
The Impact of the Informal Sector on Urban Household Consumption Expenditure in Burie Town, Ethiopia

Submitted 13/02/25, 1st revision 22/02/25, 2nd revision 16/03/25, accepted 30/03/25

Gebyaw Aniley¹

Abstract:

Purpose: An important source of income and employment for the urban poor, the informal sector nonetheless faces difficulties like unstable markets and restricted credit availability. The aim of this study is to evaluate the impact of informal sector engagement on household consumption patterns.

Design/Methodology/Approach: In terms of methodology the study is using a mixed-methods approach, with 385 households surveyed using a three-stage sample procedure (purposive, stratified, and random sampling). Descriptive statistics, binary logistic regression, and propensity score matching (PSM) are used in data analysis to assess the factors that influence participation in the informal sector and the consequences for consumption. 53.77% of selected households work in the informal sector, mainly in services (30.92%), trade (27.5%), and production (27.5%), according to key findings. Among the challenges are marketing issues (27.05%) and restricted access to financing (29.95%).

Findings: The findings of the regression show, that while more income decreases involvement, younger, less educated people, women, and larger families are more likely to participate. Involving the informal sector increases household consumption expenditure by 780–1,006 birr, according to PSM study, underscoring its economic significance.

Practical Implications: The researcher suggests strategies to legalize businesses and upgrade urban infrastructure in addition to improving financial inclusion, occupational training, and social protection for informal workers.

Originality/Value: In Burie Town, West Gojjam Zone, Ethiopia, this study looks at how the informal sector affects urban family consumption spending.

Keywords: Informal sector, Consumption expenditure, Urban households, Propensity score matching, Ethiopia.

JEL Classification: O17, D12, R20, I32, O55.

Paper type: Research article.

¹Debre Markos University, Department of Economics, Ethiopia,
e-mail: gebyawdemeke212@gmail.com;

1. Introduction

The term "informal sector" refers to any economic activity carried out by workers and economic units that, in contrast to their formal counterparts, are either not covered by formal arrangements or are only partially covered by them, according to ILO (2021). Up to 50% of economic activity in emerging nations takes place in the unorganized sector. Its contribution to economic growth is still up for debate, though (La Porta and Shleifer, 2014). 85% of jobs in Sub-Saharan Africa and nearly 83% of jobs in Africa are informal (UNDP, 2022).

In many African nations, like Nigeria and Kenya, the informal sector accounts for a sizeable amount of economic activity and is vital to job creation, GDP contribution, and local economic growth. According to the International Monetary Fund's (IMF) 2018 World Economics Report, the informal sector is estimated to represent 33.5% of Ethiopia's economy, which amounts to \$149 billion based on gross domestic product adjusted for purchasing power parity (GDP PPP). This share is notably larger in many developing countries like Ethiopia.

They account for a substantial share of the total employment and contribute significantly to the alleviation of youth unemployment, income generation, and increase the consumption. Within sub-Saharan Africa, informal employment is the main source of employment in Central Africa (91.0 %), Eastern Africa (91.6 %), and Western Africa (92.4 %) (ILO, 2018).

Ethiopia is undergoing a massive rural-urban migration and rapid urbanization. One of the major issues facing Ethiopia's urban areas due to this high rate of urbanization is unemployment (Kibret, 2014). In the Amhara region, Burie Town is a town that is growing quickly. The Burie District Agricultural Office (2022) reported that there were 143,132 people living in Burie Town (Tadesse, 2022). The ongoing increase in Ethiopia's unemployment rate and in the city specifically, has sparked widespread outrage.

However, the growing number of young people cannot find employment in the official economy. As a result, a growing number of young people are turning to the unorganized sector as a primary source of work and income. Lack of access to organized markets, credit, contemporary technologies, formal training, and public services are among the issues the industry is dealing with (ILO, 2015).

Additionally, they lack a permanent workplace, thus they frequently operate from home-based businesses, tiny stores, street sellers, and chest forms (Central Statistical Agency (CSA), reference, 2020). The industry contributes significantly to the creation of revenue, which lowers unemployment and helps the urban poor maintain their standard of living (Admasu *et al.*, 2019). Activities in the unorganized sector are becoming more acknowledged on a worldwide scale to reduce poverty (Knott and Darbi, 2016).

Nevertheless, little is known about the informal sector's economic contribution, even though it dominates in developing nations like Ethiopia (Nordman *et al.*, 2016).

Research on the informal sector was lacking, and what is currently available is largely fragmented and region-specific across Africa (Mengistu and Jibat, 2015).

Due to the sector's abandonment, particularly with relation to street vendors, there are no trustworthy estimates of its size. Because of this, its role in ensuring the safety and simplicity of the lives of the poor is not as highly recognized (Mengistu and Jibat, 2015).

