Socio-Economic Determinants of Access to Institutional Credit among Marginal and Small Farmers in Cachar District of Assam: An Econometric Analysis

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Abstract
Inadequate access to formal agricultural credit constrains rural financial obligations and reduces productivity among India's small and marginal farmers. This study explores the socio-economic status, population, and access to institutional credit and approval, using primary data collected from 300 households across five development blocks for small and marginal farmers in the Cachar district of Assam. Using econometric tools, we identify the factors that persuade credit supply to marginal and small farmers. The survey uses a binary logistic regression model to investigate the influence of selected socioeconomic characteristics on access to credit. The findings reveal that the education level of the household head has a consequential, positive, data-driven effect on the prospect of utilising institutional credit. In contrast, income, occupation, housing condition, and farmer type are not abundant determinants. The model illustrates an acceptable goodness-of-fit. The study culminates the primary roles of education and financial competence in strengthening rural financial inclusion and offers policy-relevant insights to strengthen the effectiveness of institutional credit delivery mechanisms.

Keywords: Institutional Credit; Farmer Indebtedness; Education.

JEL Codes: G21, Q14, O16

Introduction:
Indebtedness among farmers has long been seen as a distressing phenomenon in India. While debt used for productive purposes, like purchasing inputs and land development, can enhance farmers' assets and income. Borrowing for consumption and unproductive activities, such as marriages and festivals, worsens their financial conditions. Debt becomes even more burdensome when crop failures occur due to natural calamities, poor-quality inputs, high production costs, stagnant technology, or unremunerative prices. Additionally, loans from non-institutional sources like moneylenders at high interest rates often lead to mounting debt through compound interest, sometimes forcing farmers to mortgage or sell their land, migrate, or, in extreme cases, commit suicide. To address this, the Government of India has introduced various schemes to support small and marginal farmers. Initiatives such as the Rural Infrastructure Development Fund (RIDF), Pradhan Mantri Jan Dhan Yojana (PMJDY), Direct Benefit Transfer (DBT), Digital Financial Services, and efforts through Panchayati Raj Institutions (PRIs), mainly facilitated by NABARD, aim to improve access to institutional credit and financial inclusion in rural areas.
Previous studies have shown that education, social group, and institutional effectiveness significant determinants of access to rural credit, whereas bureaucratic delays, corruption, weak cooperative structures, and complex documentation impede timely credit disbursement (Sinha, 2021; 2024). Extending this regional perspective, (Das & Sinha, 2023) examine microfinance initiatives in Karimganj district and find that Self-Help Groups and Microfinance Institutions enhance women's financial inclusion, decision-making capacity, and livelihood diversification, particularly among Muslim women. However, borrowing patterns vary with landholding, age at marriage, and household assets, suggesting that socio-cultural and economic contexts mediate outcomes (Das & Sinha, 2023). Similarly, (Sinha & Vanlalchhawna, 2021) demonstrate, through exploratory factor and regression analyses, that institutional credit contributes to economic development, agricultural-investment, and family welfare, highlighting the importance of timely and adequate finance for both production and consumption needs. Evidence from broader Indian contexts reinforces these findings. It is found that education, landholding, financial literacy, and bank outreach significantly enhance credit access and farmer satisfaction, while procedural complexity constrains borrowing, and service quality mediates institutional trust (Dey et al., 2022). In these studies, (Mukesh & Srivastava,

2018) revealed that income, assets, education, and awareness positively affect participation in formal credit, whereas small holdings and administrative hurdles restrict inclusion. In addition, the documents substantial growth in institutional lending in Haryana but notes persistent regional disparities and limited outreach to marginal farmers (Malik, 2020). Collectively, these studies show that although institutional finance is indispensable for productivity growth, poverty reduction, and livelihood resilience, inclusive outcomes depend on simplified procedures, stronger rural financial institutions, improved service delivery, and enhanced financial literacy, thereby justifying further investigation of socio-economic and institutional determinants of borrowing and credit utilization in Cachar district.

Significance of the study:

This study examines the credit delivery system for small and marginal farmers in the Cachar district of Assam. It assesses the availability of institutional credit, identifies the constraints faced by farmers in accessing loans, and evaluates how factors like farm income, education, household size, and farm size influence access to credit. The study highlights that ensuring proper use of agricultural loans is essential and suggests ways to improve government policies to ensure that intended beneficiaries are actually reached.

