

An Empirical Assessment of Credit Constraints in Institutional Agricultural Credit Access: Evidence from Farmer's Perspective

Dikshita Deb

ddeb692@gmail.com

Tezpur University

Dr. Arup Roy

Tezpur University

Research Article

Keywords: Constraints, Credit access, Socio-economic, Socio-demographic, Institutional source, Assam

Posted Date: June 29th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10037975/v1>

License:   This work is licensed under a Creative Commons Attribution 4.0 International License.

[Read Full License](#)

Additional Declarations: No competing interests reported.

Abstract

The study examines the multidimensional constraints affecting farmers' access to institutional agricultural credit in Assam, focuses on demand-side, supply-side, and infrastructural barriers. Based on survey data from farmers across two districts of Assam, the study has employed ranking techniques and correlation methods to assess the severity of constraints and their association with socio-economic variables. Findings reveal that demand-side barriers such as lack of collateral and awareness are significant, supply-side and infrastructural challenges such as lengthy procedures, strict eligibility norms, weak extension services, and absence of insurance emerge as more critical barriers for farmers. Demand-side constraints are found to vary with income and landholding size. Policy recommendations emphasize simplifying loan processes, expanding insurance and guarantee schemes, strengthening financial literacy and extension services, and improving rural financial infrastructure. Therefore, if credit constraints are eliminated or reduced, then agricultural investment will be expanded, which will ultimately raise the nation's farmers' revenue. Addressing these gaps will enhance credit access and promote inclusive agricultural development in Assam.

1. Introduction

Agriculture is the backbone of India's economic development. Agricultural development can be accomplished by switching from conventional to modern farming practices. The international development community has recognized that agriculture plays a crucial role in promoting growth and reducing poverty in countries where it is the main source of livelihood for the poor (The World Bank, 2008). Elements like mechanization of agriculture, awareness and the accessibility for better inputs like certified seeds, fertilizer, and pesticides all contribute significantly to this change (de Janvry & Sadoulet, 2020; Liu & Wang, 2019; Khan et al., 2024). The government shows concern about the sluggish growth of the agricultural sector, given that nearly two-thirds of India's population relies on rural livelihoods. Although, between 2019 and 2020 during the COVID-19 pandemic India's economic growth significantly slowed, particularly affecting the industrial and service sectors. However, agriculture demonstrated relative resilience, with its contribution to the national economy increasing from 2.4% to 4% over the past year (Kumari & Garg, 2021). The national goal of "Kisano Ki Samridhi" (Prosperity of Farmers) focuses high importance on welfare of farmers.

In agriculture, credit constraints are also related to supply-side, demand side and infrastructural factors as discussed in several studies and policy discussions. Agricultural credit becomes essential for bridging the gap between limited earnings and essential expenditures. Hence, Agricultural credit plays a vital role in sustaining the livelihoods of smallholder farmers particularly in rural areas where persistently low productivity contributes to inadequate and unstable incomes (Balana et al., 2022; Omobitan & Khanal, 2022; Ullah et al., 2022; Khan et al., 2024). Constraints in accessing agricultural credit substantially influence farm productivity and efficiency, both directly and indirectly. In the short term, credit constraints limit farmers' ability to purchase inputs and cover operational costs while in the long

term, they hinder investment decisions and reduce their willingness to take risks (Omobitan et al., 2019; Ali et al., 2014).

In agriculture access to credit constitutes a fundamental role in the development and modernization of the agricultural sector (Guirkingner & Boucher, 2008; Uttara et al., 2022). However, in many developing countries credit market constraints along with the absence of reliable insurance mechanisms continues to restrict farmers from investing in high-return agricultural activities (Boucher et al., 2008; Karlan et al., 2014). Some farmers face constraints to access credits. Hence, Credit constraint is considered as one of the key barriers in agricultural productivity.

Access to credit is crucial for making essential and capital-intensive investments in agricultural production. (Diagne and Zeller, 2001) highlighted the distinction between credit access and market participation. The study found that many farm households, despite having credit access, avoid market participation due to repayment risks. Their study also showed that formal lenders supply a larger share of agricultural credit than informal sources. The adverse implications of capital market imperfections and credit constraints in developing economies have been widely acknowledged in theoretical literature (Stiglitz & Weiss, 1981; Eswaran & Kotwal, 1986; Carter, 1988; Kochar, 1997).

However, extant literature barely investigates what type of constraints farm families faces while access to credit from institutional sources. Against this background, the current paper contributes to the literature by selecting nationally representative sample from Assam. As a state Assam provides a vital context for examining the financial vulnerabilities and credit constraints faced by agrarian households. The study aims to explore the multidimensional barriers—demand-side, supply-side, and infrastructural—that hinder farmers' access to institutional agricultural credit based on their lived experiences and perceptions.

