

# THE IMPACT OF FOOD SECURITY AND MICROFINANCE INSTITUTIONS ON INCLUSIVE GROWTH IN NIGERIA

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## ABSTRACT

Food security in Nigeria remains severely strained as entrenched poverty, vulnerable agricultural systems, and rising inequality continue to threaten livelihoods. With millions facing hunger and economic exclusion, microfinance institutions offer a strategic pathway to inclusive growth by strengthening smallholder productivity, expanding access to finance, and empowering households to build resilient, sustainable economic futures. Against this backdrop, this study examined the impact of food security and the role of microfinance institutions on inclusive growth in Nigeria from 1985 to 2024, using the Autoregressive Distributed Lag (ARDL) model to evaluate both short-run dynamics and long-run relationships. The bounds test results show no evidence of a long-run relationship among the variables, implying that food security indicators and microfinance variables do not exhibit a stable long-term equilibrium relationship with poverty in Nigeria. However, the short-run ARDL estimates reveal that the lending interest rate, the prevalence of undernourishment, and microfinance bank loans to the agricultural sector exhibit negative but statistically insignificant relationships with the poverty rate. In contrast, the food production index and the number of borrowers show positive but insignificant relationships with poverty in the short run, indicating that increases in these variables are associated with short-term rises in poverty levels. Conclusively, although no long-run relationship exists, short-run interactions indicate that food security conditions and microfinance activities are linked to the trend in Nigeria's poverty rate. Therefore, policies should prioritize improving credit allocation efficiency, lowering lending rates, and ensuring that microfinance resources effectively target productive agricultural activities to enhance inclusive growth outcomes.

**Keywords:** Inclusive Growth, Incidence of undernourishment, Lending Interest Rate, Microfinance, Loans, Poverty Rate.

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## 1.0 Introduction

Inclusive growth entails broad-based, equitable economic growth that benefits all segments of society, particularly marginalized groups. Nigeria is richly blessed with vast natural resources and a large population, yet it continues to struggle to ensure food security and promote inclusive economic growth. Despite fertile land and an abundant labor force for farming, the nation has struggled to meet its food production needs (Njokunwogbu & Ijoma, 2026). Achieving inclusive growth, which ensures that the benefits of economic development are widely shared, is vital for reducing poverty and hunger, which are prerequisites for inclusive growth. Food security is a critical issue that affects the development prospects of many countries, including Nigeria (Tsongo *et al.*, 2025). The United Nations defines food security as the condition in which all people have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and preferences (Committee on World Food Security, 2021).

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As one of the focus of multidimensional poverty theory, which defines poverty as a complex phenomenon involving multiple, interconnected deprivations rather than just low income, food security remains a major challenge in Nigeria, despite the country's past self-sufficiency in food production. The theory assesses, the intensity of poverty, capturing what poor people describe, as, their, reality: a simultaneous lack of food security, multiple essential service. Recent estimates show that over 53 million Nigerians, about 30% of the population, face hunger, while roughly 52% live below the poverty line (World Bank, 2025). This troubling situation has worsened due to recurring issues like flooding, which further disrupts agriculture and food availability.

Ironically, Nigeria, as Africa's leading economy and home to over 20% of sub-Saharan Africa's population, was a net food exporter in the 1950s and 1960s. However, the discovery of crude oil and the subsequent neglect of farming caused a decline in domestic food production, turning the country into a major food importer (Folawewo & Olakojo, 2022). In 2025, the Federal Ministry of Agriculture estimated annual food import spending at over \$3 billion (about ₦450 billion), highlighting the economic strain on the country's budget and the decline in food production capabilities.

Dutch disease has played a central role in the decline of food production and the deterioration of food security in the country. The discovery and subsequent dominance of crude oil shifted national focus and investment away from agriculture, reducing the sector's contribution to GDP and export earnings while increasing dependence on imported food (Ike et al., 2025). Agricultural production remains largely labor-intensive rather than capital-intensive, relying on traditional methods and low mechanization, which constrain productivity despite the availability of abundant rural labor (Adegboye, 2026). Additional factors include inadequate infrastructure, climate change, environmental degradation, poor access to credit, and fragmented land holdings, which exacerbate inefficiencies in farming, resulting in lower yields and heightened vulnerability to food insecurity.