Objectives of the Study:

The main objectives of the study are.

1. To study the credit requirements of the farmers and the sources of meeting their needs.
2. To study the credit delivery mechanism of various institutions.

Hypotheses of the Study:

The following hypotheses have been tested for carrying out the study.

1. The availability credit of the small and marginal farmers depends on level Education, income, occupation and housing condition of the farmer.
2. The amount of availing credit does not depend on type of farmers.

Methodology of the Study:

The study is based on primary data. To meet the objectives of the study, data collected purposively in Cachar district of Assam. This study tries to analyse the credit delivery mechanism of various institutions, factors that determined the availability of credit. After the selection of the district, the stratified random sampling has been followed to make a stratum of the blocks out of a total of 15 development blocks in the district whereas, each stratum is represented by three (3) blocks separately. Again, from each stratum, one block has been selected. These blocks are (A) Borjalanga Block, (B) Kalain Block, (C) Narsingpur Block, (D) Salchapra Block and (E) Udharbond Block. From each of the selected blocks three revenue villages have been selected randomly with a total number of revenue villages as fifteen (15).

From each of the selected blocks total number of sample sizes of the respondents in the study is 300 samples. For evaluating the objectives of the study, primary data were collected by survey method using the well structure and pre-tested questionnaire from sample individuals through personal interview method. The questionnaire was set with a Likert scale where “Strongly Agree (5)”, “Agree (4)”, “Neutral (3)”, “Disagree (2)” and “Strongly Disagree (1)” has been considered. The borrowers were personally interviewed to ensure accuracy and comprehension of the data.

In this study, Binary Logistic Regression analysis has been used to model the relationship between Quantitative response variables and a set of independent variables (Predictors). In this model, “Institutional Credit to Farmers” has been taken as a dependent variable and income, education of family head, occupation, type of farmers and housing condition of farmer are taken to be independent variable. So, the equation one can be written as

$$\mathbf{E\ (Y/X_1, X_2, X_3, X4, X_5) = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 \quad ------ \quad (1)}$$

Here, dependent variable (Institutional Credit to Farmers) is categorical with two categories and can be coded as:

Institutional Credit to Farmers (Y) = 1, if Farmers are Availing Institutional Credit 0, otherwise

So, the dependent variable follows Bernoulli probability distribution with mean p which represent that farmers are Availing Institutional Credit and (1-P) represent that farmers are Not Availing Institutional Credit.

So, Equation (1) can be written as

$$\mathbf{P = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 \quad ---- ----- -- \ (2)}$$

Since, the range of both sides of Equation (2) is not equal as P is the Probability, its value lies within the interval (0, 1) and the Right Hand Side of the equation 3 is unbounded and can take values from –α to + α, so instead of fitting a model for P, we use a transformation of P. we shall consider the most commonly used transformation, the log of the odds of “Institutional Credit to farmers”.

The odds mean ratio of probability of happening of an event to probability of not happening of the event, which can be defined as follows:

$$\mathbf{Odds} = \frac{Probability\ (Success)}{Probability\ (failure)} = \frac{Probability\ (Success)}{1 - Probability\ (failure)} = \frac{P}{1-P} \quad \text{---------- (3)}$$

With this model the range of values of left-Hand Side is also between –α to + α, which is the same as the range of the Right-Hand Side of the equation.

Equation 3 is the linear model on logit scale, which is the most common form of the Logistic Regression Model. So Logistic Regression will be an appropriate statistical technique to find out the effect of income, occupation, education of family head, type of farmer, and housing condition of farmer on "Institutional Credit to Farmers".

In this study, the independent variables are categorical in nature and for each independent variable, one category is selected as a reference category, and comparisons are made between other categories of independent variable with respect to the reference category. A positive estimate of logistic regression coefficients will indicate an increase in Odds of Availing Institutional Credit by Farmers, while a negative estimate will indicate a increase in Odds of Availing Institutional Credit by Farmers with respect to the reference category for a given independent variable when all other independents factors are controlled. To test the significance of each independent variable Wald statistic has been computed at 95 percent level of significance. Wald Statistics is the square of rotation of the logistic regression coefficient to its standard error.

