

Article

Poverty and Youth: Does Non-Agricultural Employment Play a Role in Reducing Poverty Among Young Women?

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Abstract

Youth unemployment and poverty remain critical development challenges in Nigeria, where rural young women face limited livelihood opportunities and economic vulnerability. Using cross-sectional survey data from rural Nigeria and an endogenous treatment effect regression model to address potential self-selection bias, the study examines the impact of non-agricultural employment participation on poverty reduction among young women. The results show that engagement in non-farm employment significantly reduces poverty across all poverty index dimensions, demonstrating that non-agricultural employment is an effective pathway not only for escaping poverty but also for improving welfare among those who remain poor. The findings underscore the need for gender-sensitive policies that expand non-agricultural opportunities in trade, services, and digital platforms and invest in rural infrastructure to enable women's economic participation. By integrating such interventions into broader rural development strategies, policymakers can promote inclusive economic empowerment, advance gender equality, and accelerate progress toward the Sustainable Development Goals, offering a scalable model for rural poverty alleviation in sub-Saharan Africa.

Keywords: youth; women; non-agricultural employment; poverty; endogenous treatment effect; Nigeria

1. Introduction

Poverty remains a persistent challenge in many low- and middle-income countries, particularly in sub-Saharan Africa (SSA), where structural inequalities and limited access to resources constrain inclusive development (David et al., 2025). Young people constitute a significant proportion of those affected, as they face barriers to accessing quality education, decent employment, and economic opportunities (AfDB, 2018; ILO, 2024). In Nigeria, the issue of youth poverty has garnered considerable policy attention over the past two decades, resulting in several government-led initiatives, including the National Poverty Eradication Program (NAPEP), the National Directorate of Employment (NDE), and the Youth Enterprise with Innovation in Nigeria (YouWiN) scheme. These interventions were designed to reduce poverty and unemployment through skills and enterprise development. However, with persistent unemployment and a high youth poverty rate (exceeding 50%), their impact has been modest, partly due to weak implementation, limited reach, poor targeting mechanisms, and sustainability issues (FMYSD, 2019; World Bank, 2025).

While poverty affects both young men and women, young women are disproportionately impacted due to gendered structural barriers (Staab et al., 2024). According to



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the [World Bank \(2020\)](#) report, young women are significantly more likely to experience multidimensional poverty than their male counterparts, owing largely to constraints in education, health, and labour market opportunities, including the agricultural sector. In Nigeria, where women constitute nearly half of the rural labour force, young women often find themselves excluded from productive resources such as land, finance, and modern agricultural technologies ([Bello et al., 2021](#)). Consequently, their livelihoods depend disproportionately on subsistence agriculture or informal low-income activities. Although agriculture remains the backbone of rural livelihoods, its sustained profitability is undermined by seasonal production fluctuations, climate variability, and inadequate access to inputs ([Bello et al., 2024](#); [Danso-Abbeam et al., 2021](#)).

To mitigate these production and income instabilities, rural households engage in non-agricultural employment as a strategy for poverty reduction ([Danso-Abbeam et al., 2020](#); [Haggblade et al., 2010](#); [Oseni & Winters, 2009](#)). Moreover, studies on rural transformation suggest that non-agricultural employment serves as a critical safety net for rural households, supplementing farm income, smoothing consumption, and financing investments ([Al-Amin & Hossain, 2019](#); [Babatunde & Qaim, 2010](#); [Kehinde & Ogundeji, 2023](#); [Tsfaye & Nayak, 2022](#)).

Despite the growing recognition of non-agricultural employment as a crucial driver of rural development and poverty reduction, limited attention has been paid to how it specifically affects the poverty trajectories of young women. While existing studies examine youth welfare ([Adeyanju et al., 2023](#); [Fasakin et al., 2022](#)) broadly or women's empowerment through agriculture ([Bello et al., 2021](#); [Gebre et al., 2019](#); [Tufa et al., 2022](#)), few or none have explored how non-agricultural employment creates transformative opportunities for young women to escape poverty traps. [Adeyanju et al. \(2023\)](#) found that factors such as access to extension services, credit, market information and participation in agribusiness influence food security outcomes among young farmers in Kenya, Nigeria, and Uganda. [Fasakin et al. \(2022\)](#) documented that participation in agriculture has a positive impact on rice productivity in Nigeria. In a study by [Tufa et al. \(2022\)](#) the authors reported that female farmers are less productive than male farmers in Malawi, with a difference of about 14.6 to 23.1 percentage points. In the same vein, [Bello et al. \(2021\)](#) revealed an approximate 11 per cent gender performance gap favouring men in rural Nigeria, with over three-quarters (77.66 per cent) of the disparity remaining unexplained even after controlling for differences in household attributes, access to inputs, and productive resources. These studies highlight structural barriers that may limit agriculture-based poverty reduction, underscoring the potential importance of non-agricultural employment as a complementary livelihood strategy, particularly for young rural women facing constraints within farming systems.

