Social Protection Expenditure and Income Inequality in Nigeria

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Abstract
Poverty and inequality have persisted despite the increased scale of social protection implemented in Nigeria since the early 2000s. This study examines whether public expenditure on social protection has reduced income inequality in Nigeria between 2000 and 2025. Annual data is used with modelling the Gini index as a linear function of social protection expenditure (as percentage of the gross domestic product GDP), the growth rate of GDP per capita, the rate of inflation, the poverty headcount ratio, and the level of unemployment in an autoregressive distributed lag (ARDL) framework with 24 observations (2002–2025). Phillips–Perron tests indicate a mixed-series of I(0) and I(1). The short-run change in expenditure is not significant (p = .994) and contemporaneous social protection expenditure has a negative and significant coefficient, contrary to the sign expected, over inequality. Inequality is significant and positively related to growth, inflation, and unemployment, whereas the poverty headcount is insignificant. The error correction term (−1.72, < .001) suggests fast and frequent error-correction. These estimates do show that there was residual serial correlation, but. The investment figure and the level of inequality were both rising over this period. Qualitative evidence of low coverage, weak targeting and poor coordination is corroborated by the results, which currently do not show any evidence of the impact of social protection spending on reducing inequality. The paper is recommending more expansion and targeted transfers, a more up-to-date National Social Register, individualization of the relationship between transfers and employment and investment in human capital, and increased financing and monitoring.

Keywords: *social protection; income inequality; Gini index; ARDL; cash transfers; Nigeria*

1. Introduction

Nigeria is ranked as one of the biggest economies in Africa, and its economic growth has not yielded broadly distributed prosperity. In 2018/19, approximately 4 out of 10 Nigerians lived with poverty and the World Bank's poverty assessment points to slow poverty reduction due to slow growth, low human capital, labour-market issues, and shock exposure (World Bank, 2022). There is gender, regional and intergenerational transmission of poverty and unequal access to education, health-care, infrastructures and productive employment. Social protection can be broadly understood as public policies and programmes to tackle and mitigate poverty and vulnerability throughout the life cycle, and is a key tool for governments to face these challenges (International Labour Organization [ILO], 2021). Over the years, successive Nigerian governments have put in place a number of such measures including pension reform in 2004, the national health insurance in 2005, youth-enterprise schemes, and the National Social Investment Programme (with cash-transfer, N-Power, and school-feeding elements)

from 2016. Programmes of this type can, directly, decrease the level of inequality by providing income transfer to poor households, and indirectly, by enhancing human capital, growing employment opportunities and mitigating shocks (Barrientos, 2013; Devereux & Sabates-Wheeler, 2004). But, on the ground, the Nigerian system has been viewed as small-scale, weak across all tiers of government and poorly coordinated (Holmes et al., 2012), and plagued with institutional failures, corruption, and low coverage (Ogunnubi, 2024).

How effective this growing suite of programmes has been to reduce inequality at the national level remains largely unknown. Most of the available Nigerian literature is qualitative, or focuses on the impact of individual programmes, and there is little national time series evidence of the relation between the overall level of social protection and inequality. This paper is particularly making contributions by performing ARDL estimation for Gini index on social protection expenditure for the period 2000 to 2025, controlling growth, inflation, poverty and unemployment level; the importance of the paper is observing the long run relationship between social protection expenditure and the Gini index. The study aims to determine; (a) the impact of social protection expenditure on Nigerian income inequality; (b) trend of income inequality and expenditure on social protection in Nigeria; and (c) challenges to effectiveness of social protection. The following null hypotheses are tested statistically: H01: "Social protection expenditure does not have significant effect on income inequality." and H02: "Income inequality and social protection expenditure do not show any significant trend. The third goal is dealt with in the literature, in addition to being discussed in the interpretation of the findings, instead of using a statistical test. Review of the literature (Section 2), data and methodology (Section 3), result presentation and discussion (Section 4) and policy recommendations (Section 5) are presented.

