

Changing the Tide on Poverty Vulnerability in Cross River State, Nigeria: Does Risk Matter?

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ABSTRACT

This paper builds on the framework of vulnerability as expected poverty to analyse vulnerability, risk, and their effect on poverty. The Feasible Generalized Least Squares (FGLS) method was employed in a three-stage regression approach. Results show that factors that influence household poverty vulnerability in Cross River State include demographic factors, infrastructure, and employment conditions, and the rural-urban welfare gap is found to be wide. Additionally, household welfare and the household head's age are not linearly related, while female-headed households are significantly less vulnerable to poverty and have higher consumption than male-headed households. Furthermore, the results show that geographical location is a key factor in determining the welfare and vulnerability of households, thereby highlighting the importance of residence in determining how economic and environmental shocks affect households. The study concludes that integrating rural infrastructure, agricultural modernization, education, gender empowerment, and employment diversification can reduce vulnerability in the state.

Keywords: Vulnerability, poverty, risk, rural, urban

1.INTRODUCTION

Poverty appears to be the most persistent development challenge confronting many developing countries, including Nigeria. Identifying the causes and their evolution over time is the first step in poverty analysis, followed by determining the access to and effectiveness of mechanisms to mitigate or cope with them. The World Bank (2025) reports that about 139 million Nigerians live in poverty, an increase driven by climate risk, changes in subsidies, social risk, insecurity, and market risk such as price fluctuations, wage variability, and unemployment. The share of the poverty profile of the country has increased from 61 percent in 2024 to 63 percent in 2025, and it ranked 164 out of 193 countries in the 2025 Human Development Index (HDI). By this figure, it means that about 139 million people living in Nigeria are finding it hard to eke out a bare existence. The National Multidimensional Poverty Index (MPI) of 0.257 indicates that over 25 percent of all probable deprivations are experienced by poor Nigerians and 27 million are estimated to have faced food insecurity in 2025, with Cross River State moving from 19th position in 2018 among states to the 11th poorest state, with 75.4 percent in 2025 (NBS, 2025; World Bank, 2025; UNDP, (2026); IMF, 2026).

Apart from the current state of poverty, attention has been directed to the concepts of risk and vulnerability, which explain the probability that households not presently poor may fall into poverty or remain trapped in poverty when exposed to these risks. Risk, a precursor to vulnerability, is the uncertainty associated with future events that may negatively affect household welfare, while vulnerability describes the probability that individuals or households will experience in the future due to their exposure to such risks and their inability to cope. These linkages between risk and poverty define vulnerability. In particular, while poverty portrays a deplorable state of well-being,

vulnerability is perceived as the exposure to uninsured risk resulting in well-being level that is socially undesirable (Hoogereen, Tesliuc, & Vakis, 2004).

Cross River State presents an important context for examining poverty vulnerability based on its climate change impacts, geography, diverse ecological zones, including coastal areas, tropical rainforests, economic structure, and agricultural activities. Consequently, many households face significant livelihood risks arising from climate variability, soil degradation, declining agricultural productivity, and environmental changes, and are among the states experiencing rapid forest loss, with the rate of deforestation increasing by nearly 3.5% annually (FAO, 2018). However, climate change impacts and variability differ based on location, rural or urban, and gender (Mba et al., 2025).

The failure of several government programmes to prevent or mitigate poverty in the state clearly indicates that the issue of risk and vulnerability among the poor has not been properly addressed (Mba et al 2014). While conventional poverty studies have mostly given attention to identifying households that are currently poor, little attention has been given to households who may not be considered poor currently but are exposed to greater risk of becoming poor in the future.

The study objectives are to relate risk and vulnerability, their characteristics, and their impact on poverty, and to determine how disproportionately urban and rural households in Cross River State are exposed to all kinds of risk.

