African Journal of Social Issues 8 (1): 2025
Available online at https://ajosdemar.com;
https://www.ajol.info/index.php/ajosi
Copy Right: © Author(s)
DOI: https://dx.doi.org/10.4314/ajosi.v8i1.74

CC BY

p-ISSN 2672 – 5142; e-ISSN 2734 – 3324

Original Research

MACROECONOMIC DRIVERS AND SOCIAL PROTECTION DIMENSION OF INCLUSIVE GROWTH IN TANZANIA. A TIME SERIES ANALYSIS

[1]LIBERATI John Msoma, [2]LIHOYA Anthony Chamwali, and [3]SALVIUS Mbano
[1]Tanzania Institute of Accountancy, Mbeya, Tanzania,
[2 & 3] Department of Economics, Mzumbe University, Mzumbe, Tanzania

E-mail: [1]msomaliberati@gmail.com, [2]lichamwali@mzumbe.ac.tz, *and* [3]sjmbano@mzumbe.ac.tz

ABSTRACT
This study analyse the influence of macroeconomic drivers GDP per capita growth, inflation, unemployment, and government expenditure on social protection in Tanzania, proxied by under-5 mortality rates (1970-2024). Amid fiscal constraints, inflation volatility, and informal employment dominance, empirical gaps hinder policy for Vision 2025/2050 goals. Using SB-ARDL and NSB-ARDL models on World Bank data, results show cointegration ($F=7.766$, $p<0.01$). Long-run: unemployment strongly raises mortality ($\beta=21.71$, $p=0.031$); GDPPC moderately boosts it ($\beta=3.79$, $p=0.043$), moderated negatively by interaction. Short-run negative adjustments prevail; Granger causality result tests confirm causality. Diagnostics validate stability, no autocorrelation, heteroskedasticity, multicollinearity and even endogeneity. Policymakers should prioritise job creation to curb unemployment's adverse effects on child mortality, targeting formal sector expansion and informal worker protections. Boost GDP per capita through diversified growth in agriculture, tourism, and mining while pairing it with targeted social spending to maximise health gains. Stabilise inflation via monetary discipline and enhance fiscal allocation to social safety nets like PSSSF, and NSSF, ensuring equitable coverage for Vision 2025/2050 inclusive growth.

Keywords
Social Protection, Mortality rate, Tanzania, Macroeconomic Drivers, Inclusive Growth

INTRODUCTION
The influence of macroeconomic drivers on social protection remains a critical area of inquiry in Tanzania's pursuit of inclusive growth. While social protection systems such as cash transfers and pensions are essential for reducing poverty and promoting equity, their development and sustainability depend heavily on the macroeconomic environment. Factors including GDP growth, inflation control, government expenditure, and employment generation shape the capacity and effectiveness of these programs (Batool & Bhatti, 2020; World Bank, 2021; Davoodi, 2021). Despite ongoing efforts, challenges such as fiscal constraints, inflation volatility, and the predominance of informal employment limit social protection coverage and impact (Osabohien et al., 2021; Kamah et al., 2021). Moreover, there is a paucity of rigorous empirical evidence specifically analysing these macroeconomic influences within the Tanzanian context, which hinders the formulation of targeted, evidence-based policies.

This study addresses this gap by empirically examining the dynamic relationships and causal effects of selected macroeconomic drivers on social protection in Tanzania, conceptualised through indicators such as child mortality rates as a proxy for social protection outcomes. By employing advanced econometric models including the Structural Break ARDL and Nonlinear Structural Break ARDL approaches on a 55-year dataset, the research aims to uncover both short- and long-run impacts and asymmetric effects of economic variables. The objective is to provide robust, context-specific evidence that informs effective policy interventions to strengthen social protection systems and foster inclusive growth aligned with Tanzania's Vision 2025 and 2050.

EMPIRICAL REVIEW

The development of social protection systems in Tanzania hinges significantly on macroeconomic factors. Sustained GDP growth enhances fiscal space, enabling higher government investment in social protection programs like cash transfers and pensions (Batool & Bhatti, 2020; World Bank, 2021). However, maintaining fiscal sustainability requires careful balancing of expenditures with debt obligations (Davoodi, 2021). Social protection also functions as a redistributive mechanism, helping to extend economic gains to vulnerable groups and foster equity.

Government spending, exemplified by Tanzania's Productive Social Safety Net (PSSN), plays a crucial role in cushioning economic shocks and reducing poverty, particularly during downturns (World Bank, 2021; Adeosun et al., 2020). Inflation control is vital to preserving the real value of benefits, as high inflation erodes beneficiaries' purchasing power, thereby weakening social protection effectiveness (Nene et al., 2022; Davoodi, 2021).

