

Social Safety Programmes and Economic Development in Nigeria

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Abstract

This study investigates the relationship between social safety programs and economic development in Nigeria, specifically examining the impact of social and civil service pensions and gratuities on economic development and poverty. The analysis utilized annual time series data spanning from 1981 to 2022 and employed the Autoregressive Distributed Lag (ARDL) technique. The findings indicate that social and civil service pensions and gratuities have a positive but insignificant effect on economic development in the long run and a positive and significant effect in the short run. Additionally, the consumer price index negatively and significantly impacts economic development in the long run but has a negative and insignificant effect in the short run. The study also reveals that domestic investment has a positive and significant impact on economic development in both the long and short runs. Population growth shows a positive but insignificant effect on economic development in both time frames. Moreover, social and civil service pensions and gratuities negatively and insignificantly affect poverty in the long run but have a negative and significant effect in the short run. Real GDP growth negatively and significantly impacts poverty in both the long and short runs, while government debt service negatively and significantly affects poverty in the long run but has a positive and significant effect in the short run. Policymakers should reconsider the design and implementation of social security programs to ensure they are efficient, sustainable, and aligned with broader development and poverty reduction goals. This may involve reforms to enhance coverage, improve administrative efficiency, and ensure the sustainability of pension systems.

Background to the Study

Nigeria's economy has grown in terms of GDP and is considered the largest in Africa. With a population of approximately 200 million, it is the most populous black nation in the world (Nwachukwu, 2023). The country's resource base, including petroleum, solid minerals, and agriculture, has contributed to economic well-being and development (Guardian, 2023). Economic development aims to improve individuals' living standards, real income, life expectancy, access to high-quality healthcare and education, and reduce poverty. Key macroeconomic variables linked to economic development that have had poor records in Nigeria include unemployment, human capital development, and poverty. Employment, defined as access to paid work, ensures income, self-worth, confidence, and promotes individuals' social and economic status, especially for the poor and vulnerable. Social protection stimulates employment through guaranteed work programs, palliative measures for crises, unemployment insurance, support for microfinance systems, encouragement of small and medium enterprises growth, and unconditional income assistance due to poverty or inability to work. These measures are closely related to employment enhancement (UNDP, 2013).

Human capital development is crucial for socio-economic progress. Technological advancements require complementary human skills. Human capital development includes formal education, work experience, and health expenditures, leading to better earnings and health conditions. Investment in education, training, and healthcare is vital for poverty alleviation, social inclusion, and social stability (Nickolas, 2019). Poverty, viewed economically, involves income insufficiency, lack of resources for quality living, poor healthcare, limited education access, hunger, and poor housing (Adamkovič & Martončík, 2017). Poverty leads to persistent financial pressure, economic vulnerability, and reduced national investment, decreasing productivity (Breunig & Majeed, 2017).

Social safety programs aim to mitigate unemployment and poverty, especially in developing countries. These programs include social insurance schemes, social assistance, and labor market interventions, gaining traction due to rising poverty and social exclusion (Mathers & Slater, 2014). Adequate social safety programs can alleviate poverty, reduce school dropouts, stimulate MSME growth, and promote social stability (Buck, 2012; Mathers & Slater, 2014). These programs are essential for inclusiveness and sustainable economic growth (Gazeaud, 2020).

Nigeria, a middle-income country in Sub-Saharan Africa, is rich in natural resources but lags behind in several economic indicators, including poverty, human capital development, and employment. Despite implementing various social safety programs, income inequality and poverty have increased. In 2020, there were 7 million newly poor people (World Bank, 2020), and over four million people fell into poverty in early 2023 (ThisDay, 2023). GDP per capita has fluctuated, showing a general decline in recent years (Macrotrends, 2024). Human capital development remains poor, with high numbers of out-of-school children (Olaopa, 2023). The unemployment rate was 37.7% in 2022 and 40.6% in 2023 (Egole, 2023), indicating increasing poverty. The effectiveness of social

safety programs in Nigeria is hindered by low coverage, weak targeting, and lack of linkage to productive opportunities. Social protection expenditure is low, accounting for about 3% of the national budget in 2022. Unfunded federal government pension obligations and ad hoc implementation further weaken the system, covering only a tiny fraction of the poor (IMF World Economic Outlook Data Base, 2019). This raises concerns about the impact of social safety programs on Nigeria's economy.

While there are studies on social safety programs' effects on the economy, most are conducted outside Nigeria or focus on micro-level impacts on employment. Few studies explore the link between social safety programs, human capital development, and poverty at the macro level. This study aims to fill this gap and contribute to the literature on social safety programs' effects in Nigeria. This study seeks to answer: What is the effect of social and civil service pensions and gratuities on economic development in Nigeria? What is the effect of social and civil service pensions and gratuities on poverty in Nigeria? The objectives are: To examine the effect of social and civil service pensions and gratuities on economic development in Nigeria. To determine the effect of social and civil service pensions and gratuities on poverty in Nigeria.

Theoretical Literature

The Utilitarian Theory

The theoretical foundation for this study is rooted in utilitarian theory, with John Stuart Mill recognized as its principal advocate. Modern utilitarianism largely stems from Mill's ideas. As highlighted by Mattisson (2017), Mill argued that the 'greatest happiness principle' underpins utilitarianism, asserting that actions and outcomes are preferable if they generate more happiness. This form of happiness is typically referred to as utility. Within utilitarianism, utility implies achieving the greatest good for the largest number of people.