2.LITERATURE REVIEW

There are various modes of understanding risks, and such awareness will change depending on the knowledge of the individual and also the social and cultural setting during which these understandings are shaped. Risk awareness and evaluation are based on cultural norms and values that govern and are integrated in the relationship that human communities have with their physical and social environment” (Oliver-Smith, 1996). However, Hoddinott and Quisumbing (2003) argued that households exist in five settings, which include economic, social, legal, political, and physical. The economic setting is shaped by policies that influence asset variability and its returns, while the social arrangement comprises factors such as the prevalence of certain behavioral standards, social cohesion, and conflict. Whereas the legal setting is conceived as the general guidelines within which exchange occurs, the physical aspect describes natural occurrences in the form of rainfall level and variability, natural soils’ fertility, market distance, and infrastructure quality.

Conversely, the poverty-vulnerability relationship can be seen from the following perspective: while poverty portends immediate lack or inadequacy, vulnerability represents a greater chance/likelihood of facing future lack (Christiaensen & Boisvert, 2000). The concept of vulnerability is the risk of a future deficit, and it indicates a possibility statement regarding the inability to achieve a specific limit of future well-being.

Risks affect household health, income, welfare, consumption patterns, and their broad livelihood security. These risks are idiosyncratic or covariate in nature. Silbert and Useche (2012) examined the impact of natural disaster risk in Indonesian households and found, among other things, that natural disaster-related risk is excessively affecting households constrained by consumption. By way of expected mean and variance in consumption, Azam and Imai (2012) examined sources of vulnerability in rural Bangladesh and separated the variance into idiosyncratic and covariate components. The results indicated that idiosyncratic shocks seem to have greater influence on households’ consumption than the covariate and that rural vulnerability is primarily induced by poverty rather than risk-induced. In the same context, Das (2021) separated households in rural India by food vulnerability. The results revealed that idiosyncratic risks were a more significant driver of poverty than other covariates, and regions with low public distribution framework performance are easily influenced, and a food price hike increases the possibility of food insecurity.

Households are often exposed to several unfavourable incidents, which are capable of triggering a detrimental consequence on wellbeing. Ajefu (2018) investigated gender, location, and shocks on household welfare in Nigeria and revealed that top quintile households experienced increased consumption expenditure. Research undertaken by Harun (2020) on risk types including Thailand’s rural household income and discovered that loss of job, salary decline, death of household member, crops/livestock infection, and marital challenges have undesirable impact on households’ income.

Rural and urban areas are exposed to different forms of risks, but the nature and intensity differ. Adisa (2015) investigated health spending determinants among elderly households in urban Nigeria and found that the poor and elderly face a higher degree of risk. Households controlled by females have less likelihood of incurring health expenditure compared to their male-headed counterparts. The rural and urban areas differ in climate-related impact. Zhou, Kori, Sibanda, & Nhundu (2022) analysed vulnerability to climate change in rural and urban South Africa. Their investigations revealed that the changes in vulnerability between regions are due to the drivers of climate change and income-generating activities. In China, Ding (2022) compared well-being levels with those of different constituents in measuring vulnerability to poverty in rural and urban households. Findings specified that the occurrence of vulnerability in urban households was lower than in rural households, but the differentials to poverty exist, while the rural household’s welfare system’s effect and that of their counterparts in urban cities

surpass expectations. Rural and urban areas are susceptible to food insecurity. Rezvan, Fatemeh, Saeed, and Mohammad (2022) studied their impact during the COVID-19 pandemic on Iranian households and discovered that rural areas are more at risk.

In three separate studies, Mba, Nwosu & Orji (2018) examined household and regional characteristics; Mba, Nwosu & Orji (2021) examined risk exposures and their vulnerability; and Mba et al. (2025) regarding risk and Vulnerability with analysis on rural and urban households' poverty in Nigeria revealed that households in both regions are vulnerable to different risks which are greater in some instances in rural than in urban regions, and vice versa in some cases. Also, households with male-headed households have lesser vulnerability to poverty than their female counterpart. Their analysis reveals that household characteristics correlate with poverty and increase vulnerability, and risk is the precursor.