The structure of the paper is as follows: Section 2 outlines the conceptual framework and section 3 discusses about literature review; Section 4 presents the empirical strategy and descriptive statistics; Section 5 discusses the empirical findings; and Section 6 concludes.

2. Conceptual Framework

The issue of access to credit and credit constraints are well discussed in the literatures. But there is no consensus on the nature of the institutional constraints that causes barrier for the farmers. This lack of consensus in the literature on the pattern of constraint could be explained by the current study. Previous papers on credit rationing and constraints have discussed about the quantity rationing, price rationing, risk rationing and transaction-cost rationing (Anh et al., 2022; Ali et al., 2014; Boucher et al., 2009; Seck, 2019; Amanullah et al., 2020).

The concept of credit rationing and credit constraints are different terms. Credit constraints refer to any restrictions that prevents a borrower from obtaining the desired amount of credit while credit rationing is a specific type of credit constraint where borrowers are denied to get credit entirely or partially, even if

they are willing to pay. Consequently, in recent past, several empirical studies assessed the impact of credit constraints and credit rationing on farmers. The study by (Amanullah et al., 2019) has found credit constraints reduce farmer's income and investment. The study findings highlight farmers' income and investment opportunities could be boosted by 7.2% and 5.1%, respectively, with the reduction of credit limitations. Similarly, (Anh et al., 2022) demonstrates that poor credit history and longer travel time to credit sources increase the likelihood of credit rationing among farm households, whereas human capital, social capital, and physical capital characteristics significantly reduce the risk of credit constraints for smallholder farmers.

The current study proposes integrated framework of constraints for the failure of agriculture finance which classifies supply side constraints, demand side constraints and infrastructural constraints. First, financial sector constraints limit the supply of formal credit second, farmer-specific factors reduce the demand for agricultural financing. Additionally, infrastructural barriers hinder access to finance and weaken the effectiveness of agricultural credit systems, especially in developing countries (Khan et al., 2024). Again, (Amanullah et al., 2020; Baiyegunhi et al., 2010a) findings indicate that credit constraints have a significant and negative impact on farmers' consumption levels. Specifically, unconstrained farmers tend to exhibit higher and more stable consumption patterns compared to their credit-constrained counterparts. This suggests that access to credit plays a crucial role in sustaining and enhancing household consumption among farming communities. (Dong et al., 2010; Li and Zhi, 2010) have reported that credit constraints reduce farmers' income by 13.2% in China and their eliminations could increase income by approximately 23.2%.

Source(s)

Authors creation

Most of existing studies examine credit rationing in credit markets, with inconsistent findings on its determinants. To our knowledge, limited research has analysed credit constraints among Assam's farm households and the nature of constraints farmers face while availing credit. This study addresses that gap by assessing the constraints in institutional credit markets and offer policy insights to reduce credit constraints and enhance agricultural productivity.

2.1. Objectives of the study

The objectives of this study are described as follows:

- To identify and categorize the major constraints faced by farmers in accessing agricultural credit through ranking analysis.
- To analyse the relationship of credit constraints with socio-demographic and socio-economic determinants of farmers in the study area.

3. Literature Review

Various researchers have worked in different regions of the world on credit constraints that farmers face while taking credit and the impact of credit constraints in agricultural productivity as well as factors influencing to access agricultural credit. The study by (Mitra et al., 2019) found that experience, culture systems and high interest rates have differential effects on productivity under credit constrained situations where the type of culture system was found to decrease productivity for constrained farmers. Another study by (Baiyegunhi et al., 2010) in the Eastern Cape Province of South Africa utilized a probit model to assess the determinants of household credit constraints and welfare. The results identified age, land access, repayment capacity, and asset value as significant socioeconomic factors influencing a household's likelihood of experiencing credit constraints. Some previous studies discussed about the vicious circle for credit constrained farmers (Antwi et al., 2017; Engle & Kumar, 2011; Ly & Nguyen, 2020; Mitra et al., 2019). Farmers with little resources finds it difficult to overcome the vicious cycle.

The access to credit significantly influences the production performance of agricultural wholesalers. Eliminating credit constraints could lead to an average increase of approximately 15% in annual sales in China (Hu et al., 2019). In addition, the factors affecting credit constraints among rural youth farmers analysed by (Twumasi et al., 2019). The research study employed 450 farmers and revealed that higher education, older age, savings, and parents' occupation decreased the likelihood of youth farmers facing credit constraints. In contrast, complicated loan application processes and prolonged loan disbursement times increased the probability of being credit constrained. Similarly, (Balana et al., 2020) demonstrates that demand-side factors like risk aversion and limited information mainly drive credit constraints for smallholders in Ethiopia and Tanzania. The study reveals that demand-side constraints are more prevalent than supply-side factors in determining smallholders' credit access. Furthermore, the analysis highlights gender disparities, with women more likely than men to experience both demand- and supply-side credit constraints.