Utilitarianism conceptualizes societal welfare as the aggregate of individual utilities within that society (Drane, 1990). According to this approach, societal welfare increases if an individual's gain in welfare exceeds the loss experienced by others. For instance, consider a billionaire who pays an additional tax of N200,000, which is then used for social protection for low-income earners. In this scenario, society's welfare improves as the marginal utility gained by the low-income earners from the social protection outweighs the marginal utility lost by the billionaire. Utilitarianism can also be interpreted through the lenses of individualism and consequentialism (Mattisson, 2017). Individualism in utilitarianism refers to the idea that the best outcome is determined by the sum of individual utilities, which are not intrinsically more or less valuable than the sum of their parts. This means there is no inherent benefit in how utility is distributed. Consequentialism, on the other hand, suggests that the best outcome is solely based on the consequences of a new action or policy. This implies that utility-maximizing outcomes can be ranked based on incremental gains or losses from the status quo. Therefore, the optimal utilitarian outcome is the one that maximizes the efficiency-cost ratio. However, the utilitarian approach faces criticism for not considering the relative positions of

beneficiaries and those who do not benefit from a transfer, such as social protection. Additionally, transaction costs may diminish the benefits to the extent that there is no net improvement in overall societal welfare. These potential leakages in transaction costs may undermine the intended benefits of utilitarian policies.

The Maximin Theory

The maximin theory, primarily developed by Rawls (1971), is a 20th-century theory of distributive justice. This theory begins with the premise that individuals enter into a social contract, and their rights and duties are determined by this contract. Equity and justice are derived from the contract. The theory comprises two main principles. The first principle asserts that every individual is entitled to a comprehensive, adequate scheme of equal basic liberties, which is compatible with the same liberties for all. The second principle stipulates that social and economic inequalities should be arranged such that they are both attached to positions and offices open to everyone under conditions of fair equality of opportunity, and that they benefit the least advantaged members of society (Hodgson, 2011). The first principle ensures equal political rights, while the second is known as the difference principle (Mattisson, 2017). The difference principle has been criticized for encouraging overly risk-averse behavior and for assuming that rational, holistically functioning individuals are common.

The maximin theory relates to utilitarian theory in that individuals seek to maximize their expected utility. However, the difference in distribution arises because individuals (particularly the vulnerable) facing uncertainty tend to adopt a risk-averse stance. It is also connected to needs-based egalitarianism, as Rawls (2001) advocates for the provision of equal levels of essential primary goods, such as liberty and opportunity, income, and wealth. Although Rawls initially excluded healthcare from the list of primary goods, over time, healthcare has been recognized in health literature as one of these essential goods. Applying the maximin theory in the context of welfare emphasizes maximizing the outcomes for the least advantaged. The "worst off" are those with the least social and economic opportunities, such as those with the lowest incomes or poor health conditions that, if untreated, could lead to widespread health issues. A maximin approach to social protection prioritizes protecting low-income earners. Specifically, according to this theory, those with moderately poor socio-economic conditions but a strong capacity for improvement are not prioritized. Instead, the focus is on individuals with deteriorating socio-economic conditions (Mattisson, 2017).

Libertarian Theory

A key advocate of Libertarian theory is Nozick (1974). In his work, Nozick articulates the libertarian perspective through the entitlement theory, asserting that individuals have the right to hold and transfer capital and earnings within a free market-based society. According to this theory, people are entitled to property through legitimate transfers, which is considered the only valid method of acquiring holdings. Consequently, societies must be governed to protect individual rights. Thus, the government's legitimate role is to provide basic protections against foreign or domestic threats to life, property, and

personal autonomy (Almgren, 2007). Libertarians argue that collective well-being is best achieved through individual free will and self-responsibility within a laissez-faire market economy, unencumbered by excessive taxes and regulations. Libertarian theory champions a free-market economy where freedom of choice is considered the highest moral value. They believe that the free market can handle the distribution of resources and address distributive justice. Although free-market distribution might lead to inequality, Libertarians do not view this as unjust and oppose remedial measures like tax policies or other forms of redistribution (Almgren, 2007; Dharamsi & MacEntee, 2002). In applying Libertarianism to welfare, Drane (1990), echoing Nozick (1974), emphasized that justice is maintained when individuals are not coerced, even by government tax collection for projects supported by the majority. Retributive justice, which involves government interventions like social protection measures and enforced compensation for injury, illness, and disease caused by others, aligns with Libertarian principles. Within this framework, some level of social protection is necessary to address public health threats such as AIDS, Tuberculosis (TB), and sexually transmitted diseases.

Human Capital Development Theory

The human capital theory, primarily developed in the 1950s and early 1960s by Gary Becker and Theodore Schultz, highlights the importance of education in the production of goods and services and in enhancing worker efficiency through training and skill development. According to Adelakun (2011), the combination of innate abilities with investments in education and training can significantly enhance human capabilities. These investments include expenditures on job training, health, nutrition, and education, such as building schools and institutions. Over time, as gross investment surpasses depreciation, the stock of human capital increases.

Proponents of human capital theory argue that human capital is as important as, if not more important than, physical capital. They view investment in education as a productive investment in human capital. These theorists suggest that basic literacy can enhance the productivity of workers in low-skill occupations, while tasks requiring logical and analytical reasoning can increase the productivity of workers in high-skill professions by providing specialized and technical knowledge (Todaro & Smith, 2003). They conclude that increasing national productivity and economic growth necessitates expanding educational opportunities within society. Human capital encompasses all investments in education, on-the-job training, health, migration, and other factors that boost individual productivity and earnings. By acquiring knowledge and skills with economic value, workers essentially become capitalists. A significant part of productive investment involves the acquisition of knowledge and skills, alongside investments in other forms of capital.