In line with Abah & Abah (2025) view on food security exists when all people at all times have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences which encompasses both supply-side (availability) and demand-side (accessibility), achieving food security in Nigeria remains elusive because agricultural production has historically been insufficient to meet the needs of a rapidly growing population, with supply-related shocks such as climate variability, insecurity, and inflation constraining output and inflating food prices. According to the Cadre Harmonisé analysis, millions of Nigerians are projected to face high levels of acute food insecurity, with data showing that about 27.2 million people were food insecure in late 2025 and this could rise toward 34.7 million by mid-2026 without urgent interventions to boost agricultural production and access (Food and Agriculture Organization, 2025). These persistent challenges in Nigeria reflect wider global difficulties in progress toward Sustainable Development Goal 2 (Zero Hunger), where progress has stalled and hundreds of millions worldwide remain undernourished or unable to afford a healthy diet (UN, 2024). Factors such as low agricultural productivity relative to rapid population growth, recurring disruptions to farming activities, and limited access to affordable and nutritious food continue to undermine efforts to ensure food security for the majority of Nigerians. The role of financial institutions in promotion of inclusive growth is inevitable, however, there have been a mixed results on whether microfinance institutions, which plays financial intermediary roles to low-income individuals or entrepreneurs, particularly those lacking access to traditional banking services, can play a complementary role by expanding access to credit, savings, and other financial services for smallholder farmers and low-income households, thereby enabling investment in improved inputs, technologies, and income-generating activities that strengthen agricultural output and enhance household food security (Otitoju & Olaiya, 2025; Ajiboye, *et al* 2025).

Generally, a country is considered food-secure when most of its population has access to enough high-quality food for a decent life at all times (Idabacha, 2014). Since the 1980s, it has been documented that achieving food security involves focusing on both supply-side factors, which can be ensured through agricultural production, commercial imports, or food aid, and demand-side factors, where food must be safe, nutritious, and suitable to meet preferences (Devereux, et al 2013). The world remains far from reaching the Sustainable Development Goal (SDG), Zero Hunger, as the global rate of

undernourishment has stayed at nearly the same level for three consecutive years after sharply rising during the COVID-19 pandemic. In 2023, between 713 and 757 million people may have faced hunger—about one in eleven people worldwide, and one in five in Africa. Hunger continues to increase in Africa, stays relatively steady in Asia, and has seen notable progress in Latin America and the Caribbean (FAO, 2024).

Microfinance institutions (MFIs) have increasingly been recognized as an important instrument for strengthening food security and promoting inclusive growth, particularly by extending financial services to low-income households and smallholder farmers who are often excluded from the traditional banking system (Ilesanmi *et al.*, 2024; Otitoju & Olaiya, 2025; Ibrahim & Sani, 2025). Historically, agriculture has been a vital contributor to Nigeria's economy, accounting for 41.5% of GDP in 2024 and producing significant food output indices relative to other African nations. However, past strategies and development programs have failed to transform the sector significantly, leaving unresolved challenges such as low productivity, limited access to financial resources, and insufficient adoption of technology (Otitoju & Olaiya, 2025). These constraints exacerbate food insecurity, which poses a critical threat to the nation's economic stability and development. Given that agriculture directly impacts on a majority of the population, revitalizing the sector could significantly address hunger, reduce poverty, and foster inclusive growth.

