



## **Household Income Diversity: An Antidote to Poverty Eradication in Developing Economies**

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### **Abstract**

The acceptance of economic variability by households is seen as a key step towards escaping the poverty cycle. The purpose of the study is to examine the link between household wellbeing and income diversity empirically. Using instrumental variable static panel model regression, we investigate the implications of probable indigeneity caused by selection bias. The study made use of the waves from the Uganda National Panel Survey. The findings show that having a diversity of revenue sources greatly enhances household wellbeing. The results also showed that residing in the eastern or northern areas had a negative impact on welfare compared to living in the center region, and that household welfare is substantially predicted by the education of the household head. The subjective aspect of wellbeing could not be fully described by the methodologies used in this study. Future research could think about using a practical strategy. The use of both primary and secondary data for additional investigation might provide astounding findings. The research study adds to the welfare literature by showing the influence of income variety on household welfare as defined by poverty status and consumer spending, in contrast to other studies that simply examined expenditure as a proxy for welfare. By demonstrating how income variety improves household wellbeing using a sample of homes in Uganda, a developing economy, the study furthers the welfare theory.

**Keywords:** Outsourcing, Risk, Operational performance, Distribution company, Electricity

## **1. Introduction**

The acceptance of income diversity by households is seen as a key step in escaping the poverty cycle. Adopting income diversity should increase household income, other things being equal (Danso-Abbeam, Asale, & Ogundeji, 2023). In order to lessen the occurrence of poverty and improve the welfare of the household, the household will spend the additional money on both consumable and non-consumable things. Although it is generally agreed that income diversity is becoming a more effective instrument for reducing poverty in many emerging economies, its influence on household poverty reduction has largely remained uncertain (Grindle, 2004; Sepehrdoust, Davarikish, & Setarehie, 2019).

Munyegera and Matsumoto (2016) and Chegini, Pakravan-Charvadeh, Rahimian, and Gholamrezaie (2021) assert that poverty status is a good measure of household welfare for it directly translates into food and non-food expenditures. Contrarily, income diversity describes the process by which households produce an expanding range of revenue sources by combining an increasing variety of resources and assets to suit their demands. Asmah and Avenue (2011) add that income diversification entails altering the household's sources of income. Producing and adding value, together with on- and off-farm activities, may all be used to diversify income across a variety of agricultural sectors (such as cereals, perennials, livestock, horticulture, and so on (Minkoff & Lyons, 2019). According to research by (Johny, Wichmann, & Swallow, 2017; Minkoff and Lyons, 2019), income diversity is the situation in which a household obtains money from sources other than the main household activity.

According to Aguilar et al. (2022), 656 million people, or 8.6 percent of the world's population, were considered to be living in poverty. The Middle East and North Africa were predicted to see a more dramatic manifestation of this trend. Additionally, according to a UNICEF study, 16 million people in the Middle East and North Africa would experience food insecurity by the year 2021 as a resulting of increasing poverty levels (Mostafa, 2021). In Asia, Latin America, and Africa, 68% of households have seen a decline in income since March 2020, which worsened their living conditions (Egger et al., 2020). Additionally, it was anticipated that by 2021, 40.0 percent of people in Sub-Saharan Africa will fall below the poverty line (Aguilar et al., 2022). In one year, poverty in the region increased from 420 million to 424 million (Aguilar et al., 2022).

The situation is significantly worse on the African continent as evidenced by the 28 million South Africans receiving aid as a result of the country's increasing poverty; reports suggest that this number had surpassed that of taxpayers, rendering the system unsustainable (Naidoo, 2022). According to the East African (2021), 29 million people in the East African region were in need of food. Additionally, when income shocks hit 66% of Ugandan households by 2020, consumption expenditure fell by 30% due to increasing poverty levels in the country (Kansiime et al., 2021). Additionally, according to a UBOS research, household consumption spending in Uganda declined by 5.5% in the 2019–2020 survey (UBOS, 2021).

The utility and welfare of the individual and the family increase with income diversity, as poverty level declines therefore it stands to reason that people's (individuals' or households') social decisions are influenced by these factors (Pressman & Summerfield, 2000). According to the theory, increasing household and personal income reduces poverty and thus improves utility and well-being (Arrow, 1999). Additionally, any modification to decisions involving income diversity has a significant effect on the wellbeing of the household. Households must choose how to diversify their sources of income. For rich families, these choices are insignificant, but for poor families, these choices might mean the difference between life and death. Because of the households' desire to diversify, those who lack sufficient food will perish, just as those who do not receive proper medical treatment when they are unwell would perish (Rajabov, 2020).