Dependency Theory

This theory originated from two papers written by Hans Singer and Raul Prebisch in 1949. It emerged as a response to modernization theory, an earlier development theory suggesting that all societies progress through similar developmental stages.

Modernization theory posited that today's underdeveloped regions are in a similar stage of development as today's developed regions were in the past. Therefore, to assist underdeveloped areas out of poverty, the theory suggested accelerating them along this common developmental path through investment, technology transfers, and closer integration into the global market.

Dependency theory, however, rejected this perspective. It argued that underdeveloped economies are not simply primitive versions of developed economies but have unique characteristics and structures. Crucially, these underdeveloped economies are the weaker participants in the global market. The theory emerged from the observation that resources, including capital and labor, are transferred from poor or underdeveloped countries to wealthy developed countries, thus enhancing the development of these affluent countries at the expense of the underdeveloped ones. The capital transferred to wealthy countries, which is enhanced through education, skill acquisition, and training, becomes highly valuable in these developed nations. Consequently, this process impoverishes the poorer countries while enriching the wealthy ones across all sectors. Several factors contribute to economic growth in the developing world, such as state fiscal strength, degrees of regime centralization, external political integration, and capital accumulation. These factors can be effectively leveraged to stimulate growth in various economic sectors.

Empirical Literature

Niño-Zarazúa and Hernández (2023) conducted an international comparative analysis of the recent evolution of social protection systems in sub-Saharan Africa (SSA), Latin America and the Caribbean (LAC), and the Asia-Pacific (APAC) regions. They employed Tobit models with endogenous regressors (IV-Tobit) and fractional response models with endogenous regressors (FRM) to examine the role of foreign aid in these dynamics. Their findings indicated that aid significantly contributed to the expansion of social protection systems in the Global South, estimating that a percentage increase in social protection aid leads to an increase in the share of the population covered by social protection.

Abay, Yonzan Kurdi, and Tafere (2023) analyzed survey data to understand the role of social protection systems in mitigating the adverse impacts of the COVID-19 crisis in Africa. Using descriptive analysis, they found substantial evidence that these systems played a crucial role in mitigating the crisis's adverse effects. Monyei, Onyekwelu, Emmanuel, and Taiwo (2023) explored the links between Safety Net Schemes and Poverty Alleviation in Nigeria using a sample of 24 beneficiaries. Thematic analysis revealed the importance of policy and institutional programs in reducing poverty, supporting the government's role in human capacity development. Naveed, Malik, and Adil (2023) compared the effectiveness of Social Safety Nets (SSNs) provided by the government and NGOs in rural Pakistan using a quasi-experimental methodology. They employed the treatment effect technique to analyze data from households receiving SSN assistance, with a control group determined by propensity score matching. The study found that receiving SSN did not prevent households from resorting to coping strategies; however, public SSN recipients were less likely to switch to cheaper food.

Adeoye, Okunola, and Fakunle (2022) reviewed the poverty implications of COVID-19 in Nigeria and the effectiveness of government social protection programs. Their documentary analysis indicated that COVID-19 exacerbated existing poverty and that most government policy programs were ineffective in mitigating its effects. Bailey, Hoynes, Rossin-Slater, and Walker (2022) examined the roll-out of the Food Stamps program in the US between 1961 and 1975 using Census and American Community Survey data. Their treatment effect analysis found that children with access to more economic resources before age five had better adult outcomes, highlighting the Food Stamps program as a cost-effective investment in young children.

Egbetokun, Olofinyehun, Oluwatope, Olotu, and Ejim-Eze (2021) studied the role of social protection in helping Nigerian households afford food during the COVID-19 pandemic. Using panel logit regression models on data from 1,925 households, they found that food or direct cash transfers increased the likelihood of households affording needed food. Osabohien, Matthew, Ohalete, and Osabuohien (2020) examined the impact of social protection on poverty and inequality reduction in Africa from 2000 to 2017 using fixed and random effects techniques. Their findings indicated that social protection significantly reduced poverty and inequality.

Borga and D'Ambrosio (2019) analyzed the distributional impact of three large-scale social protection schemes – the Productive Safety Net Program (PSNP) in Ethiopia, the National Rural Employment Guarantee Scheme (NREGS) in India, and the Juntos program in Peru – using descriptive analysis. They found that multidimensional poverty declined, and asset formation and living standards improved during 2006-2016. Desai and Rudra (2019) investigated the effects of trade components on social protection in developing countries between 2004 and 2011 using fixed effect techniques. They found that net food and agricultural exporters provided better social protection than countries with agricultural trade deficits, while countries with manufacturing trade surpluses experienced reduced social protection coverage.

Wang, Chan, and Han (2019) used multiple binary logistic regression to study the impact of the social welfare system on the employment status of low-income urban groups in China. They found that social welfare significantly affected employment.

Edeme (2018) examined the effect of welfare on economic growth in Nigeria from 1999 to 2016 using ordinary least square techniques. Welfare was measured by nitrous oxide and carbon dioxide emissions for environmental welfare and per capita income for economic welfare. The study found that both environmental and economic welfare significantly influenced economic growth. Ravallion, Jolliffe, and Margitic (2018) analyzed whether public spending on social protection benefits the poorest and how economic development plays a role, focusing on the developing world and the US over the last 30 years. They found that spending generally lifted the floor, mainly through social insurance, with social assistance adding only 1.5 cents per day to the floor. Bellarbi, Cheikh, and Mostefaoui (2017) studied the impact of public spending on employment and income in

Algeria from 2000 to 2012. They found that public spending on social protection positively impacted employment and consumption costs for Algerian citizens.