The informal sector plays a crucial role in the life of urban households in developing countries, providing employment and income for millions of individuals, particularly the urban poor. The informal sector has become a lifeline for many in Ethiopia, where there is still substantial unemployment and rising urbanization. It employs a sizable fraction of the work population, particularly women and young people.

The sector is still poorly understood despite its significant contributions to household consumption and employment, especially in towns like Burie in the Amhara region's West Gojjam Zone. The dynamics of the sector have been studied in other Ethiopian cities, including Jimma and Hawassa, but it is not known about how it affects urban household consumption expenditure.

Given the town's quick growth and the growing dependence of its citizens on unofficial economic activity, this disparity is alarming. So, this research is studied in order to fill the gap by showing the impact of informal sector on urban household's consumption expenditure

1.2 Objective of the Study

1.2.1 General Objective

"To assess the impact of the informal sector on urban household consumption expenditure in Burie Town, West Gojjam Zone, Amhara Region, Ethiopia, by analyzing income sources, expenditure patterns, and employment dynamics."

1.2.2 Specific Objectives

- To analyze the consumption expenditure patterns of households engaged in the informal sector compared to those not engaged.
- To identify the key factors (e.g., education, gender, business type) influencing informal sector participation and its effect on household consumption.
- To assess the challenges faced by informal sector workers in sustaining household consumption levels.

2. Literature Review

There is no agreed-upon definition of the informal economy; instead, many words are used by academics and organizations to characterize it. This variability is emphasized by Koufopoulou (2019) and Dell'Anno (2022), who point out that terms like "shadow economy," "unreported economy," "hidden economy," and "parallel economy" are frequently used interchangeably.

Other terms that reflect varying opinions about its nature are "subsistence sector," "underground economy," "unofficial economy," and "irregular sector." The ambiguous and diverse nature of informal economic activity is the cause of this diversity in terminology. While some definitions concentrate on survivalist micro-enterprises (such as "petty commodity production"), others highlight legal non-compliance (such as tax evasion in the "black economy").

Since informal activities frequently take place outside of official regulatory frameworks, the absence of a uniform framework makes measurement and policy formation more difficult. "All economic activities, excluding illegal activities, by workers and economic units that are in law or in practice either not covered or insufficiently covered by formal arrangements" is how the ILO defines the informal economy (ILO, 2021).

This is the uncontrolled sector of a market economy that generates things and services for sale or other types of payment, to put it broadly. The informal economy "consists of economic activities that avoid costs and are excluded from the benefits and rights incorporated in laws and administrative rules covering property relationships, commercial licensing, labor contracts, torts, financial credit, and social systems," according to the IMF (2017) in Blanton *et al.* (2018); Nguimkeu and Okou (2019).

2.1 Types of Informal Economy

A wide variety of economic activities that take place outside of official regulatory systems are included in the informal sector. These activities differ greatly between rural and urban settings, as Chen (2016) notes. Crop cultivation, livestock husbandry, and fishing are the main agricultural activities that constitute informal work in rural areas.

On the other hand, a wide range of jobs are found in urban informal economies, ranging from construction workers and parking attendants to street vendors and garbage recyclers. Notably, small-scale businesses are not the only ones operating in the informal sector. It encompasses both small and large corporations, as well as informal practitioners like physicians and attorneys (Skinner, 2018). This diversity raises concerns about simplistic depictions of the sector. An important factor in worldwide employment is the informal economy.

According to recent estimates, it employs almost 2 billion people globally, accounting for 61.2% of the workforce (Godfrey, 2015; ILO, 2019). Informal employment usually outnumbers formal sector employment in emerging nations. With 85.8% of workers in Sub-Saharan Africa working in the informal sector, the region is notably dependent on it. With more than 90% of workers in the informal sector, Ethiopia's situation is even direr (Friedrich-Ebert-Stiftung, 2022; Stollreiter and Traub-Merz, 2023).

2.2 Contribution of Informal Economy

In fact, the unorganized sector of the economy plays a significant role in many nations and offers many benefits on both a large and small scale. First of all, it provides a significant source of employment for a sizable portion of the global population. Up to 2 billion people, or 61.2% of the working population worldwide, are employed in informal jobs, according to Godfrey (2015) and the ILO (2019).

Informal employment makes up a greater percentage of the workforce than formal employment in the majority of developing nations. More than 90 percent of Ethiopian workers are employed in the unorganized sector, per recent polls. This indicates that people frequently live in poverty and work and produce under hazardous and vulnerable circumstances (Traub-Merz and Stollreiter, 2023; Friedrich-Ebert-Stiftung, 2022).

Second, it is a significant source of income. The ILO (2021) claims that the only way for the impoverished to meet their basic survival needs is through traditional informal sector activities, such as street hawking, home-based work, casual wage labor, and unpaid labor in family businesses. Participating in the informal sector provides individuals with a vital survival tactic, particularly in nations with poor pay, particularly in the public sector, or no social safety nets (such as unemployment insurance or other forms of social benefits). Thirdly, the informal sector contributes significantly to the fight against poverty (Traub-Merz, 2023).