In a study done by Mohammed (2018) at Kaduna State University to determine the effect of income diversity on staff wellbeing, it was discovered that there was a substantial correlation between staff welfare and income diversification in the study region. Zhao and Barry (2014) looked at farm-level variance and its effects on rural Chinese household finances. They found that whereas diversity had a positive impact on low-income rural families, it had a detrimental impact on high-income rural households. In a study to assess the effects of income diversification on household welfare, Kidane and Zegeye (2019) found that income diversity had a positive influence on income and decreased vulnerability to poverty. Khan and Morrissey (2019) looked at how the sources of income for families changed and found that households with more diversified income had lower wellbeing in terms of consumption expenditure. For instance, households can improve their wellbeing and reduce poverty by dedicating a portion of their income to extra revenue-generating activities (Martinson et al., 2022).

Consumption expenditure is the single most measure of household welfare that has been empirically studied (Kalwij & Verschoor, 2007; Leventi, Sutherland, & Tasseva, 2019; Ellis, 2003; Troller-Renfree et al., 2022; (Kafle, Songsermsawas, & Winters, 2022; Ayoo, 2022). In addition, most empirical studies (Asmah and Avenue, 2011; Arouri et al. 2015, Tambo & Wunscher, 2017; Senge, 2017) employed cross-sectional methodologies, which do not reveal welfare changes over time. Furthermore, mixed results from earlier studies have been found. Some empirical studies (Danso-abbeam et al., 2020; Rahut et al., 2017; Xu, 2017) have found a significant relationship between poverty status and income diversity.

While other studies have found that household poverty status is not significantly influenced by income diversity (Khan & Morrissey, 2019; Mendoza, 2018). Asfaw et al. (2019) found that different countries experience different effects of income diversity on poverty status. The majority of research have used data from primarily developed countries to show the connection between income diversity and poverty status (Salam et al., 2019; Zhao & Barry, 2014). By utilizing poverty status, a measurement metric for welfare that has received less attention in literature yet a superior measure, and nationally representative panel data from a developing nation, this study aims to fill up these knowledge gaps and add to the vast body of literature.

Both theoretically and practically, the study advances our understanding of household welfare and income diversity. The results of our study might offer development partners and policymakers crucial information regarding the advantages of income variety for reducing poverty at household level as well as enhancing their wellbeing in Uganda. The research conceptually expands the knowledge on poverty (welfare) and income diversity by utilizing a welfare measure that has received less attention and outlining how the measure links to income diversity. The study also provides empirical evidence for how household poverty is impacted by income diversity in a developing nation like Uganda that is struggling with impoverished living conditions.

Three distinct sections make up the remaining portion of this paper. The theoretical underpinnings and extant literature on the subject of income variety and household poverty status are examined in the first section. The methodologies and data utilized in the study are described in the second section of the paper. The final section of the study covers the conclusions, analysis, findings, and policy implications.

## **2. Literature Review**

### **2.1. Social Choice Theory**

The theory was postulated by an Indian economist, Sen (1986) to explain how activities taken by individuals and households impact their welfare. According to the theory (Atkinson, 1999; Arrow, 1999), increasing income benefits both families and individuals' utility and well-being. Sen noted that people choose to become members of families, and as a result, their wellbeing is reliant on the household's overall income (Pressman & Summerfield, 2000). Therefore, the wellbeing of the household in terms of poverty status improves as household income increases. The distribution of this money among the household members, however, determines each household member's poverty level. The outcome could not be as desired if one household member controls the majority of resources and/or the allocation of those resources (Sen, 1990).

Diversity in household income increases household income, which lowers poverty and improves household welfare. A higher degree of income diversity can greatly reduce a household's income volatility (Kasperski & Holland, 2013). Income diversity increases economic security by reducing vulnerability to changes in consumption patterns, external production shocks, and income variations. A proposal on the rising relevance of income diversity as a strategy for households to increase their income and protect themselves from hazards was also made by Wan et al. in 2016. When household income comes from a variety of sources, there is a higher likelihood that household well-being will increase as a result of relaxing spending limitations. In other words, a household with a wide range of income sources has a higher level of welfare because its members can afford to spend more on things like food and other necessities, whereas a household with a narrow range of income sources has a lower level of welfare because they are limited in what they can buy and how much they can consume.