3.METHODOLOGY

Vulnerability can be decomposed into three components:

$$V_{ht}(p, n, z) = 1 [R_{ht}(n, z) > p] \dots\dots\dots 1$$

$$R_{ht}(n, z) = 1 - [(1 - \Pr(y_h, t+1 < z)) \dots (1 - \Pr(y_h, t+n < z))] \dots\dots 2$$

Where $R_{ht}(n, z)$ is risk measured as probability, n is the time horizon, z indicates the poverty line, and $1[\cdot]$ is the indicator function translating vulnerability into a variable, and p , probability threshold. The model implies that the function $1[\cdot]$, takes the value 1 if the probability computed is higher than the threshold level 0.5 and 0 otherwise (Chaudhuri, Jalan, & Suryahadi 2002). This permits us to analyse vulnerability and risk using cross-sectional household surveys for Cross River State, Nigeria.

Günther & Harttgen (2006) posit that the error term of the cross sectional consumption regression, that is, the unexplained part of households' consumption, reflects the impact of idiosyncratic and covariate shocks, and the cross-sectional variance also quantifies inter-temporal variance in consumption. The underlying assumption is that the difference in consumption can be described by household and community characteristics.

Let a set of variables X_i in period t estimate the household's i consumption. Thus, the household consumption function can be specified as:

$$\log \text{Con}_i = \beta X_i + e_i \dots\dots\dots 3$$

Where:

$\log \text{Con}_i$ = log of per capita household consumption

X_i = set of household and community characteristics

e_i = the part of households' consumption that cannot be explained.

The vector X = (age of household head, education, gender, location (rural/urban), occupation, household size, marital status, gender, sector, etc).

As indicated by the approach of Chaudhuri, Jalan, and Suryahadi (2002), this error term, or the variance in consumption, captures the impact of both idiosyncratic and community specific covariate shocks on consumption, and the differences are correlated with observable household and community characteristics.

In a second step, the variance of the error term is regressed on the household and community characteristics (Günther and Harttgen 2006).

$$\sigma_{e_i}^2 = \theta X_i \dots\dots\dots 4$$

The variance of the error term in equation (3) is not the same across households as assumed by Chaudhuri (2000), reflecting the impact of shocks on consumption; that is, the error term is assumed to be heteroscedastic. Using

OLS for an estimation of β and θ would therefore lead to unbiased but inefficient coefficients.

To control for the heteroscedasticity problem, equation (3) has to be minimized to a model where the residuals e_i have a homogeneous variance. Chaudhuri (2000) hence applies the feasible generalized least squares (FGLS) to

estimate efficient coefficients β and θ . In principle, this means first estimating equation (3) via OLS, then estimating (4) by OLS using the squared residuals of (3) as the dependent variable. The efficient coefficients θ can be used to predict again (4), which is then used to weight equation (3), obtaining also efficient estimates for β (Chaudhuri, Jalan and Subyahadi, 2002).

In another step, for each household, the expected mean as well as variance of consumption can be estimated using the consistent and asymptotically efficient estimators $\hat{\beta}_{FGLS}$ and $\hat{\theta}_{FGLS}$

$$\hat{E}[\text{Cons}_i | X_i] = \beta X_i \dots\dots\dots 5$$

$$\hat{V}[\text{Cons}_i | X_i] = \hat{\sigma}_{e_i}^2 = \theta X_i \dots\dots\dots 6$$

This approach's assumption is that the cross-sectional variance can be used to estimate inter-temporal variance in consumption, and the variance can explain part of the inter-temporal variance due to idiosyncratic and covariate

community-specific shocks. Also, it is hypothesized that the impact of shocks on the variance of consumption is correlated with household characteristics, whereas measurement error is not (Günther and Harttgen 2009). Following Chaudhuri, Jalan and Subyahadi (2002), supposing that consumption is normally distributed, then:

$$V_h = \Pr(\ln \text{Con}_h < \ln Z | X_h) = \Phi\left(\frac{(\ln Z - X_h a)}{\sqrt{X_h \theta}}\right) \dots \dots \dots 7$$

where Φ is the cumulative density function of the standard normal distribution.