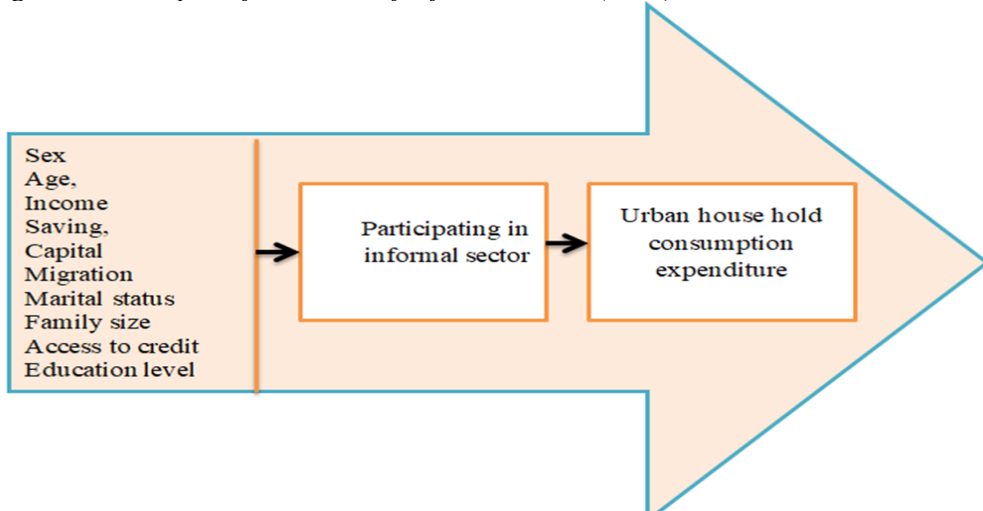
2.3 Conceptual Frameworks

The literature now in publication provides substantial evidence in favor of a number of theories explaining why urban households would want to increase their consumption. A comprehensive empirical analysis makes it possible to create a conceptual framework that links the main variables affecting a household's choice to labor in the unorganized sector to its total consumption spending.

In addition to economic and financial criteria like income, savings, and access to credit and capital, these influencing factors also include demographic characteristics like sex, age, family size, and marital status. Household participation in informal economic activities is also significantly shaped by factors such as education level, migration status, and general socioeconomic dynamics.

Gaining an understanding of these interrelated components might help one better understand the factors that influence household consumption patterns and participation in the informal sector.

Figure 1. Conceptual framework of informal sector (2025)



Source: From theoretical and empirical literature review, 2025.

3. Research Methodology

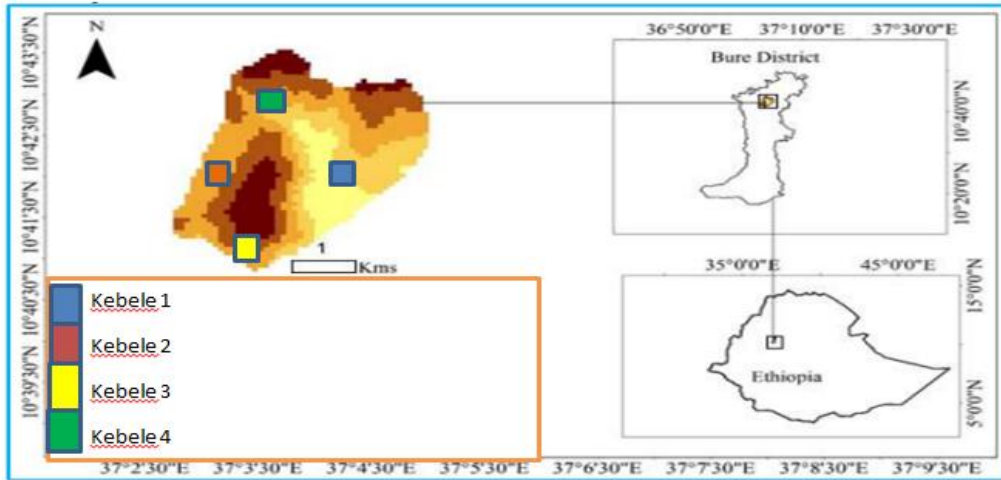
Bure Town: Bure is one of the city administration towns in West Gojjam Zone of Amhara State; this town has a longitude and latitude of 10°42'N 37°4'E with an elevation of 2091 meters above sea level. It is located 411 km from Addis Ababa and 150 km from Bahir Dar and has an area of 11.582km².

The Federal No. 3 asphalt road from Addis Ababa to Bahir Dar is crossed. It is also the starting point for roads leading to Nekemite and Shindi. The presence of major roads in all four directions is one of the reasons why the city is an attractive investment destination. Bure Integrated Agricultural Production Processing Industrial Park has been built in this beautiful city (Figure 2).

