also, there is a no long run relationship between all share index as a ratio of gross domestic product and selected pension fund variables in Nigeria. This implies that there is a short run relationship between all share index as a ratio of gross domestic product and selected pension fund variables in Nigeria. Also, pension fund has positive and statistically insignificant implying that the present value of pension contributory fund does not impact positively on its immediate past state. Inflation has positive and significant impact on market capitalization as a ratio of gross domestic product in Nigeria. Also, inflation has negative and insignificant impact on all share index as a ratio of gross domestic product in Nigeria. Pension investment at precious value is positive and as a statistically significant impact on all share index as a ratio of gross domestic product in Nigeria implying that pension fund investment could be used as purchase of share to increase the total share index in the Nigeria for future benefit for the pensioner whose contribution yields greater impact or return for stable future. The study recommended that pension fund administrators in Nigeria should understand that the rate of inflation is dynamic in Nigeria and the value of money is being lost as money is not worth its values in the next five years.

Morina and Grima (2022) analyzed the impact of pension asset investments on the economic growth of selected non-OECD countries, taking into account the controlling effect of gross fixed capital formation, domestic credit to the private sector, inflation, public debt and population. To conduct the econometric analysis in this study, the authors relied on secondary data published in the annual reports of the OECD, the World Bank and the IMF. Based on the econometric results of this study, the authors conclude that the investment of pension fund assets has positively impacted the economic growth of selected non-OECD countries (2002–2018). This study is of scientific importance because it provides detailed empirical evidence regarding the investment of pension funds in international financial markets and the effects of these investments on the economic growth of non-OECD countries. Moreover, the authors of this study through this scientific paper provide new scientific evidence to governments and policymakers in these countries on how to design appropriate strategic investment policies so that pension funds invest their pension assets at a safe rate of return from investments to ensure economic growth and efficiency in the capital markets. Given that most non-OECD countries are emerging and transition economies, the importance of this study lies in the fact that the authors, through empirical findings, highlight the importance of pension fund investments in global financial markets and the effects of these investments on the economic growth of these countries. The study recommended that pension funds in non-OECD countries should develop a strategy to regulate the asset management of pension funds and ensure that pension asset investments are for-profit, liquidity and diversification of investment risk in pension funds.

Bayar *et al.* (2022) studied the effect of pension funds and insurance companies on stock market development in 15 emerging market economies over the 2004–2019 period through panel cointegration and causality tests. The causality analysis revealed that stock market development had a significant impact on pension funds and the insurance sector in the short term. However, the cointegration analysis revealed that pension funds had a positive effect on stock market development in Brazil, Chile, Hungary, Mexico, Peru, and South Africa and the insurance sector had a positive impact on stock market development in Chile, Indonesia, Korea Republic, Philippines, and South Africa in the long term. The study findings confirm that financial market development is an important factor that affects the activity of pension funds and insurance companies, but the study also find arguments for the fact that, in some countries, pension funds and insurance companies contribute to the stock market development in the long term. The study recommends that policymakers can enhance stock market development, which in turn can provide more adequate financing for the economy. Additionally, they can support the effective functioning of pension funds and insurance companies by focusing on the relationship between institutional investors and the capital market. This can be achieved by utilizing the right tools and strategies to stimulate equity investments from pension funds and insurers.

Moleko and Ikhide (2017) provided empirical evidence to establish the effect of pension fund assets on overall capital market development. It uses proxies for both stock and bond markets and investigates using the

autoregressive distributive lag (ARDL) and the vector error correction model (VECM). The results show a positive relationship between pension savings and stock market development. There is no long run relationship established between pension savings and the bond market development. Using the VECM framework the study find only unidirectional relationship between pension fund savings and stock market development. Policies to improve investment in the bond market could enhance its development as evidence shows policies in stock market are conducive for its development. The study recommended that policymakers should focus on creating strategies that encourage pension fund investments in the bond market to foster its development, similar to the policies that have successfully enhanced stock market growth. While the study effectively demonstrates the positive impact of pension savings on stock market development, it fails to explore potential factors influencing the lack of long-term relationships between pension savings and bond market development, which could provide a more comprehensive understanding of the dynamics at play.