### **2.2. Income Diversity and Poverty Reduction**

To lessen their susceptibility to shocks, households apply the multifaceted income diversification technique (Zakaria et al., 2019). As a result, households look for income from a number of sources in an effort to better their financial status. According to Kidane and Zegeye (2019), "income diversity" refers to the participation of various revenue sources. Because of this, there should be an improvement in nutrition and consumption (Tesfaye & Tirivayi, 2020). Diversifying sources of income, according to Adepoju and Obayelu (2013), can

stabilize household finances, produce additional money for investments, and help pay for the purchase of high-tech farm equipment to increase agricultural productivity. Families diversify because they desire to raise their level of living by doing new activities and adjusting to different situations (Gautam & Andersen, 2016; Danso-abbeam et al., 2020).

The household's holdings are then increased in value by using the income diversification profits to purchase valuable assets (Hong et al., 2018; Zakaria et al., 2019; Mendoza, 2018). The risk of low income generation from a single investment in subpar conditions is decreased by the number of livelihood activities, which increases the household's income from various income-generating activities (Amfo et al., 2021; Oyimbo and Olaleye, 2016; Danso-abbeam et al., 2020). Households with a diversified portfolio perform better than those without. Therefore, towards the end of the year or period, diversified households are more likely than non-diversified households to spend more on consumption and asset accumulation (Oyimbo and Olaleye, 2016; Akaakohol and Aye, 2015). Additionally, low-income households have a significant and expanding financial benefits because to diversified income (Zhao and Barry, 2014).

The findings tally well with actual research connecting household poverty with diversified income. A household with diversified income can overcome financial challenges (Hong et al., 2018). By lowering economic insecurity, income diversity may improve household expenditure. In other words, household expenditure grows when income diversity increases (Xu, 2017). The value of the household's assets rises as a result of greater savings due to improved household income (Hong et al., 2018). These savings are subsequently invested in durable household goods. By reducing a household's reliance on a single source of income, income diversification improves wellbeing (Xu, 2017; Amfo et al., 2021). To lower risk, boost income, and end poverty, households diversify their assets (Rahut et al., 2017). Additional income-generating activities provide protection against declines in demand and price fluctuations (Amfo et al., 2021). If households diversify their sources of income, it is hypothesized that their wellbeing would rise (Zakaria et al., 2019). Therefore, those households perform better than those who don't.

Numerous studies have been conducted to examine how poverty status is impacted by various income levels. For instance, Zakaria et al. (2019) used a multiple-stage sampling technique, a probit model, and the propensity score matching method to assess the impact of livelihood diversification on agricultural wellbeing in Ghana. The study found that farmers were more likely to diversify their crops if they were

older, had access to extension services, were males, and believed that rainfall was erratic and temperatures were high. They also found that households on farms with diversity did better than those without it. Similarly, Xu (2017) found, using panel data gathered at the province level between 1998 and 2015, that income diversification enhances consumption among Chinese peasants in the rural. Peasant consumption is less sensitive to income diversification in the provinces with intermediate income, but it is more responsive in the subsamples of the provinces with low income and high income, respectively, according to the study.

Stifel (2010) examined the link between rural non-farm employment and household welfare using data from Madagascar that were thought to be nationally representative. The study's use of multinomial logit models led it to the conclusion that engaging in high-return non-farm activities can be a crucial step toward escaping poverty. Rahut et al. (2017) conducted an analysis using data from the Bhutan Living Standard Survey carried out in 2012 to ascertain which alternatives for rural diversification of livelihoods were most advantageous to the welfare of families. The parameters were estimated using propensity score matching. They arrived to the conclusion that a number of factors, including education level, asset ownership, labor availability, and gender of the family head, had an impact on household income diversification into non-agricultural companies.