3.1 Research Design and Study Approach

The objectives of the study, the data sources that are accessible, the cost of acquiring the data, and the time available all influence the choice of research design (Creswell and Clark, 2017). The pragmatic (basically hybrid) methodology used in this study included quantitative and qualitative research techniques.

Figure 2. Map of Burie town (2025)



Source: Own study.

3.2 Sampling Techniques and Procedures

This study used a three-stage sampling technique purposive, stratified, and simple random sampling to ensure a representative sample. First, Burie town in northern Ethiopia was purposively selected due to its high youth unemployment and large informal sector, which supports many urban and rural migrant workers. Next, the town's eight kebeles were stratified into low, medium, and high levels of informal business activity. Finally, within each stratum, kebeles were randomly selected, with Kebeles 1, 2, 3, and 4 chosen for their high concentration of informal enterprises. This approach ensured a balanced and reliable representation of households engaged in informal sector activities, enabling a comprehensive analysis of socioeconomic dynamics.

3.3 Sample Size Determination

The sample size from the target population was determined using the unknown sample size determination formula put forward by Cochran (1977) because there is no set number (registered) of target populations for the research.

$$n = \frac{z^2 \cdot p_i(1-p_i)}{e^2} = \frac{1.96^2 \cdot 0.5 \cdot 0.5}{0.05^2} = 384.16 \approx 385$$

where $q = 1 - p$, z is the chosen critical value of the desired confidence level, e (5%) is the required level of accuracy, n is the sample size, and p is the estimated proportion of an attribute that is present in the population. Therefore, the sample size is determined using $p = 0.5$.

3.4 Methods of Data Collection

To produce pertinent and useful information, the study used primary and secondary data sources that contained both qualitative and quantitative data. Structured and unstructured questionnaires, key informant interviews, and focus groups with the respondents were used to gather primary data. The study also made use of secondary data, which was mostly gathered from Woreda-level government records, books, journals, manuals, and the annual reports of Woreda periodicals, among other sources.

3.5 Method of Model Specification and Data Analysis

This study employed both descriptive and econometric analysis techniques to meet the goals of this study. The factors influencing participants in the informal sector were investigated using the logistic regression model. The logit and probit models are the most often used methods for estimating regression models with dummy dependent variables (Damodar, 2021).

According to Hosmer *et al.* (2013), a logistic regression model is better than other models for analyzing dichotomous outcome variables because it is highly adaptable, simple to use mathematically, and produces a meaningful interpretation. Consequently, this study uses the binary logit model to investigate the variables influencing the participants in the informal sector. According to Hosmer *et al.* (2013) and Damodar (2021), the logistic model's functional form can be described as follows:

$$P_i = (Y = 1/X_i) = \frac{1}{1 + e^{-Z_i}} \quad (1)$$

Where p_i : is the probability to participating in informal sector, Z_i : is a function of n -explanatory variable (x) and expressed as:

$$Z_i = \beta_0 + \beta_1 X_{i1} + \beta_2 X_{i2} + \dots + \beta_n X_{in} \quad (2)$$

Where: β_0 : is the intercept. $\beta_1, \beta_2, \dots, \beta_n$ are slope of the equation in the model.

As independent variables vary, the slopes show how the log-odd in favor of working in the unorganized sector changes. P_i is non-linear in both X and the β 's, which can be expressed as follows:

$$P_i = \frac{1}{e^{-\beta_1 + \beta_2 x_i + \dots + \beta_n x_m}} \quad (3)$$

This indicates that the OLS approach is not suitable for estimating the parameters.

The fact that this equation is largely linear, as demonstrated below, makes the issue more apparent than actual. P_i is the likelihood of working in the informal sector, while $(1-P_i)$ is the likelihood of not working in the informal sector.

$$1 - P_i = \frac{1}{1 + e^{-z_i}} \tag{4}$$

Therefore, taking the proportion of the probability of participating to non-participation can be written as:

$$\frac{P_i}{1 - P_i} = \frac{1}{\frac{1}{1 + e^{z_i}}} \tag{5}$$

It is the ratio of the probability of the household participating in informal sector to the probability that did not participate. Finally, we taking the natural log of equation 5, we get.

$$Li = \ln \frac{P_i}{1 - P_i} = e^{z_i}, z_i = \beta_1 + \beta_2 x_i + \dots \dots \dots \beta_n x_n \tag{6}$$

Where: Li is the log of the odds ratio, which is linear not only in X but also in parameters. If the stochastic disturbance term (E_i) is introduced, the logit model becomes:

$$Z_i = \beta_0 + \sum \beta_i X_i + \dots \beta_n x_n + E_i \tag{7}$$

In this research, the above econometric model was used to analyze the data. The model was estimated by using the iterative maximum likelihood estimation procedure. This estimation technique yields unbiased, effective and steady parameter estimates.