X_h is the household characteristics (household size, location, household head, occupation, marital status, age, etc)

$\ln \text{Con}_h$ is the per capita household consumption

$\ln Z$ is the minimum consumption/ income level beyond which a household would be considered poor or below the poverty line

Adopting the Chaudhuri, Jalan and Subyahadi (2002) framework, V_h is sorted as follows:

$\hat{V}_h > 0.5$, highly vulnerable group.

ii $P_0 < \hat{V}_h < 0.5$, relatively vulnerable group

iii. Not vulnerable group

To ascertain the correlation between risk, vulnerability, and household characteristics, where endogeneity is not a serious issue in the specifications, but tried to account for heteroscedasticity by incorporating survey designs in the estimations.

Model One

The model determines household characteristics of vulnerability to poverty specified as:

$$\text{vuln} = \beta_0 + \beta_1 \text{gender_head} + \beta_2 \text{marr} + \beta_3 \text{hhsz} + \beta_4 \text{rural} + \psi \text{age_dummy} + \mu \dots \dots \dots 8$$

Model Two

This model specifies how various kinds of exposure to risk impact on the likelihood that the household will fall into poverty:

$$\text{vuln} = \beta_0 + \beta_1 \text{marr} + \beta_2 \text{hhsz} + \beta_3 \text{rural} + \text{age_dummy} + \theta \text{Risk} + \mu \dots \dots \dots 9$$

Where $\text{gender_head}=1$ if the household head is female and 0 otherwise.

marr =marital status; this shows the effect of different kinds of marital status on household vulnerability. The coefficient ψ is a vector of parameters estimated minus the base dummy.

hhsz =household size: households are characterized by polygamous marriage. The research regrouped the household size to reflect characteristics of both the poor and rich.

$\text{Rural}=1$, if rural, 0 if urban. This is a dummy variable that captures the difference between rural and urban areas in terms of vulnerability to poverty.

Age_dummy =age dummy variable used to capture whether there is an age-specific effect on vulnerability to poverty.

Wage_dummy =represent whether an individual belongs to a certain wage category. It paves the way for categorical information (like gender, location, or wage group) to be included in regression models.

Risk = vector of different types of risk exposure in the data.

Data Sources

The analysis explored dataset obtained from the Household Living Standard Survey 2023-2024 by the National Bureau of Statistics in partnership with the World Bank, which provides essential up-to-date data on living conditions, household welfare, agricultural, and socioeconomic changes across Nigeria.

Estimation Techniques

The study employed the Feasible Generalized Least Squares (FGLS) method, a three-stage regression approach to estimate efficient coefficients β and θ of the household likelihood that future consumption will decline below the poverty line, distinguishing between those currently poor and the ones vulnerable to poverty.

4.RESULTS AND DISCUSSIONS OF FINDINGS.

Descriptive statistics

Table 1: Various Types of Risks Households Suffer in Cross River State

	Mean	Sd	Min	Max	Count
Activitystopdays	.6011107	.4898463	0	1	1389
death_adult_member	.9004951	.2994028	0	1	2337
death_remit_sender	.9240101	.2650386	0	1	2337
illness_income_earner	.9242875	.2645942	0	1	2337
loss_import_contact	.9419211	.2339426	0	1	2337
job_loss	.9311204	.2533035	0	1	2337
nonfarm_enterp_failure	.9456579	.2267401	0	1	2337
theft_cash_crops_livestock	.8946686	.3070457	0	1	2337
propertyloss_fire_theft	.9369237	.2431522	0	1	2337
land_loss	.9308163	.2538206	0	1	2337
input_price_increase	.93419	.2480028	0	1	2337
output_price_fall	.9344133	.2476113	0	1	2337
foodprice_increase	.922211	.2678966	0	1	2337
other_shocks	.9441587	.2296642	0	1	2337
departure_income_earner	.9156185	.2780176	0	1	2376
harvest_failure_rain_flood_pest	.8458716	.3611478	0	1	2376
livestock_death	.9358685	.2450394	0	1	2337
Readwrite	.571293	.4950016	0	1	2242
electricity_access	.5815618	.4934067	0	1	2376
Activlimitation	.0960987	.2947886	0	1	2376
N	2376				

NB: household-specific shocks are known as idiosyncratic, whereas general shocks are covariate.