2. Literature Review

2.1 Social Protection and Inequality: Concepts and Channels

Social protection includes social assistance (including cash transfers and school feeding), social insurance (including pensions, health insurance) and labour-market programmes. A “transformative” approach combines measures that converge with a “relational” perspective, but also include measures that speak to structural factors related to inequalities of power, access, etc. (Devereux & Sabates-Wheeler, 2004). Measuring it in percentage points (between 0 to 100) and expressed in this way it is commonly summarized using the Gini index ranging from 0 (perfect equality) to 100 (perfect inequality). There are a number of paths through which social protection works to influence inequality. The direct impact of transfers is on poor households' incomes, and a distribution compression is dependent on targeting, benefit design, and benefit levels. The international evidence review shows that, while evidence on household consumption is widespread, it demonstrates that cash transfers increase it overall, and that evidence on impacts of cash transfers on education and health is promising but limited, though the effects depend heavily on the type of cash transfer being delivered, and how it is designed and implemented (Bastagli et al., 2016). Protection that facilitates education, health, nutrition and enhances the human capital on a longer horizon can help to reduce intergenerational transmission of poverty. Social protection qualifications are not executed to empower equity where they remain small or where they get to the non-poor or where they cost from or match their advantages.

2.2 Theoretical Framework

The study is informed by four strands of theory. The Social-Contract and Social-Justice approaches argue that the state has a minimum obligation to protect its citizens and that institutions should be organized to serve the least well-done citizens (Rawls, 1971) which our constitution takes for granted in Nigeria. Economic capabilities functioning as a way of

thinking about poverty sees poverty as a lack of economic capabilities which people want, and therefore poverty is defined as a lack of capabilities to enjoy a valued life, including a healthy life, a knowledgeable life and a life with access to basic services (Sen, 1999). Human-capital theory suggests that investment in education, good health and skills will lead to a more productive and more valuable worker and will slowly reduce the income gap over time (Becker, 1964). Kuznets (1955) hypothesized that inequality increases over the initial stages of economic growth then declines thereafter. Nigeria, had it been on the up-sweep part of the curve, would be experiencing a growth rate that results in increased inequality unless it compensated through "redistributive policy. Taken together, these perspectives imply a negative relationship between social protection expenditure and inequality, a positive relationship between inequality and both inflation and unemployment (which hurt low-income households disproportionately), and an ambiguous relationship with growth.

2.3 Social Protection in Nigeria and Empirical Evidence

Holmes et al. (2012) mapped social protection in Nigeria and found that it was still in its infancy, at very small scales compared to the number of the poor, that funding was very low, and that there were no overall policy and little co-ordination, which meant reduced impact. More recently, World Bank (2022) identified that social protection had limited scope before the advent of COVID-19 and was increased but only in a modest way during the pandemic itself. The review by Ogunnubi (2024) revealed the failure of social protection schemes to narrow the inequality gap largely due to weak political commitment, weak monitoring and evaluation, poor targeting, institutional inequalities and corruption and low coverage.

There is less and less quantifiable evidence and "and" evidence. By analyzing data for 1984-2021, using dynamic ordinary least squares with structural breaks, Ajisafe et al. (2024) conclude that, with or without incorporating institutional quality, social cash transfers were found to be negatively associated with poverty and inequality, but with a positive relationship for macroeconomic instability. Government expenditure is usually incorporated as one of several control variables in empirical analyses of determinants of inequality using ARDL procedures in Nigeria, except the social protection spending is isolated (Obiakor et al., 2022). The external evidence suggests that transfers designed and implemented well and are sufficiently financed can be used to alleviate poverty and potentially inequality outside of Nigeria (Bastagli et al., 2016).

2.4 Research Gap

Three gaps follow. Firstly, there is a bias towards the qualitative or programme-specific evidence in Nigeria, with few national time-series pictureings of the relationship between aggregate social protection spending and inequality. Second, even existing quantitative research focuses on cash transfers, and poverty instead of the Gini index. Thirdly, few studies distinguish between short-run and long-run impacts and apply any test for the lagged response that public spending can be expected to have. This study applies the ARDL method which target the second and third gaps directly.

3. Methodology

3.1 Data and Variables

The study uses annual secondary data for 2000–2025 drawn from the Central Bank of Nigeria Statistical Bulletin (Central Bank of Nigeria, 2026). The dependent variable used is Gini index of income inequality (with the scale of 0–100). Government social protection spending (as percent of GDP) is the key explanatory variable. A set of four control variables represents the macroeconomic and social context: growth of GDP per capita, inflation, poverty headcount ratio and the unemployment rate. The variables have been defined and the sign is indicated in

Table 1. The ARDL model is estimated on 24 observations from 2002 to 2025 since the lags consume the number of observations.