3.5.1 Model Specification of PSM

It is incorrect to compare participants and non-participants directly based on their level of consumption expenditure because other socioeconomic factors may have contributed to the discrepancies between them. Switch Regression Models (SRM), the difference in differences (DID), and propensity score matching (PSM) are the three most popular quasi-experimental design techniques. PSM was used in this model to examine the impact of informal sector on consumer expenditure.

The following factors supported the researcher's selection of PSM: The study used cross-sectional data, making DiD infeasible, Selection bias was driven by observable factors (e.g., education, income), which PSM effectively addresses, switching regression would require strong untestable assumptions about unobserved

selection mechanisms. PSM provided a transparent, robust, and policy-relevant estimate of the informal sector's impact on consumption, aligning with the study's objectives and data constraints.

Estimation aims to calculate the program's mean impact, which is determined by averaging the influence over all population members. Average Treatment Effect, or ATE, is the name given to this parameter: When double treatment occurs, the treatment indicator D_i is equal to 1 if the person receiving treatment is treated and 0 otherwise. The average treatment impact in this situation can be determined using the formula below:

$$ATE = E(\delta) = E(Y_1 - Y_0) \quad (8)$$

E represents the average (or expected value).

$Y_i (D_i = 1)$ and $Y_i (D_i = 0)$ cannot be found in the same family at the same time, nevertheless. The unobserved result (also known as the counterfactual outcome) is either $Y_i (D_i = 1)$ or $Y_i (D_i = 0)$, depending on the household's position within the treatment participant. The "average treatment effect on the treated" (ATT), which is defined as follows, is the variable that has been given the greatest attention in the calculating literature:

$$ATT = E[Y_1 - Y_0 | P(X)] = E[Y_1/D=1 | P(x)] - E[(Y_0/D=0 | p(x))] \quad (9)$$

Where $E(Y_1/D=1)$ represents the urban household's informal sector participant's consumption expenditure. $E(Y_0/D=0)$ represents the consumption expenditure of urban households' non-participants in the informal sector. ATT stands for average treatment effect. This is guaranteed and the treatment impact is determined in a social experiment where treatment assignment is random. This refers to whether or not I am a household participant and whether or not my household received the treatment.

3.6 Ethical Approval and Consent

This study was conducted in accordance with the ethical principles set out in the declaration of the author. Prior to data collection, ethical clearance was obtained from the appropriate institutional review board research ethics review committee of the department of economics of Debre Markos University. Permission to conduct the research was also secured from local administrative authorities in Burie Town, West Gojjam Zone, Ethiopia.

All participants were fully informed about the purpose, scope, and voluntary nature of their involvement in the study. Verbal and written consent were obtained from each respondent before participation. Respondents were assured of the confidentiality and anonymity of the data collected and were informed of their right

MIGRN	Migration	1 if migrants, and 0 otherwise	dummy	+
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Source: Own study.

Table 2. *Distribution of participation in informal sector*

participation in informal sector activity	Frequency	percent
Participant	207	53.77
Non-participant	178	46.23
total	385	100

Source: Own survey data (2025)

Table 3 presents a detailed breakdown of business activities across four key sectors: trade, service, production, and construction. The trade sector, accounting for 27.40% of the total, includes the sale of diverse goods such as clothing, shoes, spiritual books, candles, and fresh produce like vegetables and fruits. The service sector, the most prominent at 30.92%, encompasses activities like selling cooked foods and local drinks, operating roadside beauty salons, and offering shoe polishing services.

Table 3. *Types of informal sector business activities in Burie town*

Business sector	Trade	Service	Production	Construction	total
Activities	Selling clothes & shoes, spiritual books, pictures, candles, various items, such as vegetables, fruits, and wood	Selling cooked Foods & local drink roadside beauty works/ salons, shoe polishing,	Home-made food staff producers, weaving, bamboo & basket working	bicycle, maintenance and repair; providing construction services along streets	
Frequency	57	64	57	29	207
Percentage	27.40	30.92	27.54	14.01	100

Source: Owen survey data (2025).

Production, making up 27.54% of the total, involves home-based food production, weaving, and crafting bamboo and basket products. Lastly, the construction sector, the smallest at 14.01%, focuses on bicycle maintenance, repair services, and small-scale street construction work. With a total of 207 recorded instances, the data reveals that service and trade dominate the local business landscape, while production remains a significant contributor. The relatively smaller share of construction suggests it plays a more niche role in this economic environment. This distribution underscores the prevalence of informal and small-scale enterprises, particularly in food, retail, and artisanal production, reflecting broader trends in local commerce.

Table 4 highlights the major challenges faced by businesses, with limited access to credit emerging as the most significant issue (29.95%), followed closely by marketing problems (27.05%) and lack of initial capital (24.64%). A smaller yet notable proportion (18.36%) cites unsuitable government administration as a barrier.

These findings, drawn from 207 responses, reveal that financial constraints spanning credit access and startup funding are the dominant hurdles, while market visibility and regulatory challenges also play substantial roles in hindering business growth. Addressing these obstacles could significantly improve entrepreneurial success rates.