Importantly, non-agricultural employment in rural areas is heterogeneous and can broadly be distinguished into demand-induced (opportunity-driven) activities and supply-push (distress-driven) occupations ([Barrett et al., 2001](#); [Barrett & Reardon, 2000](#)). Demand-induced non-farm activities—such as trade, services, and wage employment linked to expanding local markets—are typically associated with higher productivity, income stability, and more favourable welfare outcomes, as they reflect genuine labour demand and skill utilization ([Davis et al., 2017](#); [Haggblade et al., 2010](#)). In contrast, supply-push activities often emerge as coping responses to limited agricultural opportunities and tend to yield weaker or more uncertain poverty-reducing effects ([Lanjouw & Lanjouw, 2001](#); [Nagler & Naudé, 2017](#)). While empirical evidence on these distinctions is growing, few studies explicitly examine how the nature of non-farm employment interacts with gender and age to shape poverty outcomes in rural Africa.

Several gaps remain in the literature. First, there is a lack of empirical studies that disaggregate the impacts of non-agricultural employment by gender and age, particularly

for young women in rural settings. Second, there is limited existing research in a region (sub-Saharan Africa) and a country (Nigeria) that has one of the fastest-growing youth populations, accompanied by high levels of youth unemployment. Third, the gender dimension of the relationship between non-farm work and youth poverty remains underexplored. This study seeks to fill these gaps by employing the endogenous treatment effect regression to analyze the role of non-agricultural employment in uplifting young women out of poverty. By focusing on the intersection of youth, gender, and non-agricultural employment, this study contributes to the broader discourse on poverty reduction, gender equity, and sustainable development, while directly informing policies aimed at achieving SDG 1 (No Poverty), SDG 5 (Gender Equality), and SDG 8 (Decent Work and Economic Growth).

2. Methods

2.1. Study Area and Data

This study utilized cross-sectional survey data collected in Ogun and Ondo states, southwestern Nigeria, in 2019. This survey primarily focused on households headed by youth. The survey was designed to capture detailed information on youth's socio-economic characteristics, employment activities, and welfare outcomes. A multistage random sampling procedure was employed to collect the data. The first stage began with the purposive selection of the two states that are characterized by mixed livelihoods where youth often engaged predominantly in agricultural and non-agricultural activities. Second, with the help of the extension service, seven local government areas (LGAs) where youth are actively engaged are purposively selected in each state. Third, five villages were randomly selected in each state. Finally, approximately 668 youths, comprising both males and females, were selected through random sampling and interviewed using a structured questionnaire, which captured their demographic profiles and welfare outcomes. A subsample of 197 female youth farmers (aged 15–35), comprising 54 who were engaged in non-agricultural activities and 143 who were not, was selected for analysis. The youths are involved in diverse agribusiness, including crop (staple crops and vegetables) and animal production (such as poultry, piggery and fishery). The non-farm income generating activities engaged in include trading, artisanal work, printing and digital work, and salaried employment. The survey questionnaire includes information on individual and household demographics, agricultural activities (including agro-training attendance and production), engagement in non-agricultural employment, income sources, and detailed food and non-food consumption expenditures used to construct the poverty indices. Additional modules collected data on institutional and access variables, such as credit access, youth association membership, access to information on non-farm job opportunities, asset ownership, and livelihood shocks.

2.2. Theoretical Framework and Empirical Procedure

This study combines livelihood diversification, the random utility model, and the Foster–Greer–Thorbecke (FGT) poverty framework to examine how engagement in non-agricultural employment affects poverty outcomes among young rural women in Nigeria. According to the Livelihood Diversification Framework (Ellis, 1999, 2010), rural households pursue multiple income sources to manage risk, smooth consumption, and enhance welfare. Diversification represents a rational response to income uncertainty, seasonality, and limited access to productive resources. Within the Agricultural Household Model (Singh et al., 1986), households are viewed as joint production/consumption units that allocate labour between farm and non-farm activities to maximize expected utility subject to time, market, and liquidity constraints. In this context, non-agricultural employment, such as trading, artisan work, or salaried employment, serves as a strategic mechanism to mitigate shocks,

stabilize consumption, and accumulate capital for future investment in agricultural or non-agricultural enterprises.