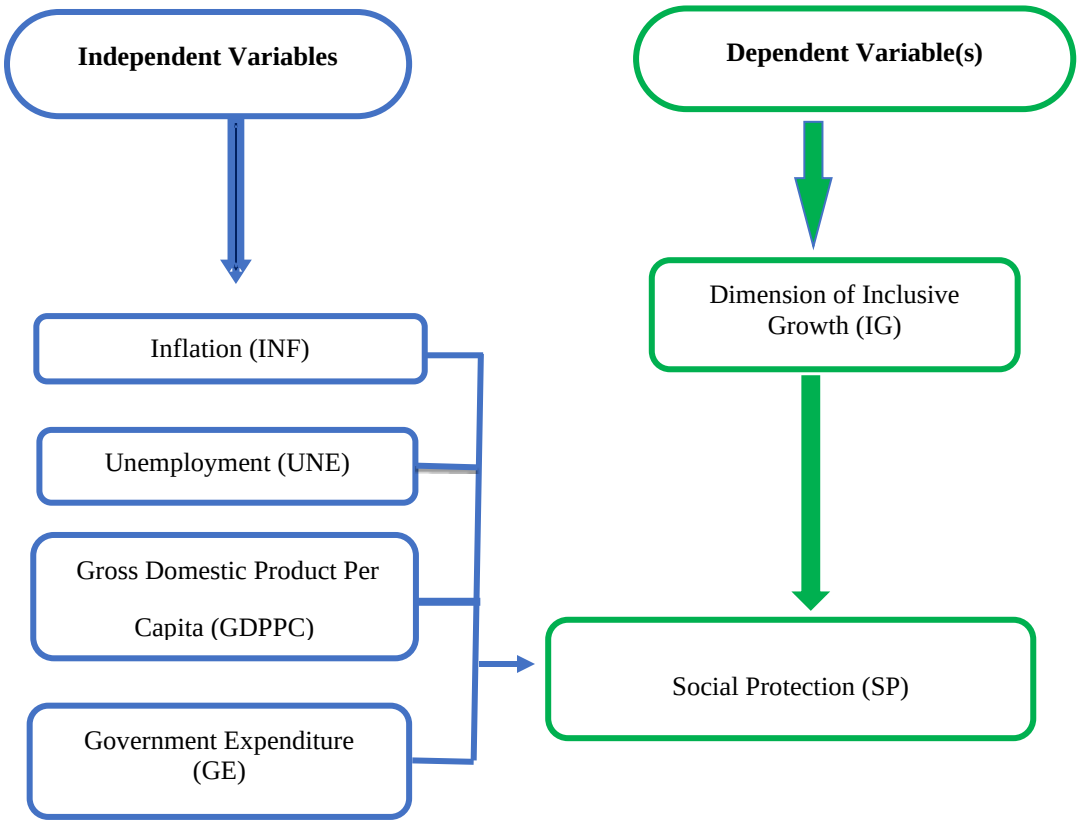
Employment growth, especially in formal sectors, supports the sustainability of contributory social insurance. Nevertheless, the large informal sector limits coverage, creating a need for complementary non-contributory programs to protect marginalised populations (Osabohien et al., 2021; Kamah et al., 2021). Institutional quality and governance are pivotal for the effective implementation and targeting of social protection, with strong management boosting program impact (Gyamfi et al., 2022).

Overall, Tanzania's social protection advances are closely linked with macroeconomic stability, government fiscal commitment, inflation management, and employment generation, aligning with the country's inclusive growth visions in TICGL (2025) and World Bank (2025). The review emphasises a scarcity of strong Tanzania-specific evidence, which the current research seeks to address through rigorous empirical investigation to guide policymaking**.**

CONCEPTUAL FRAMEWORK

This study analyse the influence, relationships, direction, and granger causality of selected macroeconomic drivers on social protection as a dimension of inclusive growth in Tanzania, building upon empirical evidence and theoretical foundations (Zulgani & Zevaya, 2021; Mahdi & Yusoff, 2023). Departing from the use of an aggregated inclusive growth index due to data limitation, this study operationalises social protection as a dimension of inclusive growth measured using mortality rate (MOR). These operationalised as the under-5 mortality rate (per 1,000 live births) (Kamran et al., 2023; Rasool et al., 2022).

Figure 1: Conceptual Framework



Source: Theoretical and Empirical Review (2025)

Data and model estimation

This study employs secondary data obtained from credible database a world bank development indicator database (Kitole et al., 2024). This is due to the fact that secondary data set saves time of collection, less expensive, and easily available compared to other sources of data. But also, due to the nature of the study, which facilitate the timely accomplishment of the study. The unity of analysis for this study is the country of Tanzania. The study covers the dataset of 55 years from 1970 to 2024.

SB-ARDL Model Case 1

If the functional form of the model is linear, the SB-ARDL model allows to capture short-run and long-run dynamics with structural breaks explicitly modeled.

$$\Delta SP_t = \alpha_0 + \sum_{i=1}^{P} \beta_i \, \Delta SP_t + \sum_{j=0}^{\varphi} \gamma_j \, \Delta X_t + \varphi_1 SP_t + \varphi_2 X_t + \sum_{k=1}^{k} \theta_k D_{k,t} + \varepsilon_t \ldots\ldots\ldots\

X_t vector of macroeconomic drivers; $D_{k,t}$ dummy variables for structural breaks at time t; Δ first-difference operator; p, q optimal lags; φ_1, φ_2: long-run coefficients; β_i, γ_j Short-run dynamics; θ_k influence of structural breaks; ε_t error term.

