

Research Article

# Contribution of Financial Inclusion to Poverty Reduction in Ethiopia

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## Abstract

This study examines the relationship between financial inclusion and poverty reduction in Ethiopia, focusing on the barriers to formal financial services faced by households. Using both descriptive and order logit estimation techniques, the research identifies key socioeconomic factors influencing financial exclusion. The study also emphasizes the importance of tailored financial products and inclusive policies to bridge the urban-rural financial gap and ensure equitable economic development. The findings reveal that financial exclusion, driven by both voluntary and involuntary factors, particularly affects the poorest households, limiting their ability to save, invest, and manage risks. While some households voluntarily opt out of formal financial services, involuntary exclusion, caused by factors such as distance, lack of financial literacy, and regulatory barriers, remains more prevalent. The study demonstrates that financial inclusion is positively correlated with improved household economic outcomes and poverty alleviation. It highlights the importance of increasing access to formal financial services, especially in rural areas, reducing transaction costs, and improving financial literacy to empower households to make informed financial decisions. Additionally, the research suggests that enhancing access to affordable credit, particularly for small-scale entrepreneurs and rural households, can foster long-term economic resilience. The study concludes with recommendations for policymakers to create an enabling environment that expands access to financial services and addresses the barriers to financial inclusion, contributing to sustainable poverty reduction in Ethiopia.

## Keywords

Financial Inclusion, Poverty Reduction, Formal Financial Services, Financial Literacy, Ethiopia

## 1. Introduction

Financial inclusion is a complex and multifaceted concept that plays a vital role in fostering economic development and social equity. Definitions provided by organizations such as the United Nations and the World Bank highlight the importance of access, usage, quality, affordability, and diversity of financial services. The implications of financial inclusion extend beyond individual financial well-being to encompass broader economic growth, poverty reduction, and social equity.

As such, promoting financial inclusion should be a priority for policymakers and stakeholders aiming to create a more inclusive and equitable financial landscape.

Globally, financial inclusion has been claimed to be a robust tool to combat unemployment, inequality, and poverty, and is gaining momentum worldwide [5].

Financial inclusion is a critical factor in mitigating poverty and inequality, particularly in developing regions where mil-

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lions remain excluded from the financial system due to low income levels and systemic discrimination. This exclusion not only limits access to essential financial services but also hampers wealth accumulation and economic mobility. Financial services play a vital role in bridging these gaps by providing households and businesses with necessary resources for consumption and investment, thereby stimulating economic activity and fostering growth [26].

Research indicates that financial literacy significantly influences wealth accumulation. Individuals with higher financial literacy are better equipped to make informed financial decisions, which can lead to increased savings and investment [7, 27]. For instance, studies have shown that financial education enhances individuals' understanding of financial products, which in turn positively affects their wealth [7]. Furthermore, the propensity to plan financially is associated with greater wealth accumulation, as those who engage in proactive financial planning tend to monitor their spending and investment strategies more effectively [4]. This suggests that enhancing financial literacy and planning capabilities can be instrumental in promoting financial inclusion and reducing economic disparities.

Moreover, the advent of digital financial services has transformed the landscape of financial inclusion. Digital inclusive finance addresses traditional barriers such as information asymmetry and high transaction costs, thereby improving access to financial services for underserved populations [25]. The integration of technology in finance not only streamlines service delivery but also fosters innovation and economic growth by enabling broader participation in the financial system [21]. This is particularly relevant in the context of the COVID-19 pandemic, which has accelerated the adoption of digital financial solutions, further highlighting the importance of technology in enhancing financial inclusion.

In addition to financial literacy and digital services, socio-economic factors also play a crucial role in wealth accumulation. Research has shown that childhood family structure and socio-economic background significantly influence individuals' financial trajectories [19]. For example, individuals from stable family environments tend to accumulate more wealth over their lifetimes compared to those from less stable backgrounds. This underscores the need for comprehensive policies that not only promote financial literacy but also address the underlying socio-economic disparities that contribute to financial exclusion [18]. In conclusion, financial inclusion is essential for reducing poverty and inequality in developing regions. By enhancing financial literacy, leveraging digital financial services, and addressing socio-economic disparities, policymakers can create a more inclusive financial ecosystem that empowers individuals and fosters economic growth. The interplay of these factors highlights the multifaceted nature of financial inclusion and its critical role in promoting equitable economic development.

In Ethiopia, 1992 marked a policy watershed in its finan-

cial sector, as well as its economic policy. This was the period in which a shift from a controlled to market-friendly policy regime was made. The new government continued with the policy of state ownership of major financial institutions, with major reforms such as operational autonomy and streamlining of some activities, expansion of credit and savings facilities, and adherence to prudent monetary and banking policies. In addition, this sector was opened to the private sector for the first time. The World Bank and the IMF supported the financial liberalization program through the Structural Adjustment Program (SAP), which started in late 1992 [2].

According to the financial stability report, National bank of Ethiopia 2024 financial inclusion remains a key priority for the Federal Democratic Republic of Ethiopia as it seeks to build an inclusive and modern financial sector. According to the National Bank of Ethiopia and recent reports from the World Bank, the country has made significant progress in expanding access to financial services. As of 2023, Ethiopia had 30 banks (of which two were private), 19 insurance companies, over 40 microfinance institutions, and 8 capital goods lease companies operating nationwide. Additionally, there are more than 20,000 savings and credit cooperatives, predominantly serving rural areas. The total number of transaction accounts has also grown significantly, with over 50 million accounts recorded across banks and microfinance institutions. This represents approximately 90 transaction accounts per 100 adults. Despite these advancements, financial inclusion challenges persist.