The random utility model formalizes this behavioral process. A household will diversify its income sources if the expected utility from diversification exceeds that from non-diversification. Formally, the decision rule is expressed as:

$$U_i^* = U_{NAgi} - U_{Agi} > 0, \quad (1)$$

where U_{Agi} and U_{NAgi} denote the utilities derived from agricultural and non-agricultural employment, respectively. Thus, a household engages in non-farm employment if the net utility gain (U_i^*) is positive. Youth farm households that engaged in non-farm income-generating activities are therefore classified as non-agricultural employment participants, while those relying solely on agribusiness are considered agricultural participants. To evaluate the poverty implications of engagement in non-agricultural employment, the study applies the Foster–Greer–Thorbecke (FGT) poverty framework (Foster et al., 1984), which decomposes poverty into three dimensions: incidence/headcount, depth, and severity, through the following index:

$$\mathcal{P}_\alpha = \frac{1}{N} \sum_{i=1}^g \left(\frac{z - y_i}{z} \right)^\alpha, \alpha = 0, 1, 2 \quad (2)$$

where $\mathcal{P}$ is the poverty indicator dimension ($\mathcal{P}_0$ = poverty headcount ratio; $\mathcal{P}_1$ = poverty depth and $\mathcal{P}_2$ = poverty severity). z represents the poverty line and y_i denotes the per capita consumption expenditure of the i th female youth household and g represents the proportion of poor households among the N total sample. Poverty is measured in Nigeria using food and non-food consumption expenditure (NBS, 2020). The poverty line was constructed using the 2019 Nigerian national poverty line of 376.52 naira/day, approximately US\$1.03 in 2019 (NBS, 2020). Thus, we classify female youth-headed households as poor or non-poor based on their daily per capita consumption expenditure, estimated from total household food and non-food consumption expenditures.

2.3. Empirical Strategy

A key empirical challenge in estimating the effects of non-agricultural employment on poverty is that engagement decisions are likely non-random. Female-headed households that engage in non-farm activities may differ systematically from those that do not in observable and unobservable characteristics—such as education, risk preferences, access to information, or entrepreneurial ability—that could also influence poverty outcomes. If these unobserved factors are correlated with engagement, standard regression estimates (such as ordinary least squares) would be biased and inconsistent due to self-selection and omitted variable bias.

Several empirical approaches have been developed to address concerns about endogeneity. The most common include the Propensity Score (PS) and Instrumental Variable (IV) methods. PS-based estimators, such as Propensity Score Matching (PSM) and Inverse Probability Weighting (IPW), relax parametric assumptions by matching households with similar observable characteristics to estimate average treatment effects (Rosenbaum & Rubin, 1983; Wooldridge, 2007, 2010). While PSM offers flexibility and avoids dependence on functional form assumptions, it does not correct for bias arising from unobserved factors that jointly determine both treatment and outcome variables, thus leaving residual endogeneity unresolved (Cameron & Trivedi, 2005, 2022). On the other hand, IV-based strategies explicitly account for unobserved heterogeneity by using instruments that affect participation but not the outcome directly. However, their reliability depends critically on identifying valid

and strong instruments that satisfy both relevance and exclusion restrictions (Heckman & Vytlacil, 2007; Takahashi & Barrett, 2014).

Thus, this study employs an IV-based approach—Endogenous Treatment Effect Regression (ETER) model—which provides a more flexible and theoretically grounded framework for estimating causal effects when treatment assignment is endogenous (Hübler, 2016). The ETER model jointly estimates the selection and outcome equations, allowing for correlation between unobserved determinants of participation and poverty outcomes. This joint estimation corrects for selection bias and produces consistent and efficient estimates even in the presence of endogenous treatment decisions (Cameron & Trivedi, 2005). Moreover, the model is particularly suitable for analyzing agricultural behavioural choices such as rural labour diversification, where participation in non-farm employment is influenced by both observed socioeconomic characteristics and unobserved individual attributes (Anang et al., 2020; Awotide et al., 2015; Oyetunde-Usman et al., 2021). The ETER selection (participation) equation is specified as

