

Contributory Pension Scheme and Human Capital Development in Nigeria

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Abstract

This study examined the effect of contributory pension scheme on human capital development in Nigeria. The study was carried out in Nigeria for the duration of 2005-2022 (18years). The study made use of secondary data (Time Series) sourced from the PENCOM Annual Report and UNDP Human Development Reports on the variables under study. The contributory pension scheme was proxied with Public Sector Pension Fund (PBSPF), Private Sector Pension Fund (PVSPF), Pension Fund Investment (PFI), Retirement Savings Account (RSA) and Total Pension Fund (TPF) (Independent Variables) were examined on how it influences the human capital development proxied with Human Development Index (HDI) (Dependent Variable) in Nigeria. The data was analyzed with descriptive statistics, correlation matrix several diagnostics tests (VIF, validity test, ADF and Engle-Granger Cointegration tests) and the Ordinary least multiple regression analysis with E-VIEW 9.0. Based on the results, it was determined that PBSPF, PVSPF, PFI and TPF had a positive and significant impact on HDI while RSA has negative and insignificant effects on HDI in Nigeria. It was concluded that contributory pension scheme has significant effect on HDI in Nigeria. The study recommended that the Nigerian government should ensure that public sector pension funds are effectively managed and transparent to build trust among employees. This can have a positive impact on HDI by providing security and stability for public sector workers, encouraging them to focus on their career growth and productivity.

Keywords: *Contributory, Pension, Scheme, Human, Capital and Development*

Introduction

Government, employers, and beneficiaries in Nigeria have long struggled with pension management. Pension is meant to provide pensioners with a comfortable lifestyle till death. The Nigerian pension system includes state and private funds. After retirement from active service, the public pension fund pays out pensions to government employees, while the private pension fund accumulates money to pay pensions to non-government employees. The existing public sector pension scheme was characterised by inadequate funding, non-payment of gratuity and pension as and when due, poor record keeping, late release of available funds, inclusion of ghost retirees' names into the payroll, incessant verification and biometrics capture under very dehumanising

conditions, disdainful treatment of senior citizens by serving officers, misappropriation and outright. Contributory pension system (CPS), sometimes known as the "New Pension Scheme," was implemented in 2004 to address old pension scheme shortcomings. Employer and employee pension contributions must be 7.5% per month (Pension Reform Act, 2004). The 2004 pension reform statute, which raised the rate to 18% from 15%, was overturned in 2014. To maximise gains, the company contributes 10% and the employee 8% (Pension Reform Act, 2014). The contributions are spread between stocks, corporate bonds, and government bonds. The National Pension Commission (PenCom, 2020) oversees, regulates, issues guidelines, rules, and regulations for pension fund administration and investment. It also approves licenses, regulates, and supervises pension fund managers, custodians, and other pension-related institutions to ensure seamless and effective pension operations in Nigeria.

Pension Fund Administrators (PFAs) licensed and regulated by PenCom manage and invest pension money through PFCs (Eche & Agbaji, 2021). Nigeria had 21 PFAs in 2020. They manage 9,862,129 RSAs worth NGN 14.99 trillion. Aesoronye (2022) estimates that 28.9% of the nation's nominal GDP was this amount in Q3. Growth is a key indicator of a healthy economy. Income and employment, which enhance living standards, drive a nation's long-term prosperity (Agarwal, 2017). A rising GDP boosts productivity, creating more jobs. Thus, the nation's wealth and population are rising (Agarwal, 2017). The Nigerian Bureau of Statistics (NBS) reported 2.01% real GDP growth in the first quarter of 2019. The first-quarter 2019 real GDP growth rate rose 0.12% from 1.89% in 2018. However, real GDP growth fell 0.38% from the fourth quarter of 2018. Economy growth requires enough cash for various economic sectors. Akowe, et al. (2015) state that these resources are needed to strengthen business and entrepreneur operations and offer infrastructure for private sector activities, investments, and expansion. Capital can be stockpiled and deployed when the economy has large capital outlays. A contributing pension program in Nigeria made pension savings easier. Amadeo (2019) stated that the 2004 Contributory Pension Scheme (CPS) permitted long-term funds to be invested, which enhanced human capital development. Pension fund assets rose from N15.60 billion in 2004 to 11.83 trillion in 2018 (PENCOM, 2018). Pension funds must be invested. Section 85 (1) of the Pension Act 2014 requires pension fund managers to invest all Pension Reform Act 2014 contributions to ensure equitable and safe returns. Ameh, et al. (2017) stated that the pension industry must provide a portion of its funds to various economic sectors, which has improved Nigeria's human capital development. According to the pension industry's investment portfolio, Federal Government Securities (FGN Bonds: 52%, Treasury Bills: 19%, Sukuk Bonds: 1%, Agency Bonds and Green Bonds: less than 1%) made up 73% of pension fund assets. This was partly due to subdued investor sentiment before the 2019 federal elections (PENCOM, 2020). Pension operators invested in FGN Securities to protect themselves before the elections and a better understanding of macro and microeconomic policy. Based on further investments, quoted ordinary share investments were worth N606.20 billion (7.02 percent of industry portfolio value) on December 31, 2018, up N4.14 billion from September 30, 2018. Fresh capital invested in common shares drove quoted stock investment values up. Some equities fell in value during that time. The All Share Index (NSE-ASI) and Market Capitalisation fell 4% and 1.92 percent, respectively, from 32,740.64 basis points and N11.95 trillion on September 30, 2018, to 31,430.50 basis points and N11.72 trillion on December