According to the World Bank's 2021 Global Findex Database, 35 percent of Ethiopian adults had accounts at regulated financial institutions, marking an improvement from 23 percent in 2016. However, this figure remains significantly lower than the sub-Saharan Africa average of 55 percent. The adoption of financial products and services, including savings, ATMs, mobile banking, internet banking, and agent banking, is gradually increasing but still lags behind regional counterparts. For instance, mobile money account ownership in Ethiopia was reported at 5 percent in 2021, which is modest compared to neighboring Kenya, where mobile banking adoption exceeds 79 percent of the adult population. These disparities underscore the need for continued efforts to promote financial inclusion in Ethiopia, particularly through leveraging technology and addressing systemic barriers [28].

Ethiopia is a developing country with a large number of rural areas (lack of finance). Ending poverty is also a major task for Ethiopia to achieve sustainable development to achieve the target of developing middle-income countries. Some studies investigated the relationship between finance and poverty in Ethiopia. Micro-evidence of the state of household savings and access to credit indicates that savings in the form of cash, particularly in rural Ethiopia, is hardly a common practice. A study covering the period from 1994 to 2000 revealed features typical of a very poor subsistence economy, with only 0.7 percent of rural respondents report-

ing having a bank account in 1994. In contrast, 15.6 percent of respondents indicated membership in traditional rotating saving groups, known as Iqub, which continue to play an important role in rural Ethiopia [10].

Recent research, however, shows signs of improvement in financial inclusion over the past decades. A World Bank report indicates that bank account ownership in Ethiopia rose from 23 percent in 2016 to 41 percent in 2022, although the rural-urban divide persists, with rural areas showing much lower account ownership World Bank, 2023 report. In rural Ethiopia, participation in informal savings groups like Iqub remains widespread, with a study in the role of informal financial institution towards Economic Development by [24] revealing that factors such as education, family size, and access to credit significantly influence household participation in savings activities.

Previous studies on access to finance are focused on the factors that determine financial inclusion, research by [8, 15]; are conducted on the determinants of financial inclusion in Ethiopia. Other available research works also done at country or cross-country macro level using the available aggregate data. Household level analyses are very limited. [9] Investigates the effect of financial inclusion on household's income in Ethiopia. The finding indicates that access to finance has a significant positive effect on household's income as it benefits more low-income households than high-income households, which supports those findings that argue financial inclusion lowers poverty and income inequality. [14] also investigate the financial inclusion in Ethiopia and they found that better education, financial literacy, gender, age, living in an urban area, living in the capital city, and preference for formal financial services are associated with a greater level of financial inclusion. However, there is few researches conducted by considering the effects of financial inclusion on poverty using nationally representative data. Therefore, this study analyzes the effect of financial inclusion on poverty using a living standard measurement study survey in Ethiopia.

Thus, the study will contribute to the literature in several ways. First, it provides further evidence of the types of financial services available to the poor in the country. Second, it examines the effect of financial access on poverty reduction in Ethiopia.

## 2. Research Method

### 2.1. Analytical Framework: Evolutionary Game Model

The evolutionary game model was chosen because it effectively captures the dynamic interactions between financial institutions and the poor in poverty reduction efforts, particularly under conditions of limited information. Unlike traditional game theory, this model reflects real-world decision-

making where players adapt their strategies over time based on payoffs. This model outlines the interaction between financial institutions and the poor in poverty reduction efforts, where both operate with limited information. The poor must choose to apply for financial services or not, while institutions decide whether to offer them. Though financial services can help reduce poverty, the poor may struggle with loan repayment, affecting the sustainability of financial institutions.

With probabilities  $X$  (institutions offering services) and  $Y$  (poor applying for services), returns are modeled based on loan amounts  $L$ , interest rates  $r$ , transaction costs  $C1$  and  $C2$  transaction costs for institutions and the poor, respectively, and the success rate  $K$  for the poor's investments. The game outlines potential outcomes for both players depending on their strategies as it is depicted in Table 1.

**Table 1.** The reappearance matrix for financial institutions and the poor.

Financial institutions	
The Poor	Apply
	Not to apply
Provide	
Not provide	

The expected return for financial institutions when providing loans is:

$$\Pi_{11} = Y(Lr - LC1) + (1 - Y)(LC1) = YLr - LC1,$$

Not providing loans,  $\Pi_{12} = 0$ .

The average expected return for financial institutions is  $\Pi_1 = X\Pi_{11} + (1 - X)\Pi_{12}$ .

The replicator dynamic model is expressed as  $F(X) = X(1 - X)(LrY - LC1)$ ,

Yielding equilibrium points at  $X_1 = 0$ ,  $X_2 = 1$ , and  $Y^* = C1/r$ . For the poor, the expected return from applying for loans is  $\Pi_{21} = X(KL - Lr - LC1) + (1 - X)(KL - LC2) = 2XKL - XLr - LC2$ , while for not applying, it is  $\Pi_{22} = -KL$ . The average expected return for the poor is  $\Pi_2 = Y\Pi_{21} + (1 - Y)\Pi_{22}$ .

The replicator dynamic model is expressed as  $F(Y) = Y(1 - Y)[(2KLLr)X - LC2]$ , yielding equilibrium points at  $Y_1 = 0$ ,  $Y_2 = 1$ , and  $X^* = C1/Kr$ .