The table depicts the descriptive statistics of shock exposure for Cross River State households. Since all variables are binary (0 = experienced, 1 = not experienced), mean values close to 1.0 indicate that very few households reported experiencing a particular shock, while mean values closer to 0.5 indicate widespread occurrence.

Activity stoppage days has a mean of 0.601 and a standard deviation of 0.490, suggesting that among households that reported any shock, approximately 40% experienced an activity stop, highlighting the direct economic disruption shocks cause in Cross River State. Harvest failure due to rain, flooding, or pest infestation (harvest_failure_rain_flood_pest) has the lowest mean among the binary shock indicators at 0.846. Meaning approximately 15.4% of surveyed households reported harvest failure, the most commonly reported covariate shock in the state. Given the State's agrarian economy, harvest failure directly threatens household food security and income simultaneously.

Theft of cash, crops, or livestock (mean 0.895, approximately 10.5% of households affected) and death of an adult member (mean 0.900, approximately 10% affected) also emerge as relatively common shocks. These idiosyncratic shocks affect individual households in ways that may not trigger community-wide safety nets, leaving only the affected families exposed.

The literacy rate of 0.571 indicates that approximately 57% of Cross River State households have at least one member who can read and write, while electricity access (electricity_access) stands at 0.582. Activity limitation, capturing disability or chronic illness, affects nearly 10% of households (0.096).

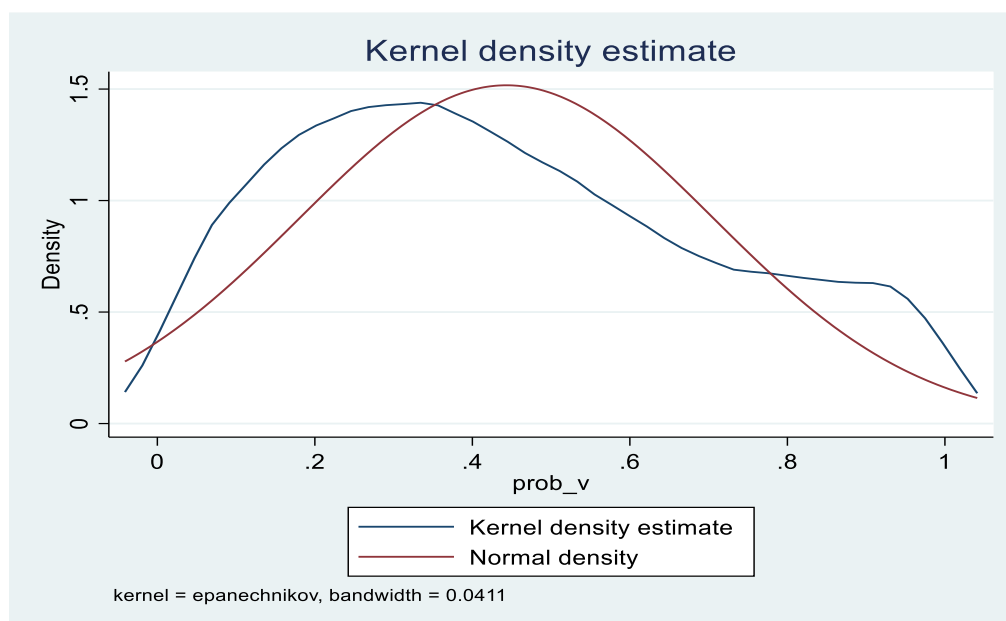


Fig 1: The graph shows that the probability of vulnerability is approximately normally distributed

Table 2: Vulnerability by Income Quintile

Quintile	National	Cross River
1	0.678224	0.4868673
2	0.5454717	0.5828306
3	0.4309986	0.4722872
4	0.3150859	0.2818529
5	0.1707662	0.1872316
Average	0.3037954	0.2489817

From the table, vulnerability is disaggregated by income quintile, ranging from the poorest 20 percent (Q1) to the richest 20 percent (Q5). The results reveal a decreasing relationship between income and vulnerability nationally. The poorest quintile has a vulnerability probability of 0.678, falling progressively to 0.171 for the richest quintile, thereby reflecting an inverse income-vulnerability relationship.