Research Design

This study utilizes a longitudinal research design, which involves collecting data on variables of interest repeatedly over an extended period. In such studies, researchers observe and gather data without influencing the process, enabling the examination of associations between variables to determine causal impacts within the study period (Thomas, 2020).

Source of Data

The study is based on a time series approach, with annual data spanning from 1981 to 2022. The data will be sourced from the African Development Bank Socio-Economic Database and various issues of the Central Bank of Nigeria (CBN) Statistical Bulletin. Variables such as GDP per capita, poverty (measured by the poverty headcount ratio), real GDP growth (annual %), and population growth rate will be sourced from the World Development Indicators (WDI). Other variables, including social safety programs (measured by social and civil service pensions and gratuity), domestic investment (measured by gross fixed capital formation), and government debt service, will be obtained from various issues of the CBN Statistical Bulletin.

Model Specification

The first objective is to analyze the impact of social safety programs on economic development. The functional form of the model for this objective is specified as follows:

$$EDEV = SSP, CPI, INVEST, PGROWT \quad (1)$$

Where:

EDEV = economic development, measured by real GDP per capita

SSP = social safety programmes, measured by social and civil service pensions and gratuity

CPI = consumer price index

INVEST = domestic investment, measured by gross fixed capital formation

PGROWT = population growth rate

The econometric model is specified as:

$$EDEV = b_0 + b_1SSP + b_2CPI + b_3INVEST + b_4PGROWT + u_{1t} \quad (2)$$

Equation (2) is re-specified in Autoregressive Distributed Lag (ARDL) form as follows:

$$EDEV = b_0 + b_1EDEV_{t-1} + b_2SSP + b_3CPI + b_4INVEST + b_5PGROWT + \sum_{j=1}^p \phi_1 EDEV_{t-j} + \sum_{s=0}^q \phi_2 SSP_{t-s} + \sum_{m=0}^q \phi_3 CPI_{t-m} + \sum_{z=0}^q \phi_4 INVEST_{t-z} + \sum_{z=0}^q \phi_5 PGROWT_{t-z} + \mu_{1t} \quad (3)$$

All variables remain as defined earlier.

μ_{1t} represents the error term,

while; $b_1, b_2, b_3, b_4, b_1, b_2, b_3, b_4$, and b_5, b_5 , as well as $\phi_1, \phi_2, \phi_3, \phi_4, \phi_1, \phi_2, \phi_3, \phi_4$, and ϕ_5, ϕ_5 , are the parameters to be estimated.

The a priori expectation for all parameters is positive except for population growth, which can be positive or negative. The short-run variables are represented by the terms ϕ_i (where $i=1,2,3,\dots,5$), while the lag variables represent the long-run process, denoted by ϕ_i (where $i=1,2,3,\dots,5$). The optimal lag length will be determined using the Akaike information criterion for lag length selection.

This model is selected due to its small sample property, providing unbiased estimates and t-values for both the long and short-run periods, even in the presence of endogenous regressors. Additionally, the model can accommodate independent variables that are stationary at $I(0)$ or $I(1)$ or a mix of orders. If cointegration is detected among the variables, it implies that the variables adjust to equilibrium, which can be captured by an error correction model specified as:

$$\Delta EDEV = b_0 + \sum_{j=1}^p \phi_1 EDEV_{t-j} + \sum_{s=0}^q \phi_2 SSP_{t-s} + \sum_{m=0}^q \phi_3 CPI_{t-m} + \sum_{z=0}^q \phi_4 INVEST_{t-z} + \sum_{z=0}^q \phi_5 PGROWT_{t-z} + ECM1_{t-1} + \mu_{1t} \quad (4)$$

Where $ECM1_{t-1}$ is the error correction term. The model is specified to capture objective one. However, to capture objective two, which is to determine the effect of social safety programmes on poverty, the following functional form is specified:

$$POVT = SSP, RGDP, DSERV, PGROWT \quad (5)$$

Where:

POVT = poverty, measured by the poverty headcount ratio

SSP = social safety programmes, measured by social and civil service pensions and gratuity

RGDP = real GDP growth (annual %)

DSERV = government debt service

PGROWT = population growth rate

The econometric model is specified as:

$$POVT = a_0 + a_1 SSP + a_2 RGDP + a_3 DSERV + a_4 PGROWT + u_{2t} \quad (6)$$

Equation (6) is re-specified in Autoregressive Distributed Lag (ARDL) form as follows:

$$POVT = a_0 + a_1 POVT_{t-1} + a_2 SSP + a_3 RGDP + a_4 DSERV + a_5 PGROWT + \sum_{j=1}^p \beta_1 POVT_{t-j} + \sum_{s=0}^q \beta_2 SSP_{t-s} + \sum_{m=0}^q \beta_3 RGDP_{t-m} + \sum_{z=0}^q \beta_4 DSERV_{t-z} + \sum_{z=0}^q \beta_5 PGROWT_{t-z} + \mu_{2t} \quad (7)$$

Where all the variables remained as defined earlier. μ_{2t} is the error term, while a_1, a_2, a_3, a_4 , and a_5 , as well as $\beta_1, \beta_2, \beta_3, \beta_4$, and β_5 , are parameters to be estimated? The a priori expectation

of all the parameters is positive except population growth, which can be positive or negative. The short-run variables are the different terms, β_i , ($i = 1,2,3, \dots,5$) while the lag variables are the long-run process, a_i ($i = 1,2,3, \dots,5$). The optimal lag length is to be determined using the Akaike information lag length selection criteria. The error correction model is specified as:

$$\Delta POVT = a_0 + \sum_{j=1}^p \beta_1 POVT_{t-j} + \sum_{s=0}^q \beta_2 SSP_{t-s} + \sum_{m=0}^q \beta_3 RGDP_{t-m} + \sum_{z=0}^q \beta_4 DSERV_{t-z} + \sum_{z=0}^q \beta_5 PGROWT_{t-z} + ECM2_{t-1} + \mu_{2t} \quad (8)$$

Where $ECM2_{t-1}$ is the error correction term. The model is specified to capture objective two.