The evolutionary game produces five equilibrium points:  $(0, 0)$ ,  $(0, 1)$ ,  $(1, 0)$ ,  $(1, 1)$ , and  $(X^*, Y^*)$ , but not all are Evolutionary Stable Strategies (ESS). To verify ESS, the Jacobi matrix is used; equilibrium is achieved when the determinant is positive and the trace is negative. The two key equi-

librium points in the evolutionary game are (0, 0) and (1, 1), with (1, 1) representing the optimal outcome where the poor apply for loans, and financial institutions provide them, aligning with the goals of inclusive finance. However, this equilibrium is not achieved instantly; it develops as financial institutions and the poor dynamically adjust their strategies based on returns. Regions involving points (X, Y), such as (0, 1), (1, 1), and (1, 0), will converge to (1, 1), while other regions converge to (0, 0). When K (the success rate) is higher, the region converging to (1, 1) expands. Therefore, this study uses the ordered logit model to identify the direction of effect and determine which consumption groups benefit most from financial inclusion.

## 2.2. Data Source and Type

This analysis uses data from the World Bank's 2015/16 Ethiopian Socioeconomic Survey (ESS), a collaborative project with Ethiopia's Central Statistics Agency and the World Bank's Living Standards Measurement Study (LSMS-ISA). The survey, which began in 2011/12 as the Ethiopian Rural Socioeconomic Survey, conducted its second and third waves in 2013/14 and 2015/16. The 2015/16 wave used a nationally representative sample, selected through stratified random sampling across rural and urban areas. Covering 11,810 adults from 4,931 households, it provided detailed data on financial inclusion, including account penetration, financial service usage, and barriers to formal finance. The survey also captured demographic, educational, and geographic information, making it valuable for assessing financial inclusion in Ethiopia.

## 2.3. Analytical Model Specification

With respect to the objective of this study outlined above,

$$\frac{\partial P_r(Y_i = j|X_i)}{\partial X_{ki}} = \begin{cases} -f(\delta_1 - X_i\beta)\beta_k & j = 1 \\ f(\delta_{j-1} - X_i\beta) - f(\delta_j - X_i\beta)\beta_k & 1 < j \leq J-1 \\ f(\delta_{J-1} - X_i\beta)\beta_k & j = J \end{cases} \quad (2)$$

In the specified model, the parameter  $\beta_k$  associated with each variable  $X_{ki}$  indicates the direction and magnitude of its effect on the likelihood of a household's consumption level falling into a particular category. A positive  $\beta_k$  suggests the variable increases the likelihood of being in a higher consumption category, while a negative  $\beta_k$  indicates the opposite. This specification ensures clarity in understanding the

ordinal logistic regression is suitable for obtaining the result. Ordinal logistic regression is an extension of binary logistic regression for analyzing ordinal response variables with more than two categories by considering the ordering of the response variable categories. Household aggregate consumption, the dependent variable is classified into five: poorest (lowest) 20 percent, second (lower) 20 percent, third (middle) 20 percent, fourth (higher) 20 percent, and richest (highest) 20 percent. Therefore, we used the order Logit model following [3] for the estimation.

$$Y_i = \sum_{k=1}^K \beta_k X_{ki} + \varepsilon_i = Z_i + \varepsilon_i \quad (1)$$

Where X is a vector of 'x's account, account finance, access to formal credit, insurance and modern banking services, socioeconomic variables education capturing gender of the respondents, household size, and households in savings, According to [1]. Since the estimate of (1) cannot be used to infer the coefficient of the independent variables in an ordered Logit model alone, it depends on the densities for j and j - 1 (j = 2... J-1) represent the cumulative probabilities of household aggregate consumption falling into a specific consumption group relative to the preceding group. For example, the model estimates the likelihood of a household moving from the poorest (lowest 20 percent) to the second (lower 20 percent) group or from the third (middle 20 percent) to the fourth (higher 20 percent) group. This ensures the ordered structure of the consumption categories is preserved, allowing the model to accurately analyze how financial services, socioeconomic variables, and other factors influence the transition between these consumption levels. Thus, the partial marginal effects of  $X_{ki}$  are specified as:

role of each factor in shaping household welfare.

The likelihood that an unobserved variable will occur can be predicted using the estimated value of Z and the disturbance term from the presumptive logistic distribution. Given that Y is within the range of the thresholds,

$$P(Y_i > j) = \frac{\exp(X_i\beta - K_j)}{1 + [\exp(X_i\beta - K_j)]}, j=1, 2, \dots, M-1 \quad (3)$$

$$Y^* = \beta_0 + \beta_1 \text{INSURANCE} + \beta_2 \text{ACCOUNT FINANCE} + \beta_3 \text{SAVING ACCOUNT} + \beta_4 \text{CREDIT} + \beta_5 \text{GENDER} + \beta_6 \text{AGE} + \beta_7 \text{EDUCATION} + \beta_8 \text{SHOCK} + \beta_9 \text{PLACE OF RESIDENCE} + \beta_{10} \text{RELIGION} + \beta_{11} \text{MARITAL STATUS} + \beta_{12} \text{Family Size} \quad (4)$$