31, 2018. PENCOM (2018) reported that FGN Bonds and FGN Agency bonds increased by N208.22 billion and N768.74 million, respectively, while Treasury Bills decreased by N171.53 billion to improve Nigeria's human capital development.

Upon examination of the pension business's investment emphasis, it becomes clear that they invest in methods that extend money to diverse economic sectors. Investments are usually made for the long run. Short-term investments are made by the pension program. To do this, it invests in quoted ordinary shares, local and overseas money market securities. These tools help the sector recover funds when needed (Anspach, 2019). Empirical research shows that the pension business allocates capital to financial instruments that extend capital abroad, boosting economic activity in other sectors (OECD, 2019). The pension industry's long-term economic investment processes have been the focus of most research. Short-term instruments for human capital development seem to be overlooked. This study examines how short-term financial instruments utilised by the pension system promote human capital development (Chijoke, 2019). Since the relevant entities approved the contributory pension system and it may be enforced to make it operational in the economy, it has suffered from various sectors' undesirable dynamism and non-conformity (Ukoh, 2021). The economy's current performance cannot be compared to the predicted outcome, which depends on all impacted parties, including individuals and states that have not yet passed legislation supporting the program's operation and enforcement. Pension Fund Administrators cannot invest pension funds in the real economy to claim economic development and progress due to the regulator's investment machinery. The National Pension Commission's (PENCOM) strict guidelines on the percentages of funds under management (FUMS) that must be invested in different markets, industries, or financial instruments to stimulate human capital development discourage pension fund administrators from taking unwarranted risks that could deplete the fund pool (Farabiyyi, 2016).

Older people receive pensions to maintain their lifestyle after retiring. A pension ensures a worker's retirement income. Defined benefit (DB) pension systems have traditionally paid pensions. Due to an ageing population and low productivity, the Defined Benefit (DB) pension became unsustainable worldwide. Governments and companies switched from the defined benefit (DB) pension system to the contributory pension scheme to improve employee service delivery and address other economic issues, as declining productivity and rising longevity made the previous system unsustainable. This study examines how Nigeria's contributory pension program influences human capital development. In 2004, the Pension Reform Act introduced a defined contribution program to fix the old system. Since its inception, the 2004 Act has undergone various changes. These include the Provisions Act of 2012, which examined university professors' retirement age and benefits; the Pension Reform Act of 2014; and the Pension Reform Amendment Act of 2011, which exempts military and security personnel and universities from the Contributory Pension Scheme (CPS). The 1999 Constitution was amended by the Third Alteration Act to give the National Industrial Court pension dispute authority (FGN, 2014). But whether the new pension regulations have solved retirement plan problems is a big question. The Contributory Pension Act of 2004 has been questioned for its ability to address inadequate funding, non-payment of gratuity and pension as due, poor record keeping, late release of funds, inclusion of ghost retirees' names into the payroll, incessant verification and biometrics capture under dehumanising conditions,

disdainful treatment of senior citizens by serving officers, misappropriation, and embezzlement. This makes post-retirement financial security difficult for workers.

Nigeria has grown 7% annually for the past decade, enough to quadruple its size every decade, but surveys show poverty is rising (Standard Chartered, 2020). The Nigerian economy grew 2.55% in the fourth quarter of 2019 compared to 2.28% in the previous quarter (Trading Economics, 2020). Stronger crude oil output (2.00 million barrels per day, up from 1.91 mbpd) and better prices drove the biggest expansion since Q3 2015. Telecommunications & information services (10.26% against 12.16% in Q3), crop production (2.52% vs 2.41%), financial services (22.33% vs 0.61%), and manufacturing (1.24% vs 1.10%) caused the non-oil sector's 2.26% boost from 1.84%. GDP grew 5.59% quarterly following 9.23%. The economy increased 2.27% in 2019, the most since 2015, compared to 1.98% in 2018 (Trading Economics, 2020). Poor infrastructure, tariff and non-tariff trade obstacles, investment barriers, currency valuation uncertainty, limited foreign exchange capacity, and irregular long-term finances for domestic investment hinder Nigeria's economic potential (USAID, 2019). It is clear that Nigeria's financed pension scheme is threatened by weak institutions, corruption, social injustice, and insecurity. Despite the switch from a defined benefit to a contributory pension scheme, money embezzlement and remittance have raised issues about whether the program is helping the economy. Academics answered this. Etim, et al. (2023), Umoren, Morina and Grima (2022), Abdullahi, and Odo (2021) found that Nigeria's contributory pension system boosts economic growth. Pension funds often have conflicting effects on Nigeria's economy. This study can also prove this assertion independently using current data and evidence. This study will explore how contributory pension scheme affects Nigeria's HDI-based human capital development proxy.