The income quintile in Cross River State shows an anomaly at quintile 2. Nationally, in quintile 2, vulnerability of (0.545) is lower than Q1 of (0.678). In Cross River, quintile 2 households (0.583) are more vulnerable than Q1 households in the state (0.487). Surprisingly, the second, middle, and highest quintiles of 58%, 47%, and 19% are higher than the national. Suggesting that these groups have volatile livelihood and may face considerable exposure to shocks. The richest quintile in Cross River State (0.187) is marginally higher than the national quintile 5 rate of (0.171), suggesting that even the relatively well-off in the state are not fully protected from future poverty risk. The declining trend across quintiles confirms that income determines household resilience. Prosperous households are better off withstanding shocks through savings, diversification of income, and asset availability.

Table 3: Consumption and Auxiliary Regression for Poverty Vulnerability (povline \$2.15)

	Consumption_regress	Auxiliary_reg
Rural	-0.124*** (-20.59)	0.0409*** (8.24)
Electricity_access	0.251*** (29.82)	0.0455*** (6.54)
Female	0.0777*** (12.28)	-0.0239*** (-4.57)

Hhsize	-0.0859*** (-104.63)	0.00954*** (14.03)
Age	-0.0103*** (-8.41)	-0.00905*** (-8.92)
Agesq	0.000122*** (8.26)	0.0000975*** (7.95)
1. none	0 (.)	0 (.)
2. first school leaving (fslc)	0.143*** (10.30)	-0.0301** (-2.63)
3. modern school (mslc)	0.0449 (0.75)	-0.0334 (-0.67)
5. junior secondary (jss)	0.178*** (11.01)	0.00692 (0.52)
6. senior secondary (sss)	0.264*** (20.17)	-0.0411*** (-3.79)
7. advanced (a) level	0.209*** (4.78)	-0.123*** (-3.42)
8. nce/ond/nursing	0.318*** (22.20)	-0.0254* (-2.15)
9. ba/bsc/hnd	0.550*** (38.05)	0.00610 (0.51)
11. masters	0.956*** (47.98)	0.00571 (0.35)
12. doctorate	1.023*** (18.62)	-0.137** (-3.01)
13. other (specify)	0.963*** (8.94)	0.397*** (4.45)
14. voc/comm certificate	0.275*** (6.03)	0.0181 (0.48)
15. voc/comm diploma	0.302*** (12.27)	-0.0582** (-2.86)
1. agriculture	0 (.)	0 (.)
2. mining	0.283*** (10.45)	0.110*** (4.93)
3. manufacturing	0.282*** (18.03)	0.0849*** (6.57)
4. professional/ scientific/technical activities	0.302*** (19.73)	-0.0395** (-3.12)
5. electricity/water/gas/waste	0.0467* (2.17)	0.0420* (2.36)
6. construction	0.143*** (10.21)	0.0623*** (5.38)
7. transportation	0.165*** (11.09)	-0.00814 (-0.66)
8. buying and selling	0.127*** (7.57)	0.105*** (7.57)
9. financial/insurance/ real est. services	0.307*** (16.07)	-0.0595*** (-3.76)
10. personal services	0.137*** (10.80)	0.0741*** (7.08)
11. education	0.0450*** (3.56)	0.0674*** (6.46)
12. health	0.189*** (12.00)	0.0859*** (6.59)

13. public administration	0.155*** (11.43)	0.0683*** (6.09)
14. other, specify	0.192*** (9.94)	0.122*** (7.60)
Constant	12.43*** (472.76)	0.282*** (12.95)
Adjusted R2	0.444	0.027
Observations	31863	31863

t-statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

From the table, rural areas carry a significant negative coefficient of -0.124 in the consumption regression, indicating that rural households consume less than their urban counterpart. The positive coefficient of 0.041 indicates that rural households also encounter higher consumption volatility and are more exposed to poverty risk than urban households. Electricity accessibility yields positive consumption with a coefficient of 0.251, $p < 0.0001$, indicating that access to electricity correlates with household welfare. Suggesting better access for improved studies, food preservation, and businesses. Also, consumption variance increases by 0.046, indicating households with electricity could participate in dynamic activities, providing other streams of income. Higher household size reduces per capita consumption by -0.086, weakening household resources and compounding their level of vulnerability by 0.010. Ruminating dependency burden and pressure on available resources. Consumption by older households decreases by 0.010 and increases vulnerability by -0.009. From the positive squared term, with a U-shaped relationship capturing a non-linear effect, consumption initially falls with age, then surges. Very young and very old household members are disadvantaged, but middle-aged fare better.