Credit constraints for Nigerian smallholder farmers largely from demand-side factors such as risk aversion and limited access to information, rather than supply-side challenges like inadequate collateral. To effectively improve credit access and promote adoption of modern agricultural technologies, policies must focus on enhancing collateral availability, expanding access to information and extension services to mitigate risks faced by smallholders (Balana & Oyeyemi, 2022). Alongside, both supply- and demand-side credit constraints significantly reduce gross farm margins and increased risk exposure for scaled farms in East China. Supply-side constraints having a stronger negative impact. These constraints also raise farmers' cost of risk under moderate risk aversion (Cai et al., 2024). Based on the literatures, it is evident that credit constraints remain a critical barrier to enhancing agricultural productivity across different regions, though the nature and intensity of these constraints vary. The study focuses on the identification of constraints faced by farmers in accessing agricultural credit from formal sources and their relationship with socio-demographic and socio-economic determinants in the study area.

Based on the conceptual framework, objectives and review of literature, the study proposes the following hypotheses:

H01. No statistically significant relationship found between demand side constraints and socio-demographic-economic variables.

H02. No statistically significant relationship found between supply side constraints and socio-demographic-economic variables.

H03. No statistically significant relationship found between infrastructural side constraints and socio-demographic-economic variables.

4. Empirical Strategy

4.1. Data survey and sampling

The cross-sectional data was collected from Indian farm state Assam. The state is selected as predominantly Assam is agrarian in nature and cultivated different crops in kharif and rabi seasons. Distribution of sample farmers across two districts are presented in this way. Specifically, the field survey data was collected through a structured scheduled by interviewing 50 farmers across the two district one is Sonitpur from north bank plain zone of Assam and another one is Nagaon from central Assam zone. Only these two districts were chosen as these districts have largely populated farmers in Assam as per Agricultural Census 2015-16. Accordingly, the primary data was collected from farmers through multi-stage purposive sampling. The field data was collected during the months of June and July, 2025. We restrict our sample only to the farmers who has taken credits for farming in Assam.

4.2. Variables selection

Covariates in this study include age, landholding size, farming experience, annual income from farming, total annual income, annual production. These matching variables are expected to identify the factors affecting credit constraints. These variables are chosen based on findings from previous studies on the agricultural credit constraints (for example, Chandio & Jiang, 2018; Hu et al., 2019; Mitra et al., 2019). Dependent variables demand-side, supply-side and infrastructural constraints are taken from the study (Khan et al., 2024). Table 1 and Table 2 describes the explanatory variables of the study.

4.3. Data analysis

The data has been examined applying both inferentially and descriptively utilizing mean, minimum, maximum, frequencies and standard deviation, correlation and ranking analysis to achieve the objectives. The Statistical Package for Social Science (SPSS) and Microsoft Excel has used to examine, code, and analyze the questionnaires. A four-point Likert scale comprising the categories strongly agree, agree, disagree, and strongly disagree was employed to assess the problems perceived by farmers that hinder their access to institutional credit. All the constrains as per demand side, supply side and infrastructural are adopted from the study (Khan et al., 2024; Shobha & Siji, 2018). The scale measuring constraints in credit access recorded a cronbach's alpha of **0.710** across 22 items, indicating a satisfactory level of internal consistency. According to conventional benchmarks, values above 0.70 reflect acceptable

reliability for social science research instruments (Nunnally & Bernstein, 1994; George & Mallery, 2003). This suggests that the items are sufficiently interrelated and consistently capture the construct under investigation, thereby validating the instrument for subsequent statistical analysis.

Table 1
Reliability statistics

Cronbach's Alpha	N items
0.710	22

5. Results & Discussions

5.1. Descriptive statistics

Table 2 reports some of the major descriptive statistics of variables of main interest and control variables used in the analysis of sample farmers. The table 2 contains values are mean, standard deviation, minimum and maximum of the variable. The mean age value of farmers is found to be about 49.58 years, suggesting that the sample farmers are moderately young. The average farming experience of farmers is found to be only around 25.30 years, suggesting that sample farmers predominately involve in farming activities for around 25 years. The mean size of land holdings of sample farmers is observed to be around 2.48 hectars. The mean total income of the farmers is observed to be around INR 1,47,120 whereas mean income only from agriculture is nearly INR 1,40,620. The average annual production of farmers is 64.08 quintal.