Definition of Variables in the Model

Economic Development (EDEV): In this study, economic development is quantified by real GDP per capita, calculated as the GDP divided by the population. This metric serves as a widely accepted and utilized indicator for economic development, reflecting the average economic output per person within a country.

Social Safety Programs (SSP): Social safety programs are represented by social and civil service pensions and gratuity. These encompass the benefits provided to civil servants upon retirement, often in the form of a 'superannuation allowance'. Alternatively, SSP can be defined as government expenditures allocated to social and civil service pensions and gratuity.

Domestic Investment (INVEST): Domestic investment is gauged through gross fixed capital formation. This metric captures the total expenditure on investment made by the production units within a country. It encompasses changes in the stock of assets over a given period, including the net acquisition of valuables by both businesses and households.

Population Growth Rate (PGROWT): The population growth rate reflects the annual rate at which a country's population expands. Within this study, PGROWT serves as a proxy for the growth of the labor force, considering that a growing population typically correlates with an expanding labor force.

Government Debt Service (DSERV): DSERV denotes the allocation set aside by the government for debt service. It encompasses the financial resources that the federal government expends in servicing public debts, reflecting its commitment to managing and repaying accumulated debts.

These definitions provide clarity on the variables utilized within the study and their respective measures, facilitating accurate analysis and interpretation of the research findings.

Estimation Technique

To initiate model estimation, the order of the Autoregressive Distributed Lag (ARDL) will be identified. Subsequently, the Ordinary Least Squares (OLS) technique will be applied for estimation. OLS serves as a foundational method in linear regression modeling, furnishing estimates for unknown parameters by minimizing the sum of squares between observed and predicted responses, thereby facilitating a linear approximation. This method is widely regarded as the Best Linear Unbiased Estimator (BLUE), particularly when variables are linearly linked and their expected values align with their true values. In essence, OLS aims to attain the most accurate estimates with the least variance among similar linear unbiased estimators. The estimation process unfolds methodically, commencing with testing the time series for unit roots. Unit roots, indicative of non-stationary processes, can introduce complications in time series analyses. For this study, the Augmented Dickey-Fuller (ADF) unit root test will be employed, evaluating whether the characteristic equation of the process possesses a root of 1. If a root exceeds 1, it signifies an explosive process, potentially impeding convergence to equilibrium following shocks.

Following the unit root analysis, the series will be subjected to cointegration testing. Cointegration implies a long-term relationship among variables within a regression model, reflecting their mutual equilibrium. The Bounds test for cointegration, a widely employed method, will be utilized for this purpose. The null hypothesis posits the absence of a long-run relationship among the variables, while rejection indicates the presence of such a relationship.

Upon completion of cointegration testing, where a long-term relationship among variables is affirmed, an error correction model will be estimated. This model accounts for short-term deviations from equilibrium, adjusting the long-run relationship between variables over time. By incorporating error correction mechanisms, the model ensures robustness in capturing dynamic adjustments to equilibrium following short-term shocks or deviations. In essence, this systematic approach ensures thorough examination and rigorous modeling of the relationships between variables, enhancing the reliability and validity of the study's findings.

Descriptive Statistics of the Variables

The variables' descriptive statistics were estimated, and the results are shown in Table 1.

Table 1: Descriptive Statistics

Variables	Obs	Mean	Standard Deviation	Minimum value	Maximum value	P-value (Skewness)	P-value (Kurtosis)
EDEV	42	1908.921	463.5383	1408.209	2679.554	0.2637	0.0000
SSP	42	2576.072	5487.797	30.0449	19047.17	0.0000	0.0042
CPI	42	82.7229	105.5645	0.4893	421.0711	0.0002	0.0279
INVEST	42	9321.227	15038.99	87.1449	65227.13	0.0000	0.0003
PGROWT	42	2.6167	0.0704	2.5191	2.7565	0.4666	0.0013
POVT	42	34.2452	11.6462	10.9	48.9	0.1836	0.0028
DSERV	42	693155.3	1221062	1007.078	5656579	0.0000	0.0001
RGDP	42	3.0465	5.3195	-13.1279	15.3291	0.0227	0.0305

Source: Estimated by the author

The mean values of the Consumer Price Index, Population Growth Rate, the Poverty Headcount Ratio, and Real GDP Growth (annual %) are approximately equal to their respective standard deviation values. This indicates that these variables have data values that are close to the mean values. However, Real GDP per capita, Social and Civil Service Pensions and Gratuity, Gross Fixed Capital Formation, and Government Debt Service exhibit mean values significantly larger than their respective standard deviation values. This suggests that the data values for these variables are considerably larger than their standard deviation values. All variables have minimum values lower than their corresponding mean values, while their maximum values are greater. This indicates that some data values for the variables exceed the mean values, while others fall below them. Moreover, this implies that there are no outliers in the data values of the variables used in the study.