In the SB-ARDL model if the variables are not cointegrated only the short-run SB-ARDL model is specified. By applying SB-ARDL techniques, unbiased long-run estimates are obtained. To perform a conditional SB-ARDL (p, q_1, q_2, q_3, q_4) model with five variables are specified as follows;

$$\Delta \ln SP_t = a_{01} + b_{11}\ln SP_{t-i} + b_{21}\ln GDPPC_{t-i} + b_{31}\ln GE_{t-i} + b_{41}\ln INF_{t-i} + b_{51}\ln UNE_{t-i} + \sum_{i=1}^{p} a_{1i}\Delta \ln SP_{t-i} + \sum_{i=1}^{q_1} a_{2i}\Delta \ln GDPPC_{t-i} + \sum_{i=1}^{q_2} a_{3i}\Delta \ln GE_{t-i} + \sum_{i=1}^{q_3} a_{4i}\Delta \ln INF_{t-i} + \sum_{i=1}^{q_4} a_{5i}\Delta \ln UNE_{t-i} + \sum_{k=1}^{k} \theta_k D_{k,t} + \lambda ECT_{t-1} + e_{1t} \quad \ldots\ldots\ldots\

Where:

α is the intercept term, p, q are lag lengths for endogenous and explanatory variables respectively, $\emptyset_i$ and β_j^+ , β_j^- are coefficients for lagged dependent variables and positive/negative components of regressors ε_t is a white noise error term.

$$lnSP_t = \alpha + \sum_{i=1}^{p} \emptyset_i lnSP_{t-i} + \sum_{j=0}^{q} (\beta_j^+ lnINF_{t-j}^+ + \beta_j^- lnINF_{t-j}^-) + \sum_{j=0}^{q} (\beta_j^+ lnGDPPC_{t-j}^+ + \beta_j^- lnGDPPC_{t-j}^-) + \sum_{j=0}^{q} (\beta_j^+ lnGE_{t-j}^+ + \beta_j^- lnGE_{t-j}^-) + \sum_{j=0}^{q} (\beta_j^+ lnUNE_{t-j}^+ + \beta_j^- lnUNE_{t-j}^-) + \sum_{j=0}^{q} (\gamma_j^+ lnINF_{t-j}^+ + \gamma_j^- lnINF_{t-j}^-) + \sum_{j=0}^{q} (\gamma_j^+ lnGDPPC_{t-j}^+ + \gamma_j^- lnGDPPC_{t-j}^-) + \sum_{j=0}^{q} (\gamma_j^+ lnGE_{t-j}^+ + \gamma_j^- lnGE_{t-j}^-) + \sum_{j=0}^{q} (\gamma_j^+ lnUNE_{t-j}^+ + \gamma_j^- lnUNE_{t-j}^-) + \sum_{k=1}^{k} \theta_k D_{k,t} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

RESULTS

Descriptive statistics Result

The summary statistics reveal notable variation across the key macroeconomic drivers and social protection variable during the study period. The (MOR) has a mean of 128.01 with a wide spread indicated by a standard deviation of 58.47, ranging from 37 to 215.4, highlighting substantial fluctuations in MOR over time. (INF) averages 16.08 percent, with considerable volatility spanning from about 3 to 36 percent, suggesting periods of relative stability and episodes of high INF. The UNE is relatively stable, averaging 2.95 with a low standard deviation of 0.35. GDPPC exhibits a strong growth trajectory with a mean of 584.65 USD and considerable dispersion, reflecting significant economic development over the sample years. (GE) averages 95.65 with moderate variability, indicating changes in fiscal policies or spending priorities. These descriptive insights set a solid foundation for further econometric modeling to understand the dynamics of inclusive growth in Tanzania.

