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THE GROWTH EFFICIENCY OF CONTRIBUTORY PENSION SCHEME AND ECONOMIC PERFORMANCE: EVIDENCE FROM NIGERIAN INSURANCE INDUSTRY

Najimu Ayinde NAFIU[1*], Taiwo Abel ADISA[2], Funke Idowu OLAIFA[3], Amos Ayodeji AKINTAYO[4]

[1] Department of Actuarial Science, Faculty of Management Sciences, Federal University Dutse, Jigawa State, Nigeria.

[2, 4] Department of Insurance, School of Management Studies, Federal Polytechnic Ilaro, Ogun State, Nigeria.

[3] Department of Actuarial Science and Insurance, Faculty of Management Sciences, University of Lagos, Akoka-Yaba, Lagos State, Nigeria.

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***Corresponding author:** Najimu Ayinde NAFIU

Department of Actuarial Science, Faculty of Management Sciences, Federal University Dutse, Jigawa State, Nigeria.

Abstract

This study examines the growth efficiency of contributory pension funds on Nigerian economic performance of insurance industry from 2007 to 2021, utilising an ex-post facto research design and multiple linear regression analysis. The findings reveal a weak yet direct relationship between growth efficiency of contributory pension funds and Gross Domestic Product (GDP of insurance industry), suggesting a positive but relatively minimal influence on economic growth. The growth of both public and private pension fund assets contributes to this impact. The study recommends that pension fund administrators and custodians prudently manage and invest pension fund assets in line with regulatory guidelines, focusing on profitable securities that can positively affect the insurance industry. By optimizing investment strategies, pension funds can enhance their contribution to Nigeria's economic growth and sustainability.

Keywords: Public Pension, Private Pension, Economic Performance, Insurance, Insurance Industry

JEL Classification Codes: H55, J32, L25, G52, G22

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1. Introduction

The benefits of statutory pension scheme in Nigeria have brought different initiatives for the eligibility of pensioner to be easily saved for future eventualities as their inactive period (Ayuba, Adeleke, & Nafiu, 2023). This enhances the retirees to benefit for long-term savings process in order to stimulate the security market growth ((Madukwe, Anyanwaokora, & Okere, 2023). The management effectiveness of contributory pension scheme has embraced by the pension fund administrators (PFAs) and pension funds custodians (PFCs) in order to be easily assessable for retirees as a programmed withdrawal or insurance annuity funding source for monetary funds (World Bank, 1994). Statutorily, the amendment of Pension Reform Act (PRA) 2004 to PRA 2014 is often stipulated the basic monthly remuneration to be paid increased to 8% and 10% by employees and employed respectively (National Pension Commission [PenCom], 2014).

Meanwhile, the structural and functional adoption of defined benefits in 1979 has led to various challenges especially the administrative management (Ayuba *et al*., 2023), where lack of adequacy from the retirees, government personnel, mismanagement of PFAs and PFCs have set detrimental issues to systemic pension reform (Haruna, Makama, & Danies, 2021). Although, life expectancy and government spending increment, and mismanagement of pension administrators and custodians have brought global issues in both private and public pension management system (Oloja, 2019). Nevertheless, the global support for contributory pension system through operational activities, advisory and analytical services have now led to equitable effectiveness and efficiency to pension system (Andrews *et al.*, 2006). Although, the allocation of national annual budgetary provision was used to allocate and implement financially the retirees' gratuity under defined benefit programme. In contrary, contributory pension funds was statutorily designed to be financed by employees and employers as a statutory scheme from PRA 2014 (Akinwale & Abiola, 2007), as well as restructuring the administrative and managerial effectiveness and efficiency of previous provisions (Edogbanya, 2013).