Table 1: **Variables, Measurement, and Expected Signs**

Variable	Measurement	Role	Expected sign
INEQ	Gini index (0–100)	Dependent	–
SPIE	Social protection expenditure (% of GDP)	Main regressor	Negative
GDP	GDP per capita growth (annual %)	Control	Ambiguous
INFL	Consumer price inflation (annual %)	Control	Positive
POHC	Poverty headcount ratio (% of population)	Control	Positive
UMPTR	Unemployment rate (% of labour force)	Control	Positive

Note. Data are from Central Bank of Nigeria (2026). A negative sign on SPIE means that higher expenditure is expected to reduce inequality.

3.2 Model Specification

Following the logic of the theoretical framework, inequality is written as a function of social protection expenditure and the control variables:

$$INEQ_t = \beta_0 + \beta_1 SPIE_t + \beta_2 GDP_t + \beta_3 INFL_t + \beta_4 POHC_t + \beta_5 UMPTR_t + \varepsilon_t \quad (1)$$

Because the variables are a mixture of I(0) and I(1) series (Section 4.2), the model is estimated in ARDL form (Pesaran et al., 2001):

$$\Delta INEQ_t = \alpha_0 + \sum_{i=1}^{p} \varphi_i \Delta INEQ_{t-i} + \sum_{j=0}^{q} \theta_j' \Delta X_{t-j} + \delta_0 INEQ_{t-1} + \delta' X_{t-1} + \varepsilon_t \quad (2)$$

where **X** is the vector of regressors (SPIE, GDP, INFL, POHC, UMPTR). The lag orders were chosen by the Schwarz Bayesian criterion, which selected ARDL(2,1,2,0,0,1) for INEQ, SPIE, GDP, INFL, POHC, and UMPTR respectively. The long-run coefficient on each regressor is obtained as the sum of its estimated coefficients divided by one minus the sum of the coefficients on lagged INEQ. The short-run dynamics are estimated through the error-correction model:

$$\Delta INEQ_t = \alpha_0 + \sum_{i=1}^{p} \varphi_i \Delta INEQ_{t-i} + \sum_{j=0}^{q} \theta_j' \Delta X_{t-j} + \lambda ECT_{t-1} + u_t \quad (3)$$

where ECT_{t-1} is the lagged error-correction term. A negative and significant λ indicates that inequality adjusts back toward its long-run relationship with the regressors, and its significance is also taken as evidence of a long-run relationship (Banerjee et al., 1998).

3.3 Estimation Procedure

This analysis is carried out in four steps. Descriptive statistics and the Jarque–Bera test (Jarque & Bera, 1987) summarise the data. Second, Phillips–Perron (PP) tests (Phillips & Perron, 1988) are used to test the order of integration since order is important as the ARDL method does not allow for any variable to be integrated at I(2). The PP test is preferable to the Dickey–Fuller test because it saves from the nonparametric corrections for serial correlation and heteroskedasticity. Thirdly, the ARDL and the error correction models are estimated. Fourth, diagnostic checks to promote residual analysis are used: The Lagrange Multipplier test for serial correlation (Breusch, 1978; Godfrey, 1978), the Durbin–Watson statistic (Durbin & Watson, 1950), Ramsey's test of functional form (1969) and the Jarque–Bera normality test. Simple linear time trends are applied to social protection expenditure and Gini index to help meet the second objective.

4. Results and Discussion

4.1 Descriptive Statistics and Trends

Table 2 summarises the data. The gini index was on average 31.9 (between 23 and 37), and social protection spending was 0.40 % of GDP at average level, and never more than 0.84 % of GDP, indicating the relatively small size of programmes. The inflation rate was 12.8%, on average, the highest being 33.2% for one year, and GDP per capita growth distribution was strongly negatively skewed due to one large contraction. The Jarque–Bera statistics show only GDP growth strongly varies from normality ($p < .001$) while the rest are consistent with normality distributions.