Female headed household's increases consumption by (0.078, $p < 0.001$) more than the male headed in the consumption regression but reduce vulnerability by -0.024, signifying that female led households may be more efficient in managing risk in the study area despite lower average resources. Moving from no formal education to improvement to higher qualifications creates more consumption upscale. Doctorate holders consume more, with the coefficient followed by master's holders with a 95.6% premium. The First School Leaving Certificate (FSLC) holders recorded a 14.3% consumption premium, highlighting the poverty reducing value of basic formal schooling.

Vulnerability varies according to employment sector, with mining, manufacturing, construction, trade, and services having higher consumption compared to agriculture (the reference), with mining (0.110), manufacturing (0.085), and trade (0.105) having higher risk, and finance (-0.060) as one of the most powerful protective factors and other professions (-0.040) with lower risk. This indicates that activities not related to agriculture generally raise consumption, but exposure to poverty risk depends on the stability of sectors. This shows that agricultural households are more exposed to risk due to low output and unstable income. Suggesting that diversification away from agriculture, even into lower-skilled service sectors, significantly boosts household welfare.

Table 4: Vulnerability to Poverty-Urban and Rural

Vulnerability to Poverty-Urban and Rural		
Sector	National	Cross River
Urban	0.200233	0.121887
Rural	0.407098	0.296311
Average	0.303795	0.248982

NB: vulnerability to poverty was calculated from a normal distribution after auxiliary regression from the FGLS. The table reveals urban and rural divide in vulnerability to poverty at both the national and Cross River state. Nationally, rural households face a mean vulnerability probability of 0.407, higher than the urban rate of 0.200. This reveals that, on average, over 40 percent of rural Nigerian households have a probability exceeding the threshold of being classified as vulnerable to poverty, compared with only 20% of urban households. The average national vulnerability stands at 0.304. In Cross River State, the urban households' rate is 0.122, which is 39 percent lower than the national urban average, and the rural households' rate of 0.296, at about 30% vulnerability, is high but lower than the national rural figure of .407 at 27 percent. The state overall average household vulnerability of 0.249 is below the national average of 0.304.

Rural households are consistently more vulnerable than urban households both nationally and in Cross River. This reflects the concentration of weaker infrastructure and limited access to services. In Cross River, vulnerability levels are lower, but the continual rural to urban vulnerability in the state (0.296 against 0.122) is still a crucial policy concern. Implying that spatial inequalities in access to infrastructure, education, services, and markets continue to drive differential welfare outcomes.

5. DISCUSSION OF FINDINGS

The empirical results showed that the factors that influence household poverty vulnerability in Cross River State include demographic factors, infrastructure, and employment conditions. The findings are in line with the vulnerability framework proposed by Chaudhuri, Jalan, and Suryahadi (2002), which suggests that the household characteristics in the present period affect future consumption level and its variance, thus affecting the likelihood of falling into poverty. The rural-urban welfare gap is found to be wide. This means that rural households live on lower per capita incomes, and they also experience higher levels of income risk. This is a result of structural constraints of rural livelihoods such as reliance on rain-fed agriculture, low market integration, poor infrastructure, less access to financial services, and fewer income diversification opportunities. This corroborates the findings of Rezvan et al. (2022), who discovered that rural areas are more at risk in Iran.

One of the determinants of households' welfare is access to electricity. The benefits of electricity on welfare are greater than the increase in consumption fluctuations resulting from electricity use, highlighting the role of rural electrification as one of the most effective tools to reduce the poverty vulnerability of rural households in the long run.