Generally, the contributory pension plans are not only alarming presently between the privately and publicly commercial organisations (Alles, 2015) but also the traditional settings (Dahir-Umar, 2022) in order to enhance strategically the funding processes for the retirees (Oloja, 2019). In addition, the financial participants can have access to the pool of risks beyond the financial period planned for conveniently accessibility on a lengthier for financial instruments (Edogbanya, 2013) through capitalisation of financial market and saving in self-liquidity profitable investment (Alles, 2016; Edogbanya, 2013). Meanwhile, the growth and development of nation's economy through the insurance multiplier effect is to generate adequate and sufficient premiums and investment on national income and investment, and living standards (Yusuf and Nafiu, 2023). However, the study focus on the growth efficiency of contributory pension scheme and economic performance of Nigerian insurance industry. Therefore, the main variables of the study that are representing the Contributory Pension funds are the Public Sector Pension Contribution Fund and the Private Sector Pension Contribution Fund, and the Economic performance of insurance industry is the GDP of insurance sector. Where the specific objectives are stated below:

i. To evaluate the growth of public fund assets on economic performance of insurance industry in Nigeria.
ii. To analyse the growth of private fund assets on economic performance of insurance industry in Nigeria.
iii. To assess the growth of total fund assets on economic performance of insurance industry in Nigeria.

2. Literature Review

The pension fund risks are viewed from the economic point of view. Where the methodological procedures and theories adopted are objectively and empirically discussed to look at the relationship between growth efficiency and economic performance in insurance industry. Moreover, decision-making theory is the severity within the horizontal time. That is, the procedural step from human cognitive is an action or opinion course for various set of choices. In finance, decision-making in investment is the main modeling from the rational reasoning procedure, which defines the investors' willingness for inherent risk in investment so as to react on a particular return through the formalized model of Markowitz mean-variance in 1959, Sharp's Capital Asset Price in 1964 and Arbitrage Pricing model (Andersen, 2008). While, the behavioural finance approach addresses the decision-making model as the description of how we do decide, how we should decide, and we do guide the decision-maker within the confining variables, which are termed as descriptive, normative and prescriptive analysed techniques respectively (French & Gabrielli, 2005). Behaviour has affected decision-making in finance. In 1950, psychological field has an effect on decision-making in relations to the bounded rational process through the psychological cognitive within the economics and finance. Sociological and psychological parameters in behavioral finance have influenced not only decision-making process but also financial markets (Andersen, 2008). However, the rational and irrational approaches are sets of choices in terms of decision-making consequences, which are described as financial economics and behavioural and psychological finance respectively. That is, people are having the perfect knowledge of the aftermath of their decision-making when making either rational or irrational decisions (Akinwale & Abiola, 2007; Pike & Neale, 2006).

2.1 Empirical Review

Mgbada, Nwite, Ele, Uguru and Tebepah (2023) postulated that study investigated the impact of the Nigerian pension scheme on economic growth over a 15-year period (2007-2021). The research employed an ex-post facto design and utilized regression analysis, specifically the Autoregressive Distributed Lag (ARDL) model, to analyze data sourced from the Central Bank of Nigeria (CBN) statistical bulletin. The study revealed a significant positive relationship between total pension fund contributions and GDP, indicating that increased pension fund investments can boost economic growth. However, a significant negative relationship was found between inflation rate and GDP, suggesting that high inflation can hinder economic growth. Based on these findings, it recommended that government officials prioritize proactive investment strategies for pension funds to support economic growth in Nigeria. Additionally, policymakers should implement effective measures to control inflation and maintain price stability, thereby fostering a favorable economic environment.

Madukwe, Anyanwaokoro and Okeke (2023) postulated to examine the impact of contributory pension fund investments in Federal Government Securities on the Nigerian economy over 45

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quarters (2010Q1-2021Q1). The research utilized time series data from secondary sources, including the Central Bank of Nigeria Statistical Bulletin, National Pension Commission's annual reports, and National Bureau of Statistics. The study employed an ex-post facto design and Ordinary Least Square (OLS) with Autoregressive Distributed Lag (ARDL) model as the analytical framework. The study found that contributory pension fund investments had a non-significant positive impact on both inflation rate and Nigeria's Gross Domestic Product (GDP). To leverage the potential benefits of pension funds on the economy, it recommended that government officials and private sector stakeholders promote widespread registration of employees under the contributory pension scheme. This would increase the net asset values of pension funds, enhancing their role in financial intermediation and ultimately contributing to Nigeria's economic growth.