The socio-demographic profile of the sample farmers is presented in table 3. The entire sample comprised male respondents, with the majority of farmers falling under the marginal (54%) and small (24%) farmer categories. In terms of education, most farmers had attained middle school (28%) or matriculation level (22%), while only a small proportion (4%) possessed a degree or higher. Caste distribution shows that Other Backward Classes (36%) and Scheduled Castes (34%) formed the largest groups, followed by General (26%) and Scheduled Tribes (4%). This distribution provides an overview of the socio-demographic and socio-economic background of the farmers included in the study.”

Table 2
Summary statistics of the variables of interest

Socio-demographic-economic variables	Description	Min.	Max.	Mean	SD
Age	Farmers' age in years	33	70	49.58	10
Farming Experience	Years of farming experience	3	55	25.30	14
Landholding Size	Landholding size in hectors	0.20	40	2.48	5.82
Farm Income	Annual income from farming	15000	1000000	140620	180946.02
Total Income	Total annual income	15000	1000000	147120	182817.58
Annual Production	Annual production in quintal	3	671	64.08	127.38

Note: Min. = Minimum; Max. = Maximum; SD = Standard Deviation.

Source(s): Own computations

Table 3
Socio-demographic characteristics of farmers

Socio-demographic variables	Description	Frequency	Percentage (%)
Gender	Male	50	100
	Female	-	-
Education	Illiterate	11	22
	Primary school	5	10
	Middle school	14	28
	Matriculation	11	22
	Higher secondary	7	14
	Degree and above	2	4
Social caste	General	13	26
	OBC	18	36
	SC	17	34
	ST	2	4
Type of farmer	Marginal	27	54
	Small	12	24
	Semi-medium	4	8
	Medium	5	10
	Large	2	4
Source(s): Own computations			

5.2. Constraints faced by farmers in accessing agricultural credit

Agricultural credit is a vital input for agricultural development, as it plays a significant role in enhancing productivity. In particular, institutional credit requires strengthening to ensure that the poorer sections of the farming community have adequate and timely access to financial resources for agricultural activities. The results from Table 4 shows that among demand-side constraints, *lack of collateral* (Mean = 3.81) is the most critical, while *lack of guarantees* (Mean = 2.51) is the least important. On the supply side, *complicated and lengthy process* (Mean = 4.34) and *strict eligibility criteria* (Mean = 4.30) emerged as the most significant constraints. Within infrastructural factors, *lack of insurance* (Mean = 4.15) and *lack of extension services* (Mean = 3.92) are the major challenges. Overall, infrastructural constraints

registered the highest average mean score (3.49), followed by supply-side (3.31) and demand-side constraints (3.29), indicating that infrastructural limitations are relatively more severe barriers to agricultural credit access.

Table 4
Category wise mean scores ranking of credit constraints

Nature of Constraints	Constraints	Means	Ranking	Mean
Demand Size Constraints	Lack of collateral	3.81	1	3.29
	Lack of awareness	3.77	2	
	Small scale farming	3.60	3	
	Risk aversion	3.28	4	
	Low-repayment ability	3.23	5	
	Land tenancy	2.81	6	
	Lack of guarantees	2.51	7	
Supply Size Constraints	Complicated and lengthy process	4.34	1	3.31
	Strict eligibility criteria	4.30	2	
	High documentation	3.83	3	
	High interest rate	3.74	4	
	Asymmetrical information	3.30	5	
	Poor customer relationship	3.25	6	
	Lack of products	2.60	7	
	Inefficient monitoring	2.51	8	
Infrastructural Constraints	Lack of Insurance	4.15	1	3.49
	Lack of Extension services	3.92	2	
	Inadequate technology	3.75	3	
	Inefficient value chain and market access	3.58	4	
	Lack of investment	3.15	5	
	High distance to formal sources	2.36	6	
Source(s): Own computations				

In agriculture farmers have to face several constraints to access credits. The current study illustrates in Table 5 the in-depth analysis of constraints to access credits. The ranking of constraints demonstrates that supply side and infrastructural barriers constitute the most significant impediments to accessing agricultural credit. The *complicated and lengthy process* (Mean = 4.34) and *strict eligibility criteria* (Mean = 4.30) emerged as the highest-ranked constraints, followed closely by the *lack of insurance facilities* (Mean = 4.15) and *lack of extension services* (Mean = 3.92). These findings are consistent with earlier studies, which highlight that procedural complexities, stringent eligibility norms, and weak institutional support systems pose major challenges in accessing formal credit (Hussain & Thapa, 2012; Mitra et al., 2019). Conversely, constraints such as *land tenancy* (Mean = 2.81), *lack of suitable products* (Mean = 2.60), *inefficient monitoring policy* (Mean = 2.51), and *lack of suppliers* (Mean = 1.91) received lower mean scores, implying that issues are comparatively less critical from the farmers' perspective. Overall, the results underscore the need for policy interventions aimed at simplifying credit procedures, easing eligibility norms, and strengthening risk-mitigation and extension services. Such reforms have also been emphasized in the literature as essential to improving the outreach and effectiveness of institutional credit for small and marginal farmers (Swain, 2011; Chandio & Jiang, 2018).