Review of Related Literature

Conceptual Review

Concept of Pension

Pension is an employer's regular payment to a retired worker. Pension is a series of annual income (annuity) granted to a retired worker in acknowledgement of their economic services to the organisation, according to Bayar and Ozturk (2016). Kalu and Mgbemena (2015) define it as a recurring award or reward to an individual or family for deserving labour or meeting particular parameters like age, tenure of service, wanted level of contributions, etc. Pensions distribute economic output to employees and retirees, according to Micah and Obah (2016). Pensioners and workers may share in the business's profits, but nobody should think they're the only ones who benefit. As previously stated, pensions are regular payments received in conjunction with official employment.

Contributory Pension System in Nigeria

Contributory pension program addressed the two trillion naira unsustainable pension shortfall of the prior Pay-As-You-Go (PAYG) Pension program (Yilmaz & Ozturk, 2016). Yilmaz & Ozturk (2016) stated that the contributory pension program, which had 1.7 trillion naira (11.3 billion dollars) in assets as of July 2010, will solve Nigeria's pension deficit. The Nigeria Public Service's contributory pension scheme is projected to multiply workers' dedication and attitudes towards retirement and corruption, especially in the civil or public service. Because the uncertainty of a

pension and gratuity after retirement drove public service workforce turnover. Poor wages, delayed fringe benefit payments, and poor service conditions are among the reasons medical staff from Nigeria leave for the US and UK, according to WHO (2017). Features and safeguards give the system a shot. The Pension Fund Administrators invest Pension Scheme funds. Under Section 86 of the Pension Act 2014, pension funds can be invested in numerous ways. Based on unaudited valuation data, pension fund assets increased 7.36% from N10.33 trillion in March 2020 to N11.09 trillion in June 2020 (PENCOM Q2, 2020). Listed equity valuation drove growth. As of Q2 2020, RSA funds (Funds I–V) held the largest portfolio, accounting for N8.56 trillion (77.18%) of funds under management. At N1.37 trillion and N1.16 trillion, CPFAs and AESs represented 12.37% and 10.45% of total assets under management. Fund (I) made up 0.24% (N26.88 billion) of the total AUM, Fund (II) 43.01% (N4.77 trillion), Fund (III) 25.93% (N2.87 trillion), Fund (IV) the ‘Retiree’ Fund 8.00% (N886.47 billion), and Fund (V) less than 1% (N32.32 million). Federal Government Securities comprised 67% of pension assets (FGN Bonds: 57%, Treasury Bills: 9%, Sukuk Bonds: 1%, Agency Bonds and Green Bonds: negligible).

Human Capital Development

Human Capital is the investment people make in themselves to increase productivity, according to Amadeo (2019), while Etim et al. (2023) define it as a collection of traits like knowledge, skills, education, abilities, experience, attitude, and behaviour that contribute to productivity. Human capital comprises ‘an amalgam of factors such as education, experience, training, intelligence, energy, work habits, trustworthiness, and initiative that determine the value of a worker's marginal product’ (Etim, et al, 2023). Human capital development is the improvement of a person or government to improve performance, life capacity, and economy for the future. According to the Organisation for Economic Co-operation and Development (OECD) and Kwon, Dae-Bong, the UNDP's new Human Capital measurement approach uses the Human Development Index (HDI) to assess a nation's well-being. The health, knowledge, and standard of living index includes subvariables such life expectancy at birth, adult literacy rate, gross enrolment ratio, and GDP per capita. HDI focusses on all persons' living quality and economic circumstances because it incorporates quality components. The paper recommended including ‘human development’ in advanced human capital measurement (Etim, et al., 2023).

Theoretical Framework

This study is anchored on the deferred wage theory and Endogenous growth theory. This are discussed below:

The life-cycle theory

In 1954, Franco Modigliani and colleagues established the consumption function's life-cycle theory. Modigliani believed that households make decisions about saving and consuming at each stage of life to achieve the desired distribution of consumption over the life cycle, subject to the limitations of their lifetime resources. The life cycle model starts here. Consumption is more dependent on future revenues than current income. Perceptions of lifetime wages influence people's consumption and spending. We start with a basic instance to see how this theory affects the consumption function. Imagine a person with a T-year life expectancy who wants to work for

N. These people work. Our typical customer is thirty years old, has a life expectancy of fifty (plus) years, and plans to retire in forty years. Their expected retirement years are $(T - N)$, or 10. Our assumption about the person's plans: The person will likely want to consume products forever. It is also assumed that this person will spend their lifetime earnings and current assets without leaving any bequests. We assume assets have no interest and that saving now equals future consumption equal to the current amount of money. This example uses assumptions, which are later eased. These assumptions mean consumption will always equal $1/T$ of lifetime resources. Ten equal installments of their lifetime wage are planned. According to research employing life cycle theory, pension funds evolve via start-up, growth, and maturity. The life cycle hypothesis explains pension fund managers' three maturation stages and financial demands. Lifecycle theory describes pension fund managers' three stages and financial demands. According to the life-cycle hypothesis, pension fund administrators' finance sources depend on each stage of development, economic growth, and human capital development.