Ayuba, Adeleke, and Nafiu (2023) found that saved contributions from compulsory pension plans should be paid out to eligible retired workers through regular periodic payments. Their study, which analyzed National Pension Commission annual reports using Pareto chart analysis, examined trends in contributory funds between total private and public pension fund assets after the 2014 Pension Reform enactment. The study found a significant decline in pension fund contributions from both public and private sectors during and after elections. Notably, government bonds dominated the investment portfolio. To address this, the National Pension Commission (PenCom) should strictly enforce timely remittances as mandated by the 2014 Pension Reform Act, including regular spot-checks on defaulting employers.

Muraina's 2023 study explored the relationship between pension fund administrators' (PFAs') financial performance and Nigeria's economic growth from 2009 to 2021. The research employed a correlational approach and panel regression technique, specifically robust regression (VCE), to analyze the impact of PFAs' financial performance on economic development. The study found a significant positive correlation between Return on Assets (ROA) and Gross Domestic Product (GDP), indicating that improved ROA contributes to economic growth. However, a significant negative correlation was observed between Return on Equity (ROE) and GDP. Based on these findings, the researchers recommended that the National Pension Commission (PenCom) conduct awareness campaigns targeting both formal and informal sectors to increase pension fund assets under the management of Pension Fund Administrators, ultimately boosting the Nigerian economy.

Abdullah, Obadare, and Anifowose's 2022 study of the effectiveness of contributory pension schemes on Nigerian economic growth employed an ex-post facto approach and panel regression technique. Their research aimed to provide empirical evidence on how pension funds impact economic development in Nigeria. The study found that pension fund assets and pension contributions had a positive but non-significant impact on Nigeria's economic growth. To enhance this impact, the researchers recommended that pension fund management prioritize investments in key areas such as the money market, government bonds, real estate, and investment trusts. This strategic investment approach could boost Nigeria's Gross Domestic Product (GDP). Additionally, the study suggested promoting transparency and accountability by strengthening the relationship between Pension Fund Administrators (PFAs) and Pension Fund Custodians.

Madukwe and Okere (2022) study examined the impact of inflation on pension fund investments in Nigerian federal government securities from 2007 to 2019. Using a time series analysis and ex-post facto research design, they analyzed secondary data from the National Pension Commission Annual Reports and Central Bank of Nigeria Statistical Bulletin. The study employed ordinary least square (OLS) regression to test the hypothesis and found that inflation rate did not significantly impact pension fund investment in federal government securities in Nigeria. To mitigate the impact of inflation on pension benefits, the researchers recommend that the Nigerian pension industry advocate for a reduction in monetary policy rates to stabilize the currency and preserve the value of pension benefits.

Ogonda and Okiakpe's 2022 study explored the relationship between pension fund investments and Nigeria's economic development from 2004 to 2020. Their research employed an ex-post facto design, utilizing time-series data and analyzing it with descriptive statistics, correlation, and a Fixed/Random Effects Regression Model. The study found that investments in federal government securities and money market instruments had a non-significant effect on the Human Development Index (HDI), while investments in quoted ordinary shares and corporate debt securities had a significant positive effect. Based on these findings, the researchers recommended that pension funds should invest proactively in ordinary shares and corporate debt securities to maximize impact. In contrast, investments in money market instruments should be approached with caution.