$$\mathcal{N}_i^* = \mathbf{x}_i\varphi + \mathbb{Z}_i\omega + \mu_i \quad (3)$$

where $\mathcal{N}_i$ is a binary indicator that takes the value 1 if a female youth farmer engages in non-farm employment, and 0, otherwise. Thus, the observed binary treatment indicator $\mathcal{N}_i = 1$ when $\mathcal{N}_i^* > 0$. $\mathbf{x}_i$ is a set of exogenous variables such as education, age, household size, and location. $\mathbb{Z}_i$ is the instrument. The instrumental variable used in the study, access to information about non-agricultural jobs, is expected to affect the likelihood of participation in non-farm employment without directly influencing poverty outcomes, thereby ensuring identification validity. φ and ω represents vectors of parameters to be estimated, while μ_i is the disturbance term.

The poverty outcome equation is expressed as:

$$\mathcal{P}_i = \mathbf{x}_i\gamma + \delta\mathcal{N}_i + \xi_i \quad (4)$$

where $\mathcal{P}_i$ denotes the FGT poverty indices, i.e., poverty headcount ($\mathcal{P}_0$), gap ($\mathcal{P}_1$), and severity ($\mathcal{P}_2$). $\mathbf{x}_i$ includes the same set of exogenous variables in Equation (1); γ and δ rare vectors of parameters to be estimated, while ξ_i is the error term. The ETER model jointly estimates the selection and outcome equations, allowing the error terms (μ_i, ξ_i) to be correlated. The FGT poverty indices are modelled as continuous outcome variables using linear specifications, a common approach in applied microeconomic and development research when estimating average differences in poverty outcomes (Ogunniyi et al., 2023; Wooldridge, 2010). The ETER framework, therefore, captures conditional mean associations between non-agricultural employment and poverty incidence, depth, and severity, rather than marginal probability effects. To account for the bounded and potentially skewed nature of the indices, robust standard errors are employed. All estimations were conducted using Stata 18 (etregress command for ETER) statistical software. To assess sensitivity to model choice, we complement the ETER results with ordinary least squares and inverse-probability weighting estimates (see Appendix A).

Identification Strategy

As stated earlier, access to information on non-farm job opportunities was used as an IV in the ETER framework. This IV is motivated by the institutional structure of rural labour markets in Nigeria, where non-farm employment, particularly for young women, is predominantly accessed through informal information channels rather than formal recruitment systems. In such settings, awareness of employment opportunities is a necessary condition for participation, as information reduces job-search frictions and facilitates matching in segmented local labour markets. The instrument's relevance is supported by the

first-stage results, which show that access to information on non-farm employment is positively and statistically associated with engagement in non-farm employment. The identifying assumption is that, conditional on observed socio-economic characteristics (such as education, household assets, and location), access to information on non-farm work affects poverty outcomes primarily through its influence on non-farm employment participation rather than through a direct consumption or income channel. While access to information may be correlated with unobserved characteristics such as social networks or individual motivation, the endogenous treatment effect model explicitly allows for selection on unobservables, as reflected in the statistically significant correlation parameter (athrho). Accordingly, the estimated coefficients of the ETER model are interpreted as conditional treatment effects under maintained identification assumptions, rather than as unconditional causal effects. We therefore adopt a cautious interpretation of the magnitude of the estimates and emphasize patterns of association rather than strong causal claims.

3. Results and Discussion

3.1. Summary Statistics

The descriptive statistics in Table 1 show that 27.4% of the sampled young women were engaged in non-agricultural employment.

Table 1. Descriptive Statistics.

Variable	Full Sample	Engaged	Non-Engaged	Mean Difference
Non-agricultural employment (dummy)	0.274			
Poverty head count ($\mathcal{P}_0$)	0.736	0.667	0.762	−0.096
Poverty gap/depth ($\mathcal{P}_1$)	0.496	0.438	0.518	−0.08
Poverty severity ($\mathcal{P}_2$)	0.383	0.337	0.401	−0.065
Age (years)	29.091	28.944	29.147	−0.202
Education attainment (years)	11.959	10.815	12.392	−1.577 **
Agro-training attendance (dummy)	0.695	0.741	0.678	0.062
Household size (number)	3.096	3.278	3.028	0.250 ***
Credit access (dummy)	0.264	0.259	0.266	−0.006
Youth forum membership (dummy)	0.325	0.37	0.308	0.063
Productive asset value (US dollar [\$])	62.563	60.533	63.33	−2.797
Extension access (dummy)	0.208	0.241	0.196	0.045
Ondo_ST (1 = Ondo, 0 = Ogun)	0.487	0.407	0.517	−0.11
Non-farm information access (dummy)	0.355	0.444	0.322	0.123
Observations	197	54	143	197

NB: Standard errors in parentheses. *** $p < 0.01$ and ** $p < 0.05$.