2.3 Theoretical Framework

2.3.1 Life-Cycle Hypothesis (LCH)

The Life-Cycle Hypothesis (LCH) was developed by Franco Modigliani and Richard Brumberg in 1952. The theory posits that individuals plan their consumption and savings behavior over the course of their lifetime to smooth consumption across different phases of life. The core idea is that people aim to maintain a stable standard of living, saving during their working years to fund consumption during retirement. According to the LCH, individuals save primarily for the purpose of retirement, anticipating that their income will decline once they stop working. This theory assumes that people are rational and forward-looking, making decisions about saving and spending based on their expected lifetime income, which ensures that their consumption remains relatively smooth throughout life (Modigliani & Brumberg, 1952). The Life-Cycle Hypothesis has significant implications for understanding the role of pension funds in securing an individual's financial future. In contributory pension schemes, where individuals and employers contribute to retirement savings over time, the LCH highlights the importance of consistent and long-term savings. Pension systems are seen as a crucial tool in helping individuals smooth their consumption during retirement by accumulating savings and investing them for future returns. This is particularly important in developing and emerging economies where state-funded pensions may be insufficient. By contributing to pension schemes, individuals ensure their consumption in retirement is supported, while pension funds, as an institutional mechanism, contribute to the broader financial system by channeling long-term savings into productive investments (Adekunle, 2024).

2.3.2 Financial Development and Economic Growth Theory

The Financial Development and Economic Growth Theory is a broad theoretical framework that underscores the crucial role of financial markets and institutions in fostering economic growth. One of the main proponents of this theory is Raghuram Rajan, whose work in the 1990s explored the links between financial development and economic performance. The theory suggests that a well-developed financial system comprising efficient capital markets, strong financial institutions, and deep financial products facilitates the efficient allocation of resources, supports entrepreneurship, and enables long-term investment. Financial systems that are well-regulated and diversified allow businesses to access necessary capital for expansion, leading to increased productivity, innovation, and, ultimately, economic growth (Rajan & Zingales, 1998). It also argues that financial development is a key driver of economic growth, as it provides the necessary infrastructure for economic actors to engage in productive activities.

The theory also emphasizes the role of institutional investors, such as pension funds, in providing long-term capital that drives capital market development. In the case of pension funds, their contributions to the capital markets can enhance liquidity, stability, and the depth of financial markets. By investing in a wide range of assets, pension funds can reduce market volatility and provide businesses with the capital needed for long-term investments, thus supporting both the capital markets and the broader economy. Financial markets that are supported by institutional investors can also offer a wider variety of financial products, which contributes to the diversity of the market and its attractiveness to international investors. This, in turn, accelerates economic growth and stability by ensuring that resources are allocated efficiently to their most productive uses (Adeyefa & Adeyefa, 2024).

What makes the Financial Development and Economic Growth Theory stand out as an underpinning theory for this study is its comprehensive approach to understanding the interaction between financial systems and economic growth, particularly in developing and emerging economies. In the context of this study, this theory explains how pension funds, as institutional investors, play a key role in the development of capital markets by providing the long-term capital needed to support economic growth. Additionally, it addresses the dual relationship between pension funds and capital markets, where the performance of capital markets impacts the returns on pension fund assets, and the growth of pension funds can drive further capital market development by increasing market liquidity and

investor confidence. This theory is particularly relevant to the African context, where financial markets are often underdeveloped, and pension systems are still evolving. It provides a framework for understanding how the growth of both pension funds and capital markets can create a virtuous cycle, enhancing the economic stability and growth of emerging economies in Africa. This theory aligns perfectly with the aim of this research to explore the ways in which contributory pension funds can contribute to the development of capital markets and how the capital markets can, in turn, benefit from the expansion of pension fund assets.