3. Methodology

The study utilises an ex-post facto research design, leveraging secondary data from Central Bank of Nigeria (CBN) Statistical Bulletin reports and the National Pension Commission (PenCom) annual reports spanning 15 years (2007-2021). This time-series data is sourced from the National Pension Commission (PenCom) annual reports and the Central Bank of Nigeria (CBN) Statistical Bulletin. By adopting this approach, the research aims to examine the causal relationships between variables after the events have occurred, providing valuable insights into the phenomena under investigation (National Pension Commission, 2022). The study employed a simple sampling method and utilized multiple linear regression analysis as the inferential statistical technique. This approach allowed researchers to investigate the relationship between publicly and privately managed pension fund assets and Nigerian economic performance, determining the significance and relevance of pension funds in driving economic growth within the country's pension sector. The Multiple linear regression model is specifically stated for this research below (Mgbada *et al.*, 2023):

$$GGDP\ (INS) = f(GPuFA, GPrFA, GTFA) - - - - - - - -1$$

$$GGDPit\ (INS) = \beta 0\ + \beta 1GPuFAit + \beta 2GPrFAit + \beta 3GTFAit + € - - - -2$$

Where;

GGDP = Growth Rate of Gross Domestic Products (Insurance)
GPuFA = Growth rate of Public Fund Assets
GPrFA = Growth rate of Private Fund Assets
GTPFA = Growth rate of Total Pension Fund Assets
€ = Unexpected Variable

The coefficients of the variables (β0–β3) are measured by using the multivariate least square statistics.

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4. Results and Discussion of Findings

4.1 Components of the Independent and Dependent Variables

Table 1: Private and Public Sector Pension Contributions and GDP of Insurance

Year	Amount (N billion)				Actual Growth Rate			
	Private Sector	Public Sector	Total Value	GDP	Private Sector	Public Sector	Total Sector	GDP
2007	68.34	80.63	148.97	196.05	196.741	115.70	146.60	11.33
2008	80.81	99.28	180.09	217.59	18.25	23.13	20.89	10.99
2009	91.21	137.10	228.31	238.47	12.87	38.09	26.78	9.60
2010	103.03	162.46	265.49	260.07	12.96	18.50	16.28	9.06
2011	119.53	228.92	348.45	265.13	16.01	40.91	31.25	1.95
2012	159.52	302.24	461.76	226.20	33.46	32.03	32.52	-14.68
2013	225.42	278.50	503.92	241.52	41.31	-7.85	9.13	6.77
2014	343.97	237.76	581.73	258.89	52.59	-14.63	15.44	7.19
2015	358.91	200.05	558.96	272.07	4.34	-15.86	-3.91	5.09
2016	262.33	225.86	488.19	278.76	-26.91	12.90	-12.66	2.46
2017	353.73	257.11	610.84	270.68	34.84	13.84	25.12	-2.90
2018	340.72	266.84	607.56	287.24	-3.68	3.78	-0.54	6.12
2019	369.13	331.56	700.69	297.55	8.34	24.25	15.33	3.59
2020	371.12	526.97	598.09	252.02	0.54	58.94	-14.64	-15.30
2021	**388.23**	**492.45**	**880.68**	**267.74**	4.61	-6.55	47.25	6.24

Source: Authors' Computation, 2025.

4.2 Descriptive Statistics

Table 2: Descriptive Statistics of the Dependent and Independent Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Growth Rate of Gross Domestic Products	15	-15.3016	11.3288	3.166074	8.2528284
Growth Rate of Public Funds Assets	15	\-26.9093	196.7434	27.085176	50.9061347
Growth Rate of Private Funds Asset	15	-15.8605	115.7036	22.478769	33.6364259
Growth Rate of Total Pension Funds Asset	15	-14.6427	146.5982	23.655463	38.1354916
Valid N (listwise)	15				

Source: Authors' Computation, 2025

The summary of the descriptive statistical analysis is with the total observations of 15 years from 2007 to 2021. The Growth Rate of Gross Domestic Products shows the means of 316.61% with the lowest recorded at decreased value of 15301.6% in 2007 and 1132.88% as the highest value in 2021. The variability level of 825.28% aligns trends with the returns from premium, investment, which this has observed a strong connection with the contributory pension funds.

The Growth Rate of Public Funds Assets also shows the means of 2708.52% with the lowest recorded at decreased value of 2690.93% in 2007 and the highest reaching value of 19674.34% in 2021. The variability level of 5090.61% aligns the trends with the contributory funds from the public sectors.