Human Capital Theory

This theory holds that the employer and employee have an implicit pension fund contract that guarantees the employer's retirement benefits if the employee works for the company for a long time. When employers and employees engage in long-term, recurring contacts, implicit long-term contracts may boost human capital development and minimise employee turnover and strike rates (Etim, et al., 2023). The Siemens case strongly suggests that pension fund setup and restrictions were the same as employees handing the corporation a security deposit. Since pensions were not paid until an employee had worked for the company for ten years, the cumulative pension bonded workers.

Empirical Review

A study by Etim et al. (2023) analysed Nigeria's contributory pension program and Human Development Index. The Central Bank Statistics Bulletin and National Pension Commission Annual Report were used to analyse this ex-post-facto study. A model was constructed utilising theoretical and empirical studies. The model used the Human Development Index as the dependent variable and total, public, and private pension funds as independent variables. In this work, FMOLS was used to analyse data. The findings showed that overall pension funds, private sector pension funds, and public sector pension funds all had positive and significant effects on the human development index (p-values of 0.0000, 0.0000, and 0.0031). Deduction results showed that the contributory pension program boosted Nigeria's economy. Economic growth will increase with timely pension payments to public and private sector pensioners. Accordingly, the researcher finds that the government should guarantee timely pension payments in accordance with the Pension Reform Act of 2014 to raise the population's standard of living and human development index.

Umaren and colleagues examined the Nigerian economy's impact on contributory pensions in 2023. This study uses National Pension Commission Annual Report and Central Bank Statistical Bulletin ex-facto design data. Combining theoretical and empirical reviews into a model helps achieve this. Total pension funds, public pension funds, and per capita income explained. This study examined pension issues for public and commercial Nigerian seniors. FMOLS Model did

data analysis. Researchers used p-value to accept or reject null hypotheses. Critical p-values under 5% indicate significant and rejected variables. Public and private pension funds had positive significant effects on per capita income (p-values of 0.0117 and 0.0089, respectively), while overall pension funds had an inconsequential effect (p-value of 0.8641). According to research, the contributory pension plan boosted Nigeria's economy. Public and private retirees receiving pensions on time will enhance economic growth. The research advised the government to enforce the Pension Reform Act of 2014 and pay pensions on time.

Morina and Grima (2022) analysed how pension asset investments affect economic growth in a few non-OECD countries, taking into account population, state debt, inflation, gross fixed capital formation, and private sector lending. Econometric research for this paper utilises secondary data from OECD, World Bank, and IMF annual reports. This study's econometric data shows that pension fund asset investment boosted the economies of a selected group of non-OECD nations (2002–2018). Its substantial empirical data on pension fund investments in global financial markets and their influence on non-OECD economies makes it scientifically significant. The authors also provide governments and policymakers in these nations with new scientific data on how to create strategic investment plans that allow pension funds to invest their assets at a safe rate of return to support capital market efficiency and economic growth. Pension fund investments in international financial markets affect the economic development of non-OECD nations, most of which are emerging and transitional economies, and the study's use of empirical data highlights this.

Abdullahi et al. (2022) presented true facts on Nigeria's contributory pension scheme's impact on economic growth. The study employed secondary data from PenCom Annual Reports and CBN Bulletin (database) records. SPSS calculated the data. Pension funds and their savings and contributions boost economic growth slightly. These findings suggest that Nigeria's government have failed to use savings and pension fund assets to boost the economy. Pension asset management on the capital market, together with government bonds, real estate, and investment trusts, was recommended to boost Nigeria's GDP. PFAs and Custodians should reconcile accounts immediately. This will increase system accountability and transparency. PenCom must monitor, supervise, and enforce the PRA 2004 regulations, which are crucial to the Contributory Pension Scheme's GDP contribution.