Table 2: **Descriptive Statistics, 2000–2025**

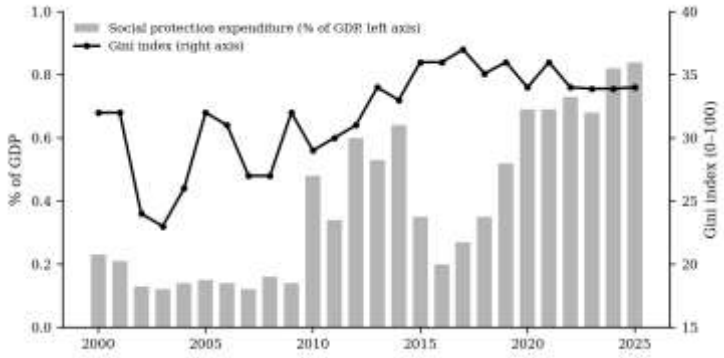
Statistic	INEQ	SPIE	GDP	INFL	POHC	UMPTR
Mean	31.881	0.395	−0.008	12.831	50.142	4.027
Median	32.500	0.345	0.200	11.900	54.200	3.800
Maximum	37.000	0.840	2.200	33.200	69.000	5.700
Minimum	23.000	0.120	−8.300	3.000	21.000	3.000
Std. dev.	3.839	0.249	1.927	7.667	12.706	0.684
Skewness	−0.832	0.391	−3.097	0.725	−0.720	0.991
Kurtosis	2.787	1.654	14.476	3.126	2.948	3.348
Jarque–Bera	3.052	2.627	184.223	2.297	2.250	4.389
p (Jarque–Bera)	.217	.269	< .001	.317	.325	.111
n	26	26	26	26	26	26

Note. Authors' calculations from the annual data. Standard deviations use $n - 1$.

Figure 1 plots the two key series. Expenditure was low and flat at roughly 0.12%–0.23% of GDP until 2009, rose sharply from 2010, and reached its highest levels after 2019. The Gini index, in contrast, fell to 23 in 2003 and then drifted upward to the mid-30s from about 2013. Linear trend regressions confirm that both series rose over the period: expenditure by about 0.027 percentage points of GDP per year ($p < .001$) and the Gini index by about 0.35 points per year ($p < .001$). The null hypothesis H_{02} of no significant trend is therefore rejected. The correlation between the two series in levels is positive ($r = .53$, $p = .006$), but the correlation between their annual changes is small and insignificant ($r = -.19$, $p = .365$). The first correlation reflects two trending series moving together and should not be read as evidence of causation; the second shows no tendency for years of larger spending increases to coincide with falls in inequality.

Figure 1

Social Protection Expenditure and the Gini Index in Nigeria, 2000–2025



Source: Authors' plot from the annual data (Central Bank of Nigeria, 2026).

4.2 Unit Root Tests

Table 3 reports the PP tests. The Gini index, social protection expenditure, the poverty headcount, and GDP growth are non-stationary in levels and stationery in first differences, so they are I (1). Inflation is stationary in levels, so it is I(0). The unemployment rate is stationary in first differences only at the 10% level, which gives weak evidence of I(1) behaviour. No variable is I (2). The mixture of I(0) and I(1) variables supports the ARDL approach. The finding that a growth rate is I(1) is unusual and may reflect the single extreme observation in the series.

Table 3: **Phillips–Perron Unit Root Tests**

Variable	PP statistic	1% critical value	*p*	Tested at	Order
INEQ	−5.380	−3.738	.0002	First difference	I(1)
SPIE	−5.763	−3.738	.0001	First difference	I(1)
GDP	−15.144	−3.738	< .001	First difference	I(1)
POHC	−4.546	−3.788	.0019	First difference	I(1)
INFL	−4.612	−3.724	.0017	Level	I(0)
UMPTR	−2.691	−3.738	< .10	First difference	I(1)

Source: Authors' estimates. The null hypothesis is that the series has a unit root. UMPTR is stationary in first differences at the 10% level only.

4.3 ARDL Estimates

Table 4 reports the ARDL (2,1,2,0,0,1) estimates. The contemporaneous coefficient on social protection expenditure is essentially zero and insignificant (p = .994), but the one-year lag is positive and significant (β = 12.38, p = .010). A rise in expenditure of one percentage point of GDP in the previous year is thus associated with a higher Gini index, which is the opposite of the expected sign. Because the current and lagged terms are highly correlated, it is safer to interpret their sum (12.41) than the individual coefficients. The sample is also small, so a one-percentage-point change in expenditure is large relative to the observed range (0.12–0.84).