In terms of skewness, the probability values for Social and Civil Service Pensions and Gratuity, Consumer Price Index, Gross Fixed Capital Formation, Government Debt Service, and Real GDP Growth are significant at the 5 per cent level. The significant skewness probability values reject the null hypothesis of normal distribution, indicating that the data is skewed either to the right or left. Conversely, Real GDP per capita, Population Growth Rate, and the Poverty Headcount Ratio exhibit insignificant skewness probability values, accepting the null hypothesis of normal distribution at the 5 per cent level. Therefore, the data for trade globalization, population growth rate, and unemployment rate are normally distributed.

Regarding kurtosis, all variables show significance at the 5 per cent level. Consequently, the null hypothesis of kurtosis of a normal distribution is rejected at the 5 per cent level for all variables. This implies that the data for each variable differs from the tails of a normal distribution, indicating that they are not normally distributed.

Unit Root Test

The Augmented Dickey-Fuller and the Phillips-Perron tests were employed in testing the stationarity of the time series variables in the models. The test results are presented in Table 2.

Table 2: Augmented Dickey-Fuller and Philips-Perron unit root test results

Variable	Augmented Dickey-Fuller Result		Philips-Perron Result		Lag order	Order of Integration
	Level	1 st Difference	Level	1 st Difference		
EDEV	-1.491	-3.943	-2.869	-3.699	2	I(1)
SSP	-2.450	-6.215	-3.489	-6.215	2	I(1)
CPI	-1.709	-3.725	-2.709	-4.725	2	I(1)
INVEST	-1.735	-3.486	-1.735	-4.486	2	I(1)
PGROWT	-2.234	-3.167	-2.234	-4.167	2	I(1)
POVT	-2.590	-3.865	-2.590	-3.865	2	I(1)
DSERV	-4.772	-	-4.772	-	2	I(0)
RGDP	-3.670	-	-3.670	-	2	I(0)

Where * denotes significance at 5% and the rejection of the null hypothesis of the presence of unit root. The optimal lag length of 2 was chosen using Akaike's Final Prediction Error (FPE), and Akaike's information criteria. The ADF 5% critical value at levels is -3.544, while at 1st difference is -3.548. The Philips-Perron critical value at levels and 1st difference are -3.536 and -3.540. A trend was included in both the Augmented Dickey -Fuller and Philips -Perron unit root test models estimated.

Source: Estimated by the author

The Augmented Dickey-Fuller (ADF) 5 per cent critical value exceeds the test statistics for all variables tested at the level, except for Government Debt Service and Real GDP Growth. This indicates that the variables are statistically insignificant at the level, except for Government Debt Service and Real GDP Growth, which are significant at the 5 per cent level. Therefore, the null hypothesis of the presence of a unit root is accepted at the level for the variables, suggesting nonstationarity, except for Government Debt Service and Real GDP Growth, which are stationary at the level.

To address the nonstationarity of the variables (excluding Government Debt Service and Real GDP Growth), they were differenced once, and the test was conducted again at the first difference. The test statistics for the variables at the first difference exceeded the 5 per cent critical value. Consequently, the null hypothesis of the presence of a unit root is rejected at the first difference for the tested variables, indicating stationarity at the first difference. The Philips-Perron test yields results consistent with the Augmented Dickey-Fuller test, confirming nonstationarity at the level for all variables except Government Debt Service and Real GDP Growth, which become stationary at the first difference.

Effect of Social and Civil Service Pensions and Gratuity on Economic Development

In this section, we present and analyze the results pertaining to objective one. We commence with the Bounds test outcome concerning the presence of a level form relationship (cointegration) among the variables in the model for objective one. The findings are detailed in Table 3.

Table 3: Bounds test result for level form relationship (level effect) of the variables in the model for objective one

	10%		5%		1%		p-value	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F	2.592	3.966	3.167	4.744	4.562	6.616	0.002	0.001
t	-2.473	-3.589	-2.844	-4.024	-3.603	-4.912	0.000	0.000
F = 7.512								
t = -8.220								

Source: Author's computation

Upon comparison of the F-value of 7.512 with the 5 per cent critical values, it was observed to exceed both the lower and upper bounds critical values of 3.167 and 4.744, respectively. Since it surpasses the upper bound, we reject the null hypothesis of a level-form relationship, signifying the presence of cointegration among the variables. Additionally, the absolute value of the t-value (-8.220) surpasses the 5 per cent lower and upper bounds critical values of -2.844 and -4.024. This indicates cointegration among the variables, as the t-value exceeds both bounds. Specifically, the p-values for the order 0 and order 1 variables are significant, further supporting the rejection of the null hypothesis for both sets of variables. The results of the error correction model are presented in Table 4.