III. METHODOLOGY

To estimate the models and examine the statistical significance of the variables related to contributory pension funds, capital market development, and economic growth in developing and emerging markets in Africa, particularly in Nigeria, South Africa, Egypt, and Ghana, this study employs an ex-post facto research design using panel data spanning from 2003 to 2023. The selection of Nigeria, South Africa, Egypt, and Ghana as the study's sample countries is based on their relatively large capital markets, growing pension fund sectors, stable economic and political environments, and the availability of reliable data, making them representative of developing and emerging markets in Africa. The data for the study was sourced from reputable databases, including STATISTA and other relevant financial reports. The key variables considered in this analysis include pension fund assets, pension investment, market capitalization, and GDP growth. These variables are used to assess the interrelationship between pension fund development and capital market growth across the four selected countries in Africa, with a focus on the impact of pension funds on market liquidity and overall economic performance. The market capitalization is used as the dependent variable, representing the level of capital market development, while pension fund assets and pension investment serve as the independent variables, reflecting the size and investment behavior of pension funds. GDP is included as a control variable to account for the overall economic activity and growth in these countries. This study employs a Panel Autoregressive Distributed Lag (P-ARDL) model, implemented using E-Views 12 software. The P-ARDL approach is preferred due to its ability to provide consistent and reliable estimates for both long-run and short-run relationships among variables with different integration orders (i.e., I(0) and I(1) series) in panel data. This method is particularly suitable for this study as it captures the dynamic impact of contributory pension funds and macroeconomic variables such as GDP growth on capital market development over time, while accounting for both cross-sectional (country-specific) and time-series variations. To ensure robustness, unit root tests were conducted to check the stationarity properties of the data, and lag length selection tests were performed to identify the appropriate lag structure for the model. Additionally, the study adapts and modifies the model developed by Yashim and Yohanna (2025) to reflect the relationship between pension fund contributions, pension investment, and capital market development in a panel data framework. The mathematical form of the adapted model is as follows:

$LTOR = L\beta10 + \beta11LPFA + \beta12LPFIE + \beta13LPFIGS + \beta14LGDPGR + \varepsilon1$ -------- (i)

Model Deployed

$MCAP_{it} = \beta0 + \beta_1 PFA_{it} + \beta_2 PFI_{it} + \beta_3 GDP_{it} + \varepsilon_{it}$……………………………………….……………....(ii)

Where:

MCAP = Market capitalization
PFA = Pension Fund Assets
PFI = Pension Fund Investment
GDP = Gross Domestic Product
t = Time (2003, 2004……………………………………………2023)
μt = Stochastic Error Term.

Table 1: Apriori Expectation

Variable	**Expected Relationship with MCAP (Market Capitalization)**	**Rationale/Explanation**
PFA (Pension Fund Assets)	Positive (+)	An increase in pension fund assets is expected to boost market capitalization, as pension funds contribute to market liquidity and long-term investments.
PFI (Pension Fund Investment)	Positive (+)	A higher level of pension fund investment is likely to lead to more substantial capital inflows into the market, enhancing market capitalization

Variable	Expected Relationship with MCAP (Market Capitalization)	Rationale/Explanation
GDP (Gross Domestic Product)	Positive (+)	As GDP grows, it generally reflects a stronger economy, which is expected to increase market activity and thus contribute to higher market capitalization.

Source: Researcher Conceptualization (2025)

Table 2: Measurement of Variables

Variable	Type	Measurement	Source
Market Capitalization (MCAP)	Dependent	Measures the total value of all listed equities in the capital market.	Yashim & Yohanna (2025)
Pension Fund Assets (PFA)	Independent	The total value of assets held by pension funds, representing their investments in financial markets.	Yashim & Yohanna (2025)
Pension Fund Investment (PFI)	Independent	The level of investments made by pension funds into various financial assets, indicating the degree of market engagement.	Yashim & Soepding (2024)
Gross Domestic Product (GDP)	Control	The total value of all goods and services produced within a country, representing economic output.	Yabubu *et al.* (2023)

Source: Researcher Conceptualization (2025)

IV. RESULT AND DISCUSSION

4.1.1 Descriptive Statistics

In order to have glimpse of the data used in the study, a first pass at the data in form of descriptive statistics was carried out. This gives us a good idea of the patterns in the data used for the analysis. The summary statistics is presented in Table 3.