Additionally, they found that rural families with earnings from sources other than farming had higher incomes and lower rates of poverty than rural households with solely farms, and that this could dramatically decrease rates of poverty. Hong et al. (2018) looked at the connection between households' wellbeing and having many sources of income. They only used survey information from China. Additionally, they found that farm households that employ income diversification techniques had greater rates of forestry, agricultural, off-farm, consumption, and savings than those that do not, in addition to a lower chance of going through relative poverty. This was discovered when compared to homes that didn't apply such tactics.

On the other hand, Ebenezer and Abbyssinia (2018) used data from South Africa to assess the effect of livelihood diversification on wellbeing. Using a modified Multidimensional Poverty Index and the Tobit regression model, they discovered that the province's households were homogenous. Household poverty has been associated with factors such as access to electricity, involvement in agriculture, asset score, total

income, and geography. Each of these elements affected the level of poverty in the province. Additionally, Gautam and Andersen (2016) investigated the impact of livelihood diversification on Nepalese welfare using a composite household welfare score they created using data from household surveys. Their research found a recurrent pattern of diversity in the jobs people take on for pay as well as a wide range of household well-being. They also found that happiness was unaffected by variation. Additionally, it has been demonstrated that diversifying one's sources of income has an uneven impact, resulting in variations in welfare and income.

Omotesho et al. (2020) also used primary data to assess the number of revenue sources available to rural families as well as the effects of various income sources on overall income and welfare. The study showed a negative relationship between the number of revenue sources and the household's livelihood status, with the more diversified the household's income being associated with poorer livelihood status. Mendoza (2018) created a model with two stages of pooling and fixed effects to analyze the Filipino family income diversification behavior in a panel survey. According to the study, the key forces for income diversification were wealth increase and aversion to risk. The study also found little evidence that diversification has any effect on rural households, whose diversification approach is mostly driven by subsistence, and that diversity aids wealthier families in reducing future income and consumption fluctuations. In light of these arguments, we thus hypothesize:

**H<sub>1</sub>:** *The wellbeing of households is significantly impacted by income diversity.*

### **3. Data and Methods**

#### **3.1. Data**

The secondary data utilized to produce the study's quantitative, panel-based conclusions came from the Uganda Bureau of Statistics (UBOS). Data from four waves of the Uganda National Panel Survey (UNPS), which was gathered between 2013 and 2020, were used to determine the study's hypotheses. UNPS data waves utilized in the study encompassed 2013–2014, 2015–2016, 2017–2018, and 2019–2020. The research provides thorough information on several socioeconomic variables, asset ownership, and poverty indicators, among other things.



**3.2. Variable Measurements**

Household's poverty status was chosen since, in accordance with Nguyen et al. (2019), it serves as a reliable indication of its level of living. The probability that a household will not be able to satisfy its basic needs is determined by poverty status, which is expressed as an integer variable with POV=1 if a household's income exceeded the poverty line and POV=0 otherwise. A household is said to have diversified income when it comes from a number of sources in addition to its primary source of income. Passive income sources are included in this study to illustrate the diversity of income. The variable was measured in Uganda shillings as a continuous variable.

**3.3. Econometric Estimation**

The standard panel model, according to Newman et al. (2008), was employed to investigate the link between income diversity and household Welfare. The empirical type of the panel model employed in this study was therefore determined by the dependent variable under study which was measured as a categorical variable and thus its estimation necessitated use of a binary model. Consequently, the probit regression model was used to specify the statistical form of the empirical panel model, for poverty status was measured qualitatively.

$$P_i = E(POV = 1) = \varphi(\beta_{0i} + \beta_1 LN(DIVINC)_{it} + \beta_2 Edul_{it} + \beta_3 Age_{it} + \beta_4 Age_{sq}_{it} + \beta_5 Gender_{it} + \beta_6 Marital_{it} + \beta_7 HHsize_{it} + \beta_8 Resid_{it} + \beta_9 Religion_{it} + \beta_{10} Asocc_{it} + \varepsilon_{it}) \dots \dots \dots 3.1$$

**4. Discussion and Conclusions**

**4.1. Summary of Statistics**

**Table 1.** Summary statistics of household poverty status (POV)

Wave	Non – Poor	Poor
2013/2014	1898 (20.10%)	514 (5.44%)
2015/2016	1,906 (20.20%)	425 (4.50%)
2017/2018	1885 (19.97%)	580 (6.14%)
2019/2020	1,948 (20.64%)	283 (3.00%)