Table 4. *Challenges of working at informal sector*

Challenges	Frequency	Percentage
lack of initial capital	51	24.64
limited access to credit	62	29.95
marketing problems of product	56	27.05
unsuitable government administration	38	18.36
total	207	100.00

Source: Owen survey data (2025).

Table 5 compares key socio-economic variables between participants (n=207) and non-participants (n=178), revealing statistically significant differences (marked with * or **). Participants were younger (41.3 vs. 46.1 years), less educated (45.5% vs. 54.5%), and had lower incomes (2,373 vs. 2,744 units). Gender disparities existed (43.5% female participants vs. 54.5% non-participants), and participants had larger families (5.0 vs. 4.7 members) and higher savings rates (56.0% vs. 46.6%). No significant differences were found in migration status, capital, credit access, or marital status. These findings suggest that participation correlates with younger age, lower income, and distinct financial behaviors.

Table 5. *Summary of variables by participation status*

Variables	Participant (n=207)	Non-participant (n=178)	t-test/chi square
Age of respondent	41.33333	46.09551	1.5286**
Education level	45.50%	54.50 %	10.1985*
Income of respondent	2372.899	2743.82	3.3468*
Sex of respondent	43.48%	54.49 %	4.6495 **
Migration	53.14%	49.44 %	0.5250
Capital respondent	1664.686	1672.528	0.0813
Access to credit	52.66 %	47.75%	0.337
Saving	56.04 %	46.63%	3.3973**
Family size	5.004831	4.662921	-1.9147**
Marital status	53.14	52.81	0.0042

Note: *Significant at 1% probability level, ** Significant at 5% probability level.

Source: Owen survey data (2025).

4.2 Diagnostic Tests

4.2.1 Multicollinearity Test

The Variance Inflation Factor (VIF) was used to assess collinearity among continuous variables, while contingency coefficients were applied to check the degree of association among categorical variables. As presented in Tables 6 and 7, the results confirm that no strong multicollinearity exists among the independent variables. Consequently, all explanatory variables were retained for the final regression analysis. This robust preliminary assessment ensures that the logit model provides accurate and unbiased estimates, offering valuable insights into the key determinants of informal sector participation.

Table 6. Variance Inflation Factor (VIF) for continuous explanatory variables

Variable	Variance Inflation Factor (VIF)	1/VIF
Age of respondent	1.07	0.938888
Income of respondent	1.06	0.940887
Capital respondent	1.04	0.964491
Family size	1.02	0.977645
Mean	1.05	

Source: Own computation (2025).

Table 7. Contingency coefficients for discrete variables

	MIGRN	SAVING	MTSTS	EDUCLVL	CREDIT	SEX
MIGRN	1.0000					
SAVING	0.1628	1.0000				
MTSTS	0.1571	0.0579	1.0000			
EDUCL	0.1227	-0.1216	0.1338	1.0000		
CREDIT	0.0024	0.0283	-0.1436	0.0079	1.0000	
SEX	-0.1266	0.0244	-0.0425	-0.0915	0.1016	1.0000

Source: Own computation (2025).

4.2.2 Heteroskedasticity Test

The Breusch-Pagan test for heteroskedasticity yielded a p-value of 0.7872, far exceeding the conventional 0.05 threshold. This indicates strong evidence supporting the null hypothesis of homoskedasticity, meaning the residual variance remains constant across observations the model.

Table 8. Breusch-Pagan test for heteroskedasticity

chi2(1)	0.07
Prob > chi2	0.7872

Source: Own computation (2025).

4.2.3 Model Specification Test

The null hypothesis of the Ramsey RESET test: The null hypothesis (H_0) is that the model is correctly specified (i.e., no need for higher-order terms). The alternative hypothesis (H_1) is that the model is mis specified (i.e., higher-order terms are needed). A significant result (a low p-value) indicates that there may be a specification error in the model. If the test statistics are not significant, we fail to reject the null hypothesis and assume the model is correctly specified. Therefore from Table 9 above it is possible to conclude that with a p-value of 0.0637, the result is marginally significant. In typical hypothesis testing, a significance level (α) of 0.05 is often used. Since 0.0637 is slightly greater than 0.05, we would fail to reject the null hypothesis at the 5% significance level.

Table 9. Ramsey RESET test using powers of the fitted values of PIFS

F(3,371)	2.44
Prob>F	0.0637

Source: Own computation (2025).