Table 3: Descriptive Analysis Result

	MCAP	PFA	PFI	GDP
Mean	61.52210	171.4125	22.90522	510.5486
Median	23.28000	12.53000	7.085085	276.5970
Maximum	287.9600	965.8000	105.8152	2708.300
Minimum	1.120000	4.705522	0.500000	5.010000
Std. Dev.	83.02963	296.5747	31.67161	670.9226
Skewness	1.459719	1.549564	1.339220	1.931787
Kurtosis	3.691754	3.848536	3.066485	5.629426
Jarque-Bera	31.50573	36.13612	25.12463	76.44381
Probability	0.000000	0.000000	0.000004	0.000000
Sum	5167.856	14398.65	1924.039	42886.09
Sum Sq. Dev.	572195.3	7300392.	83256.54	37361377
Observations	84	84	84	84

Source: E-View 12 Output (2025)

The descriptive statistics provided offer insights into the key economic variables related to capital market development, pension fund assets, pension fund investments, and GDP for the four selected African countries. The mean values indicate the central tendency of these variables, with Market Capitalization (MCAP) averaging approximately 61.52 billion USD, Pension Fund Assets (PFA) averaging 171.41 billion USD, and Pension Fund Investment (PFI) averaging 22.91 billion USD. Gross Domestic Product (GDP) for these countries averages 510.55 billion USD. The maximum and minimum values highlight significant variation across countries, with market capitalization reaching as high as 287.96 billion USD and as low as 1.12 billion USD, suggesting large disparities in capital market development. Similarly, pension fund assets and investments exhibit substantial variability, with maximum values of 965.8 billion USD for PFA and 105.82 billion USD for PFI, alongside minimum values of 4.71 billion USD for PFA and 0.5 billion USD for PFI.

The statistical dispersion of the data is further reflected in the standard deviations, which show that PFA has the highest variation (296.57 billion USD) compared to MCAP (83.03 billion USD), PFI (31.67 billion USD), and GDP (670.92 billion USD). This suggests that pension fund assets and investments show greater variability across the countries involved. The skewness values are all positive, indicating that the distributions of each variable are right-skewed, with a long tail on the higher end of the distribution. This is particularly noticeable in GDP (1.93) and PFA (1.55), suggesting a concentration of smaller values and few larger values in these distributions. The kurtosis values, which measure the "tailedness" of the distributions, suggest that the variables are generally leptokurtic (i.e., have fat tails), with GDP exhibiting the highest kurtosis (5.63), indicating a more extreme distribution with some very high GDP values. Finally, the Jarque-Bera test confirms that all variables deviate significantly from normality, with very low p-values, suggesting that the data for these variables does not follow a normal distribution.

4.1.2 Correlation Analysis

According to Gujarati (2004), a correlation coefficient between two independent variables of 0.80 is considered excessive, and thus certain measures are required to correct that anomaly in the data.

Table 4: Correlation Analysis Result

Covariance Analysis: Ordinary
Date: 04/16/25 Time: 13:19
Sample: 2003 2023
Included observations: 84

Correlation Probability	MCAP	PFA	PFI	GDP
MCAP	1.000000 -----			
PFA	0.590858 0.0000	1.000000 -----		
PFI	0.665811 0.0000	0.668471 0.0000	1.000000 -----	
GDP	-0.060498 0.5846	-0.181403 0.0987	-0.174118 0.1132	1.000000 -----

Source: E-View 12 Output (2025)

The correlation matrix provides insights into the relationships between the four key variables: Market Capitalization (MCAP), Pension Fund Assets (PFA), Pension Fund Investment (PFI), and Gross Domestic Product (GDP). The correlation between MCAP and PFA is 0.5909, indicating a moderate positive relationship. This suggests that as pension fund assets increase, market capitalization tends to grow as well, reflecting the role of pension funds in enhancing market liquidity and supporting long-term investments in the capital markets. The correlation between MCAP and PFI is slightly stronger at 0.6658, signifying a positive relationship between pension fund investments and market capitalization. This further supports the idea that as pension funds invest more in financial markets, capital markets tend to grow, likely due to increased market activity and liquidity. Both of these correlations are statistically significant with very low p-values (0.0000), indicating strong evidence of these relationships.

On the other hand, the correlations involving GDP show weaker and statistically insignificant relationships with the other variables. The correlation between GDP and MCAP is -0.0605, which is very close to zero, indicating that changes in GDP do not have a significant direct impact on market capitalization within the time period considered. Similarly, the correlations between GDP and both PFA (-0.1814) and PFI (-0.1741) are also negative, albeit weak, and statistically insignificant (p-values of 0.0987 and 0.1132, respectively). This suggests that, in this sample, GDP growth does not have a strong or direct impact on either pension fund assets or pension fund investment. These findings highlight the need for a more nuanced understanding of how macroeconomic factors, such as GDP, interact with pension fund variables in driving market development.