Table 5
Overall ranking of all constraints based on mean scores

Constraints	Mean	Std. deviation	Rank
Complicated and lengthy process	4.34	0.831	1
Strict eligibility criteria	4.30	0.952	2
Lack of insurance facilities	4.15	1.026	3
Lack of extension services	3.92	1.053	4
Lack of collateral	3.81	1.331	5
High documentation	3.83	1.122	6
Lack of awareness	3.77	0.847	7
Inadequate technology & communication	3.75	0.998	8
High interest rate	3.74	1.095	9
Inefficient value chain & market access	3.58	1.420	10
Small scale farming	3.60	1.335	11
Risk aversion	3.28	1.231	12
Poor customer relationship	3.25	1.090	13
Low repayment ability	3.23	1.187	14
Asymmetric information	3.30	1.170	15
Lack of investment opportunities	3.15	1.307	16
Land tenancy	2.81	0.962	17
Lack of suitable products	2.60	1.115	18
Inefficient monitoring policy	2.51	1.154	19
Lack of guarantees	2.51	1.049	20
High distance to credit sources	2.36	1.226	21
Lack of suppliers	1.91	0.815	22
Source(s): Own computations			

5.3. Relationship between credit constraints and socio-demographic and socio-economic determinants

This section examines the relation of demand-side, supply-side, and infrastructural constraints with selected socio-demographic-economic variables. Specifically, Age, farming experience, farm income, total income, landholding size and production of farmers are socio-demographic and socio-economic variables analysed to understand how household and farm characteristics influence the severity of credit-related challenges. The correlation analysis from Table 6 revealed that demand-side constraints were significantly and negatively associated with annual income from farming ($r = -0.371$, $p < 0.01$), total income ($r = -0.357$, $p < 0.05$), and landholding size ($r = -0.399$, $p < 0.01$). This indicates that farmers with larger landholdings and higher income levels are less likely to experience demand-related barriers in accessing credit, whereas farmers with small landholdings and lower income are more likely to experience demand-related constraints. However, supply-side and infrastructural constraints did not exhibit any statistically significant relationship with the socio-demographic and socio-economic variables considered in the study. This suggests that supply and infrastructural barriers are not vary significantly with farmers' individual or household characteristics.

Table 6
Correlation between credit demand and selected socio-demographic-economic variables

Variables	Correlation (r)	Sig. (p)	Interpretation
Demand constraints ↔ Annual income (Farming)	-0.371**	0.008	Higher farming income reduces demand side constraints
Demand constraints ↔ Total income	-0.357*	0.011	Higher overall income reduces demand side constraints
Demand constraints ↔ Landholding size	-0.399**	0.004	Larger landholdings reduce demand side constraints
Note: ** and * denote significance at the 1% and 5% levels respectively.			
Source(s): Own computations			

Table 7
Summary of Hypothesis

Hypothesis	Statement	Finding	Decision
H1	No statistically significant relationship found between demand side constraints and socio-demographic-economic variables.	Significant negative relationships with annual income from farming ($r = -0.371$, $p < 0.01$), total income ($r = -0.357$, $p < 0.05$), and operated land ($r = -0.399$, $p < 0.01$). No significant relationship with age, farming experience, or annual production.	Partially Supported
H2	No statistically significant relationship found between supply side constraints and socio-demographic-economic variables.	No significant relationship with any variable.	Not Supported
H3	No statistically significant relationship found between infrastructural side constraints and socio-demographic-economic variables.	No significant relationship with any variable.	Not Supported
Source(s): Own computations			

The above analysis from Table 7 indicates that demand-side constraints are strongly influenced by farmers' economic capacity, as reflected significant negative association with income and landholding size. Farmers with higher incomes and larger holdings are better placed to provide collateral, fulfil repayment obligations, and access relevant information, thereby encountering fewer demand-related barriers. In contrast, small and marginal farmers, who constitute the majority in Assam are disproportionately affected, highlighting their financial vulnerability. Whereas, the absence of significant associations between socio-demographic-economic factors and supply-side and infrastructural constraints suggests that these challenges are institution-driven, rather than farmer-specific.