Research Methodology

This study used ex-post facto and quasi-experimental designs. The ex-post facto research design examined the causal effect of contributory pension scheme on human capital development in Nigeria after the event or fact occurred, while the quasi experimental design examined the causal effect. Verifiable variables mean the study cannot manipulate the variable of interest. The study cannot manipulate the variable of interest to achieve its research goals because it is verifiable. This study collected secondary data (time series data) from the 2005–2022 PENCOR Annual Report and UNDP Human Development Reports on the factors under consideration. Quality and relevancy are more essential than data source. These reputable and legitimate data and information sources were employed for the investigation. Data description, diagnostic test, stationary test, Engle-Granger Cointegration, and ordinary least square regression were used in the study with E-

VIEW 9.0 Statistical Software. The ordinary least square model was used to determine if the independent variables and dependent variables are significantly related. The study used Etim et al.'s (2023) model. This model will be adjusted for study factors. Human capital development proxied by HDI and contributory pension scheme proxied by PBSPF, PVSPF, PFI, RSA, and TPF will be subjected to natural logarithm to uniformise the data set since they are in billion. Thus, the functional model definition in this investigation is:

$$\text{HDI} = f(\text{PBSPF}, \text{PVSPF}, \text{PFI}, \text{RSA}, \text{TPF}) \dots \dots \dots (1)$$

The above functional equation will be stated in econometric form as presented below:

$$\text{HDI} = \beta_0 + \beta_1 \text{PBSPF}_i + \beta_2 \text{PVSPF}_i + \beta_3 \text{PFI}_i + \beta_4 \text{RSA}_i + \beta_5 \text{TPF}_i + U_i \dots \dots \dots (2)$$

Introducing the log form as follows:

$$\text{HDI} = \beta_0 + \beta_1 \text{LogPBSPF}_1 + \beta_2 \text{LogPVSPF}_2 + \beta_3 \text{LogPFI}_3 + \beta_4 \text{LogRSA}_4 + \beta_5 \text{LogTPF}_5 + U_i \dots \dots (3)$$

Where:

- HDI = Human Development Index
- PBSPF= Public Sector Pension Fund,
- PVSPF = Private Sector Pension Fund,
- PFI = Pension Fund Investment,
- RSA = Retirement Savings Account,
- TPF = Total Pension Fund
- U_i = Error Term,
- β₀–β₅ = the Parameters,
- Apriori Expectation = β₁, β₂, β₃, β₄, β₅ > 0.

Results and Discussion

Descriptive statistics

The descriptive statistics consists of mean, std. Dev., minimum and maximum values associated with the variables under consideration. The descriptive statistics are summarized on Table 4.2.1 below;

Table 4.2: Descriptive Statistics

	HDI	LOGPBSPF	LOGPVSPF	LOGPFI	RSA	LOGTPF
Mean	0.518722	2.267508	2.032384	2.707181	0.821111	2.452948
Median	0.523000	2.362267	2.385920	3.045573	0.930000	2.676507
Maximum	0.592000	2.729950	2.589089	3.199020	1.360000	2.958129
Minimum	0.466000	1.532500	-2.000000	-0.172954	0.120000	1.193125
Std. Dev.	0.031821	0.331277	1.064233	1.018935	0.324144	0.498507
Skewness	0.322273	-0.972883	-3.245322	-2.467894	-0.598671	-1.279092
Kurtosis	2.841506	3.281229	12.87842	7.121978	2.656302	3.653504
Jarque-Bera	0.330420	2.898820	104.7838	31.01452	1.163818	5.228528
Probability	0.847716	0.234709	0.000000	0.000000	0.558831	0.073222
Sum	9.337000	40.81515	36.58292	48.72926	14.78000	44.15306
Sum Sq. Dev.	0.017214	1.865659	19.25405	17.64987	1.786178	4.224660

Observations	18	18	18	18	18	18
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Source: E-VIEW 9.0 Output, 2024.

Table 4.2 revealed the study's independent and dependent factors. From 2005 to 2022, PBSPF has a mean of 2.2675, a high of 2.7300, a low of 1.5325, and a standard deviation of 0.3313. This indicates 33% PBSPF volatility. PVSPF had a mean of 2.0324, a maximum of 2.5891 and a low of -2.0000, with a standard deviation of 1.0642. This indicates 106% PVSPF volatility. PFI's mean was 2.7072, its maximum and minimum were 3.1990 and -0.1730, and its std. dev. was 1.0189, indicating 102% volatility. The mean of RSA was 0.8211, the maximum and minimum were 1.3600 and 0.1200, and the std. dev. was 0.3241, indicating 32% volatility. The mean of TPF was 2.4529, with a maximum of 2.9581 and a minimum of 1.1931, and the std. dev. was 0.4985, indicating 50% volatility. HDI averaged 0.5187, with maximums and minimums of 0.5920 and 0.4660 and std. dev. of 0.0318. HDI volatility is 3.18%, indicating a sluggish increase in Nigeria's HDI during 2005-2022.

Table 4.3: Variance Inflation Factors Multicollinearity Test

Variance Inflation Factors
 Date: 05/18/24 Time: 05:54
 Sample: 2005 2022
 Included observations: 18

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.010354	581.4402	NA
LOGPBSPF	0.004823	1420.632	8.207217
LOGPVSPF	9.10E-05	26.56717	5.464749
LOGPFI	0.000159	74.21442	8.757677
RSA	0.005559	241.4526	3.917766
LOGTPF	0.002090	733.5849	7.254067

Source: EVIEW, 9.0 Outputs, 2024.