Multicollinearity Test (VIF)

Conducting multicollinearity tests is essential to determine if there is a strong inter-correlation among independent variables that could lead to erroneous results.

***Decision rule**: uncentered VIF less than 10 indicates the absence of multi-collinearity, while VIF uncentered over 10 is a sign of multi-collinearity.

Table 5: Multicollinearity Test (VIF)

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.420432	7.746632	NA
PFA	62.46740	8.42380	1.578334
PFI	123.33672	8.55491	1.839516
GDP	225.36201	9.76959	1.925621

Source: E-View 12 Output (2025)

As noted above, the law of multicollinearity test rule uses a variance inflation factor that VIF centered below indicates absence of multi-collinearity, while VIF uncentered over 10 indicates the presence of multi-collinearity. Table 5 above shows the absence of multicollinearity between independent variables, as all independent variables (PFA, PFI and GDP) have less than 10 VIF centered.

Heteroskedasticity

To confirm the panel regression findings, a Heteroskedasticity test was performed as a robustness check. Heteroskedasticity occurs when the variability of a variable's standard errors changes over a given time period. Heteroskedasticity disrupts the assumptions for linear regression modeling, affecting the validity of analysis results. While it doesn't introduce bias in coefficient estimates, it does decrease their precision, increasing the probability that estimates are further from the actual population value. The hypothesis is presented below;

Hypothesis

Ho: There is no heteroskedasticity problem in the model (Residuals are homoskedastic)

H_1: There is heteroskedasticity problem in the model

Decision Rule: If the Prob. value is greater than 0.05 (5% level of significant) reject null hypothesis if otherwise, do not reject null.

Table 6: Heteroskedasticity Test

Panel Cross-section Heteroskedasticity LR Test
Null hypothesis: Residuals are homoskedastic
Equation: UNTITLED
Specification: MCAP C PFA PFI GDP

	Value	df	Probability
Likelihood ratio	102.6393	4	0.0826

LR test summary:

	Value	df
Restricted LogL	-244.7299	80
Unrestricted LogL	-193.4103	80

Source: E-View 12 Output (2025)

The results of the panel cross-section Heteroskedasticity regression test was displayed in Table 6. The decision criteria for the panel cross-section test for Heteroskedasticity is as follows:

The test's null hypothesis asserts the absence of Heteroskedasticity, while the alternate hypothesis claims the presence of Heteroskedasticity. If the P value exceeds 5% level of significance, the null hypothesis should not be rejected. Based on the findings in table 4.8, with a ratio value of 102.6393 and a probability value of 0.0826 exceeding 5%, the research concludes that the null hypothesis should be rejected in favour of the alternative hypothesis indicating the presence of conditional Heteroskedasticity issue. Due to the diagnostic probability of 0.0826 the null hypothesis is accepted, showing no conditional heteroskedasticity, which means residuals are homoskedastic and samples accurately represent the population.

Hausman test

The Hausman test is a test for model specification in panel data analysis and this test is employed to choose between fixed effects model and the random effects model. Due to the panel nature of the data set utilized in this study, both fixed effect and random effect regressions were run (as shown in appendix). Thus, the decision rule for the Hausman specification test is stated thus; at 5% Level of significance:

H_0: Random effect is more appropriate for the Panel Regression analysis

H_1: Fixed effect is more appropriate for the Panel Regression analysis

As encapsulated above, if the p-value is greater than 0.05 the decision rule is to reject the null hypothesis which states that fixed effect is more appropriate for the Panel Regression analysis (meaning that the preferred model is random effects). Similarly, if the p-value is less than 0.05 the decision rule is to reject the null hypothesis which states that fixed effect is more appropriate for the Panel Regression analysis (meaning that the random effect model is to be rejected).