Table 4: Error correction estimates of the ARDL model for objective one

The dependent variable economic development (EDEV), measured by real GDP per capita				
EDEV	coefficients	Standard Errors	t-Statistics	P-value
Adjustment	-0.1626	0.0505	-3.22	0.000
Long-Run				
SSP	0.0079	0.0243	0.33	0.745
CPI	-1.8856	0.5767	3.27	0.000
INVEST	0.0097	0.0035	2.74	0.004
PGROWT	3670.899	2662.59	1.38	0.180
Short-Run				
EDEV	0.4123	0.2023	2.04	0.049
SSP	0.0455	0.0209	2.17	0.043
CPI	-5.3852	5.0292	-1.07	0.294
INVEST	0.0668	0.0268	2.49	0.029
PGROWT	655.3727	679.7631	0.96	0.344
Constant	-1300.187	1186.336	-1.10	0.284
R2	0.6321			
Adjusted R-Squared	0.4261			
F-statistics	3.07 (0.0071)			
Durbin-Watson d-statistic (15, 40)	2.2224			
Breusch-Godfrey LM test	3.354 (p = 0.0670)			

Source: Author's computation

The error correction adjustment coefficient is calculated at -0.1626 with a corresponding t-value of -3.22. This significant negative value implies that in instances of short-term disequilibrium, the variables in the model for objective one adjusts back to equilibrium in the long run at a notable pace of 16.26 per cent annually. Regarding the long-run coefficient of Social and Civil Service Pensions and Gratuity, it stands at 0.0079 with a t-value of 0.33. Since the t-value falls below 2, indicating statistical insignificance, the null hypothesis suggesting that Social and Civil Service Pensions and Gratuity have no significant effect on economic development is accepted at the 5 per cent level. Specifically, an increase in Social and Civil Service Pensions and Gratuity results in an insignificant 0.01 per cent rise in economic development. Conversely, in the short run, the impact is positive and significant, with a percentage increase leading to a noteworthy 0.05 per cent boost in economic development. Thus, Social and Civil Service Pensions and Gratuity exhibit a positive and insignificant effect on economic development in the long run, contrasted with a positive and significant effect in the short run.

The Consumer Price Index coefficient demonstrates negativity and significance. As it is statistically significant, the null hypothesis suggesting that the Consumer Price Index has no significant effect on economic development is rejected at the 5 per cent level. This signifies that the Consumer Price Index indeed wields a significant impact on economic development. Specifically, a percentage increase in the Consumer Price Index correlates with a substantial 1.89 per cent decline in economic development in the long run. However, in the short run, this effect is insignificant at the 5 per cent level, with a percentage increase leading to a 5.39 per cent insignificant reduction in economic development. Thus, the Consumer Price Index exerts a negative and significant effect on economic development in the long run, countered by a negative and insignificant effect in the short run.

The effect of Domestic Investment on economic development manifests as positive and significant, with a long-run coefficient of 0.0097 and a corresponding t-value of 2.74. This suggests that an upsurge in Domestic Investment results in a notable 0.01 per cent increase in economic development over the long term. Likewise, in the short run, Domestic Investment yields a positive and significant effect, evident through a coefficient of 0.0668 and a t-value of 2.49. This translates to a substantial 0.07 per cent increase in economic development. Thus, Domestic Investment exerts a positive and significant influence on economic development in both the long run and short run.

Regarding the effect of Population Growth on economic development, it appears positive but statistically insignificant in the long run. As a result, the null hypothesis suggesting that Population Growth has no significant effect on economic development is accepted for the long run. Hence, an increase in Population Growth leads to a positive yet insignificant impact on economic development. This pattern mirrors the findings in the short run, where the effect of Population Growth on economic development remains positive but insignificant. Therefore, Population Growth demonstrates a positive and insignificant effect on economic development both in the long run and short run.

The calculated R-squared coefficient stands at 0.6321, indicating that the independent variables elucidate approximately 63.21 per cent of the changes in economic development in Nigeria. The remaining percentage of economic development variation is attributable to other unaccounted variables. Furthermore, the F-value of 3.07, accompanied by a significant p-value of 0.0071, rejects the null hypothesis, suggesting that the independent variables lack a joint effect on the dependent variables. Thus, the independent variables collectively exert a significant impact on economic development. Moreover, the Durbin-Watson d-statistic approximates 2, signifying the acceptance of the null hypothesis of no autocorrelation. Similarly, the insignificant Breusch-Godfrey LM Chi-square Statistics of 3.354 ($p = 0.0670$) indicates that the independent variables are not serially correlated.

The Effect of Social and Civil Service Pensions and Gratuity on Poverty

In this section, we delve into the results and discussions pertinent to objective two. We initiate the analysis with the Bounds test outcome, aiming to ascertain the presence of a level form relationship (cointegration) among the variables in the model for objective two. The detailed findings are presented in Table 5.

Table 5: Bounds test result for level form relationship (level effect) of the variables in the model for objective two

	10%		5%		1%		p-value	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F	2.592	3.966	3.167	4.744	4.562	6.616	0.000	0.000
t	-2.473	-3.589	-2.844	-4.024	-3.603	-4.912	0.000	0.000
F = 10.867								
t = -9.810								

Source: Author's computation

Upon comparison, the F-value of 10.867 was found to exceed both the lower and upper bounds critical values of 3.167 and 4.744, respectively. Since it surpasses the upper bound, we reject the null hypothesis of a level-form relationship, indicating the presence of cointegration among the variables. Additionally, the absolute value of the t-value (-9.810) exceeds both the 5 per cent lower and upper bounds critical values of -2.844 and -4.024, respectively. This indicates cointegration among the variables, as the t-value surpasses both bounds. Specifically, the p-values for both the order 0 and order 1 variables are significant, further supporting the rejection of the null hypothesis for both sets of variables. The results of the error correction model are provided in Table 6.