The mean poverty headcount ($\mathcal{P}_0 = 0.736$) underscores the high prevalence of poverty, while the poverty gap ($\mathcal{P}_1 = 0.496$) and severity ($\mathcal{P}_2 = 0.383$). Comparing the poverty outcomes between engaged and non-engaged young women groups in non-farm employment. The FGT poverty indices—headcount, gap, and severity—are consistently lower for participants; however, the differences are not statistically significant. These results align with the high poverty incidence reported in Nigeria in 2019 (NBS, 2020).

Socioeconomic variables indicate that female youth farmers are approximately 29 years old, have secondary/high school educational attainment (11.96 years on average), and live in households of about 3 members. Female youth who engaged in non-farm employment exhibit significantly lower educational attainment than the non-engaged group (10.82 vs. 12.39 years, $p < 0.05$), suggesting that non-farm engagement among young women may reflect necessity-driven diversification rather than higher human capital. This pattern is evident in the study area, where most non-farm employment opportunities are informal

and typically require only basic or no formal education. Consistent with this context, recent evidence indicates that over 90% of employed youth in Nigeria are engaged in informal work, underscoring the structural dominance of informal non-farm activities (Bello, 2025; NBS, 2024). The average value of owned productive assets used for farm production is \$62.56, with no statistically significant difference between engaged and non-engaged women (\$60.53 vs. \$63.33). This indicates that engagement in non-agricultural employment is not systematically associated with higher initial asset endowments. Instead, the uniformly low level of asset ownership points to a broadly resource-constrained rural context in which agriculture alone may be insufficient to generate adequate livelihoods. This suggests that asset endowments alone do not explain entry into non-agricultural activities, reinforcing the role of non-farm employment as a complementary livelihood strategy rather than a substitute for farm-based accumulation.

Institutional characteristics indicate generally limited access to formal support services in the study area. While most of the respondents report having participated in agro-allied training (69.5%), access to formal credit (26.4%) and extension services (20.8%) remains limited across both groups. Membership in youth associations or forums is also relatively low (32.5%) and does not differ significantly by engagement status. These patterns suggest that formal institutional support mechanisms play a limited role in differentiating livelihood strategies among young women in the study area. Access to information on non-farm employment opportunities—the instrumental variable used in the endogenous treatment framework—is reported by only 35.5% of respondents, but is higher among women engaged in non-farm employment (44.4%) compared to the non-engaged group (32.2%). Although this difference is not statistically significant in the summary statistics, it is consistent with the notion that information availability may influence awareness of and entry into non-farm activities, particularly in settings dominated by informal employment. Overall, these statistics depict a rural context characterized by constrained assets, limited institutional access, and uneven exposure to non-farm opportunities, underscoring the structural conditions shaping livelihood diversification among young women.

3.2. *Effect of Non-Agricultural Employment on Poverty*

The results of the endogenous treatment effect regression (ETER) analysis are presented in Table 2.

The θ coefficients are significant and positive, confirming endogeneity: unobserved factors, such as motivation or risk preference, simultaneously influence non-farm participation and poverty outcomes. The model's correction for this bias ensures consistent estimation of the causal impact of non-agricultural employment on poverty reduction. The selection equation (column 2) results showed that education, household size, productive assets, and the instrumented variable—access to non-farm job information—significantly influenced female youth participation in non-farm work. The determinant of non-agricultural employment is not discussed in detail because the primary objective of the study is to assess its poverty implications. The outcome equation (column 3–5) results indicated that engagement in non-agricultural employment significantly reduces poverty across all dimensions of the FGT indices. While the estimated effects are economically sizable, their magnitude should not be interpreted as exact percentage changes. Differences in effect sizes across alternative specifications underscore the sensitivity of estimates to model structure and sample composition. Nonetheless, the direction and statistical significance of the estimates remain broadly consistent across robustness checks (see Appendix A), lending support to the central findings. The observed reductions in the poverty indices imply that non-agricultural employment play a role in smoothing consumption and mitigating the intensity of deprivation, which in turn facilitates transitions above the poverty line, aligning with