**Table 2.** Summery of variable specification.

Name	Label	Description	Expected sign
Consumption quintiles in aggregate's	Within-economy household consumption quintile	Total amount of consumptions per household	
Insurance	Insured in the paste		+ve
Account	Has an account	Composite indicator	+ve
Modern banking	Use of modern banking services		+ve
Formal Saving account	Saved in the past year	Composite indicator	+ve
Credit access	Borrowed in the past 12 months	Composite indicator	+ve
Socio economic issues (variables)			
Gender	Respondent is female Sex of the household head: otherwise	1 if female; 0 otherwise	+ve
Age	Respondent age	Age of the household head in years	+ve
Education	Respondent education level	highest completed level of education in the family	+ve
Shock	Shocks during the last 12 months.	During the last 12 months, was your household affected by shocks? YES 1 NO 2	-ve
Place of residence	Place where household lives	Rural/urban	
Religion	Main religion of household	Orthodox 1 Catholic 2 Protestant 3 Muslim 4 Traditional 5 Pagan 6 Wkifata 7 Other Specify) 8	
Marital status	Marital status of household head	Never married 1 Married (MONOGAMOUS) 2 Married (POLYGAMOUS) 3 Divorced 4 Separated 5 Widowed 6	
Family size	Family size	Household family size	-ve



### 3. Results and Discussion

#### 3.1. Descriptive Statistics: Poverty and Financial Inclusion

Researchers have identified various approaches to measuring poverty. There are four different approaches to the definition and measurement of poverty: participatory, social exclusion, capability, and monetary. According to [23], financial inclusion holds the promise of addressing income inequality, underdevelopment, universal poverty, and welfare for the less-privileged segments of society. This is in line with the view of Kofi Annan (former UN Secretary-General), who opined that financial exclusion is a great challenge before us, and we have to attack it together to build inclusive financial sectors that will positively impact people's lives. This means that a financially included society is one with enhanced economic activities, a low level of poverty, and reasonable economic development and growth. The result of the chi2 test confirms the above argument that a significant relationship between poverty and households has financial inclusion. According to the 2017 finindex report in most developing economies, the gap in account ownership between richer and poorer adults reaches two digits. While in developed economies, the gap between the two groups is nearly 13 percent points. In Ethiopia the same case for developing nations the figure shows that the gap between poorest 1.71 percent and the richest 18.24 percent. as presented in Table 3.

**Table 3.** Consumption quintile by account book.

5 Quintiles of Consumption	Have Account					
	Yes		No		Total	
	Obs	Freq.	Obs	Freq.	Obs	Freq.
Poorest	78	1.71	621	13.58	699	15.29
Poor	157	3.43	620	13.56	777	16.99
Average	189	4.13	609	13.32	798	17.45
Rich	287	6.28	627	13.71	914	19.99
Richest	834	18.24	551	12.05	1385	30.29
Total	1545	33.79	3028	66.21	4573	100
Pearson chi2 (4) = 695.2529 Pr = 0.000						

Source, own computation from (LSMS&ESS 2015/16)

#### 3.2. Financial Inclusion Indicators

##### 3.2.1. Access to and Usage of Financial Services by Households in Ethiopia (Account Ownership)

Access to financial services has recently become a part of the essential rights of people in the authorities, as financial exclusion is decried as discriminatory and a broad set of social exclusions, such as involuntary exclusion, discrimination, or exclusion based on sex, tribe, or other related criteria. Until today, we know little about financial exclusion in Ethiopia [17].

According to the 2016 data 66 percent of households in Ethiopia did not have a bank account and were hence not part of the banking system. The main reasons for this exclusion were as financial constraints, distance from the location, and demanding documentation requirements. This study also demonstrated that barriers pertaining to the regulatory framework and organizational structure of the financial system played a significant role in the limited availability of loans.

##### 3.2.2. Accounts Penetration

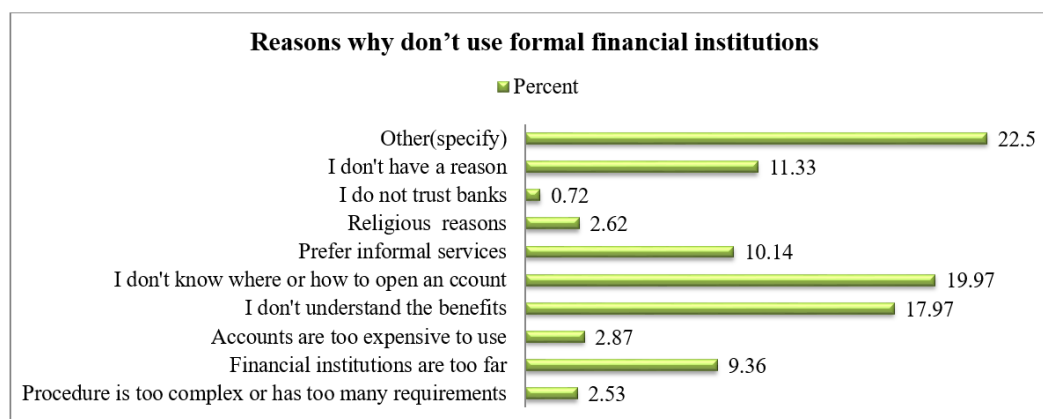
Ethiopia, like many other developing countries, faced challenges in achieving widespread financial inclusion. According to the 2016 ERSS (Ethiopia Rural Socioeconomic Survey), only 33.40 percent of adult Ethiopians have an account at a formal financial institution. The evidence shows that people use their accounts to obtain credit and foreign exchange services, send and receive money, and securely store their money. Plus, only 4.23 percent of households said that they had a mobile money account.