Table 4.3 computes the variance inflation factor (VIF) as stated in Table 4.4 to validate this study's conclusions. The Centred Variance Inflation Factor (CVIF) statistics for all independent variables are consistently 1-10, below the threshold of 10. The VIF cutoff value of 10 shows no multicollinearity issues among the variables under examination. Multicollinearity is commonly associated with VIF values over 10.

Data Validity Test

The validity test was performed on time series data from 2005-2022 (18 years) to ensure analysis validity. Table 4.4 shows this.

Table 4.4: Data Validity Test

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	0.167416	Prob. F(2,10)	0.8482	
Obs*R-squared	0.583171	Prob. Chi-Square(2)	0.7471	
Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.353389	Prob. F(5,12)	0.8704	
Obs*R-squared	2.310243	Prob. Chi-Square(5)	0.8048	
Scaled explained SS	4.856797	Prob. Chi-Square(5)	0.4336	
Ramsey RESET Test				
Equation: UNTITLED				
Specification: HDI C LOGPBSPF LOGPVSPF LOGPFI RSA LOGTPF				
	Value	Df	Probability	Value
t-statistic	1.034940	11	0.3229	1.034940
F-statistic	1.071101	(1, 11)	0.3229	1.071101
Likelihood ratio	1.672542	1	0.1959	1.672542

Source: E-VIEW, 9.0 Outputs, 2024.

A serial correlation LM test was used. The serial correlation LM test in Table 4.4 shows that the models have no serial correlation because the f-statistics p-values are negligible at 5%. To ensure model estimate homoscedasticity, the Breusch-Pagan-Godfrey heteroskedasticity test was used. With the outcome, the models have no heteroskedasticity issues because the f-statistics p-values are insignificant at 5%. Table 4.4 shows that the model is homoskedastic because five parameters have probability values larger than 0.05. Ramsey test results show our model is appropriately described and stable for regression analysis.

Correlation Matrix

A correlation matrix depicts the relationship between independent and dependent variables. This shows whether the independent and dependent variables are moderately or lowly correlated.

Table 4.5: Correlation Output

	HDI	LOGPBSPF	LOGPVSPF	LOGPFI	RSA	LOGTPF
HDI	1.000000					
LOGPBSPF	0.596315	1.000000				
LOGPVSPF	0.642086	0.761714	1.000000			
LOGPFI	0.565758	0.808233	0.825745	1.000000		
RSA	0.556904	0.953474	0.754421	0.684687	1.000000	
LOGTPF	0.546864	0.957024	0.840824	0.815728	0.954309	1.000000

Source: E-VIEW 9.0 Output, 2024.

Table 4.5 shows the coefficients of the association between the independent (PBSPF, PVSPF, PFI, RSA, and TPF) and dependent (HDI) variables. PBSPF, PVSPF, PFI, RSA, and TPF have correlation coefficients (r) of 0.5963, 0.6421, 0.5658, 0.5569, and 0.5469, respectively, which are below the threshold of 0.7, confirming the absence of multicollinearity in the data sets and that all independent variables are the right measures of contributory pension scheme.

Augmented Dickey-Fuller (ADF) Unit Root Test

A unit root indicates non-stationary time-series data, while an absence indicates stationary stochastic process. The ADF test was used for the unit root test (table 4.6).

Table 4.6: ADF Group Unit root Test

Group unit root test: Summary
 Series: HDI, LOGPBSPF, LOGPVSPF, LOGPFI, RSA, LOGTPF
 Date: 05/18/24 Time: 06:10
 Sample: 2005 2022
 Exogenous variables: Individual effects
 Automatic selection of maximum lags
 Automatic lag length selection based on SIC: 0
 Newey-West automatic bandwidth selection and Bartlett kernel
 Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.0654	0.0000	6	102
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-9.91561	0.0000	6	102
ADF - Fisher Chi-square	298.201	0.0000	6	102
PP - Fisher Chi-square	162.826	0.0000	6	102

** Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution. All other tests assume asymptotic normality.

Source: E-VIEW, 9.0 Outputs, 2024

Table 4.6 shows that all variables under investigation—HDI, PBSPF, PVSPF, PFI, RSA, and TPF—have unit root tests at their initial difference 1(1). Their group ADF statistics exceed the crucial value of 5%. The fact that all variables' p-values are less than 5% significant and larger than 95% confident also supports stationary series. They all reached stationarity at order one, first difference. Since all variables are integrated at order one, we can use Engle-Granger Cointegration.