Household size also has strong negative effects on per capita consumption, and positive effects on poverty vulnerability. This finding is in line with Ajefu (2018) on household welfare in Nigeria, which revealed that top quintile households experienced increased consumption expenditure. This is an indication of the economic costs associated with having larger family sizes that reduce per capita resource availability due to high dependency ratios.

Household welfare and household head's age are not linearly related. This implies that vulnerability differs within the household life cycle instead of being consistent across age groups of household heads, and that middle aged household heads are generally better able to cope with livelihood risks than younger and older household heads. Again, Female-headed households are significantly less vulnerable to poverty and have higher consumption than male-headed households. This finding is at odds with the finding of Mba et al. (2021), who found male headed households to have lower vulnerability to poverty than their female counterpart. This implies that the female household heads in Cross River State can manage household resources more profitably, direct household spending towards food, education and healthcare, and make more sensible decisions on financial and risk management.

The labour market also has an important role in influencing the welfare and vulnerability of households. Households involved in mining, manufacturing, construction, trade and service activities have generally higher consumption levels than those in the agriculture sector, indicating higher labour productivity and higher income-generating potential in the non-agricultural sectors than in subsistence farming. Those in the finance and other professional sectors have less vulnerability, while households in mining, manufacturing, and trade have more consumption volatility. It implies that these sectors raise one's welfare but, at the same time, are vulnerable to market fluctuations, business cycles, and job insecurity.

The results show that geographical location is a key factor in determining the welfare and vulnerability of households, thereby highlighting the importance of the place of residence in determining how economic and environmental shocks affect the household. This is in line with the finding of Zhou et al (2022) that revealed how changes in vulnerability between regions are due to the drivers of climate change and income-generating activities in South Africa. The vulnerability level of households is relatively low in Cross River State compared to the average level of vulnerability of households in the country, whether rural or urban. The finding implies that Cross River State households have relatively higher resilience to future poverty as compared to Nigeria as a whole. This relatively low vulnerability could be linked to the relatively favourable socioeconomic situation existing in the state. However, there are very large rural-urban differences in the state. This large difference suggests that the relationship between poverty risk and rural residence is still very strong, meaning that spatial inequalities have not disappeared despite the increase in overall welfare. Instead, in rural areas, structural disadvantages remain for households, raising the risk of both exposure to adverse shocks and to future poverty.

6. RECOMMENDATIONS AND CONCLUSION

Policy Recommendations

Integrated policies that combine rural infrastructure, agricultural modernization, education, gender empowerment, and employment diversification are needed to reduce vulnerability in Cross River State. The results highlight that poverty vulnerability is not only poverty, but vulnerability to risk and ability to cope with shocks. Structural transformation, infrastructure, education, diversification, and social protection are the key areas of government

policy, while at the community level, there is a strong need for collective resilience, empowerment, and local capacity building. These strategies, in combination, decrease chronic and transient poverty vulnerability.

Policy should be targeted for structural transformation and spatial equity by investing in rural infrastructure, education, and rural diversification; and community-level interventions should be based on collective resilience, empowerment, and localized capacity building. These strategies complement each other and can lower chronic and transient poverty vulnerability for rural households, allowing them to better withstand shocks than their urban counterparts.

There is a linkage between vulnerability and resilience building policies, and a reduction in vulnerability must go beyond known poverty reduction policies. Household incomes need to be raised, but the same priority should be placed on livelihood stabilization, supporting the extension of adaptive social protection, enhancing access to financial services, productive asset building, and risk management system improvements.

7.CONCLUSION

The study examined household risk and poverty vulnerability with an emphasis on Cross River State, Nigeria. Findings showed that vulnerability to poverty is multidimensional, caused by exposure to shocks and not only by income and current consumption levels. It also revealed that households in rural areas face higher exposure to risks arising from dependence on agriculture, inadequate infrastructure, among others. Therefore, poverty reduction sustainability requires adequate rural infrastructure and modern agricultural facilities, gender empowerment, and employment diversification.

8.FUNDING:

The research received support from the Tertiary Education Trust Fund (TETFUND) Institutional-Based Research (IBR) Grant (Batch 10).

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