Table 7: Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	13.030093	3	0.0046

The Hausman test result presented in Table 7 shows a Chi-Square statistic of 13.030093 with 3 degrees of freedom and a p-value of 0.0046. This low p-value indicates that the null hypothesis, which posits that the Random Effects (RE) model is more appropriate than the Fixed Effects (FE) model, was rejected. Therefore, the fixed effects model is preferred in this context, as there is significant evidence that the individual effects are not correlated with the regressors, suggesting that the fixed effect model would provide more efficient and consistent estimates. Given that the fixed effects model is preferred, there is still a need to conduct the fixed effect likelihood ratio test to determine whether the fixed Effects model is indeed necessary. This step is crucial to ensure that the correct model is chosen for the analysis.

Fixed effects Likelihood tests

Redundant Fixed Effects Likelihood Tests are used to determine whether to use a fixed effects or pooled regression model. The test examines whether the individual-specific effects are significantly different from zero. The hypothesis is present below;

Null Hypothesis (H0): The individual-specific effects are not significantly different from zero. This implies that the pooled regression model is appropriate as the individual-specific effects can be ignored.

Alternative Hypothesis (H1): The individual-specific effects are significantly different from zero. This implies that the fixed effects model should be used to account for the individual-specific variations.

Table 8: Redundant Fixed Effects Likelihood Tests (Test between Pooled and Fixed)

Redundant Fixed Effects Tests
Equation: Untitled
Test period fixed effects

Effects Test	Statistic	d.f.	Prob.
Period F	5.661237	(20,60)	0.0470
Period Chi-square	16.731863	20	0.0003

Source: E-View 12 Output (2025)

The redundant fixed effects tests indicate that the cross-section fixed effects are statistically significant, providing strong evidence to reject the null hypothesis of no individual-specific effects. The F-statistic of 5.661237 and Chi-square statistic of 16.731863, both with 20,60 and 20 degrees of freedom, are highly significant (Prob. = 0.0470),

confirming that the individual-specific effects are significantly different from zero. This suggests that the fixed effects model is more appropriate choice, as it accounts for the significant variation across individual cross-sections, and using a pooled regression model would lead to inconsistent estimates.

Langranger Multiplier Test (Test between Random and Pooled)

The Langrange Multiplier (LM) test, also known as the Breusch-Pagan test in the context of random effects models, is a statistical test used to determine whether a random effects model is more appropriate than a pooled ordinary least squares (OLS) regression model for panel data analysis. The test examines the presence of random effects by assessing if the variance of the random error components is significantly different from zero, which would indicate that the random effects model should be preferred over the pooled OLS model due to unobserved heterogeneity across entities.

Table 9: Breusch-Pagan Langranger Multiplier Test

Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in residuals
Equation: Untitled
Periods included: 21
Cross-sections included: 4
Total panel observations: 84
Note: non-zero cross-section means detected in data
Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	68.00859	6	0.0000
Pesaran scaled LM	17.90034		0.0000
Pesaran CD	3.705802		0.0002

Source: E-View 12 Output (2025)

The Breusch-Pagan Lagrange Multiplier (LM) test presented in Table 9 assesses whether a Random Effects model is more appropriate than Pooled OLS by testing for cross-sectional dependence in the residuals. With a test statistic of 68.00859 and a p-value of 0.0000 (below the 0.05 significance threshold), the null hypothesis of no cross-sectional dependence is rejected. This result suggests that unobserved effects vary significantly across entities, making the Random Effects model more suitable than Pooled OLS for this panel data. Accounting for these random effects allows the model to capture entity-specific variations, yielding more accurate and efficient estimates for the analysis.

Table 10: Panel Regression Result (Fixed Effect)

Dependent Variable: MCAP
Method: Panel Least Squares
Date: 04/16/25 Time: 13:42
Sample: 2003 2023
Periods included: 21
Cross-sections included: 4
Total panel (balanced) observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.051554	0.853257	4.748339	0.0000
PFA	0.243291	0.008311	29.27307	0.0000
PFI	0.374374	0.076385	4.901121	0.0000
GDP	0.014088	0.000877	16.05529	0.0000
	Effects Specification			
Period fixed (dummy variables)				
R-squared	0.997610	Mean dependent var		61.52210
Adjusted R-squared	0.976694	S.D. dependent var		83.02963
S.E. of regression	4.773858	Akaike info criterion		6.199143
Sum squared resid	1367.383	Schwarz criterion		6.893662
Log likelihood	-236.3640	Hannan-Quinn criter.		6.478334
F-statistic	1089.026	Durbin-Watson stat		1.857744
Prob(F-statistic)	0.000000			