Engle-Granger Cointegration Test

This study uses the Engle-Granger Cointegration test to assess if the variables have a long-term relationship after determining their time series features. Table 4.7 summarises the cointegration test:

Table 4.7: Summary of Engle-Granger Cointegration Test Output

Date: 05/18/24 Time: 06:11				
Series: HDI LOGPBSPF LOGPVSPF LOGPFI RSA LOGTPF				
Sample: 2005 2022				
Included observations: 18				
Null hypothesis: Series are not cointegrated				
Cointegrating equation deterministics: C				
Automatic lags specification based on Schwarz criterion (maxlag=3)				
Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
HDI	-4.467385	0.2396	-18.85766	0.0187
LOGPBSPF	-4.614708	0.2112	-54.63454	0.0000
LOGPVSPF	-7.195135	0.0069	-22.46353	0.0447
LOGPFI	-6.199108	0.0308	-62.50925	0.0000
RSA	-6.218635	0.0300	-187.4777	0.0000
LOGTPF	-3.052275	0.7491	-13.85654	0.0376

Source: E-views 9.0 Output, 2024.

The Engle-Granger Cointegration results in Table 4.7 show that HDI, PBSPF, PVSPF, PFI, RSA, and TPF are below critical values at 5% significance. This confirms a steady long-term link between HDI and contributory pension schemes PBSPF, PVSPF, PFI, RSA, and TPF.

Table 4.8: Regression Results

Dependent Variable: HDI

Method: Least Squares

Date: 05/18/24 Time: 05:47

Sample: 2005 2022

Included observations: 18

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.442097	0.101754	4.344770	0.0010
LOGPBSPF	0.147174	0.069447	2.119228	0.0499
LOGPVSPF	0.025033	0.009538	2.624554	0.0373
LOGPFI	0.043248	0.012611	3.429387	0.0041
RSA	-0.055668	0.074558	-0.746641	0.4697
LOGTPF	0.163966	0.045712	3.586936	0.0031
R-squared	0.776551	Mean dependent var	0.518722	
Adjusted R-squared	0.683447	S.D. dependent var	0.031821	
S.E. of regression	0.017903	Akaike info criterion	-4.946455	
Sum squared resid	0.003846	Schwarz criterion	-4.649665	
Log likelihood	50.51810	Hannan-Quinn criter.	-4.905532	
F-statistic	8.340711	Durbin-Watson stat	2.216658	
Prob(F-statistic)	0.001327			

Source: E-VIEW 9.0 Output, 2024.

Table 4.8 revealed the regression coefficients and t-statistics for PBSPF, PVSPF, PFI, RSA, and TPF's effects on HDI.

PBSPF's p-value is 0.0499, below the significant value of 0.05, and its t-ratio is 2.1192, above 2, indicating its substantial effect on HDI. The coefficient of PBSPF is 0.1472, indicating a positive trend with HDI. One percent change in DD would boost HDI by 14.72% in Nigeria. Nigerian HDI is affected by PBSPF. Public sector pension funds can boost Nigeria's human capital index in numerous ways: The public sector can attract and keep qualified personnel with adequate pension benefits. This can increase labour experience and expertise, boosting human capital in the country. Pensions reduce elderly poverty by providing financial security to retired public sector workers. Knowing they will be supported in retirement can improve workers' well-being and productivity during their working years. Pension funds might invest in public sector employee education and training. Continuous learning and skill improvement boost productivity and adaptability to changing economic situations. Social stability can be achieved by lowering retiree income inequality and poverty with adequate pension payouts. A more economically secure and socially inclusive society can boost the human capital index by guaranteeing a healthy and educated workforce. Public sector pension funds improve human capital development in Nigeria by supporting employee retention, financial security, education and training, and social stability. This supports Etim et al. (2023) but contradicts Abdullahi et al. (2022).

PVSPF's p-value is 0.0373, below 0.05, and its t-ratio is 2.6246, above 2, indicating its substantial effect on HDI. PVSPF's coefficient is 0.0250, indicating a positive HDI trend. A 1% PVSPF change would raise HDI by 2.50% in Nigeria. Nigerian HDI is affected by PVSPF. Private sector pension funds in Nigeria might boost the country's human capital index. Among these effects: Private pension plans can help people save for retirement and ensure financial security. This can help families focus on education and skill development by reducing financial stress. Private pension funds enable long-term human capital investments by providing retirement income. These include higher education, skill acquisition, and business startup, which can boost human capital in the country. Access to private pension funds improves future confidence and economic participation. This can boost productivity, entrepreneurship, and innovation, improving the country's human capital index. Private pension plans can lessen government social welfare dependence by helping people save for retirement. This can free up funds for human capital-building social services like education and healthcare. Thus, Nigeria's private sector pension funds can boost the human capital index by fostering financial security, long-term human capital investments, economic growth, and social welfare reduction. This agrees with Etim et al. (2023) and Udo (2023), but disagrees with Abdullahi et al. (2022).