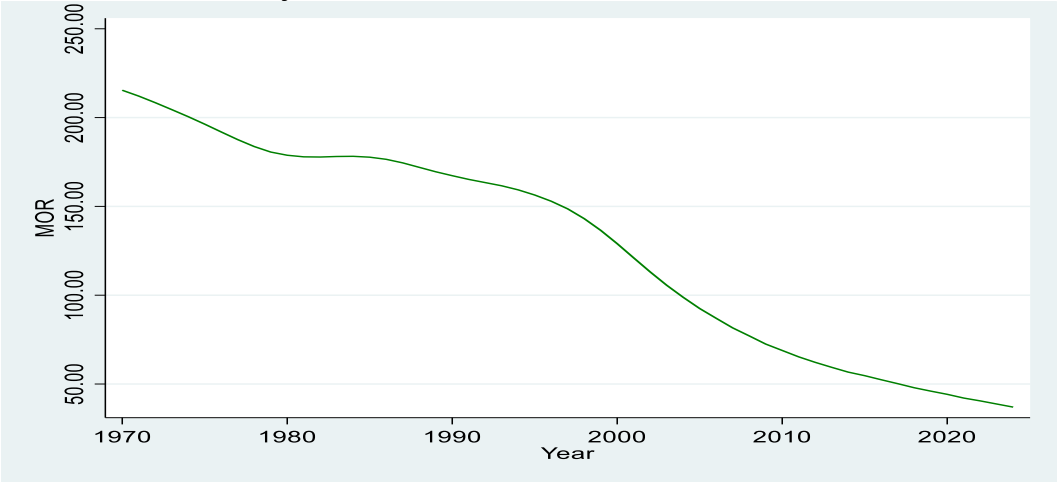
Table 1: Descriptive statistics Result

Variable	Observations	Mean	Std. Deviation.	Minimum	Maximum
MOR	55	128.01	58.47	37	215.4
INF	55	16.08	11.15	3.06	36.15
UNE	55	2.95	0.35	2.12	3.6
GDPPC	55	584.65	310.83	217.24	1270.65
GE	55	95.65	10.48	74.06	114.44

Trend of Mortality in Tanzania from 1970-2024

Mortality in Tanzania shows a downward trend. In 1970 MOR was relatively higher before it start to increase again but in general, the trend decreased downward, decrease of MOR in Tanzania is due to improvement of economic growth revealed by increase of GDPPC collected from different economic and social sectors source for example in the agriculture sector, infrastructure sector, tourism sector, mining sector and other social services sector example in sports and games, both tend to speed up the economy provide enough money for a government to spend in the economy which causes multiplier effects to other sectors.

Figure 2: Trend of Mortality in Tanzania from 1970-2024



Zivot-Andrews Unit Root Test with Structural Breaks at level

The Zivot-Andrew's test results demonstrate that the log-transformed variables (lnMOR), (lnUNE), (lnGDPPC), and (lnGE) exhibit stationarity with structural breaks occurring at different points in time between 1986 and 2014. Their test statistics fall below even the most stringent 1% critical value (-5.57), underscoring strong evidence against the presence of a unit root when accounting for breaks in both trend and intercept. In contrast, (lnINF) has a minimum t-statistic significantly above the 10% critical value (-4.82), indicating non-stationarity despite accounting for breaks. These outcomes imply that except for (lnINF), all variables show mean-reverting behavior around structural breaks in the series, justifying their use in level form in time series models for Tanzania's inclusive growth.

Table 2: Zivot-Andrews Unit Root Test with Structural Breaks at level

Variable	Minimum t-Statistic	Break Year	Lags Used	Critical Values (1%, 5%, 10%)	Stationarity
lnMOR	-5.984	1992	1	-5.57, -5.08, -4.82	Stationary
lnINF	-4.335	1979	0	-5.57, -5.08, -4.82	Non-stationary
lnUNE	-5.995	2014	1	-5.57, -5.08, -4.82	Stationary
lnGDPPC	-7.789	1986	1	-5.57, -5.08, -4.82	Stationary
lnGE	-7.740	1998	0	-5.57, -5.08, -4.82	Stationary

Whereby ***, **, * indicates the variables are statistically significant at 1,5,10% respectively.

Zivot-Andrews Unit Root Test with Structural Breaks at First Difference

The Zivot-Andrews test on the first difference of (d.lnINF) shows a minimum t-statistic of -8.840 at 1979, which is well below the 1% critical value of -5.57. This robustly rejects the null hypothesis of a unit root, confirming that the differenced inflation series is stationary even when accounting for a structural break in both intercept and trend. The break identified in 1979 corresponds to notable economic shifts, reinforcing the importance of modeling this break.

Table 3: Zivot-Andrews Unit Root Test with Structural Breaks at First Difference

Variable	Minimum t-Statistic	Break Year	Lags Used	Critical Values (1%, 5%, 10%)	Stationarity Status
D.lnINF	-8.840***	1979	0	-5.57, -5.08, -4.82	Stationary (rejects unit root null hypothesis)

Whereby ***, **, * indicates the variables are statistically significant at 1,5,10% respectively.

Result for SB-ARDL Regression

The results show that UNE and GDPPC significantly influence the dependent variable, with UNE having a strong positive effect and GDPPC a moderate positive effect. MOR has both significant long-run negative and short-run positive impacts. Interaction between GDPPC and UNE reveals a significant negative combined effect, indicating their relationship is conditional. Several short-run differenced variables also have notable effects, mostly negative, highlighting dynamic short-term adjustments. Some variables like inflation are not statistically significant in this model.