Source: E-View 12 Output (2025)

The results from the Panel Least Squares (PLS) regression indicate a strong relationship between the independent variables—Pension Fund Assets (PFA), Pension Fund Investment (PFI), and Gross Domestic Product (GDP)—and the dependent variable, Market Capitalization (MCAP). The coefficient for PFA is 0.2433, which is statistically significant with a t-statistic of 29.273 and a p-value of 0.0000. This suggests that for every billion-dollar increase in pension fund assets, market capitalization increases by approximately 0.243 billion dollars, holding other variables constant. Similarly, the coefficient for PFI is 0.3744, indicating that a 1 billion-dollar increase in pension fund investment leads to a 0.374 billion-dollar increase in market capitalization, with a significant t-statistic of 4.901 and a p-value of 0.0000. The GDP coefficient is 0.0141, also statistically significant with a t-statistic of 16.055 and a p-value of 0.0000, suggesting a positive but relatively small impact of GDP on market capitalization, which increases by 0.0141 billion dollars for each billion-dollar increase in GDP.

The R-squared value of 0.9976 indicates that the model explains over 99% of the variation in market capitalization, suggesting a very strong fit of the model to the data. The Adjusted R-squared of 0.9767 confirms that the model's explanatory power remains robust even after accounting for the number of variables in the model. The F-statistic of 1089.026, with a probability of 0.0000, shows that the overall regression model is highly statistically significant. Furthermore, the Durbin-Watson statistic of 1.8577 suggests no serious issues with autocorrelation in the residuals. The period fixed effects model specification indicates that the analysis controls for time-specific variations across the periods, adding robustness to the results. Overall, the analysis indicates that pension fund assets, pension fund investments, and GDP are significant drivers of market capitalization in the selected countries, with all variables showing strong and significant positive effects on the dependent variable.

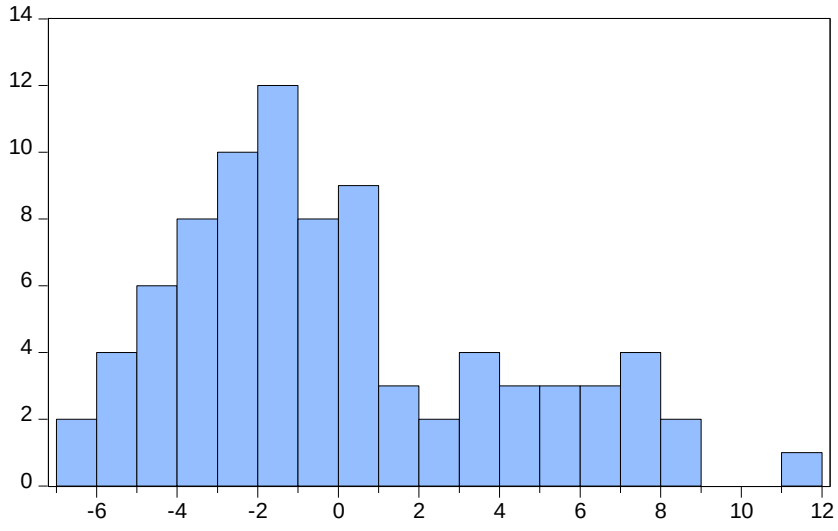
Normality Test

A normality test is a statistical procedure used to determine if a dataset follows a normal distribution, which is a key assumption in many statistical analyses. Testing for normality helps ensure the validity of parametric tests that rely on this assumption, such as t-tests and ANOVAs.

***Decision Rule: At 5% level of Significance**

H_0: There is normal distribution

H_1: There is no normal distribution



Series: Standardized Residuals	
Sample 2003 2023	
Observations 84	
Mean	-4.10e-16
Median	-0.983006
Maximum	11.46300
Minimum	-6.937238
Std. Dev.	4.058879
Skewness	0.681142
Kurtosis	2.731609
Jarque-Bera	6.747471
Probability	0.034261

=

Source: E-View 12 Output (2025)

The histogram of the standardized residuals indicates that the residuals are relatively well-behaved, with a distribution that is fairly symmetric around zero. The mean of the residuals is very close to zero (4.10e-16), suggesting no significant bias in the model's predictions. The skewness value of 0.68 indicates a slight positive skew, which is not extreme and suggests that the residuals are not heavily biased in one direction. The kurtosis value of 2.73 is close to 3, which suggests that the residuals are close to a normal distribution, though slightly platykurtic (less peaked). The Jarque-Bera statistic of 6.74, with a probability of 0.03, indicates that the residuals do not perfectly follow a normal distribution but the deviation is not alarming and is within acceptable limits for this type of analysis.