Microfinance institutions (MFIs) are well-positioned to play a pivotal role in this transformation. By providing financial services such as credit, savings, and insurance, MFIs could empower smallholder farmers and rural entrepreneurs, enhancing productivity and enabling better access to markets and resources. By providing access to credit, savings, micro-insurance, and other tailored financial products, MFIs help bridge longstanding financial gaps in rural and peri-urban areas. This access to finance enables farmers to invest in improved seeds, fertilizers, irrigation facilities, storage infrastructure, and small-scale mechanisation, thereby enhancing agricultural productivity and food availability. Beyond farming, microfinance supports income diversification through small businesses and agro-processing activities, which strengthen household purchasing power and improve access to nutritious food. In this way, MFIs contribute not only to food production but also to rural enterprise development, financial inclusion, and income stability which are key pillars of inclusive economic growth, as identified by multidimensional poverty theory. The elimination of food insecurity and promotion of financial intermediation among low-income individuals will go a long way break the poverty trapped cycle.

Against this background, this study examines the intermediary role of microfinance institutions and food security on growth inclusiveness in Nigeria over the period 1985 to 2024, a timeline that reflects major structural and policy shifts in Nigeria's economy. The starting point coincides with the Structural Adjustment Programme (SAP), which significantly altered the country's financial and agricultural policy environment through liberalisation and reforms that reshaped rural credit delivery. The study period also captures the formal emergence and expansion of microfinance institutions following the introduction of the Microfinance Policy Framework in 2005, alongside subsequent banking reforms, agricultural intervention programmes, and the rise of digital financial inclusion initiatives. Extending the analysis to 2024 allows consideration of contemporary challenges, including rising food prices, insecurity in farming regions, climate-related shocks, and post-COVID-19 recovery efforts. The importance of this study lies in its potential to provide empirical evidence on whether microfinance institutions in Nigeria have meaningfully enhanced agricultural productivity, improved household food access, and broadened participation in economic activities.

## 2.0 Literature Review

Economic theories provide a foundation for understanding how investments in productive capacity translate into broader development outcomes such as food security and inclusive growth. The Solow–Swan growth theory posits that long-run economic growth is driven by capital accumulation, labour force growth and technological progress, with diminishing returns to individual factors but sustained growth achievable through enhancements in productivity (Solow, 1956). In economies like Nigeria's, where agriculture remains central to livelihoods and food availability, access to productive capital facilitated through microfinance can deepen capital formation among smallholder farmers and

low-income households. Relatedly, financial intermediation theory shows the role of financial institutions in mobilizing savings and allocating credit efficiently to productive uses (Levine, 1997). Microfinance institutions, as specialised intermediaries, reduce financial market imperfections by extending credit, savings, and risk-mitigating services to otherwise excluded rural households (Otitoju & Olaiya, 2025). In doing so, they help channel financial resources into agriculture, enabling investments in improved inputs, technologies, and activities that raise output, strengthen food availability, and broaden economic participation which are key elements in achieving inclusive growth.

Despite the potential of capital accumulation and improved financial flows, many rural households remain trapped in low-productivity equilibria, a phenomenon explained by the poverty trap theory and multidimensional poverty theory. These theories highlight self-reinforcing mechanisms such as limited access to credit, education, technology, good nutrition, and insurance that prevent poor households from escaping cycles of low income and low investment (Azariadis & Stachurski, 2005). In Nigeria, smallholder farmers often face binding constraints that reduce agricultural productivity and sustain food insecurity because they cannot afford the upfront costs of improved seeds, fertilizers, irrigation, or resilient farming practices. Microfinance institutions can help break these traps by providing the financial resources and risk management tools needed for households to invest in productivity-enhancing activities. Similarly, the multidimensional poverty theory was operationalized by Alkire and Foster (2011) in developing the Multidimensional Poverty Index (MPI). The theory assumes that poverty goes beyond income deprivation and involves multiple deprivations in areas like education, health, living standards, nutrition, and access to basic services. It argues that individuals may face overlapping disadvantages that reinforce vulnerability and limit their ability to participate productively in the economy.