6. Conclusion & Policy recommendations

This study examines the constraints farmers encounter in accessing formal agricultural credit and explores their relationship with socio-demographic and socio-economic determinants in the study area. This study explores the multidimensional nature of institutional agricultural credit constraints faced by farmers in Assam, focuses on demand-side, supply-side, and infrastructural factors. The descriptive analysis revealed that the sample consisted mainly of marginal and small farmers with moderate landholdings, limited formal education, and relatively low farm incomes, reflecting the structural vulnerability of agrarian households in the state. The ranking analysis demonstrated that in demand-side barriers such as lack of collateral and awareness remain important for farmers. Specifically, complicated and lengthy loan procedures, strict eligibility criteria, lack of insurance facilities, and weak extension

services emerged as the most critical challenges for supply-side and infrastructural constraints. However, while considering all constraints together the study found that for farmers complicated and lengthy loan procedures, strict eligibility criteria, lack of insurance facilities, and weak extension services are severely significant barriers for farmers. The research found that among the three dimensions of constraints infrastructural barriers are more severe as average mean scores of infrastructural barriers is high (3.49) as compare to the other dimensions. These results are consistent with earlier findings (Hussain & Thapa, 2012; Swain, 2011; Balana & Oyeyemi, 2022) that highlight the dominance of institutional and systemic barriers over household-level factors.

Correlation analysis further revealed that institutional agricultural credit access in Assam continues to be constrained by factors, with the severity of differing across categories. The results indicate that demand-side barriers are strongly shaped by farmers' socio-economic characteristics—particularly income levels and landholding size—where higher-income and larger farmers face fewer restrictions in accessing institutional credit. This aligns with the findings of (Baiyegunhi et al., 2010; Shobha & Siji, 2018; Anh et al., 2022), who also reported that economic capacity reduces the probability of being credit constrained. In contrast, supply-side and infrastructural barriers showed no significant relationship with socio-demographic-economic variables, implying that these challenges are institution-driven, regardless of income or land size. Taken together, these findings confirm that small and marginal farmers remain disproportionately vulnerable to demand-side constraints, while all farmers are equally exposed to procedural, institutional, and infrastructural limitations.

In view of these results, several policy recommendations are evident. Simplifying loan procedures, reducing documentation, and easing eligibility norms would improve access, especially for small and marginal farmers. Strengthening risk-mitigation measures such as crop insurance and guarantee schemes is critical to reduce repayment uncertainty and build confidence among both lenders and borrowers. At the same time, enhancing farmer awareness and financial literacy through effective extension services can address information gaps and reduce risk aversion. Finally, improving rural financial infrastructure, ensuring timely loan disbursement, and strengthening value chain linkages are necessary to translate credit into productive outcomes. Together, these measures would make institutional credit more inclusive, effective, and sustainable for Assam's farming households.

Overall, the findings underscore that addressing agricultural credit constraints requires a dual approach: reducing household-level vulnerabilities while simultaneously reforming institutional systems to be more inclusive and responsive. For Assam, where small and marginal farmers dominate, interventions must prioritize collateral-free credit, concessional loan products, and stronger linkages between credit, insurance, and extension support. By implementing these reforms, institutional credit systems can move closer to fulfilling the national goal of "Kisano Ki Samridhi," ensuring not only access but also the effective utilization of credit to enhance farmer welfare and agricultural growth.

The limitations of the study offer insight into potential directions for further research. The study has confined to the farmers of selected districts of Assam. The study does not consider the informal credit

sources; The future researchers extend its scope by conducting the study in other regions and emerging economies, promoting cross-regional comparisons, investigating qualitative elements like farmer satisfaction and trust. More farmers profiles from around the world should be gathered in the future to expand the scope of the findings and strengthen the arguments made in the recommendations and conclusions.

Declarations

Acknowledgments

The author would like to thank all online public databases that contributed to the data used in this study. Additionally, the author would like to thank the Tezpur University, which provides good Internet access. The authors express gratitude to editors and reviewers for their valuable insights and feedback that will be helped to improve the study.

Declaration of conflicting interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval and informed consent statements

Ethical approval for this study was obtained from the Tezpur University Ethics Committee (TUEC) and approval number/ID/IEC No: DoRD/TUEC/PROP/2025/36

Data availability statement

All relevant data are included in the manuscript.

Funding statement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Clinical Trial Number

Not applicable

Consent to Participate

Informed consent was obtained from all participants involved in the study.

Consent to Publish

The authors affirm that all participants consented to the use of anonymized data for research and publication purposes, and the authors consent to the publication of this manuscript.