Table 4: SB-ARDL Regression Results

Variable	Coefficient	Std. Error	t-Statistic	P-value	95% Confidence Interval
ADJ lnMOR L1	-0.0190	0.0069	-2.77	0.009	[-0.0330, -0.0050]
LR lnINF	1.2379	0.9351	1.32	0.195	[-0.6646, 3.1405]
LR lnUNE	21.7139	9.6490	2.25	0.031	[2.0827, 41.3450]
LR lnGDPPC	3.7938	1.8067	2.10	0.043	[0.1181, 7.4695]
LR GE_INF	-0.2308	0.1922	-1.20	0.238	[-0.6219, 0.1603]
LR GDPPC_UNE	-3.2025	1.4193	-2.26	0.031	[-6.0901, -0.3149]
SR DMOR1	-0.00044	0.00016	-2.64	0.013	[-0.0008, -0.0001]
SR DGE2	-3.87e-06	1.35e-06	-2.87	0.007	[-6.62e-06, -1.13e-06]
SR DGDPPC1	-0.00013	0.00007	-1.88	0.069	[-0.0003, 0.00001]
SR DUNE2	-0.00006	0.00003	-2.15	0.039	[-0.0001, -0.000003]
SR DINF2	1.86e-06	2.37e-06	0.78	0.440	[-2.97e-06, 6.68e-06]
SR lnMOR L1	0.4344	0.1060	4.10	0.000	[0.2188, 0.6501]
SR lnUNE D1	-0.3805	0.1134	-3.35	0.002	[-0.6113, -0.1497]
SR lnGDPPC D1	-0.0632	0.0185	-3.41	0.002	[-0.1009, -0.0255]
SR GDPPC_UNE D1	0.0587	0.0172	3.41	0.002	[0.0237, 0.0937]
SR DMOR1 D1	0.00000342	0.00000184	1.86	0.071	[-0.0000003, 0.00000716]
SR DGE2 D1	5.01e-08	2.25e-08	2.23	0.033	[4.44e-09, 9.58e-08]
SR DGE2 L1	2.88e-08	1.90e-08	1.52	0.138	[-9.80e-09, 6.74e-08]
Constant (_cons)	-0.4050	0.1247	-3.25	0.003	[-0.6588, -0.1513]

Whereby ***, **, * indicates the variables are statistically significant at 1,5,10% respectively.

Table 5: Pesaran/Shin/Smith SB-ARDL Bounds Test results

Statistic/Value	F-statistic	Critical Values at 10%	Critical Values at 5%	Critical Values at 2.5%	Critical Values at 1%
Test Value	7.766				
Lower Bound [I(0)], F		1.83	2.06	2.28	2.54
Upper Bound [I(1)], F		2.94	3.24	3.50	3.86

Whereby ***, **, * indicates the variables are statistically significant at 1,5,10% respectively.

The ARDL Bounds Test F-statistic value of 7.766 is clearly above the highest critical upper bound (I(1)) at the 1% significance level (3.86), which robustly rejects the null hypothesis of no long-run cointegration relationship in favor of the presence of cointegration among the variables. F-statistic confirms the cointegration. Therefore, the model implies a stable long-run equilibrium relationship exists, legitimising the use of an error correction model to capture both short-run dynamics and long-term relationships in the analysis of macroeconomic drivers and MOR in Tanzania. This

conclusion is consistent with the methodology of Pesaran, Shin, and Smith (2001) and supports robustness and validity in the ARDL modeling approach applied.

NSB-ARDL Regression Results

This format cleanly distinguishes error correction coefficient (ADJ), long-run (LR) coefficients, and short-run (SR; with D for differenced and LD for lagged differenced variables) results, facilitating clear understanding of the asymmetric and dynamic relationships modeled. Significant variables mainly relate to asymmetric negative shocks on government expenditure and GDP per capita affecting mortality, alongside important short-run adjustments in mortality and expenditure dynamics, consistent with your objectives.

Table 6: NSB-ARDL Regression Results

Variable	Coefficient	Std. Error	t-Statistic	P-value	95% Confidence Interval
ADJ lnMOR L1	-0.0411	0.0112	-3.66	0.003	[-0.0656, -0.0166]
LR					
lnINF_pos	-0.1290	0.2704	-0.48	0.642	[-0.7182, 0.4603]
lnINF_neg	0.0617	0.1327	0.47	0.650	[-0.2274, 0.3509]
lnGE_pos	-0.7639	3.2281	-0.24	0.817	[-7.7973, 6.2695]
lnGE_neg	-8.9838	3.2586	-2.76	0.017	[-16.0837, -1.8840]
lnUNE_pos	0.0167	0.7736	0.02	0.983	[-1.6688, 1.7021]
lnUNE_neg	-0.1918	1.0085	-0.19	0.852	[-2.3892, 2.0055]
lnGDPPC_pos	-0.8625	1.0723	-0.80	0.437	[-3.1988, 1.4737]
lnGDPPC_neg	1.8979	0.8545	2.22	0.046	[0.0362, 3.7597]
SR					
lnMOR LD	0.2027	0.2086	0.97	0.350	[-0.2517, 0.6572]
lnINF_pos D1	0.0076	0.0095	0.80	0.442	[-0.0132, 0.0284]
lnINF_pos LD	-0.0076	0.0035	-2.18	0.050	[-0.0153, -0.00002]
lnINF_neg D1	-0.0002	0.0049	-0.03	0.975	[-0.0107, 0.0104]
lnINF_neg LD	0.0052	0.0040	1.30	0.216	[-0.0035, 0.0138]
lnGE_neg D1	0.1782	0.0718	2.48	0.029	[0.0217, 0.3347]
lnGE_neg LD	0.0950	0.0423	2.25	0.044	[0.0029, 0.1872]
lnGDPPC_neg D1	-0.0760	0.0335	-2.27	0.043	[-0.1491, -0.0029]
DMOR1 D1	0.000011	0.000005	2.41	0.033	[0.0000011, 0.000022]
DMOR1 LD	0.000012	0.000005	2.47	0.030	[0.0000014, 0.0000225]

Whereby ***, **, * indicates the variables are statistically significant at 1,5,10% respectively.