evidence from previous research (Barrett et al., 2001; Bezu & Barrett, 2012; Haggblade et al., 2010; Rahman & Mishra, 2020). The relatively larger reduction in the poverty headcount highlights the capacity of rural non-farm employment to lift a greater share of households out of poverty. Meanwhile, the substantial declines in the poverty gap and severity indices reflect improvements in the depth and distributional aspects of welfare among participants. These findings resonate with theoretical expectations from the livelihood diversification hypothesis, which posits that non-farm activities provide crucial income smoothing, liquidity, and consumption stabilization functions in rural economies exposed to agricultural risk and seasonal volatility (Ellis, 1999; Harriss-White & Heyer, 2010).

Table 2. Effect of non-agricultural employment on poverty.

Variables	Engagement	FGT Poverty Outcomes		
		Head Count	Depth	Severity
Non-agricultural employment		−0.80 *** (0.16)	−0.46 *** (0.099)	−0.47 *** (0.14)
lnAge	−0.68 (0.58)	−0.24 (0.22)	−0.036 (0.11)	−0.00054 (0.11)
lnEducation attainment	−0.27 * (0.16)	−0.14 ** (0.060)	−0.088 *** (0.033)	−0.085 ** (0.034)
Agro-training attendance	0.090 (0.24)	0.031 (0.078)	−0.016 (0.043)	−0.042 (0.042)
lnHousehold size	2.86 ** (1.26)	1.23 *** (0.40)	0.85 *** (0.23)	0.91 *** (0.25)
Credit Access	0.011 (0.24)	−0.26 *** (0.079)	−0.12 *** (0.044)	−0.087 ** (0.043)
Youth forum membership	0.15 (0.23)	−0.039 (0.076)	−0.036 (0.042)	−0.034 (0.043)
ln Productive asset value	−0.055 ** (0.023)	−0.030 *** (0.0080)	−0.023 *** (0.0045)	−0.025 *** (0.0046)
Extension access	−0.21 (0.29)	0.12 (0.092)	0.027 (0.051)	−0.0085 (0.050)
Ondo_ST	−0.023 (0.25)	−0.21 *** (0.075)	−0.15 *** (0.036)	−0.15 *** (0.00054)
Non-farm information access	0.65 *** (0.25)			
constant	−1.179 (2.701)	0.517 (0.840)	−0.082 (0.466)	−0.338 (0.459)
athrho		1.07 *** (0.31)	1.03 *** (0.35)	1.20 * (0.62)
lnsigma		−0.77 *** (0.095)	−1.36 *** (0.10)	−1.39 *** (0.15)

NB: Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$ and * $p < 0.10$.

Educational attainment, productive assets, and access to credit further reduce poverty measures, highlighting the centrality of human capital and financial inclusion. Conversely, household size is positively associated with poverty depth and severity, consistent with the dependency burden hypothesis—larger households have higher consumption pressure and lower per capita welfare (Babatunde & Qaim, 2010). These results underscore the importance of strengthening rural non-farm sectors through improved infrastructure, skills development, and access to credit and labour market information. Expanding such opportunities can enhance the capacity of young female-headed households to smooth income fluctuations and accumulate assets, thereby facilitating long-term welfare gains and the structural transformation of the rural economy.

The findings are consistent with a growing body of evidence highlighting the welfare-enhancing effects of non-farm participation. Studies in low and middle-income countries demonstrate that non-agricultural employment significantly contributes to poverty reduction, income stability, and food security (Al-Amin & Hossain, 2019; Lanjouw & Lanjouw, 2001; Nagler & Naudé, 2017; Oseni & Winters, 2009; Rahman & Mishra, 2020). Similar empirical findings from Nigeria and Ghana have documented that rural households engaged in non-farm activities experience higher consumption levels and reduced vulnerability to income shocks compared to those solely reliant on agriculture (Bello, 2025; Danso-Abbeam et al., 2020; Kehinde & Ogundej, 2023).