Table 10. Parameter estimates of the logistic regression model

Explanatory variable	Estimated coefficient	Standard error	Marginal effect(dy/dx)
AGE	-.0138537**	.0070721	-.0030784
EDUC	-.7544394*	.2257823	-.1700528
INCM	-.0003668*	.0001045	-.0000815
CREDIT	.2258196	.2211189	.0502651
FAMSIZ	.1921491*	.0672345	.0426973
SEX	-.5713339*	.2223512	-.1278573
SAVING	.2911655	.2213537	.065071
MTSTS	.0550867	.2255559	.0122395
CAPTL	.0001103	.0001224	.0000245
MIGRN	.0831527	.2261501	.0184919
Constant	.8957972	.5636665	-----
Pseudo R2	0.0812	LR chi2 (p-value)	-244.18597 (0.000)
2log likelihood	43.16	Number of cases	385
Sensitivity		71.98%	
Specificity		57.30%	

Note: *Significant at 1 percent probability level, ** Significant at 5 percent probability level.

Source: Own STATA result computation 2025.

4.2.4 Significant Explanatory Variable in the Logit Model

As is shown in Table 10, the regression results reveal several significant factors influencing the dependent variable, with varying degrees of impact. **Age (AGE)** exhibits a negative and statistically significant effect (coefficient = -0.0139, $p < 0.05$), suggesting that older individuals are marginally less likely to experience the outcome, with each additional year reducing the probability by 0.3%. Similarly, **Education (EDUC)** and **income (INCM)** show strong negative associations (coefficients = -0.754 and -0.00037, respectively; $p < 0.05$), implying that higher

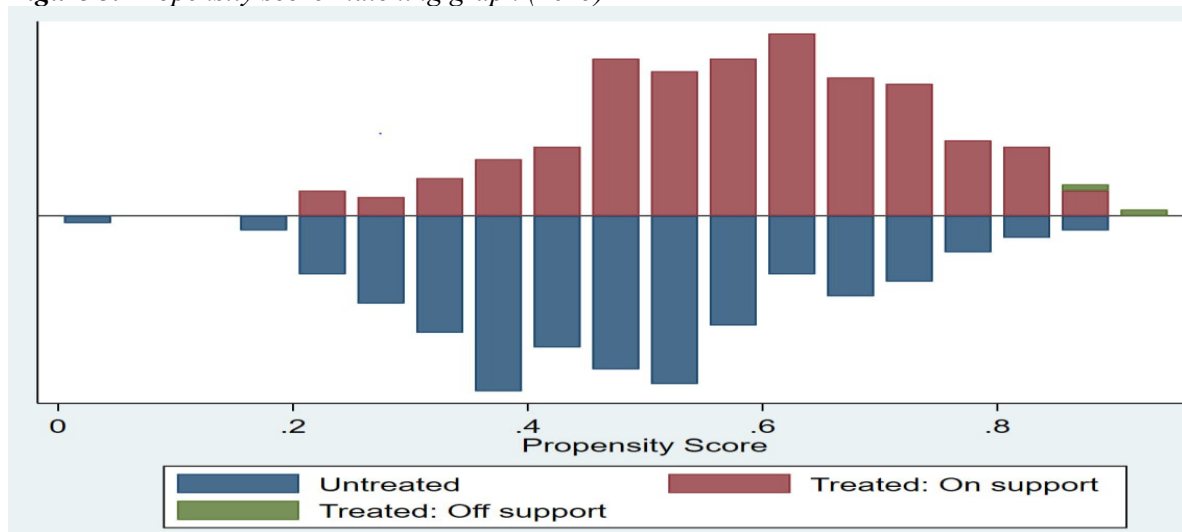
education and income levels reduce the likelihood of the outcome by 17.0% and 0.008% per unit increase, respectively. Conversely, family size (FAMSIZ) has a positive and significant influence (coefficient = 0.192, $p < 0.05$), increasing the probability by 4.3% per additional member, possibly reflecting household dynamics that favor the outcome. Gender (SEX) also plays a notable role, with a negative coefficient (-0.571, $p < 0.05$), indicating that one gender (likely males, if coded as 1) is 12.8% less likely to exhibit the outcome compared to the other.

4.3 Propensity Score Matching Result: Impact of Participating in Nonfarm Activity on Rural Household Income

The analysis of predicted propensity scores identified a common support region ranging from 0.0022524 to 0.9034147. This means that households with propensity scores below 0.0022524 or above 0.9034147 were excluded from the matching process. As a result, only 2 out of 385 observations (0.52%) fell outside this range and were discarded to ensure robust matching.

The common support condition, as illustrated in Figure 3, was effectively met. The substantial overlap in the distribution of propensity scores between participant and non-participant groups confirms that a reliable comparison can be made. This overlap ensures that the matching process is based on comparable observations, strengthening the validity of the impact estimation.

Figure 3. Propensity score matching graph (2025)



Source: Own STATA result computation 2025.

4.3.1 Algorithm Selection for Matching

Choosing an appropriate matching estimator is crucial for ensuring that explanatory variables are well-balanced while maximizing the number of matched observations.

The ideal matching algorithm is one that achieves the lowest pseudo-R² value and produces a sufficiently large, matched sample size. In this study, various widely used matching techniques Nearest Neighbor Matching (NN-1, NN-5) and Kernel-Based Matching (KB-0.03, KB-0.06) were tested. Among these, the selected algorithm demonstrated optimal performance in balancing covariates while retaining an adequate number of observations for analysis.