The Growth Rate of Private Funds Assets also shows the means of 2247.87% with the lowest recorded at decreased value of 1586.05% in 2007 and the highest reaching value of 11570.36% in 2021. The variability level of 3363.64% aligns the trends with the contributory funds from the both public and private sectors.

The Growth Rate of Total Pension Fund Assets also shows the means of 2365.55% with the lowest recorded at decreased value of 1464.27% in 2007 and the highest reaching value of 14659.82% in 2021. The variability level of 3813.55% aligns the trends with the contributory funds from the private sectors.

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4.3 Correlation Analysis

Table 3: Correlation Matrix of Dependent and Independent Variables

		Growth Rate of Gross Domestic Products	Growth Rate of Public Funds Assets	Growth Rate of Private Funds Asset	Growth Rate of Total Pension Funds Asset
Growth Rate of Gross Domestic Products	Pearson Correlation	1	.249	-.113	.312
	Sig. (2-tailed)		.371	.688	.258
	N	15	15	15	15
Growth Rate of Public Funds Assets	Pearson Correlation	.249	1	.654**	.901**
	Sig. (2-tailed)	.371		.008	.000
	N	15	15	15	15
Growth Rate of Private Funds Asset	Pearson Correlation	-.113	.654**	1	.682**
	Sig. (2-tailed)	.688	.008		.005
	N	15	15	15	15
Growth Rate of Total Pension Funds Asset	Pearson Correlation	.312	.901**	.682**	1
	Sig. (2-tailed)	.258	.000	.005	
	N	15	15	15	15

Source: Authors' Computation, 2025.

The Growth Rate of Public Funds Assets (GPuFA) shows positive correlation result with Growth rate of Gross Product Assets (GGDP) with r = 0.2495. In addition, there is also insignificant relationship between Growth Rate of Public Funds Assets and Growth rate of Gross Product Assets with p-value = 0.371.

The Growth Rate of Private Funds Assets (GPrFA) shows negative correlation result with Growth rate of Gross Product Assets (GGDP) with r = -0.113. In addition, there is also insignificant relationship between Growth Rate of Private Funds Assets and Growth rate of Gross Product Assets with p-value = 0.688.

The Growth Rate of Total Pension Fund Assets (GTPFA) shows positive correlation result with Growth rate of Gross Product Assets (GGDP) with r = 0.312. In addition, there is also insignificant relationship between Growth Rate of Total Pension Fund Assets and Growth rate of Gross Product Assets with p-value = 0.258.

However, Growth Rate of Public Funds Assets reveals a positively significant relationship with both Growth Rate of Private Funds Assets and Growth Rate of Total Pension Funds Assets with r = 0.654 & P-value = 0.008, and r = 0.901 & p-value = 0.000 respectively. The Growth Rate of Private Funds Assets indicates as positive significant with r = 0.682 & p-value = 0.005 as shown from Table 3.

4.4 Regression Analysis

4.4.1 Summary of the Model

Table 4: Regression Summary Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.545[a]	0.297	0.105	7.8080433

Source: Authors' Computation, 2025.

The regression analysis results show that the combined effects of growth rates in public, private, and total pension fund assets explain approximately 29.7% (R-Squared) to 10.5% (Adjusted R-Squared) of the variation in Nigeria's Gross Domestic Product (GDP) growth rate. This suggests a moderate relationship between pension fund growth and economic performance, affirming the impact of the contributory pension scheme on the insurance industry's growth efficiency.

4.4.2 ANOVA and Regression Coefficients

4.4.2.1 ANOVA Analysis

The ANOVA analysis and regression coefficients are to examine the growth efficiency of contributory pension funds and economic performance of insurance industry.

Table 5: ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	282.908	3	94.303	1.547	0.258[b]
	Residual	670.621	11	60.966		
	Total	953.528	14			

Source: Authors' Computation, 2025.