Empirical studies from different countries show the vital role of microfinance in improving food security and promoting inclusive growth. Obaidullah (2015) found that Islamic microfinance institutions (IsMFIs) use various “finance-plus” methods, combining credit with technology, capacity building, and marketing support, which boosts smallholder farmers’ productivity and overall food security. Similarly, Purnawan and Brunori (2022) showed that microfinance programs in Indonesia positively affect household food security, although their success depends on additional institutional and community support. Evidence from Africa shows similar patterns: Chilimba et al. (2020) discovered that participation in microfinance programs in Malawi enhances household food security, especially when women are involved and education levels are higher. Gulzar et al. (2025) also demonstrated that financial inclusion mitigates the negative impacts of economic policy uncertainty on food security across 24 developing countries, highlighting the stabilizing role of financial access. Tsongo et al. (2025) supported this by showing that financial inclusion significantly increases per capita calorie intake and lowers undernourishment in African nations, with educational growth boosting these benefits. Likewise, Jagadish and Jus (2024) offered a broader review showing that microfinance helps reduce poverty, increase household income, and foster entrepreneurship, although issues like over-indebtedness and sustainability still pose challenges.

In Nigeria, recent empirical studies highlight the critical interplay among microfinance, agricultural productivity, and food security. Otitoju and Olaiya (2025) demonstrated that access to microcredit and membership in farmer-based organizations significantly improve food security among rice-farming households in Niger and Nasarawa States, emphasizing the importance of organized support structures alongside financial access. Similarly, Ilesanmi *et al.* (2024) revealed that microcredit enhances rural livelihoods in Southwest Nigeria by enabling investments in productive activities, although access to formal microfinance remains limited and constrained by factors such as education and market access. Ibrahim and Sani (2025) further confirmed that microfinance services, including credit and entrepreneurial training, positively influence the performance of smallholder rice farmers in Kaduna State, indicating that targeted financial interventions can increase productivity and household income. On a broader scale, Ajiboye *et al.* (2025) examined agricultural credit mobilisation and found that while credit provision is essential, urbanisation can exacerbate food insecurity if credit schemes are not tailored to local contexts. Studies by Abah and Abah (2025) and Adegboye (2026) showed that sustainable agricultural practices and mechanization are essential complements to financial interventions for ensuring food security, as productivity remains constrained by traditional labour-

intensive methods. Njokunwogbu and Ijoma (2026) provided a comprehensive review of agriculture and food security in Nigeria, noting persistent structural challenges, including inadequate financial support, limited mechanization, and low adoption of modern farming practices.

In the same manner, Akanbi *et al.* (2023) employed the ARDL framework between 1990 and 2021 and found that improvements in the food production index significantly reduce poverty, while undernourishment and food inadequacy exert strong causal effects on extreme poverty, confirming the long-run food security–poverty nexus. Babarinde (2022) also applied ARDL to establish a cointegrating relationship between microfinance banks' investment portfolios and standard of living, revealing short-run welfare gains but adverse long-run effects, suggesting sustainability and allocation inefficiencies in microfinance investment structures. Similarly, Adetiloye *et al.* (2023) demonstrated that sustained bank-led agricultural financing significantly increases per capita income and reduces poverty in the long run, whereas certain public intervention schemes such as the agricultural credit guarantee scheme fund exhibit negative long-run effects. Finally, Osinubi *et al.* (2022) analyzed the nexus between food security and inclusive growth in Nigeria from 2000Q1 to 2018Q4, utilizing a dynamic GMM approach. The study finds that enhancing food security, coupled with government stability, significantly boosts inclusive growth, while poverty and inequality hinder it, concluding that ensuring food accessibility is vital for economic.

Although prior empirical studies affirm the importance of microfinance, food security, and agricultural financing in reducing poverty and promoting inclusive growth, their findings remain mixed and sometimes contradictory, thereby justifying further investigation. While several studies report that food production and microfinance improve welfare and reduce poverty in the long run, others reveal short-run benefits but adverse or insignificant long-run effects, particularly regarding microfinance investment portfolios and certain public credit schemes. Similarly, evidence on the effectiveness of agricultural credit and financial inclusion varies across countries and institutional contexts, with differences in magnitude, direction, and sustainability of impact. These inconsistencies suggest that the inclusive growth, food security and microfinance nexus may be sensitive to variable measurement, transmission channels, and dynamic adjustments over time. Therefore, a comprehensive ARDL-based analysis that jointly captures short-run dynamics and long-run equilibrium relationships among poverty rate, food production, undernourishment, microfinance lending, interest rates, and borrower outreach is necessary to reconcile these mixed results and provide more robust evidence for Nigeria.