Table 6: Error correction estimates of the ARDL model for objective two

The dependent variable is poverty, measured by the poverty headcount ratio				
POVT	coefficients	Standard Errors	t-Statistics	P-value
Adjustment	-0.0898	0.0319	-2.81	0.425
Long-Run				
SSP	-0.0101	0.0002	-0.77	0.446
RGDP	-0.4023	0.1638	-2.46	0.021
DSERV	-0.4721	0.2127	-2.22	0.038
PGROWT	7.2615	12.6314	0.57	0.571
Short-Run				
POVT	0.3017	0.1912	1.58	0.127
SSP	-0.0521	0.0149	-3.49	0.000
RGDP	-0.4238	0.1446	-2.93	0.007
DSERV	0.0115	0.0038	3.01	0.000
PGROWT	-2.7533	1.9808	-1.39	0.178
Constant	-14.9685	35.8363	-0.42	0.680
R2		0.5335		
Adjusted R-Squared		0.2723		
F-statistics		2.04 (p = 0.0579)		
Durbin-Watson d-statistic (14, 25)		2.1215		
Breusch-Godfrey LM test		0.642 (p = 0.4229)		

Source: Author's computation

The analysis of objective two reveals significant insights. Commencing with the error correction model, we observe an error correction adjustment coefficient of -0.0898, accompanied by a t-value of -2.81. This significant negative coefficient signifies that in the short run, when disequilibrium occurs, the variables adjust back to equilibrium in the long run at a notable pace of 8.98 percent annually. Examining the impact of social and civil service pensions and gratuity on poverty, we find a long-run coefficient of -0.0101, with a t-value of -0.77. Since the t-value falls below 2, indicating statistical insignificance, the null hypothesis of no significant effect is accepted at the 5 percent level. Conversely, in the short run, the effect is negative and significant, suggesting a notable decrease in poverty.

The real GDP growth coefficient exhibits significance, with a negative impact on poverty. A percentage increase in real GDP growth leads to a significant decrease in poverty, both in the long and short run. Regarding government debt service, the coefficient is negative and significant in the long run, indicating a substantial decrease in poverty. However, in the short run, the effect becomes positive and significant, implying an increase in poverty due to higher government debt service.

Population growth's effect on poverty is positive but insignificant in the long run, while in the short run, it is negative and statistically insignificant.

The R-squared coefficient of 0.5335 suggests that the independent variables elucidate about 53.35 percent of the variation in poverty in Nigeria. The F-value is significant, indicating that the independent variables have a joint significant effect on poverty. Additionally, the Durbin-Watson d-statistic supports the absence of autocorrelation, while the insignificant Breusch-Godfrey LM Chi-square Statistics suggests no serial correlation among the independent variables. These findings underscore the nuanced dynamics shaping poverty in Nigeria and the multifaceted influences of various economic factors.

Summary of Findings

The key findings of this study can be summarized as follows:

- i. Regarding objective one, the analysis revealed that social and civil service pensions and gratuity had a positive yet insignificant impact on economic development in the long run, but a positive and significant effect in the short run. Additionally, the consumer price index exhibited a negative and significant influence on economic development over the long term, while its impact was negative yet statistically insignificant in the short run. Moreover, domestic investment emerged as a significant driver of economic development, positively affecting it both in the long run and short run. Population growth, however, was found to have a positive yet insignificant effect on economic development, regardless of the time frame.
- ii. In relation to objective two, it was discovered that social and civil service pensions and gratuity had a negative and statistically insignificant effect on poverty in the long run, but a negative and significant impact in the short run. Similarly, real GDP growth demonstrated a negative and significant association with poverty, both in the long and short term. Government debt service was found to have a negative and significant effect on poverty in the long run, yet a positive and significant impact on poverty in the short run. Furthermore, population growth exhibited a positive yet insignificant influence on poverty over the long run, and a negative yet statistically insignificant effect in the short run. These findings offer valuable insights into the intricate dynamics between various socioeconomic factors and their implications for both economic development and poverty alleviation in Nigeria.

Conclusion

This study investigated the correlation between social safety programs and economic development in Nigeria, utilizing the Autoregressive Distributed Lag (ARDL) technique. Through rigorous analysis, several key findings emerged. It is deduced from these findings that the impact of social and civil service pensions and gratuity on economic development and poverty alleviation is minimal in the long term but gains significance in the short term. This implies that its efficacy as a tool for both economic development and poverty reduction is more pronounced in the short term than in the long term. Furthermore, the study revealed a negative association between the consumer price index and economic development, indicating that increases in consumer prices hinder

economic growth. Conversely, domestic investment was identified as a significant driver of economic growth and development, exerting a positive influence in both the long and short term. Moreover, the analysis unveiled that economic growth contributes to poverty reduction over both the long and short term. However, government debt service was found to exacerbate poverty in the short term, while in the long run, it leads to a decrease in the poverty level within the economy. In conclusion, these findings underscore the complex interplay between social safety programs, economic variables, and poverty dynamics in Nigeria. They highlight the nuanced effects of various factors on economic development and poverty alleviation, providing valuable insights for policymakers and stakeholders aiming to craft effective strategies for sustainable development and poverty reduction initiatives.

Recommendations for Policy

The following recommendations are put forward based on the study's findings:

- i. Policymakers ought to review the structure and execution of social security programs to guarantee their effectiveness, longevity, and alignment with broader development objectives and poverty alleviation targets. This might entail reforms aimed at enhancing coverage, streamlining administrative processes, and ensuring the sustainability of pension schemes.
- ii. Additionally, policymakers should prioritize the establishment of conducive conditions for domestic investment by implementing measures that foster macroeconomic stability, improve access to financial resources, and cultivate a competitive business environment.
- iii. Policymakers must adopt comprehensive strategies that address both immediate requirements and fundamental structural impediments to poverty reduction, particularly during periods of economic downturns. This entails addressing not only immediate needs but also underlying factors that perpetuate poverty, ensuring a more sustainable approach to poverty alleviation.

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