GDP growth has positive and significant coefficients at all three lags ($p \leq .031$), which suggests that growth in this period was associated with widening rather than narrowing inequality. Inflation is positively and significantly associated with inequality (β = 0.32, p = .007). Unemployment has a large positive contemporaneous coefficient (β = 14.56, p < .001) that is partly reversed at the first lag (β = −2.55, p = .058). The poverty headcount is negative but insignificant (p = .194). The model explains most of the variation in the Gini index (R^2 = .897; adjusted R^2 = .818; F = 11.37, p < .01).

Table 4: **ARDL (2,1,2,0,0,1) Estimates (Dependent Variable: INEQ)**

Variable	Coefficient	Std. error	*t*-statistic	*p*
$INEQ_{t-1}$	−0.0249	0.1946	−0.128	.900
$INEQ_{t-2}$	−0.6907	0.1671	−4.133	.001***
SPIE	0.0253	3.1521	0.008	.994
$SPIE_{t-1}$	12.3819	4.0984	3.021	.010**
GDP	0.6524	0.2700	2.416	.031**
GDP_{t-1}	2.2476	0.3940	5.705	< .001***
GDP_{t-2}	1.6621	0.3310	5.021	< .001***
INFL	0.3164	0.0980	3.230	.007***
POHC	−0.0510	0.0373	−1.369	.194
UMPTR	14.5552	2.2510	6.466	< .001***
$UMPTR_{t-1}$	−2.5479	1.2237	−2.082	.058*

Source: Authors' estimates, $n = 24$ (2002–2025). $R^2 = .897$; adjusted $R^2 = .818$; $F = 11.369$, $p < .01$; Durbin–Watson = 3.067. *$p < .10$, **$p < .05$, ***$p < .01$.

4.4 Implied Long-Run Effects and Error Correction

Table 5 shows the long-run coefficients implied by the ARDL estimates. A sustained one-percentage-point increase in social protection expenditure is associated with a 7.2-point higher Gini index in the long run, and the signs for growth, inflation, and unemployment are likewise positive. These are point estimates derived from the coefficients in Table 4; standard errors for the long-run effects were not available, so their significance cannot be assessed and they should be read with caution.

Table 5: **Implied Long-Run Coefficients**

Variable	Long-run coefficient
SPIE	7.2321
GDP	2.6592
INFL	0.1845
POHC	−0.0297
UMPTR	6.9990

Source: Computed as the sum of the coefficients on each regressor in Table 4 divided by $1 - (\varphi_1 + \varphi_2) = 1.7156$.

Table 6 reports the error-correction model. The change in inequality is persistent ($\beta = 0.69$, $p = .001$). The short-run change in social protection expenditure has no significant effect ($p = .994$), while changes in GDP growth ($p = .028$), inflation ($p = .005$), and unemployment ($p < .001$) are significant and positive, and the lagged change in GDP growth is significant and negative ($\beta = -1.66$, $p < .001$), so the growth effect reverses over time. The error-correction term is −1.716 and significant at the 1% level. Its sign confirms adjustment toward the long-run relationship, but a magnitude above one in absolute value implies overshooting: after a shock, inequality over-corrects and then oscillates back toward equilibrium rather than converging monotonically. The coefficient should not be read as "172% of the disequilibrium is corrected".

Table 6: **Error-Correction Model (Dependent Variable: ΔINEQ)**

Variable	Coefficient	Std. error	t-statistic	p
$\Delta INEQ_{t-1}$	0.6907	0.1671	4.133	.001***
ΔSPIE	0.0253	3.1521	0.008	.994
ΔGDP	0.6524	0.2700	2.416	.028**
ΔGDP_{t-1}	−1.6621	0.3310	−5.021	< .001***
ΔINFL	0.3164	0.0980	3.230	.005***
ΔPOHC	−0.0510	0.0373	−1.369	.190
ΔUMPTR	14.5552	2.2510	6.466	< .001***
ECT_{t-1}	−1.7156	0.2391	−7.177	< .001***

Source: Authors' estimates, $n = 24$. $R^2 = .810$; adjusted $R^2 = .664$; $F(7, 16) = 7.932$, $p < .001$; standard error of regression = 1.705; Durbin–Watson = 3.067. **$p < .05$, ***$p < .01$.