V. Discussion of Findings

This study examines the relationship between contributory pension funds and capital market development in developing and emerging markets in Africa, with a specific focus on Nigeria, South Africa, Egypt, and Ghana. The results of this study demonstrate the significant positive impact of Pension Fund Assets (PFA) and Pension Fund Investments (PFI) on Market Capitalization (MCAP). This finding aligns with previous research, particularly Yashim and Yohanna (2025), which showed that pension fund assets contribute to market liquidity and overall market growth in the Nigerian capital market. Similarly, Moleko and Ikhide (2017) observed a positive relationship between pension savings and stock market development. The study confirms that pension funds, when invested in diversified assets such as equities, provide critical long-term capital, thereby fostering the development of capital markets by improving liquidity and increasing market capitalization. The study's findings also support the view that PFI plays a crucial role in capital market development. The positive and significant relationship between PFI and MCAP is consistent with Yashim and Yohanna (2025), who highlighted the importance of diversified pension fund investments, particularly in equities, for enhancing market liquidity. This is further corroborated by Bayar et al. (2022), who argued that institutional investors like pension funds contribute to long-term market development by injecting substantial capital, thus boosting market liquidity and stability. The results emphasize that pension funds should focus on diversifying their portfolios and increasing their investments in growth-oriented assets to maximize their impact on market capitalization.

However, some studies contradict these findings. For instance, Yashim and Soepding (2024) found that while public sector pension contributions positively influenced market capitalization, private sector contributions had a negative yet significant impact. Similarly, Dibal et al. (2024) reported that inflation reduces the effectiveness of pension fund investments on capital market development, showing that the relationship between pension fund investments and market growth is more nuanced. These conflicting results suggest that factors such as the type of pension fund, economic conditions (e.g., inflation), and investment strategies could influence the degree to which pension funds impact capital markets. In this study, the positive effects observed could be attributed to the broader diversification of pension funds into more dynamic assets, such as equities, which may not be the case in all contexts. While the study acknowledges these differences in the literature, the findings are justified by the specific

context of the African economies examined. PFA and PFI have a clearly positive effect on market capitalization, especially when pension funds diversify their portfolios into assets like equities, which are more likely to drive market growth. The negative or insignificant findings in some studies may arise from factors such as insufficient pension fund diversification, reliance on government securities, or macroeconomic challenges like inflation.

VI. Conclusion and Recommendations

This study has examined the relationship between contributory pension funds and capital market development in developing and emerging markets in Africa, specifically focusing on Nigeria, South Africa, Egypt, and Ghana. The study conclusively demonstrates that contributory pension funds significantly influence capital market development in African economies, primarily by increasing market capitalization through diversified and strategic investments. The findings underscore the vital role that well-managed pension funds can play in fostering financial stability, attracting investment, and supporting economic growth across the continent. To optimize this potential, it is essential for relevant agencies to facilitate environments that promote pension fund diversification into higher-yield assets like equities and infrastructure.

Based on these insights, two major policy recommendations are:

i. **Financial Regulatory Agencies (e.g., Securities and Exchange Commissions, Central Banks):** Strengthen governance, transparency standards, and oversight mechanisms in pension fund management. Implement stringent regulatory frameworks that enforce accountability, reduce mismanagement risks, and promote best practices, thereby encouraging pension funds to adopt diversified, growth-oriented investment strategies.

ii. **National Pensions Regulatory Authorities and Policy Makers (e.g., African Union, National Pension Commissions):** Develop and implement incentives such as tax breaks, regulatory support, or preferential treatment for pension funds that allocate a substantial share of their assets to equities, infrastructure, and other capital market investments. These measures will motivate pension funds to diversify, deepen capital markets, and facilitate sustainable economic development across African countries.

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