Table 1: Case Processing Summary

Case Processing Summary			
Unweighted Cases[a]		**N**	**Percent**
Selected Cases	Included in Analysis	300	100.0
	Missing Cases	0	.0
	Total	300	100.0
Unselected Cases		0	.0
Total		300	100.0
a. If weight is in effect, see classification table for the total number of cases.			

Sources: Computed from Field Survey

Table 1 reveals there were 300 samples of respondents collected and from which there were no missing cases of the respondents. Thus, there is no use of dummy data while estimating the relationship between the dependent and independent variables of the study.

Table 2: Dependent Variable Encoding

Dependent Variable Encoding	
Original Value	**Internal Value**
Otherwise	**0**
Availing Credit	**1**

Sources: Computed from Field Survey

Table 2 shows that the dependent variable (Institutional Credit to Farmers) is categorical with two categories and can be coded as:

Institutional Credit to Farmers (Y) = 1, if Farmers are Availing Institutional Credit 0, otherwise

Table 3: Model Summary of the Data

Model Summary			
Step	**-2 Log likelihood**	**Cox & Snell R Square**	**Nagelkerke R Square**
1	**166.131[a]**	**0.118**	**0.239**
a. Estimation was terminated at iteration number 20 because maximum iteration has been reached. Final solution cannot be found.			

Sources: Computed from Field Survey

The above table 3 of the model summary describes the relation between the variables, i.e. dependent and independent variables. The Nagelkerke R Square value indicates there is 24% variation on dependent variables explained by independent variables. The Cox & Snell R Square value indicates that there is a 12% variation on dependent variables when explained by the independent variables. Similarly, 2 log-likelihood test explains the variation range of the dependence of the dependent variable on the independent variable.

Table 4: Hosmer and Lemeshow Test

Hosmer and Lemeshow Test			
Step	**Chi-square**	**df**	**Sig.**

1	3.772	8	.877

Sources: Computed from Field Survey

Table 4 indicates the goodness-of-fit based on Hosmer and Lemeshow Test. The test has p-values higher than the usual significance level of 0.05. Thus, the significance value of the study is 0.877, which is higher than the usual value. This shows that the study is a goodness-of-fit model.

Table 5: Classification Table

Classification Table[a,b]				
Observed		**Predicted**		
		Institutional Credit		**Percentage Correct**
		Otherwise	**Availing Credit**	
Institutional Credit	**Otherwise**	**0**	**17**	**.0**
	Availing Credit	**0**	**283**	**100.0**
Overall Percentage				**94.3**
a. Constant is included in the model.				
b. The cut value is .500				

Sources: Computed from Field Survey

In the table 5 confirms that the major percentages of cases were rightly predicted by the model. In the context of this paper, 94.3% cases were correctly predicted.

Table 6: Variables in the Equation

Variables in the Equation								
	B	**S.E.**	**Wald**	**Df**	**Sig.**	**Exp(B)**	**95% C.I. for EXP(B)**	
							Lower	**Upper**
Education of the respondents	.645	.215	9.036	1	.003	1.906	1.252	2.903
Occupation of the respondents	.284	.249	1.306	1	.253	1.329	.816	2.164
Total Family Income of the Respondents	-.521	.358	2.115	1	.146	.594	.294	1.199
Type of House	-.086	.528	.026	1	.871	.918	.326	2.584
Types of farmers	.522	.674	.600	1	.439	1.685	.450	6.309
Constant	-1.205	1.851	.424	1	.515	.300		
a. Variable(s) entered on step 1: Education of the respondents, Occupation of the respondents, Total Family Income of the Respondents, Type of House, Types of Farmers. b. Dependent Variable: Availing Institutional Credit								

Sources: Computed from Field Survey

In the above table 6 it gives results of binary logistic regression analysis on institutional credit to farmers. The different categories of independent variables along with the reference category are given in first column. The second column headed as B gives the estimate of binary logistic regression coefficients, and the third column gives their standard errors. Wald statistics for testing the significance of individual variables has been computed in column 4. Columns 5 and 6 give the degree of freedom (DF) of the Wald Statistics and its significance. Odds ratio, that is the magnitude of Odds of institutional credit to Farmers belonging to any category as compared to the reference category for a given individual variable is given in column 7. The last two columns depict the lower and upper limit of confidence interval of Odds Ratio.