4.3.2 Testing for Propensity Score and Covariate Balance

The effectiveness of the matching process was evaluated using multiple statistical tests. As presented in Table 11, the results confirm that the matching procedure successfully balanced the characteristics of treated and matched comparison groups. This conclusion is supported by the following findings:

- A reduction in mean standardized bias between matched and unmatched households.
- A decrease in pseudo-R² after matching, indicating improved covariate balance.
- Insignificant likelihood ratio tests, suggesting that systematic differences between treated and control groups were minimized after matching.

These results validate the robustness of the propensity score matching (PSM) approach, confirming that the methodology effectively eliminates observable differences between participant and non-participant households. Consequently, the matched sample provides a reliable basis for assessing the impact of non-farm activity participation on household outcomes.

Table 11. Covariate balance indicators before and after matching

Matching algorithm	NNM-1	NNM-5	KBM-0.03	KBM-0.06
Mean std. bias (before)	16.2	16.2	16.2	16.2
Mean std. bias (after)	14.5	5.8	14.5	14.5
Pseudo R² (before)	0.080	0.080	0.080	0.080
Pseudo R² (after)	0.056	0.011	0.056	0.056
LRχ²withp-value (before)	42.73(0.000)	42.73(0.000)	42.73(0.000)	42.73(0.000)
LRχ² with p-value (after)	31.58 (0.581)	5.98(0.817)	31.58(0.581)	31.58 (0.581)

Notes: NNM-1: Nearest neighbor matching with single neighbors, NNM-5: Nearest neighbor matching with five neighbors, KBM-0.03: Kernel-based matching with 0.03 bandwidth, KBM-0.06: kernel-based matching with 0.06 bandwidth.

Source: Own survey data (2025).

Table 12. Average treatment effects on the treated (ATT) estimation results

Matching algorithm stat	ATT	Std. err.	t-
NNM-1	1005.85366	172.693384	5.82**
NNM-5	779.902439	134.489261	5.80**
KBM-0.03	1005.85366	172.693384	5.82**
KBM-0.06	1005.85366	172.693384	5.82**

Note: ** Shows significant at 5% significant level.

Source: Own survey data (2025).

As shown in Table 12, the results from the Average Treatment Effect on the Treated (ATT) estimation provide strong evidence that participation in the informal sector significantly increases household consumption expenditure. The analysis, conducted using various matching algorithms, consistently demonstrates a positive and statistically significant impact on household spending.

Across all matching methods Nearest Neighbor Matching (NNM-1 and NNM-5) and Kernel-Based Matching (KBM-0.03 and KBM-0.06) households engaged in informal sector activities exhibit substantially higher consumption expenditures compared to their non-participating counterparts. The estimated increase in household spending ranges from approximately 780 to 1006 units, with all results being highly significant. These findings underscore the economic importance of informal sector participation, particularly in settings where access to stable formal employment is limited.

5. Conclusion

The study on the impact of the informal sector on urban household consumption expenditure in Burie Town, Ethiopia, underscores the sector's critical role as a lifeline for many households, particularly the urban poor. With 53.77% of surveyed households engaged in informal activities primarily in services, trade, and production the sector significantly boosts consumption expenditure by 780–1,006 birr per household, as revealed by propensity score matching analysis.

However, challenges such as limited access to credit (29.95%) and marketing difficulties (27.05%) hinder their potential. Key determinants of informal sector participation include younger age, lower education levels, larger family sizes, and female gender, highlighting the sector's role as a refuge for marginalized groups. Conversely, higher income and education reduce reliance on informal work, emphasizing the need for policies that bridge gaps in financial inclusion, education, and vocational training.

The findings advocate for targeted interventions, expanding microfinance access, simplifying formalization processes, and investing in skills development.

5.1 Recommendation

The study on the impact of the informal sector on urban household consumption expenditure in Burie Town, Ethiopia, reveals critical insights into the sector's role in livelihoods and economic stability. Based on the findings, the following recommendations are proposed.

Microfinance and Credit Facilities: Since 29.95% of informal workers face limited access to credit, local governments and financial institutions should design low-interest loan programs tailored to informal businesses.

Savings and Insurance Schemes: Encourage informal sector workers to participate in savings cooperatives and insurance programs to mitigate income instability.

Strengthen Skills Development and Education; Vocational Training Programs: Given that higher education reduces informal sector participation, targeted vocational training (e.g., business management, digital skills) can enhance productivity and income stability. **Adult Literacy Programs:** Since illiteracy correlates with informal employment, community-based education initiatives can improve employability in formal sectors.

Formalization and Policy Support for Informal Enterprises Simplified Business Registration: Reduce bureaucratic hurdles to formalization while offering tax incentives for small informal businesses transitioning into the formal economy.

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