### 3.0 Methodology

The research design adopted in this study is expo-facto research design. This design was chosen to enable the use of secondary time series data to analyse the role of microfinance institutions on food insecurity and inclusive growth in Nigeria. The study is anchored on the multidimensional poverty theory (MPT) by Alkire and Foster (2011). This theory emerged as a response to the limitations of traditional income-based measures of poverty, emphasizing that poverty is a complex phenomenon that cannot be fully captured by monetary metrics alone. The core assumption of MPT is that poverty encompasses various deprivations across multiple dimensions, including health, education, living standards, and access to basic services, rather than solely focusing on income levels. Food security directly intersects with several dimensions of poverty. For instance, inadequate access to nutritious food leads to poor health outcomes, which affects individuals' ability to work and learn, thereby impacting their educational and economic opportunities.

$$MP_t = f(Y_t, FS_t, FI_t) \quad (1)$$

Where  $MP_t$  = multidimensional poverty at time t,  $Y_t$  = income/consumption dimension,  $FS_t$  = food security dimension and  $FI_t$  = financial inclusion dimension. Following the capability approach, poverty is not solely income deprivation but includes food deprivation (undernourishment) and exclusion from financial services. Using Alkire–Foster deprivation index form, multidimensional poverty be expressed as:

$$MP_t = H_t \times A_t \quad (2)$$

Where:  $H_t$  = headcount ratio (incidence of poverty)  $A_t$  = intensity of deprivation

$$H_t = \frac{q_t}{N} \quad (3)$$

$$A_t = \frac{1}{q_t} \sum_{i=1}^{q_t} c_i \quad (4)$$

This follows the Alkire–Foster methodology where poverty depends on both the proportion of deprived individuals and the severity of their deprivation. Food insecurity increases intensity  $A_t$ , while microfinance access reduces deprivation counts  $q_t$ .

$$FS_t = \lambda_0 + \lambda_1 FPI_t - \lambda_2 PoU_t \quad (5)$$

Higher food production improves food availability and reduces deprivation, while higher undernourishment worsens multidimensional poverty. Financial inclusion (microfinance) is specified as:

$$FI_t = \beta_0 + \beta_1 MFBL_t - \beta_2 LIR_t + \beta_3 NoB_t \quad (6)$$

Where;  $MFBL_t$  = microfinance bank loans to agriculture,  $LIR_t$  = lending interest rate and  $NoB_t$  = Number of borrowers. Microcredit and borrower outreach enhance productive capacity and income generation. However, high lending rates constrain access and may worsen poverty. Equation 6 specifies how microfinance variables determine financial inclusion ( $FI_t$ ) as a capability-enhancing mechanism. Substituting this financial inclusion function in equation 6, together with the food security function into the multidimensional poverty function yields the model of the study as expressed in equation 7. This expresses poverty directly as a reduced-form function of food security and microfinance variables, which was built on the study of Akanbi *et al.*, (2024) with a slight modification.

$$PR_t = \alpha_0 + \alpha_1 FPI_t + \alpha_2 PoU_t + \alpha_3 MFBL_t + \alpha_4 LIR_t + \alpha_5 NoB_t + \varepsilon_t \quad (7)$$

The specification of the ARDL model is explicitly specified as follows taking the log of the variables;

$$PR_t = \alpha_0 + \sum_{i=1}^p \beta_i PR_{t-i} + \sum_{j=0}^{q_1} \gamma_j FPI_{t-j} + \sum_{k=0}^{q_2} \delta_k PoU_{t-k} + \sum_{l=0}^{q_3} \phi_l MFBL_{t-l} + \sum_{m=0}^{q_4} \theta_m LIR_{t-m} + \sum_{n=0}^{q_5} \psi_n NoB_{t-n} + \varepsilon_t \quad (8)$$

Where;  $PR_t$  = Poverty Rate at time t,  $FPI_t$  = Food Production Index at time t,  $PoU_t$  = Prevalence of undernourishment at time t,  $MFBL_t$  = MFB loan to agricultural sector at time t,  $LIR_t$  = Lending interest rate at time t,  $NoB_t$  = Number of Borrowers at time t and  $\varepsilon_t$  = Disturbance or Error term.