The results indicate that the binary logistic regression coefficients of occupation of the respondents, Total Family Income of the Respondents, Type of House, Types of farmers are insignificant, and education of family head is significant. Thus, these are contributing factors for availing institutional credit by farmers. It has been observed that logistic regression coefficients of the categories of education, occupation and type of farmer and housing condition of the farmer have a positive effect on dependent variables and income of the family head and type of housing condition have a negative impact on the institutional credit delivery system. A positive estimate of logistic regression coefficients indicates an increase in odds of availing institutional credit, while a negative estimate indicates a decrease in Odds of availing

Institutional Credit, for the reference category for a given independent variable when all other independent factors are controlled. It may also be observed from column 6 that all the coefficients increase of independent variables like occupation, family income of the respondent types of house and types of farmers are found to be statistically insignificant (>0.05) at 95% level of significance and education of the head of family is found statistically significant (<0.05) at 95% level of significance.

Education of the respondents, especially head of family, has always been considered as important criteria for institutional credit by the financial institutions in the rural areas. It may be observed that the odds of availing of institutional credit by the educated farmers are 91% more compared to the odds of not availing of Institutional Credit are 9%. This clearly indicates that education of the head of the family has a positive impact in availing of Institutional Credit.

Occupation of the respondents also positive impact on institutional credit It may be observed that the odds of availing of institutional credit by the occupation of the farmers are 33% more compared to the odds of not availing of Institutional Credit are 9%. This clearly indicates that occupation of the head of the family has a positive impact in availing of Institutional Credit.

Family income of the respondents has negative impact on institutional credit It may be observed that the odds of availing of institutional credit by the occupation of the farmers are 41% less compared to the odds of not availing of Institutional Credit are 59%. This clearly indicates that the income of the head of the family has a negative impact in availing of Institutional Credit i.e. higher the level of income lowers the availing of institutional credit.

The housing conditions can be considered economic wellbeing and one of the determinants of institutional credit. This found that the probability of availing of institutional credit is lower for farmers having pucca houses. The odds of availing of institutional credit by farmers are 8% less as compared to the not availing credit are 92%. It indicates that farmers having pucca houses are not willing to avail institutional credit.

Similarly, it is found that farmers are availing of Institutional Credit has a positive impact on types of farmers. The odds of availing Institutional Credit by the farmers are 69% higher as compared to the odds of not availing of institutional credit by farmers in rural areas i.e. 31%. It is observed that there has a positive impact on institutional credit delivery mechanism in rural areas.

Conclusion and policy implications:

This study examines the determinants of access to institutional credit among small and marginal farmers in the Cachar district of Assam using primary data collected from 300 farm households and employing a binary logistic regression framework. The empirical results indicate that the education level of the household head is the most significant factor influencing access to institutional credit, highlighting the central role of human capital in facilitating financial inclusion in rural areas. Educated farmers exhibit substantially higher odds of availing institutional loans, reflecting better awareness, documentation capability, and interaction with formal financial institutions. In contrast, other socio-economic variables such as occupation, household income, housing condition, and type of farmer are found to be statistically insignificant. Interestingly, higher income levels and better housing conditions are associated with a lower propensity to borrow from institutional sources, suggesting reduced dependence on formal credit among relatively better-off households.

The model demonstrates satisfactory goodness-of-fit and strong predictive accuracy, confirming the robustness and reliability of the estimated results. The findings suggest that barriers to institutional credit access are not solely economic but are also driven by informational and capability-related constraints. Despite the expansion of formal credit channels and financial inclusion initiatives, a significant section of farmers remains unable to effectively engage with institutional lending systems. The study concludes that improving access to institutional credit requires policy interventions that go beyond increasing credit availability. Emphasis should be placed on strengthening financial literacy and educational initiatives at the grassroots level. Simplification of lending procedures, reduction in documentation complexity, and enhanced borrower support mechanisms are essential to improve credit uptake among small and marginal farmers. Furthermore, leveraging Panchayati Raj Institutions, Self-Help Groups, and Farmer Producer Organisations as intermediaries can enhance outreach and trust in institutional finance. Strengthening coordination between banks, NABARD, and local institutions will be crucial for ensuring that institutional credit effectively contributes to agricultural sustainability, income stability, and a reduction in rural indebtedness.

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