4.5 Diagnostic Tests

Table 7 indicates that there is no evidence of heteroskedasticity, the functional form is appropriate and the residuals are normally distributed. The test for serial correlation, however, decisively rejects the null hypothesis of no serial correlation (p < .001) and the Durbin–Watson statistic of 3.07, which is far from the 2 predicted by the null hypothesis, indicates negative autocorrelation. Standard errors and t statistics in Tables 4 and 6 are possibly not reliable due to residual serial correlation, and therefore the significance level reported above is only indicative, and not definitive. It could indicate that dynamics and/or measurement errors were not reported in the data.

Table 7: **Residual Diagnostic Tests**

Test	Statistic	p	Conclusion
Serial correlation (LM), $\chi^2(1)$	13.553	< .001	Serial correlation present
Serial correlation (*F*), $F(1, 12)$	15.569	.002	Serial correlation present
Functional form (RESET), $\chi^2(1)$	1.382	.240	Adequate
Normality (Jarque–Bera), $\chi^2(2)$	1.219	.544	Residuals normal
Heteroskedasticity, $\chi^2(1)$	0.085	.770	Homoskedastic

Source: Authors' estimates. Durbin–Watson statistic = 3.067.

4.6 Discussion

Social protection expenditure. H_{01} states that social protection expenditure has no significant effect on inequality. The evidence only partly rejects it: the contemporaneous and short-run effects are insignificant, and the lagged effect is significant but positive. No specification supports the expected inequality-reducing effect. This supports the qualitative findings that indicate Nigerian programmes are too small, not well targeted and poorly coordinated to reduce national inequality (World Bank, 2022; Ogunnubi, 2024; Holmes et al., 2012). On average, households invested less than 0.4% of GDP and such a programme is unlikely to help them make any significant shifts in the distribution of national income, although it may raise the income of better-off households through formal-sector pensions and insurance. This differs from the reported "inequality reduction" effects from cash transfers (Ajisafe et al., 2024), when these measures the impact of cash transfers, as opposed to money spent as a whole and measure the impact over a longer time period, making the comparison non-comparable.

The positive lagged coefficient is meant to indicate that there is no effect of social protection on inequality, but rather that it does not lead to an increase in inequality. A more likely story, though, is the reverse one: Governments increased programmes in response to increases in poverty and inequality, and increased spending leads to increased inequality, not the other way around. The ARDL not only omits the distinction, but the serial correlation is more uncertainty. **Growth, inflation and unemployment.** The positive relationship between growth and inequality is akin to the upward trend in a Kuznets-like relationship and World Bank (2022) findings of non-inclusive growth in Nigeria. Inflation is redistributive because borrowers' net assets are smaller that are not as inflation-proof as those of the lenders, and the real value of fixed transfers decreases. Joblessness increases inequality, as it lowers the income level for lower-income families. The negligible changes in the Poverty headcount alone denotes that the relationship between poverty and inequality is not very close during this time and after controlling all other factors.

5.1 Conclusion

This study examined whether social protection expenditure has reduced income inequality in Nigeria between 2000 and 2025. There was a significant increasing trend of expenditure since 2009, and this coincided with increasing trend of the Gini index – very probable reverse causality and hence no significant equation cointegration short-run relationship between the ones. There was also a positive relationship between the ones, with growth, inflation and unemployment, which is most likely due to reverse causality effect. Both qualitative literature and results indicate that social protection in Nigeria is still not scaled up sufficiently, targeted properly and well-coordinated to bring down local inequality at the national level. Results should be taken as indicative due to the following reasons: (1) serial correlation because the sample included in this study was small and for that reason it may not accurately represent the population, and (2) data limitations inherent in the character of the data.

5.2 Policy Recommendations

Based on the findings of this study, the following recommendations are suggested.

1. Government should expand both the scope and effectiveness of cash transfers for the poorest and most vulnerable, and ensure that the National Social Register is up to date, so that people who end up in poverty due to inflation, unemployment or conflict can benefit from these transfers without having to be denied for failing to provide documentation or access to a bank account.
2. Small business financing, education and support, relief for health, transfer to agricultural assistance and skills trainings are to be linked to enable short-term relief to become a long-term strategy for improving human capital and income.
3. Social protection financing must shift towards more domestic financing, using improved tax collection and reallocating expenditure budgets, and not rely primarily on donor resources.
4. Federal, state and local programmes should be coordinated within a policy guidance framework with regular publicity on the beneficiaries, payments, geographic spread, administrative costs and results to minimize leakages, duplication and politicization.