##### 3.2.3. Households' Reasons for not Having a Formal Account

Ten possible rationales that households may have given for choosing not to have a formal account are included in the ESS survey. In line with, some of these answers can be considered voluntary exclusion ("lack of money", "I prefer informal services", "I don't have a reason", "I don't understand the benefit" and "religious reasons") while others can be categorized as involuntary exclusion ("too far away", "the procedure is too complex", "too expensive", "I don't know where or how to open an account" and "lack of trust") as presented in Figure 1. For policy implications, it is crucial to distinguish between voluntary and involuntary exclusion. Voluntary exclusion emphasizes the existence of barriers to financial inclusion, which can be mitigated by enacting appropriate policies. In summary, households see several obstacles to owning an account. Based on a brief review of the data, "other reason" is the most frequently mentioned justification (22.50 percent). This is an example of voluntary exclusion, as 95 percent of households do not have additional funds for their savings. Globally, lack of money is the most common reason for not having an account (59 percent) [13].

Individuals without sufficient cash earnings cannot afford the overall cost of having a formal account. The second for most frequently cited reason in Ethiopia is “I don’t know how to open an account” (19.97 percent), this is an instance of involuntary exclusion. This was followed by ‘I don’t have a reason’ (11.33 percent), ‘do not understand the benefits of opening an account’ (17.97), ‘financial institutions are too far (9.36 percent)’ and ‘Prefer informal service (10.14 percent)’ as important reasons in explaining financial exclusion in the country. The other reasons perceived as barriers to

financial exclusion like ‘the procedure is too complex,’ (2.53 percent), ‘religious reason’ (2.62 percent), ‘accounts are too expensive’ (0.36 percent), ‘I don’t trust the financial sector’ (0.72 percent), and were less cited reasons. Both voluntary and involuntary reasons contribute to the financial exclusion of a large proportion of Ethiopia’s population. However, involuntary exclusion due to obstacles is higher in Ethiopia. With the exception of China, where there is a, more significant rate of voluntary exclusion, the outcome is comparable to that of BRICS nations [11].



Source, own computation from (LSMS&ESS 2015/16)

**Figure 1.** Reasons for not Using Formal Financial Institutions.

### 3.2.4. Saving Account, Preference, and Reasons for Saving (Usage of account)

People save for future expenses such as large purchases, investments in education or a business, their needs in old age, and possible emergencies. Alternatively, facing more immediate expenses, they may choose to borrow. In 2017, the Global Findex data report in Table 4 showed how and why people save and borrow and shed light on their financial resilience to unexpected expenses; 48 percent of adults around the world reported having saved or set aside money in the past 12 months. In high-income economies, 71 percent of adults reported having saved, while in developing economies, 43 percent did so. In Ethiopia, 34.95 percent households have a formal account to save at financial institutions, such as banks or microfinance institutions. This implies that having an account does not necessarily mean that being saver, that is, globally, 3 percent of unbanked adults reported having saved formally. Saving preference is the most important thing people go about saving money in different ways, that is, people may save formal or informal institutions in Ethiopia; 64.4 percent of households prefer formal financial institutions, while 28.8 percent households prefer informal institutions such as equb, eddir, and 6.7 percent prefer both.

**Table 4.** Preference of saving among the households.

Variable	Obs	Mean	Std. Dev.	Min	Max
Preference of formal financial institution	4780	.495	.5	0	1
Preference of informal financial institution	4780	.411	.492	0	1
Preference of both	4780	.094	.292	0	1

Source, own computation from (LSMS&ESS 2015/16)

In line with [12], there are two specific reasons for saving needs in old age and to start, operate, or expand a business: 21 percent of adults reported having saved in the past 12 months in old age, 44 percent in high-income economies, and 16 percent in developing economies. Survey results in Ethiopia indicated in Table 5 showed that 77.78 percent of households save for the sake of emergency, 7.13 percent for growing and starting business, 8.00 percent for asset building, 2.04 percent for medical expenses, 1.18 percent for edu-

cation, 2.50 percent for their children's future, 0.82 percent other reasons like for ceremonial expense, food consumption expense, to keep it safe. Unlike to developed countries, Ethiopian households save for 0.15 percent old age. as a result financial sector should provide possible alternative saving mechanisms like old age saving.

**Table 5.** Household reasons of saving.

Main reasons of saving	Freq.	Percent	Cum.
Emergencies	1714	77.87	77.87
Health or medical expenses	45	2.04	79.92
To start or expand a business	157	7.13	87.05
Old age	10	0.45	87.51
Education	26	1.18	88.69
For my children's future	55	2.50	91.19
Asset building	176	8.00	99.18
Other (specify)	18	0.82	100.00

Source, own computation from (LSMS&ESS 2015/16)