#### 4.0 Results and Discussion

Table 1 presents the descriptive statistics for the variables from 1985–2024. The poverty rate has a mean of 37 percent, indicating that, on average, about 37 percent of the population lived in poverty during the period. Its standard deviation of 6.9 suggests low volatility, with values ranging from 25 to 46 percent. The prevalence of undernourishment averages 7 percent, while microfinance bank loans to the agricultural sector average \$94 million. The standard deviation shows low volatility in undernourishment (7) but relatively high volatility in agricultural loans (157). Both variables recorded minimum values of zero, while maximum values reached 31 percent for undernourishment and \$675 million for loans. The average number of borrowers is approximately 3,015,077 farmers, with substantial variation (12,104,939), indicating high volatility and non-normal distribution based on skewness and kurtosis. Lending interest rate and food production index have mean values of 18 percent and 78 percent, respectively, with relatively low standard deviations (4 and 37). Their minimum and maximum values range from 9–32 percent for interest rate and 28–208 percent for food production index. However, both variables deviate from normal distribution

**Table 1: Descriptive Statistics**

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
PR	40	37.438	6.859	25.100	46.300	-0.546	2.108
POU	40	7.005	7.464	0.000	31.000	1.177	4.518
NOB	40	3015077	12104939	0.000	76360884	5.770	35.452
MFBL	40	94.523	157.256	0.000	675.000	2.045	6.890
LIR	40	18.057	4.265	9.433	31.650	0.614	4.448
FPI	40	78.439	37.399	27.920	208.478	1.360	5.693

Source: Authors' computation, 2025.

The table 2 below shows the result of the correlation matrix and it revealed that poverty rate and prevalence of undernourishment are moderately positively correlated suggesting that increased prevalence of undernourishment does not boost poverty rate, poverty rate and number of borrowers are not strongly related. It also suggests that prevalence of undernourishment and microfinance loan to agricultural sector are highly related, and also that prevalence of undernourishment and food production index are highly correlated, while microfinance loan to agricultural sector strongly tied to food production index fluctuations. Finally, poverty rate and lending interest rate are closely related, while there is a moderate correlation between poverty rate and number of borrowers.

**Table 2: Summary of Correlational Matrix**

Variables	PR	POU	NOB	MFBL	LIR	FPI
PR	.....	0.0118	0.2227	0.0830	0.2024	0.0037
POU	0.0118	.....	0.6409	0.9142	0.3016	0.9556
NOB	0.2227	0.6409	.....	0.7260	-0.0356	0.6754
MFBL	0.0830	0.9142	0.7260	.....	-0.3392	0.9195
LIR	0.2024	0.3016	-0.0356	-0.3392	.....	-0.2392
FPI	0.0037	0.9556	0.6754	0.9195	-0.2392	.....

Source: Authors' computation, 2025.

### 4.1 Stationarity Results

The test of unit root in Table 3 was conducted to examine the stability of food security, microfinance institutions and inclusive growth indicators over time. This is achieved using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, which are joined and adopted for robust evidence. The outcome of the unit root testing reveals the rejection of the null hypothesis of unit root in the distribution of the series at level and first difference at 1 percent. Hence, it is concluded that there is evidence that the series are stationary at different order, that is, I(0) and I(1).