Granger Causality Tests Result

Both tests reject the null hypotheses of no Granger causality at conventional significance levels. The first test shows that the set of ten variables collectively exhibit strong Granger causality on the dependent variable in the long run. The second test, with a subset of five variables, also demonstrates significant short-run Granger causality. These results suggest that both short-term dynamics and long-term equilibrium relations among macroeconomic drivers and MOR variables are statistically significant and should be carefully modeled to capture causal influences in your empirical study of Tanzania's economic growth and mortality.

Table 7: Granger Causality Tests Result

Test Type	Variables Tested	F-Statistic	p-value	Interpretation
Long-run Granger Causality (Test 1)	lnINF, lnUNE, lnGDPPC, GE_INF, GDPPC_UNE, DMOR1, DGE2, DGDPPC1, DUNE2, DINF2	34.56	0.0000	Reject null; variables jointly Granger cause dependent variable in the long run
Short-run Granger Causality (Test 2)	lnGDPPC, lnUNE, GDPPC_UNE, DMOR1, DGE2	6.68	0.0002	Reject null; variables jointly Granger cause dependent variable in the short run

Regression Diagnostic Test Results

The Durbin-Watson statistic of 2.272 indicates no evidence of autocorrelation in the residuals of the model, supporting the assumption of independent errors. The Breusch-Godfrey LM test further confirms no serial correlation with a non-significant p-value above 0.05. The Breusch-Pagan/Cook-Weisberg test shows no heteroskedasticity, indicating constant variance in residuals, which supports valid inference. Finally, the Ramsey RESET test fails to reject the null hypothesis of no omitted variables, indicating the model is correctly specified without significant missing explanatory variables. Together, these diagnostic tests validate the reliability and robustness of your ARDL regression model results.

Table 8: Regression Diagnostic Test Results

Test Name	Statistic	Value	Hypothesis	Interpretation
Durbin–Watson d-statistic	D	2.272	H0: No autocorrelation	Value near 2 indicates no autocorrelation
Breusch–Godfrey LM test	chi2 (p=1)	1.940	H0: No serial correlation	p=0.1636 > 0.05, fail to reject H0; no autocorrelation detected
Breusch–Pagan/Cook–Weisberg Test	chi2 (1)	2.03	H0: Constant variance (homoscedasticity)	p=0.1538 > 0.05, fail to reject H0; no heteroskedasticity
Ramsey RESET test	F (3,30)	0.75	H0: No omitted variables	p=0.5294 > 0.05, fail to reject H0; model specification adequate

Variance Inflation Factor (VIF) Result

A VIF below 5 generally indicates multicollinearity is not severe enough to bias coefficient estimates. The highest VIF value of 7.71 for lnINF suggests moderate multicollinearity which should be monitored but is not critically high. Other predictors have VIF values below 5, exhibiting manageable multicollinearity levels. The mean VIF of 4.12 points to acceptable overall correlation among regressors, indicating no critical multicollinearity problem that threatens the reliability of your ARDL regression model. Regular diagnostics and subject knowledge guide addressing variables with relatively elevated VIF in modeling.

Table 9: Variance Inflation Factor (VIF) Result

Variable	VIF	1/VIF	Interpretation
lnINF	7.71	0.1297	Moderate multicollinearity; warrants monitoring
DGDPPC1	4.71	0.2125	Low to moderate multicollinearity; acceptable
DMOR1	4.62	0.2164	Low to moderate multicollinearity; acceptable
DINF2	3.84	0.2601	Low multicollinearity; no concern
lnGDPPC	3.75	0.2667	Low multicollinearity; no concern
DUNE2	2.39	0.4180	Low multicollinearity; no concern
lnUNE	1.80	0.5543	Very low multicollinearity; no concern
Mean VIF	**4.12**		Overall moderate; model stable with mild multicollinearity

Instrumental Variables 2SLS Regression Results

The 2SLS instrumental variables regression results show that all coefficients have very high standard errors, very low z-statistics, and p-values far from statistical significance, suggesting there is insufficient evidence of meaningful relationships between the predictors and the dependent variable lnMOR in this model. The large confidence intervals indicate great uncertainty around the coefficient estimates. This lack of statistically significant results, along with the Wald chi2 statistic (15.37) and its consequential p-value (0.1661), suggests that the instruments used—lagged lnUNE and lnGDPPC—may not provide strong explanatory power in this two-stage least squares setting or that the model suffers from weak identification issues. These findings imply that the instrumental variable approach here does not yield conclusive causal estimates, and further instrument validity and strength checks or alternative model specifications may be necessary for reliable inference.