### 3.3. Source, Preference, Reasons of Credit

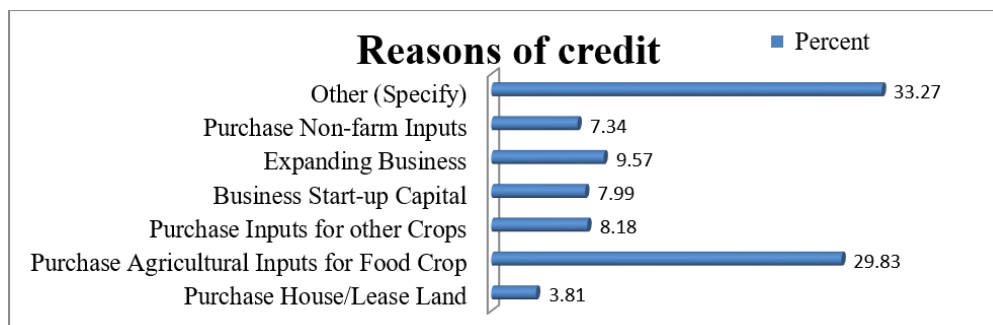
Scholars proposed two strategies for the contribution of credit to poverty reduction. While proponents of the income generation approach contend that credit should primarily be extended to the entrepreneurial poor in order to facilitate their ability to fund particular private income-generating endeavors, proponents of the "new" minimalist approach contend that credit programmers would still be combating poverty by extending credit to any impoverished individual who is able to repay a loan, without imposing any restrictions on the recipient regarding the means and purposes

of the loan. According to a World Bank, 2021 survey, 47 percent of respondents said they had taken out a loan in the previous 12 months, even if it was through a credit card. In high-income nations, the percentage of adults with new credit, whether official or informal, averaged 64 percent, whereas in emerging economies, it was 44 percent. In Ethiopia, in 2016, 21.94 percent of households reported having borrowed money in the past 12 months fund sources with 41.09 percent households' relatives (family or friends), 24.56 percent microfinance institutions, 10.71 percent neighbors being the most frequently reported source of new loans as stated in Table 6. This implies that the country has no well-established financial credit system.

**Table 6.** Sources of loan.

From Whom Did the HH Member Borrow over the last 12 Months	Freq.	Percent	Cum.
Relative	445	41.09	41.09
Neighbor	116	10.71	51.80
glossary local merchant	111	10.25	62.05
Money lender (catapila)	22	2.03	64.08
Employer	9	0.83	64.91
religious institution	39	3.6	68.51
Micro finance institutions	266	24.56	93.07
Bank (commercial)	12	1.11	94.18
Ngo	22	2.03	96.21
Other (specify)	41	3.79	100

Source, own computation from (LSMS&ESS 2015/16)



Source, own computation from (LSMS&ESS 2015/16)

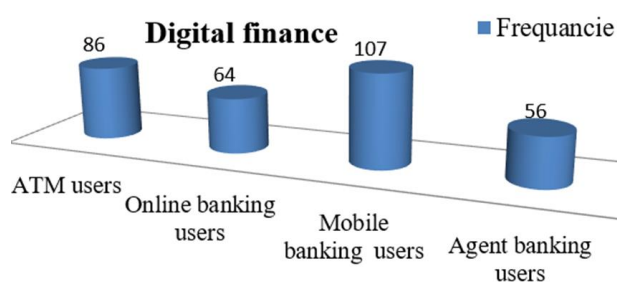
**Figure 2.** Reasons of credit.



### 3.4. Usage of Financial Products (Digital Financial Services)

Ethiopia is currently using different mobile payment and money transfer platforms that will significantly reduce transaction costs and offer low-income households and cooperatives in rural areas of the nation that are underserved by financial institutions an easy-to-use way to transact financial business. NBE, banks, insurance companies, and micro-finance institutions have conducted various studies. Because they are low-cost options for the rural economy, mobile money, kifiya, e-wallets, and other media are particularly appealing. The program's Initiation Phase begins by evaluating existing models' viability, scalability, and application.

As showed in Figure 3, in Ethiopia, agent banking is in its infancy label. 3.47 percent households reported as users of agent banking, which implies the number of agents of payment service providers per 100,000 per adult, 17.17, 3.96 and 6.67 ATM users, online banking users, like internet banking and mobile banking users, respectively.



Source, own computation from (LSMS&ESS 2015/16)

Figure 3. Digital finance.

Digital payment methods, such as mobile banking and mobile money, can make it faster, easier, and cheaper. They

offer the advantages of both transaction and economic security.

### 3.5. Econometric Analysis

The summary statistics from the survey data are presented in Table 7, which shows that insurance, savings account, access to finance from a formal financial institution (account book), residents living in rural areas, and size of the household have a negative significant (at level) effect on the distribution of poverty, and shock, education, gender, marital status, and religion have a positive significant effect on household poverty status. The coefficient parameters converted to proportional odds ratios and their 95 percent confidence intervals. The interpretation for such is for an individual which is included in the modern financial sector by using insurance, the odd of moving from poorest to average and richest are 0.562 times greater, given that other variables in the model are held constant. In other words, insured households are not vulnerable to shocks. Ordered Logit estimates show that (improving) access to finance significantly increases the likelihood of chronically poor households moving out of poverty. The estimates also show that the likelihood of never-poor households entering poverty is significantly reduced by such access. Estimates of the impact of access to finance on households in transient poverty (disaggregated into households moving out and into poverty) provide interesting insights. Although the impact of (easier) access to finance on households moving out of poverty was not significant, an indication that while access to finance may be necessary, it is not sufficient to lift these households out of poverty. For households descending into poverty, ordered Logit results indicate that while access to finance reduces the likelihood of moving into poverty, although significant, an improvement in household's access to formal finance tends to have a statistically significant positive impact on households moving into poverty.