The ANOVA (Analysis of Variance) results further validate the model's significance, with an F-value of 1.547 and a p-value of 0.258, suggesting that the combination of independent variables together have positively insignificant assessment on growth rate of gross domestic products. This means that there is direct relationship between growth efficiency of contributory pension funds and economic performance of insurance industry, when the growth efficiency of contributory pension funds increases, performance also tends to increase by 28290.80%.

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4.4.2.2 Regression Coefficient

Table 6: Regression Coefficients of the Variables

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.787	2.505		1.113	.290
	Growth Rate of Public Fund Assets	-.007	.095	-.044	-.075	.942
	Growth Rate of Private Fund Assets	-.149	.086	-.607	-1.742	.109
	Growth Rate of Total Pension Fund Assets	.166	.132	.766	1.260	.234

Source: Authors' Computation, 2025.

From the table above, the Growth Rate of Public Fund Assets coefficient of -0.007 reveals that for every 1% increase in Growth Rate of Public Fund Assets, economic performance of insurance industry is expected to decrease by 0.70%. The p-value of 0.942 means there is insignificant relationship between Growth Rate of Public Fund Assets and growth rate of gross domestic products.

In addition, the Growth Rate of Private Fund Assets coefficient of -0.149 reveals that for every 1% increase in Growth Rate of Private Fund Assets, economic performance of insurance industry is expected to decrease by 14.90%. The p-value of 0.109 means there is insignificant relationship between Growth Rate of Private Fund Assets and growth rate of gross domestic products.

Lastly, the Growth Rate of Total pension Fund Assets coefficient of 0.166 reveals that for every 1% increase in Growth Rate of Total pension Fund Assets, economic performance of insurance industry is expected to decrease by 16.60%. The p-value of 0.234 means there is insignificant relationship between Growth Rate of Total pension Fund Assets and growth rate of gross domestic products.

4.5 Discussion of Findings

Generally, the findings reveal that the growth rate of public fund assets, growth rate of private fund assets and the growth rate of total pension fund assets do have a positively and statistically non-significant relationship effect respectively with economic performance of insurance industry in Nigeria. The study has similar result with the previous researches (Ayuba, *et al.*, 2023; Madukwe *et al.*, 2023) because of a directly and statistically non-significant associative effect. Contrary to the findings of this study, previous research by Madukwe and Okere (2022) and Mgbada et al. (2023) presents differing views, highlighting the complexity of the topic and the need for further investigation to reconcile these disparate perspectives. This disparity in research outcomes underscores the dynamic nature of academic inquiry, where varied methodologies and datasets can yield distinct conclusions. Likewise, the weakly positive from R-square value as well as the insignificant of F-change has made the assertion to be suggested that the model employed may have good fitness for the data, which indicates that the model may be sufficiently captured the data. The incremental outcome registration across the all-Nigerian industries to partake in pension funds scheme has brought the economy to be sustainably reliable.

4. Conclusion And Recommendations

The study evaluate**s** a 15-year study (2007-2021) on the impact of contributory pension funds on Nigerian economic performance revealed a weak yet direct relationship between pension funds and Gross Domestic Product (GDP). This suggests that while pension funds contribute positively to economic growth, their influence is relatively minimal. Research indicates that pension fund contributions and assets have grown significantly over the years, with total private pension fund assets reaching approximately ₦4 trillion in 2020. The study concludes that the growth of contributory pension funds has a direct but non-significant impact on Nigeria's economic performance, particularly in the insurance industry. This is influenced by the growth of both public and private pension fund assets. To enhance this impact, pension fund administrators and custodians are advised to prudently implement policies that optimize investment strategies, focusing on profitable securities that can positively affect the insurance industry, such as through the purchase of annuity options. The study recommends that Nigerian Pension Fund Administrators and Custodians prudently manage and invest pension fund assets in line with the contributory pension scheme and regulatory guidelines. This involves adhering to both internal and external directives to optimize investment strategies and ensure the growth and sustainability of pension funds.

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