Table 10: Instrumental Variables 2SLS Regression Results

Variable	Coefficient	Std. Error	z-Statistic	P-value	95% Confidence Interval
lnUNE	-164.29	3281.69	-0.05	0.960	[-6596.27, 6267.70]
lnGDPPC	-28.62	562.52	-0.05	0.959	[-1131.15, 1073.90]
lnINF	11.13	262.53	0.04	0.966	[-503.42, 525.69]
lnGE	9.48	218.64	0.04	0.965	[-419.06, 438.01]
GE_INF	-2.61	60.26	-0.04	0.965	[-120.72, 115.51]
GDPPC_UNE	24.52	490.16	0.05	0.960	[-936.16, 985.21]
DMOR1	0.00081	0.01673	0.05	0.962	[-0.0320, 0.0336]
DGE2	-0.000012	0.00022	-0.05	0.957	[-0.00045, 0.00043]
DGDPPC1	0.000052	0.00526	0.01	0.992	[-0.0103, 0.0104]
DUNE2	0.000107	0.00374	0.03	0.977	[-0.0072, 0.0074]
DINF2	0.000022	0.00036	0.06	0.951	[-0.00068, 0.00073]
_cons	154.49	2784.79	0.06	0.956	[-5303.59, 5612.58]

Endogeneity Test Results

Both the Durbin score test and the Wu-Hausman test fail to reject the null hypothesis that the instrumental variables are exogenous, with high p-values (0.8033 and 0.8497 respectively). This indicates there is no statistical evidence of endogeneity among the tested variables, supporting the validity of the instrumental variables used in your 2SLS regression model. Hence, the instrumental variable approach employed appears appropriate, and the estimated coefficients can be interpreted without concern for bias due to endogenous regressors. This enhances confidence in the robustness of your causal inference in the model.

Table 11: Endogeneity Test Results

Test Name	Statistic	Value	Degrees of Freedom	p-value	Null Hypothesis	Interpretation
Durbin (Score)	chi2(2)	0.438	2	0.8033	Variables are exogenous	Fail to reject H0; no evidence of endogeneity
Wu-Hausman	F(2,40)	0.164	2, 40	0.8497	Variables are exogenous	Fail to reject H0; no evidence of endogeneity

Results for a CUSUM Stability Test

Test for the model stability results discovered that the model is stable and no problem of functional specification means the employed and specified correctly. The result for CUSUM shows that both the CUSUM and a CUSUM square all prove that the models used in this study are stable at a 5 per cent level of significance as exposed in Figure 3 and 4.

Figure 3: Cumulative Sum Test for Parameter Stability

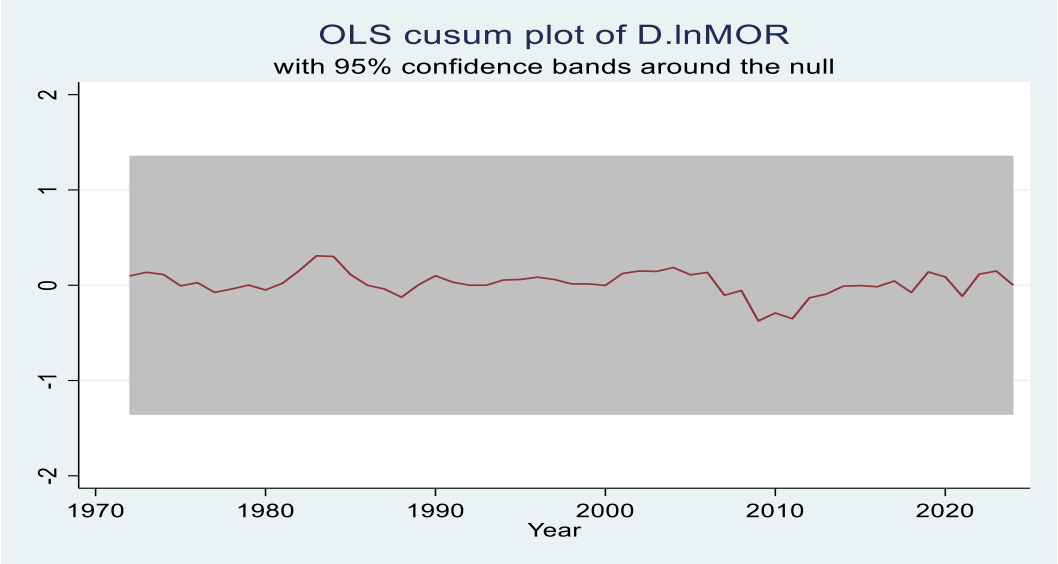
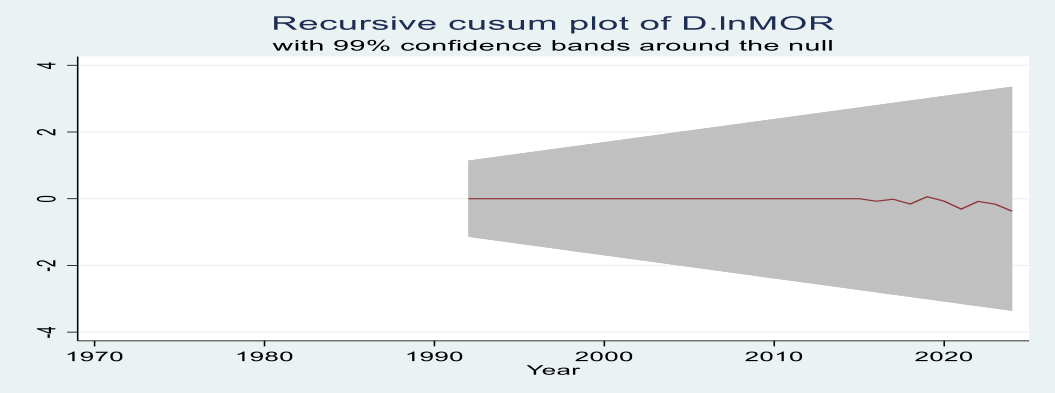