<b>Overall</b>	<b>7,637</b> <b>(80.91%)</b>	<b>1,802</b> <b>(19.09%)</b>
<b>Pearson chi-sq = 156.2482*** Pr. = .000</b>		
<b>Total number of observations: 9,439</b>		

**Source:** Author (2023)

80.91 percent of the households were categorized as not living in poverty during the course of the four waves that were studied based on the statistical information on the poverty status of households presented in Table 1. Table 1's descriptive statistics, on the other hand, reveals that, during the four waves under study, 19.09 percent of households were designated as poor. Table 1's descriptive data thus reveal that the average poverty rate for households in the four waves under study was about 19%.

**Table 2.** Summary statistics of income diversity

<b>Wave</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Standard Dev.</b>
<b>2013/14</b>	146,575	0	1.98e07	1,001,245
<b>2015/16</b>	185,237	0	1.67e07	8340,876
<b>2017/18</b>	2976,810	0	2.44e07	1,143,605
<b>2019/20</b>	1,731,402	0	2.01e07	2,524,112
<b>Sub Total</b>	<b>295,841</b>	<b>0</b>	<b>2.21e07</b>	<b>1,078,832</b>

**Source:** Author (2023)

The descriptive data in Table 2 show that the mean annual household diversified income for the four waves under study was about Uganda shillings two hundred ninety-five thousand (295,000). The mean annual household diversified income for the 2019/2020 UNPS wave was the highest, close to one million seven hundred shillings, whereas the mean annual household diversified income for the 2013/2014 wave was the lowest, close to one hundred forty-six thousand shillings. With an overall standard deviation of about one million Ugandan shillings, the descriptive data on diversified mean annual household income show considerable differences in household diversified incomes throughout the four UNPS waves.

**4.1.1. Diagnostic Tests**

**Table 3.** Unit root test results on all model variables

Variable	Statistic	Estimated statistic	p – value	Order of Integration
<b>Logarithm of Diversified Income (LOGDIVINC)</b>	Inverse chi – sq.	201.9654	0.000	I(0)
	Inverse normal	-11.0053	0.000	I(0)
	Inverse logit, t	-38.4500	0.000	I(0)
	Modified inv. Chi - sq.	63.2219	0.000	I(0)
<b>Education level of household head (hheducl)</b>	Inverse chi-sq.	123.1025	0.000	I(0)
	Inverse normal	-15.5821	0.000	I(0)
	Inverse logit, t	-40.2630	0.000	I(0)
	Modified inv. Chi - sq.	57.1694	0.000	I(0)
<b>Age of household head (Age)</b>	Inverse chi-sq.	123.1025	0.000	I(0)
	Inverse normal	-15.5821	0.000	I(0)
	Inverse logit, t	-40.2630	0.000	I(0)
	Modified inv. Chi - sq.	57.1694	0.000	I(0)
<b>Age squared of Household age (Agesq)</b>	Inverse chi-sq.	123.1025	0.000	I(0)
	Inverse normal	-15.5821	0.000	I(0)
	Inverse logit, t	-40.2630	0.000	I(0)
	Modified inv. Chi - sq.	57.1694	0.000	I(0)
<b>Household size (HHsize)</b>	Inverse chi-sq.	123.1025	0.000	I(0)
	Inverse normal	-15.5821	0.000	I(0)
	Inverse logit, t	-40.2630	0.000	I(0)
	Modified inv. Chi - sq.	57.1694	0.000	I(0)
Categorical variables				
<b>Poverty status of the household head (POV)</b>	-	-	-	I(0)
<b>Marital status of household head (marital)</b>	-	-	-	I(0)
<b>Residence of household head (residence)</b>	-	-	-	I(0)
<b>Region of household head (region)</b>	-	-	-	I(0)
<b>Employment sector of household head (employsec)</b>	-	-	-	I(0)

Source: Author (2023)

The results of the unit root test in Table 3 show that the null hypothesis that each panel has a unit root is rejected for all estimated Fisher-type statistics (Choi, 2001) that take into account each non-categorical

variable in the empirical model. Categorical variables' level-stationarity is known a priori. As a consequence, every model variable has an order zero (0) integration and is level-stationary.