**Table 3: Results of Unit Root Tests**

	Phillips-Perron test			ADF test		
	Level	$\Delta$	$I(d)$	Level	$\Delta$	$I(d)$
PR	-1.5175	-6.1739***	I(1)	-1.4323	-6.1739***	I(1)
LIR	-3.0397**	-6.3986***	I(0)	-2.9830**	-6.3982***	I(0)
FPI	2.7760	-3.8945***	I(1)	2.4227	-1.1456	
POU	-7.7658	-4.2630***	I(1)	2.4510	-4.2815***	I(1)
LOGNOB	-3.1073	-6.6116***	I(1)	-0.2651	-6.6104***	I(1)
LOGMFBL	0.9058	-8.3234***	I(1)	0.7433	-6.9039***	I(1)

Source: Authors' computation, 2025.

Note:  $\Delta$  denotes the first difference operator.  $I(d)$  stands for the remark for the order of integration of the unit root tests. \*\*\* represents significance at 1% level, \*\* represents significance at 5% level and \* represents significance at 10% level.

### 4.2 Cointegration Results

The Autoregressive Distributed Lag (ARDL) bounds testing approach was used to examine the short-term dynamics and the co-integration relationship between the dependent variable and the explanatory variables. The bound test co-integration result is presented in Table 4. The result shows that no long run relationship among the variables under study as the F-statistics is less than the lower bound value at

1%, 2.5%, 5% and 10% consecutively. Therefore, we accept the null hypothesis of no co-integration among the variables under study.

**Table 4: Results of co-integration test**

Test statistics	Value	K
F-stat	1.077404	5
<b>Critical Value Bounds</b>		
Level of significance	I(0) Bounds	I(1) Bounds
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

*Source: Authors' computation, 2025.*

The short-run ARDL result is presented in Table 5. The results reveal that the lending interest rate, prevalence of undernourishment, and microfinance loan to agricultural sector exert a negative and insignificant effect on poverty rate in the short run. This indicates that a unit increase in lending interest rate, prevalence of undernourishment, and microfinance loan to agricultural sector result in approximately 8%, 11%, and 121% decreases in poverty rate in the short run. Also, food production index and number of borrowers had a positive and insignificant impact on poverty rate in the short run. This indicates that a unit increase in food production index and number of borrowers lead to approximately 6% and 24% increases in poverty rate in the short run. The adjusted coefficient of determination ( $R^2$ ) is 0.722. This indicate that the independent variable jointly explains 72% of the total variation in the dependent variable. Furthermore, the probability of the F-statistic which is used to measure the overall significance of the estimated models shows significance, this indicate that the explanatory variables (food production index, lending interest rate, prevalence of undernourishment, number of farmers and microfinance bank loan to agricultural sector), when jointly used can have effect on poverty rate in Nigeria. The post estimation results revealed Jarque-Bera value of 137.188 with a probability value of 0.121 indicates that the model data were normally distributed as its probability value is greater than 10% level. Therefore, the normality assumption is accepted. The Breusch-Godfrey statistic of the serial correlation LM test showed that the time series data employed in the analyses had no serial correlation problem since the probability value is greater than the 10% level of significance. Furthermore, the Breusch-Pagan-Godfrey heteroskedasticity probability value is greater than the 10% level of significance, therefore, the acceptance of the alternate hypothesis of constant variance. The stability test result as given by statistic of 0.014 and probability value of Ramsey RESET test of 0.907 revealed that the series is free from non-linearity as its p-value is greater than 10% level of significance.

**Table 5: Results of Short-run ARDL Estimate**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.2744	6.5022	1.1188	0.2716
FPI	0.0592	0.0621	0.9536	0.3474
LIR	-0.0803	0.1826	-0.4395	0.6632
POU	-0.1090	0.2881	-0.3783	0.7077
LOGNOB	0.2441	0.1629	1.4985	0.1438
LOGMFBL	-1.2187	0.8015	-1.5206	0.1382
Adjusted R-squared	0.7220			
F-statistics	17.4451			
Prob(F-stat)	0.0000			
Durbin Watson	2.1446			
		<b>POST</b>	<b>ESTIMATION</b>	<b>TEST</b>
Test	<b>Statistics</b>	<b>Value</b>	<b>Probability</b>	
Linearity	Ramsey RESET	0.0138	0.9072	
Serial Correlation	Breusch-Godfrey	0.7975	0.4598	
LM	Breusch-Pagan-Godfrey	0.6791	0.6675	
Heteroskedasticity	Jarque-Bera	137.1876	0.1210	
Normality				