References

1. Ali DA, Deininger K, Duponchel M. Credit Constraints and Agricultural Productivity: Evidence from rural Rwanda. *J Dev Stud.* 2014;50(5):649–65. <https://doi.org/10.1080/00220388.2014.887687>.
2. Amanullah, Jing W. Farm Level Impacts Of Credit Constraints On Agricultural Investment And Income. *Pakistan J Agricultural Sci.* 2019;56(02):511–21. <https://doi.org/10.21162/pakjas/19.7872>.
3. Amanullah N, Lakhan GR, Channa SA, Magsi H, Koondher MA, Wang J, Channa NA. Credit constraints and rural farmers' welfare in an agrarian economy. *Heliyon.* 2020;6(10):e05252. <https://doi.org/10.1016/j.heliyon.2020.e05252>.
4. Anh NT, Gan C, Anh DLT. Multi-market credit rationing: The determinants of and impacts on farm performance in Vietnam. *Econ Anal Policy.* 2022;75:159–73. <https://doi.org/10.1016/j.eap.2022.05.008>.
5. Antwi DE, Kuwornu JK, Onumah EE, Bhujel RC. Productivity and constraints analysis of commercial tilapia farms in Ghana. *Kasetsart J Social Sci.* 2017;38(3):282–90. <https://doi.org/10.1016/j.kjss.2016.12.001>.
6. Baiyegunhi LJS, Fraser GCG, Darroch MaG. Credit constraints and household welfare in the Eastern Cape Province, South Africa. *Afr J Agric Res.* 2010;5(16):2243–52. <https://doi.org/10.5897/ajar10.261>.
7. Balana BB, Mekonnen D, Haile B, Hagos F, Yimam S, Ringler C. Demand and supply constraints of credit in smallholder farming: Evidence from Ethiopia and Tanzania. *World Dev.* 2022;159:106033. <https://doi.org/10.1016/j.worlddev.2022.106033>.
8. Balana BB, Oyeyemi MA. Agricultural credit constraints in smallholder farming in developing countries: Evidence from Nigeria. *World Dev Sustain.* 2022;1:100012. <https://doi.org/10.1016/j.wds.2022.100012>.
9. Balana B, Mekonnen DK, Haile B, Hagos F, Yiman S, Ringler C. (2020). *Are smallholder farmers credit constrained? Evidence on demand and supply constraints of credit in Ethiopia and Tanzania.* <https://doi.org/10.2499/p15738coll2.134152>
10. Boucher SR, Carter MR, Guirking C. Risk Rationing and Wealth Effects in Credit Markets: Theory and Implications for Agricultural Development. *Am J Agric Econ.* 2008;90(2):409–23. <https://doi.org/10.1111/j.1467-8276.2007.01116.x>.
11. Boucher SR, Guirking C, Trivelli C. Direct Elicitation of Credit Constraints: Conceptual and Practical Issues with an Application to Peruvian Agriculture. *Econ Dev Cult Change.* 2009;57(4):609–40. <https://doi.org/10.1086/598763>.
12. Cai R, Ma J, Wang S, Cai S. Credit constraints and risk exposure in scaled farming: insights from East China. *Appl Econ.* 2024;1–15. <https://doi.org/10.1080/00036846.2024.2348186>.

13. Carter MR. Equilibrium credit rationing of small farm agriculture. *J Dev Econ.* 1988;28(1):83–103. [https://doi.org/10.1016/0304-3878\(88\)90015-6](https://doi.org/10.1016/0304-3878(88)90015-6).
14. Chandio AA, Jiang Y. Determinants of Credit Constraints: Evidence from Sindh, Pakistan. *Emerg Markets Finance Trade.* 2018;54(15):3401–10. <https://doi.org/10.1080/1540496x.2018.1481743>.
15. De Janvry A, Sadoulet E. Using agriculture for development: Supply- and demand-side approaches. *World Dev.* 2020;133:105003. <https://doi.org/10.1016/j.worlddev.2020.105003>.
16. Diagne A, Zeller M. (2001). Access to credit and its impact on welfare in Malawi. <https://doi.org/10.2499/0896291197rr116>
17. Dong F, Lu J, Featherstone AM. (2010). Effects of credit constraints on productivity and rural household income in China. *Am J Agric Econ.* <https://ideas.repec.org/p/ias/cpaper/10-wp516.html>
18. Engle C, Kumar G. The Effect Of Cash Flow And Credit Constraints On Financial Feasibility And Stocking Strategies On U.S. Catfish Farms: A Mixed-Integer Multi-Stage Programming Approach. *Aquaculture Econ Manage.* 2011;15(3):193–213. <https://doi.org/10.1080/13657305.2011.598216>.
19. Eswaran M, Kotwal A. Access to capital and agrarian production organisation. *Econ J.* 1986;96(382):482. <https://doi.org/10.2307/2233128>.
20. George D, Mallery P. *SPSS for Windows step by step: A simple guide and reference.* 4th ed. Boston, MA: Allyn & Bacon; 2003.
21. Guirkingner C, Boucher SR. Credit constraints and productivity in Peruvian agriculture. *Agric Econ.* 2008;39(3):295–308. <https://doi.org/10.1111/j.1574-0862.2008.00334.x>.
22. Hu L, Lopez RA, Zeng Y. The impact of credit constraints on the performance of Chinese agricultural wholesalers. *Appl Econ.* 2019;51(35):3864–75. <https://doi.org/10.1080/00036846.2019.1584385>.
23. Hussain A, Thapa GB. Smallholders' access to agricultural credit in Pakistan. *Food Secur.* 2012;4(1):73–85. <https://doi.org/10.1007/s12571-012-0167-2>.
24. Karlan D, Osei R, Osei-Akoto I, Udry C. Agricultural Decisions after Relaxing Credit and Risk Constraints *. *Q J Econ.* 2014;129(2):597–652. <https://doi.org/10.1093/qje/qju002>.
25. Khan FU, Nouman M, Negrut L, Abban J, Cismas LM, Siddiqi MF. Constraints to agricultural finance in underdeveloped and developing countries: a systematic literature review. *Int J Agric Sustain.* 2024;22(1). <https://doi.org/10.1080/14735903.2024.2329388>.
26. Kochar A. An empirical investigation of rationing constraints in rural credit markets in India. *J Dev Econ.* 1997;53(2):339–71. [https://doi.org/10.1016/s0304-3878\(97\)00020-5](https://doi.org/10.1016/s0304-3878(97)00020-5).
27. Kumari A, Garg V. Impact of credit on sustainable agricultural development in India. *J Sustainable Finance Invest.* 2021;13(1):560–71. <https://doi.org/10.1080/20430795.2021.1964811>.
28. Liu Y, Wang Y. Rural land engineering and poverty alleviation: Lessons from typical regions in China. *J Geog Sci.* 2019;29(5):643–57. <https://doi.org/10.1007/s11442-019-1619-9>.
29. Ly NTY, Nguyen LK. (2020). The impact of credit accessibility on aquaculture production in Mekong delta, Vietnam. *PROCEEDINGS*, 5(2). <https://doi.org/10.46223/hcmcoujs.econ.en.4.2.94.2014>