Table 7. Ordered logistic regression.

cons_quint	Coef.	St.Err.	Sig
Have insurance	0.562	0.183	***
Being Sav account	0.139	0.071	*
Account book	2.116	0.253	***
credit_yes_no	0.050	0.065	
Reside rural 1	1.212	0.247	***
House hold size	-0.245	0.012	***
Vulnerable shock	-0.244	0.071	***
Educ head college	-0.078	0.131	*
Educ head primer	-0.057	0.074	

cons_quint	Coef.	St.Err.	Sig
Gender	-0.372	0.094	***
age_head	-0.019	0.003	***
head_married	0.469	0.110	***
Being orthodox	0.890	0.116	***
Being muslim	1.154	0.101	***
Uhat	-16.400	1.934	***
Constant	-5.364	0.347	
Constant	-4.291	0.345	
Constant	-3.438	0.343	
Constant	-2.447	0.341	
Mean dependent var	3.326	SD dependent var	1.446
Pseudo r-squared	0.70	Number of obs	4560.000
Chi-square	1010.318	Prob> chi 2	0.000
Akaike crit. (AIC)	13409.872	Bayesian crit. (BIC)	13531.948
NB *** p<0.01, ** p<0.05, * p<0.1			

Source, own computation from (LSMS &ESS 2015/16)

Taken together, these findings are consistent with evidence from Pakistan and Nicaragua, as presented by [20, 22], respectively in the sense that (improved) access to finance not only reduces the probability of households remaining in poverty, but also reduces transient poverty.

The marginal effect of having insurance shows a negative association with being in the richest consumption quintile and a positive association with being in the poorest quintile, as reflected in the coefficient for having insurance (0.562,  $p < 0.01$ ). This suggests that poor households with access to formal insurance are better able to manage risks and cope with the adverse impacts of shocks. Specifically, insurance enables these households to smooth consumption and avoid falling further into vulnerability due to financial constraints.

For instance, the positive coefficient of 0.562 indicates that households with insurance are more likely to fall into lower consumption quintiles, which aligns with the notion that such schemes primarily benefit economically disadvantaged groups. Insurance reduces the financial burden of shocks, helping poor households maintain consumption levels and protect against severe economic instability. Evidence for the marginal effect further shows that the richest consumption quintile benefits from changes in government programs such as subsidies, while the poorest consumption quintile does not. Those who use their accounts in savings are more likely to be in the poorest consumption quintile and those who are not in the richest income quintile. In addition, as households move from the poorest to the richest consumption quintile, the likelihood of their participation in commu-

nity savings clubs decreases. The marginal effects also indicate that those in the lowest consumption quintile would benefit from formal savings. Moreover, the marginal effects of having an account book had a positive effect on the poorest consumption quintile and a negative effect on the richest consumption. This finding shows that (improving) access to finance account books significantly enhances the likelihood of chronically poor households moving out of poverty. The estimated marginal effect of socio, economic, and demographic characteristics presented in the table also showed that females, married marital status, and age have a positive and significant effect at 1 percent level of significance. Being Muslim, orthodox, and head married had a negative effect on the poorest consumption quintile and a positive effect on the richest consumption quintile.

Smaller-sized households are also more likely to be in the poorest income quintile than larger-sized households. This is due to the use of family members for farm labor. The effects of household size on household welfare depend, in part, on the degree of rivalry in consumption among household members. One extreme case is that all consumption is public; therefore, every marginal increase in consumption benefits all household members. Examples of such consumption could include public goods like improved community security measures or the installation of a communal tap to provide clean drinking water, which benefit all household members collectively. The other extreme case is that all consumption is private, which implies that only one person can benefit from any consumption activity. Nutrition is almost entirely

private, except for pregnant and breastfeeding mothers, and to the extent that one person enjoys another being well-fed (e.g., parents may be altruistic towards their children). In addition, there may be synergies from larger households, both in production and consumption. The effect of years of schooling on poverty is negative for the poorest and positive for the richest consumption quintile. This suggests that the probability of being poor relative to the richest increases if one does not have a formal education, keeping all other things the same.

The variable "shock" in Table 8 Shows a redistributive effect across consumption quintiles. Shocks reduce the likelihood of being in the poorest quintile by 4.4 percentage points but increase the likelihood of being in the richest quintile by 6.1 percentage points. This suggests that wealthier households are better equipped to absorb shocks, while poorer households may experience consumption volatility, highlighting the need for targeted social protection to mitigate vulnerability among disadvantaged groups.

**Table 8.** Marginal Effects (Ordered Logit Model)

Delta-method			Delta-method		
	dy/dx	Std.Err.		dy/dx	Std.Err.
have_insurnc			cradit_yes_no		
_predict			_predict		
Poorest	0.073	0.024	Poorest	0.005	0.008
poor	0.039	0.013	poor	0.003	0.004
average	0.009	0.003	average	0.001	0.001
rich	-0.020	0.007	rich	-0.001	0.002
richest	-0.100	0.033	richest	-0.007	0.010
sav_accnt			rural 1		
_predict			_predict		
Poorest	0.040	0.008	Poorest	0.121	0.009
poor	0.022	0.004	poor	0.065	0.005
average	0.005	0.001	average	0.015	0.002
rich	-0.011	0.002	rich	-0.034	0.003
richest	-0.055	0.011	richest	-0.166	0.011
accountbook			hh_size		
_predict			_predict		
Poorest	0.066	0.009	Poorest	0.027	0.002
poor	0.035	0.005	poor	0.015	0.001
average	0.008	0.001	average	0.003	0.000
rich	-0.019	0.003	rich	-0.008	0.001
richest	-0.091	0.013	richest	-0.038	0.002
			shock		
			_predict		
			Poorest	-0.044	0.007
			poor	-0.024	0.004
			average	-0.005	0.001
			rich	0.012	0.002
			richest	0.061	0.009
			educ_hcol		
			_predict		
			Poorest	-0.159	0.016
			poor	-0.085	0.009
			average	-0.019	0.003
			rich	0.045	0.006
			richest	0.218	0.020
			educ_hprim		
			_predict		