4. Conclusions and Policy Implications

In developing economies such as Nigeria, where several emerging issues—including economic restructuring, technological change, and demographic pressures—are shaping labour market dynamics, understanding the inclusiveness of employment opportunities for young women is crucial for designing effective and targeted interventions. This study provides robust empirical evidence that participation in non-agricultural employment significantly reduces poverty among young women in Nigeria. The consistent and substantial effects across all FGT poverty dimensions demonstrate that non-farm activities serve as an effective pathway for both escaping poverty and improving welfare among those who remain poor. These findings underscore that non-agricultural employment is not merely a supplementary income source but a key driver of inclusive rural transformation. By providing more stable and often higher returns compared to farm-based livelihoods, non-farm work enhances household resilience against agricultural shocks, climate variability, and market volatility. Furthermore, the significant roles of education, access to credit, and productive assets in reducing poverty highlight the importance of human capital and financial inclusion as complementary mechanisms that amplify the welfare impact of non-farm engagement.

The study recommends mainstreaming gender-sensitive non-agricultural employment programs into Nigeria's broader rural development and poverty reduction strategies. In the short term, policy efforts could focus on relatively feasible interventions such as improving access to labour market information, facilitating linkages to local non-farm opportunities in trade and services, and easing credit constraints for young women through existing microfinance and youth-focused programs. These measures can be implemented within current institutional frameworks and leverage ongoing initiatives targeting youth employment and women's empowerment. Over the longer term, sustained investments in rural infrastructure—including transportation networks, electrification, and digital connectivity—are essential to expand the range and quality of non-farm employment opportunities available to rural women. Such structural investments are more resource-intensive but critical for supporting productive, demand-driven non-farm sectors that offer stable income prospects. Importantly, the effectiveness of these interventions depends on institutional coordination across agriculture, labour, and social protection agencies, as well as alignment with Nigeria's national development and youth employment strategies. By combining short-term, targeted support with longer-term structural investments, policy-makers can harness the poverty-reducing potential of non-agricultural employment to uplift young women, advance gender equity, and accelerate progress toward sustainable development goals—SDG 1 (No Poverty), SDG 5 (Gender Equality), and SDG 8 (Decent Work and Economic Growth)—offering a scalable model for poverty alleviation in rural sub-Saharan Africa.

5. Limitations and Future Research

This study has several limitations that should be considered when interpreting the findings. First, the study does not explicitly incorporate broader regional (study area) socio-economic indicators—such as youth unemployment and not engaged in employment, education, or training (NEET) rates, the share of agricultural employment in total employment, or trends in rural GDP—which could further contextualize young women’s engagement in non-agricultural work. While the household survey provides rich micro-level information, the absence of linked regional, state or LGA-level labour market data limits the ability to assess how structural economic conditions shape employment opportunities and poverty outcomes. Second, the cross-sectional nature of the data precludes analysis of dynamic poverty transitions, employment mobility, and longer-term welfare effects of non-agricultural work. Third, the relatively small size of the treated subsample may affect statistical precision and sensitivity to specification choices.

Future research could address these limitations by incorporating multiple rounds of large household surveys or panel data, richer labour-market information, and alternative identification strategies, including experimental or quasi-experimental designs, to better isolate causal mechanisms linking non-agricultural employment to poverty dynamics among rural youth women.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data used in this study are available upon reasonable request from the corresponding author.

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Abbreviations

The following abbreviations are used in this manuscript:

ETER	Endogenous Treatment Effect Regression
FGT	Foster–Greer–Thorbecke
IV	Instrumental Variable
IPW	Inverse Probability Weighting
LGAs	Local Government Areas
NAPEP	National Poverty Eradication Program
NDE	National Directorate of Employment
NEET	Not engaged in employment, education, or training
OLS	Ordinary Least Squares
PS	Propensity Score
PSM	Propensity Score Matching
SDG	Sustainable Development Goals
SSA	Sub-Saharan Africa

Appendix A

Table A1. Robustness check—Effect of non-agricultural employment on poverty.

Variable	Ordinary Least Squares (OLS)			Inverse Probability Weighting (IPW)		
	Head Count	Depth	Severity	Head Count	Depth	Severity
Non-agricultural employment	−0.19 *** (0.069)	−0.13 *** (0.037)	−0.12 *** (0.034)	−0.18 *** (0.062)	−0.13 *** (0.036)	−0.12 *** (0.034)
Controls	YES	YES	YES	YES	YES	YES
observation	197	197	197	197	197	197

NB: Control variables are the same as those used in the ETER model. Robust standard errors in parentheses.
*** $p < 0.01$.

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