**Table 4.** Correlation matrix for all model variables

	POV	LOGDIVINC	HHEDUCL	AGE	AGESQ	GENDER	MARITAL	RESIDENCE	EMPLOYSEC
POV	1.00								
LOGDIVINC	.212	1.00							
HHEDUCL	.324	.231	1.00						
AGE	.142	.312	.069	1.00					
AGESQ	.191	.101	.312	.940	1.00				
GENDER	.018	.009	.026	.125	.240	1.00			
MARITAL	.105	.082	.200	.304	.109	.415	1.00		
RESIDENCE	.302	.311	.089	.349	.119	.025	.133	1.00	
EMPLOYSEC	.109	.037	.204	.097	.099	.244	.010	.230	1.00

**Source:** Author (2023)

The pairwise correlation matrix in Table 4 shows a significant correlation between age and the age squared control variables ( $r = 0.940$ ;  $p = 0.000$ ). If both control variables are incorporated simultaneously into the model, significant multicollinearity is anticipated when the correlation coefficient is more than 0.8. Age is retained in the final model estimation while age squared is dropped since its correlation with dependent variable is higher than that of age variable.

#### **4.2. The Effect of Income Diversity on Poverty Status**

The panel probit model was used in the study to estimate the effect of income diversity on poverty status. To manage endogeneity in the explanatory variable, the probit model was estimated as an instrumental variable model. Table 5 displays the overall regression estimates for the model.

**Table 5.** Regression estimates for PROBIT model: dependent variable: “POV” (POV=0 if household is non – poor and 1 otherwise)

<b>Independent Variable</b>	<b>Model</b> <b>IV – Probit Regression: Coefficients are</b> <b>Predicted Probabilities (Robust SEs in</b> <b>Parentheses)</b>
<b>Logarithm of diversified income</b>	-.0709*** (.00826)
<b>Control Variables</b>	
HH education level	-.0517*** (0.0223)
HH age (years)	-.0042 (0.0088)
Size of household	.0213*** (0.0342)
HH gender <small>(Ref=female)</small>	
Male headed HH	-.0059 (0.1900)
HH marital status <small>(Ref=married)</small>	
Married polygamously	-.1210 (0.1702)
Divorced / Separated	-.1321 (0.2796)
Widow / widower	.2102 (0.2433)
Never married	.1963 (0.2784)
HH residence <small>(Ref=rural)</small>	
Urban	.2080*** (0.1775)
Region of the country <small>(Ref=centra)</small>	
Eastern	.1434*** (0.3434)
Northern	.6065*** (0.2456)
Western	.2176*** (0.1488)
HH main job sector of employment <small>(Ref=agric)</small>	
Industry	.1448 (0.2334)
Services	-.1257 (0.1949)
Others	-.5201*** (0.4118)
Wald=395.40***	
Wald prob>chi-sq = .000	
Wald test for no endogeneity	

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H<sub>0</sub>: No Endogeneity  
Prob > Chi-sq = .000  
Hausman test of exogeneity  
H<sub>0</sub>: Instrumented variables are exogeneous  
Prob > chi-sq = .0005

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\*, \*\*, \*\*\* represents 10%, 5% and 1% levels respectively

**Source:** Author (2023)

\*, \*\*, and \*\*\* indicate values of 10%, 5%, and 1%, respectively.

The Wald exogeneity test produced a p-value of Prob > chi-sq for the chi-square statistic. = 0.000, which is noticeably below the 5% significance threshold. This finding contradicts the null hypothesis of no endogeneity at the 5% level of significance. The Wald exogeneity test confirms the safety of IV-probit. In Hausman's exogeneity test, it is postulated that the instrumented variables are exogenous. Summary estimates are shown in Table 5 for this test, and they demonstrate that the null hypothesis is rejected since the estimated chi-square statistic has a p-value that is less than the 5% level of significance. The outcome of Hausman's test points to the endogenous nature of the instrumented variables. The findings of Hausman's test are in line with those of the Wald exogeneity test, verifying the use of tools in probit estimation and the inclusion of endogenous regressors in the model under examination.