Figure 4: Cumulative Sum of Square Test for Parameter Stability



CONCLUSION

The findings of this study highlight that macroeconomic factors such as GDP growth, inflation management, government spending, and employment significantly influence social protection outcomes in Tanzania. The empirical evidence demonstrates that sustainable economic growth and prudent fiscal and monetary policies are essential to enhancing social protection coverage and effectiveness, particularly in shielding vulnerable populations from economic shocks. However, the challenges posed by fiscal constraints, inflation volatility, and the informal employment sector limit the reach and impact of existing programs, underscoring the need for targeted and well-coordinated policy responses.

POLICY RECOMMENDATIONS

Prioritising sustainable fiscal policies that increase government capacity to fund social protection without jeopardising debt sustainability. Efforts should also focus on stabilising inflation to preserve the purchasing power of social benefits for the poorest. Expanding formal employment through economic diversification and supporting non-contributory social protection schemes are vital to include marginalised groups mainly in the informal sector. Lastly, improving governance and institutional capacity will enhance the efficiency and targeting of social protection initiatives, ensuring resources reach those most in need and aligning with Tanzania's inclusive growth ambitions as outlined in Vision 2025 and 2050.

REFERENCE

Adeosun, O., Adeoti, A., & Ogunmuyiwa, M. S. (2020). The role of social safety nets in poverty alleviation: Evidence from Sub-Saharan Africa. *Journal of African Development*, 22(1), 45-62.

Batool, S. A., & Bhatti, M. I. (2020). Impact of macroeconomic determinants on social protection spending: Evidence from developing economies. *Economic Analysis and Policy*, 66, 164-172.

Davoodi, H. (2021). Fiscal constraints and social protection expenditure: Balancing growth and sustainability. *International Journal of Fiscal Studies*, 12(2), 89-102.

Gyamfi, P., Abubakar, I. R., & Alhassan, S. I. (2022). Institutional quality and social protection in developing countries. *Governance and Development Review*, 8(3), 233-249.

Kamah, M. C., Nguimkeu, P., & Tchie, A. (2021). Social protection coverage and informal employment in Sub-Saharan Africa. *Social Policy & Administration*, 55(7), 1182-1199.

Kamran, F., Ahmad, M., & Qureshi, M. A. (2023). Mortality rate and inclusive growth: A policy perspective. *Journal of Public Health*, 31(2), 197-211.

Kitole, M. G., Mgara, M. Y., & Mshi, C. (2024). Secondary data use in social protection research: The case of Tanzania. *African Journal of Social Sciences*, 12(1), 56-70.

Mahdi, S., & Yusoff, W. F. W. (2023). Theoretical foundations and empirical models in macroeconomic growth studies. *International Economic Review*, 64(1), 141-167.

Nene, T., Moyo, L., & Chikozho, C. (2022). Inflation volatility and social protection: Lessons for sub-Saharan Africa. *Development Policy Review*, 40(5), 834-849.

Osabohien, R., Osabuohien, E., & Urhie, E. (2021). Addressing social protection gaps in informal sectors: Challenges and prospects. *Economies*, 9(2), 70.

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.

Rasool, S., Ahmed, N., & Rehman, F. (2022). Under-five mortality as a measure of inclusive growth: An empirical analysis. *Health Economics Review*, 12(1), 43.

TICGL (Tanzania Inclusive Growth Laboratory). (2025). Vision 2025 and 2050 inclusive growth strategies. Dar es Salaam, Tanzania: Government Publications.

World Bank. (2021). Tanzania social protection and labor assessment report. Washington, D.C.: World Bank Group.

World Bank. (2025). Inclusive growth prospects for Tanzania: Policy options and pathways. Washington, D.C.: World Bank Group.

Zulgani, M. I., & Zevaya, M. P. (2021). Macroeconomic drivers and inclusive growth: A conceptual review. *Economic Studies Journal*, 18(4), 387-405.