PFI's p-value is 0.0041, below 0.05, and its t-ratio is 3.4294, above 2, indicating its substantial effect on HDI. The PFI coefficient of 0.0432 suggests it improves HDI. A 1% increase in PFI would boost HDI in Nigeria by 4.32%. Pension fund investment in Nigeria might significantly affect the HDI. Pension funds can fund infrastructure, enterprises, and other assets, boosting the economy. This can boost HDI by increasing employment, income, and living standards. Pensions

promote financial security and reduce poverty by providing retirement income. Financial stability can boost access to healthcare, education, and other essential services, improving population well-being and development. Long-term pension fund investments can stabilise the economy and fund development projects that improve human development indices like education, healthcare, and infrastructure. By boosting economic growth, social security, and sustainable development planning, pension fund investment can improve human development in Nigeria. This opposes Eche & Agbaji (2021) but disagrees with Morina & Grima (2022), Etim, et al (2023), and others.

The PFI effect on HDI is significant because the FD p-value is 0.4697 is greater than 0.05 and the t-ratio is -0.7466 is less than 2. PFI negatively affects HDI with a coefficient of -0.0557. One percent increase in PFI would decrease HDI in Nigeria by 5.57%. Retirement savings accounts can significantly affect Nigeria's HDI. These accounts can boost economic growth and population well-being by boosting retirement savings. Retirement savings accounts help reduce poverty in old age and increase access to healthcare and education. Financial security can improve well-being and quality of life, which can boost Nigeria's HDI. Retirement savings accounts also encourage savings and investment, promoting long-term economic stability. This can boost economic growth, job creation, and affluence, which affect a country's HDI. Retirement saving accounts can improve Nigeria's Human Development Index by encouraging financial security, economic stability, and population well-being. This matches Abdullahi et al. (2022).

TPF's p-value is 0.0031, below the significant value of 0.05, and its t-ratio is 3.5869, above 2, indicating its substantial effect on HDI. TPF's coefficient is 0.1640, indicating a positive HDI trend. HDI increases 16.40% for every 1% TPF change. TPF significantly affects Nigerian HDI. Total pension fund In Nigeria, can boost HDI in several ways: Better Social Security: A well-managed pension fund can give retirees with a solid income, decreasing poverty and enhancing well-being. This increases life expectancy and standard of living, raising HDI. A strong pension system can boost economic stability by mobilising savings for infrastructure and other development initiatives. Employment and economic growth may rise, raising the HDI. Pension funds encourage savings and long-term financial planning, promoting financial inclusiveness. This can improve HDI by increasing access to education, healthcare, and other critical services. Pension funds can fund social welfare programs that improve education, healthcare, and social protection for needy communities. This can boost HDI by reducing social inequality and fostering human growth. A well-functioning total pension fund in Nigeria can boost the country's Human Development Index by encouraging economic stability, social welfare, financial inclusion, and social security. This agrees with Etim et al. (2023) yet contradicts them.

Conclusion

The Nigerian contributory pension scheme and human capital development study found that such programs benefit the workforce. A well-designed contributory pension program can help Nigeria expand its human capital, boosting economic growth and sustainability. This study studied how contributory pension scheme affects Nigerian human capital development. Nigeria hosted the 2005–2022 study. The study employed secondary data (Time Series) from the PENCOS Annual Report and UNDP Human Development Reports on the variables. The contributory pension

scheme was proxied with Public Sector Pension Fund (PBSPF), Private Sector Pension Fund (PVSPF), Pension Fund Investment (PFI), Retirement Savings Account (RSA), and Total Pension Fund (TPF) (Independent Variables) to determine how it affects Nigeria's human capital development proxied with HDI. Descriptive statistics, correlation matrix, VIF, validity, ADF, and Engle-Granger Cointegration tests, and Ordinary least multiple regression analysis with E-VIEW 9.0 were used. The data showed that the following factors affect HDI in Nigeria: PBSPF, PVSPF, PFI, RSA, and TPF. Contributory pension scheme affects Nigerian human capital development.

Recommendations

These suggestions are made:

1. The Nigerian government should enhance the public sector to ensure pension funds are transparently administered and generate trust. This can boost human capital development by giving public sector workers security and stability to focus on career progress and productivity.
2. Private pension funds help recruit and retain competent workers. Private enterprises should prioritize pension fund contributions in their employee benefits package to grow human capital. Employee happiness, motivation, and long-term commitment can improve.
3. Nigerian pension funds must invest in diversified and sustainable projects to boost economic growth and employment creation. Pension fund investments that support national development goals can boost human capital development by creating job and skill opportunities.
4. Retirement savings accounts promote financial knowledge and planning by encouraging people to save for retirement. This can boost human capital development by giving people financial security and well-being to focus on personal and professional progress.
5. A comprehensive pension fund management strategy that includes public and private sector funds can boost Nigerian human capital development. Social stability, economic growth, and retirement empowerment can be achieved by making the pension fund system stable, efficient, and accessible.

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