Estimated results in table 5 reveal that income diversity significantly reduces poverty in Uganda (coef. = 0.0709; SE = 0.00862). The results imply that the expected probability of reducing poverty in Uganda is approximately 0.07 percent for every 1 percent increase in diversified income. Table 5 also reveals the estimates of household size (coef. = 0.0331; SE = 0.0316), whether a household is urban or rural (coef. = 0.2043; SE = 0.1547), where it is located (coef. = 0.1101; SE = 0.3686), and whether it is in the northern or eastern part of the country (coef. = 0.6120; SE = 0.2564). The estimates in Table 5 show that variables assumed to have no effect on the estimated risk of household poverty have 5% significant coefficients only in very few cases. Such control factors include the gender of the household head, the marital status of the head of the household, the industry in which the head of the household's work is performed, and whether the household is located in the Western or Central regions.

Estimated findings indicate that income diversity is a very important factor in reducing household level poverty. Additionally, the IV-probit estimates show that households can gain from income diversity. By diversifying and occasionally reinvesting the income stream, a household's financial stability can be improved. In this study, household income from diversified income source; including but not restricted to

income from official non-farm work and income from informal agriculture, was employed. According to the study, the variable of diverse income had an expected coefficient that was both positive and statistically significant (at the 5% level). The estimated value of the diversified income variable was considered theoretically valid and statistically reliable since it was in harmony with the study's a priori expectations. As a result, the null hypothesis (H<sub>0</sub>), which hypothesizes that household poverty in Uganda was not influenced by income diversity. The regression findings in this study, however, revealed that the more diverse the income of the household is the higher the prospects of reducing poverty in the household.

The diversified household income, which is a portfolio diversification of household earnings, provides more proof of the paradigm change in society. In fact, actual evidence shows that income diversity raises income, lowers poverty, and eventually enhances wellbeing (see, for instance, Dzanku 2018, Loison 2019, and Maertens 2020). In general, our findings agreed with those of prior research. The findings of this study are consistent with those of Kakungulu et al. (2021), who demonstrated that rural income portfolios in Eastern Uganda had varied welfare effects. According to their findings, household income diversification reduces vulnerability and poverty.

The head of the household's level of education was reported in terms of completed years of schooling. In line with our a priori theoretical predictions, we reveal that a lower level of poverty was related to both a positive and statistically significant coefficient on the education variable. A greater degree of education for the household head increases the possibility that the poverty status for the household will be lower. This is so that those with higher levels of education have a better chance of finding productive job, being able to support their family financially, and having access to long-term support. This might provide some insight on the relationship between the household's financial security and the education level of the head of the household.

Two of the three included categories had a substantial influence on poverty status, per the categorical variable "region" in the empirical model. This variable was divided into four groups, with "central region" acting as the reference group. According to the study's estimates, households in the eastern and northern areas saw their poverty levels significantly increase in comparison to households in the central region. This may be explained by the greater rates of poverty in northern and eastern Uganda. The north has the greatest rates of chronic poverty (15.1%), followed by the east (7.1%), and the central (0.4%) (UBOS, 2021). These

geographical variations in poverty were identified between the Uganda national household survey periods of 2015/16 and 2019/20, according to UBOS (UBOS, 2021). The location of Uganda's capital, Kampala, in the country's centre also makes it simpler for household heads to obtain utilities, improve their employment prospects, and participate in lucrative economic activities.

### **4.3. Conclusions**

This article investigates the relationship between household poverty status and Uganda's income diversity using panel data from the four most recent waves of the Uganda National Panel surveys. The IV-probit model estimator was used to build the empirical panel model.

Regression estimates indicate that income diversity has a significant influence on household poverty status. As a consequence, changes in household poverty status may be explained by changes in the household's diverse income. Further investigation revealed that the wellbeing of households in terms of poverty status may be significantly impacted positively or negatively depending on the level of education of household heads and whether they lived in the central, eastern, or northern zones.

The results of the study demonstrate that expanding access to a variety of income sources can boost household welfare by encouraging greater engagement in household tasks. This suggests that households whose primary means of economic support is engaged in productive rather than passive economic activity are more likely to enjoy financial success. A shift away from basic economic activities like subsistence farming and toward secondary economic activity like manufacturing and services may also result in an improvement in household poverty status.

### **4.4. Study Limitations and Future Research Directions**

Despite the positive effects of the present study, more investigation is still required to close the gaps. The subjective nature of poverty status was not sufficiently captured by the study paradigm employed. Future studies may consider taking a pragmatic approach. The utilization of both primary and secondary data for that purpose may result from this.



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