*Source: Author's computation, 2025.*

*Note: Std. Error. stands for standard error, Prob. Indicates probability and Durbin-Watson stat stands for Durbin*

*Watson statistics.*

Though partial agreement of the study findings with the literatures on microfinance, food security, and inclusive growth which shows that these relationships are complex and country specific. While studies like Obaidullah (2015), Purnawan and Brunori (2022), and Tsongo *et al.* (2025) demonstrated that financial inclusion and microfinance can significantly enhance household food security and livelihoods, the study suggests that in Nigeria, the short-run effects of microfinance and agricultural support are limited which reflects constraints in access, allocation efficiency, and institutional support. Similarly, evidence from Babarinde (2022) and Ajiboye *et al.* (2025) indicates that while microfinance may generate immediate welfare gains, sustainability but structural inefficiencies can dampen long-term outcomes, which resonates with the study's observation of short-term impacts. Moreover, some literature emphasizes the critical role of complementary measures such as education, mechanization, and organized farmer support (Ilesanmi *et al.*, 2024; Otitoju & Olaiya, 2025) translate financial inputs into meaningful improvements in food security and poverty reduction. The study results reinforce the consensus that microfinance alone is not a panacea; its effectiveness is contingent upon integration with broader agricultural and socio-economic interventions, echoing the findings of Osinubi *et al.* (2022) that inclusive growth requires a holistic approach combining food security, policy stability, financial inclusion and structural support as dictated by multidimensional poverty theory.

### **4.3 Theoretical and Practical Implications**

The multidimensional poverty theory is very relevant to Nigeria's situation, as reflected in the joint examination of food security indicators (food production index and prevalence of undernourishment) alongside microfinance variables (microfinance bank loans to the agricultural sector and number of borrowers) in explaining poverty dynamics.

Unlike previous studies that focus on the individual significance of variables, the study highlights that while lending interest rate, food production, and microfinance loans may show weak individual impacts on poverty in the short run, their collective influence is statistically significant. This finding underscores the importance of policy synergy and challenges the conventional emphasis on isolated variable impacts. This contributes directly to development policy debates by showing that microfinance institutions, agricultural financing, and food security interventions must be designed in an integrated and threshold-sensitive manner to add practical value by guiding policymakers on where and how interventions can be most effective in promoting inclusive growth in the country.

### **4.4 Conclusion and Recommendations**

Evident from the findings, specific variables such as lending interest rate, prevalence of undernourishment, microfinance loan to the agricultural sector, food production index, and number of borrowers exhibit insignificant effects on poverty rate in the short run; their collective influence is meaningful. Moreover, the overall model indicates that food security and microfinance institutions, when considered alongside agricultural production and related factors, play an important role in shaping poverty outcomes, even if their isolated short-run effects are weak. This shows the importance of integrated policy measures that strengthen the link between microfinance, agricultural financing, and food security initiatives to achieve inclusive growth in Nigeria.

Since the short-run effects of microfinance loans and lending interest rates on poverty reduction are negative but insignificant, policymakers should focus on improving the accessibility and efficiency of microfinance programmes by ensuring that loans reach productive farmers and small enterprises that can generate measurable income and food security gains. Second, the positive but insignificant impact of food production and the number of borrowers suggests that simply increasing production or participation is not enough; complementary interventions such as agricultural training, mechanization, modern farming techniques, and better market access are needed to translate production into income and poverty reduction. Third, given the absence of a long-run co-integration relationship, the government and development agencies should adopt integrated policies that combine microfinance support with social safety nets, nutrition programmes, and rural infrastructure to achieve sustained

poverty alleviation. Finally, continuous monitoring and evaluation of microfinance and agricultural policies are essential to ensure that resources are effectively allocated, programmes remain sustainable, and interventions are adapted to local contexts to promote inclusive growth.

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