	Delta-method	
	dy/dx	Std.Err.
Poorest	-0.034	0.007
poor	-0.018	0.004
average	-0.004	0.001
rich	0.010	0.002
richest	0.047	0.010
female		
_predict		
Poorest	-0.025	0.010
poor	-0.014	0.005
average	-0.003	0.001
rich	0.007	0.003
richest	0.035	0.014
age_head		
_predict		
Poorest	-0.000	0.000
poor	-0.000	0.000
average	-0.000	0.000
rich	0.000	0.000
richest	0.000	0.000
head_married		
_predict		
Poorest	-0.032	0.010
poor	-0.017	0.006
average	-0.004	0.001
rich	0.009	0.003
richest	0.044	0.014
orthodox		
_predict		
Poorest	-0.062	0.009
poor	-0.033	0.005
average	-0.008	0.001
rich	0.017	0.003
richest	0.085	0.012
Muslim		
_predict		
Poorest	-0.111	0.009
poor	-0.060	0.005

	Delta-method	
	dy/dx	Std.Err.
average	-0.013	0.002
rich	0.031	0.003
richest	0.153	0.013

Source, Own computation from (LSMS & ESS 2015/16)

Average marginal effects Number of objects = 4,573 Model VCE: OIM

dy/dx w.r.t.: have\_insurcsav\_acntaccountbookcradit\_yes\_no rural  
1 hh\_size shock educ\_hcoeduc\_hprim female  
age\_headhead\_married orthodox muslim.

## 4. Conclusion and Recommendations

The empirical specifications focused on three dimensions of financial indicators: owning a formal financial account, using a formal financial account to save, and using financial products and services (digital finance). In Ethiopia, both voluntary and involuntary barriers are responsible for financial exclusion. Both descriptive and order logit estimations indicate that many socioeconomic factors are associated with reasons for not including formal financial sectors in Ethiopian households. This is in line with other researchers, such as [6, 12, 13, 16, 29]. The findings reveal that a large proportion of the population remains excluded from the financial system, with the poorest households exhibiting the least access to bank accounts, thus limiting their capacity to save, invest, and manage risks effectively. In particular, financial exclusion is not only a barrier to poverty alleviation but also exacerbates income inequality, as those without access to formal financial services are often left to rely on informal financial systems that provide limited support. The descriptive statistics presented confirm the persistent disparities in financial inclusion, particularly between the richest and poorest segments of the population. Furthermore, the study highlights that while some households voluntarily opt out of formal financial services, involuntary exclusion remains a more prevalent issue, driven by factors such as distance, lack of financial literacy, and regulatory barriers. The usage of financial products, including savings accounts, credit, and digital financial services, further emphasizes the need for greater access to diverse financial mechanisms. The regression analysis confirms the hypotheses that financial inclusion is a significant determinant of poverty reduction, with access to formal financial services positively correlating with improved household economic outcomes. Overall, the econometric results reinforce the notion that financial inclusion is not only an essential tool for poverty reduction but also a key driver of long-term household economic well-being. The findings emphasize the importance of creating an enabling

environment that facilitates broader access to financial services, particularly in rural and underserved areas, while also addressing the barriers to financial literacy and affordability.

Based on the findings several key recommendations emerge for policymakers and stakeholders aiming to enhance financial inclusion and reduce poverty in Ethiopia. First, it is crucial to expand access to formal financial services, especially in rural and underserved areas which would bridge the gap between rural households and financial institutions. Additionally, efforts should be made to reduce the transaction costs associated with financial services, making them more affordable and accessible to low-income households.

Second, targeted financial literacy programs are essential for improving household financial decision-making and promoting the use of formal financial services. By enhancing financial literacy, households are more likely to engage with financial institutions, save regularly, and access credit for productive purposes.

Third, increasing access to affordable credit is critical for empowering small-scale entrepreneurs and improving household financial resilience. Policymakers should focus on promoting microcredit schemes and other affordable financing options that cater to the needs of micro-entrepreneurs and rural households. This can help create income-generating opportunities and reduce vulnerability to economic shocks, which can contribute to long-term poverty reduction.

Lastly, addressing involuntary exclusion from financial services, caused by factors such as geographic isolation, lack of infrastructure, and high costs, should be a priority. Financial institutions should develop inclusive products and services tailored to the specific needs of disadvantaged populations, and government policies should encourage greater collaboration between financial institutions, mobile service providers, and community organizations to expand access to these services. By adopting these strategies, Ethiopia can harness the potential of financial inclusion to foster sustainable economic development and poverty alleviation.

## Abbreviations

FI	Financial Inclusion
CBHI	Community-Based Health Insurance
SHI	Social Health Insurance
OOP	Out-of-Pocket (Expenditure)
CHE	Catastrophic Health Expenditure
GDP	Gross Domestic Product
MFIs	Microfinance Institutions
ATM	Automated Teller Machine
UNDP	United Nations Development Programme
NBE	National Bank of Ethiopia
CSA	Central Statistical Authority
SDGs	Sustainable Development Goals
Findex	Global Financial Inclusion Index

## Author Contributions

Teshome Mihret Abate is the sole author. The author read and approved the final manuscript.

## Conflicts of Interest

The author declares no conflicts of interest.

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