5.3 Limitations and Directions for Future Research

Several limitations qualify the findings. First, the sample is small (24 observations in estimation) which is reflected on the weak inference and also in the fact that the residuals are serially correlated. Second, official estimates of the Gini index are available only for a handful of years and there are likely to be differences between the series across survey periods, therefore inducing measurement error into the annual series, especially for the cases where employment data is available. Third, there were no bounds test or standard errors for a long-

term relationship and the issue of significance of the error-correction term was used as evidence of long-run relationship. Fourth, no distinction is made between programmes with respect to the type of programme, its coverage and its targeting. Future research might include the use of survey microdata for the production of comparable measures of inequalities, their analysis by specific programmes or states, the analysis of bounds tests and robust standard errors, instrumental or panel closer and tests for nonlinear effects.

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References

Ajisafe, R. A., Okunade, S. O., & Fatai, M. O. (2024). Modelling structural breaks in social cash transfers effects on poverty and inequality reduction in Africa: A case of Nigeria. *Scientific African, 23*, Article e02106. https://doi.org/10.1016/j.sciaf.2024.e02106

Atkinson, A. B. (2015). *Inequality: What can be done?* Harvard University Press.

Banerjee, A., Dolado, J., & Mestre, R. (1998). Error-correction mechanism tests for cointegration in a single-equation framework. *Journal of Time Series Analysis, 19*(3), 267–283.

Barrientos, A. (2013). *Social assistance in developing countries*. Cambridge University Press.

Bastagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., Schmidt, T., & Pellerano, L. (2016). *Cash transfers: What does the evidence say? A rigorous review of programme impact and of the role of design and implementation features*. Overseas Development Institute.

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. National Bureau of Economic Research.

Breusch, T. S. (1978). Testing for autocorrelation in dynamic linear models. *Australian Economic Papers, 17*(31), 334–355.

Central Bank of Nigeria. (2026). *Statistical bulletin*. https://www.cbn.gov.ng

Devereux, S., & Sabates-Wheeler, R. (2004). *Transformative social protection* (IDS Working Paper 232). Institute of Development Studies.

Durbin, J., & Watson, G. S. (1950). Testing for serial correlation in least squares regression: I. *Biometrika, 37*(3–4), 409–428.

Godfrey, L. G. (1978). Testing against general autoregressive and moving average error models when the regressors include lagged dependent variables. *Econometrica, 46*(6), 1293–1301.

Holmes, R., Akinrimisi, B., Morgan, J., & Buck, R. (2012). *Social protection in Nigeria: Mapping programmes and their effectiveness*. Overseas Development Institute.

International Labour Organization. (2021). *World social protection report 2020–22: Social protection at the crossroads – in pursuit of a better future*. International Labour Office.

Jarque, C. M., & Bera, A. K. (1987). A test for normality of observations and regression residuals. *International Statistical Review, 55*(2), 163–172.

Kuznets, S. (1955). Economic growth and income inequality. *American Economic Review, 45*(1), 1–28.

Obiakor, R., Akpa, E., & Okwu, A. (2022). *Economic size, uncertainty, and income inequality in Nigeria* (MPRA Paper No. 113637). University Library of Munich. https://mpra.ub.uni-muenchen.de/113637/

Ogunnubi, O. O. (2024). Towards addressing poverty and inequality in Nigeria: Rethinking social protection strategies. *The Journal of Sociology & Social Welfare, 51*(3), Article 2. https://doi.org/10.15453/0191-5096.4653

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics, 16*(3), 289–326.

Phillips, P. C. B., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika, 75*(2), 335–346.

Ramsey, J. B. (1969). Tests for specification errors in classical linear least-squares regression analysis. *Journal of the Royal Statistical Society: Series B (Methodological), 31*(2), 350–371.

Rawls, J. (1971). *A theory of justice*. Harvard University Press.

Sen, A. (1999). *Development as freedom*. Alfred A. Knopf.

World Bank. (2022). *A better future for all Nigerians: Nigeria poverty assessment 2022*. https://doi.org/10.1596/37295