30. Mitra S, Khan MA, Nielsen R. Credit constraints and aquaculture productivity. *Aquaculture Econ Manage*. 2019;23(4):410–27. <https://doi.org/10.1080/13657305.2019.1641571>.
31. Nunnally JC, Bernstein IH. *Psychometric theory*. 3rd ed. New York: McGraw-Hill; 1994. pp. 248–92.
32. Omobitan O, Khanal A, Honey U. (2019). Examining Capital Constraints and Financing Sources: How Do Small Farms Meet their Agricultural Spending and Expenses? *2019 Annual Meeting, Southern Agricultural Economics Association*. <https://doi.org/10.22004/ag.econ.284282>
33. Omobitan O, Khanal AR. Examining farm financial management: How do small US farms meet their agricultural expenses? *J Risk Financial Manage*. 2022;15(3):133. <https://doi.org/10.3390/jrfm15030133>.
34. Ouattara N, Xiong X, Bakayoko M, Bi TB, a. Y, Sedebo DA, Ballo Z. What Influences Rice Farmers' Choices of Credit Sources in Côte d'Ivoire? An Econometric Analysis using the Multinomial Conditional Logit Model. *Progress Dev Stud*. 2022;22(2):149–73. <https://doi.org/10.1177/14649934211066453>.
35. Overview. (2008). World Bank. <https://www.worldbank.org/en/topic/agriculture/overview>
36. Seck A. Heterogeneous credit constraints and smallholder farming productivity in the Senegal River Valley. *Emerg Markets Finance Trade*. 2019;57(12):3301–19. <https://doi.org/10.1080/1540496x.2019.1601080>.
37. Shobha DK, Siji K. (2018). Problems Faced by Farmers in Accessing Agricultural Credit with Special Reference to Malur in Kolar District of Karnataka. *Int J Creative Res Thoughts (IJCRT)*, 6(1).
38. Stiglitz JE, Weiss A. Credit Rationing in Markets with Imperfect Information. *Am Econ Rev*. 1981;71(3):393–410. <https://doi.org/10.7916/d8v12ft1>.
39. Swain RB. The demand and supply of credit for households. *Appl Econ*. 2011;39(21):2681–92. <https://doi.org/10.1080/00036840600749516>.
40. Twumasi MA, Jiang Y, Acheampong MO. Capital and credit constraints in the engagement of youth in Ghanaian agriculture. *Agric Financ Rev*. 2019;80(1):22–37. <https://doi.org/10.1108/afr-11-2018-0100>.
41. Ullah A, Saqib SE, Kächele H. Determinants of farmers' awareness and adoption of extension recommended wheat varieties in the rainfed areas of Pakistan. *Sustainability*. 2022;14(6):3194. <https://doi.org/10.3390/su14063194>.

Figures

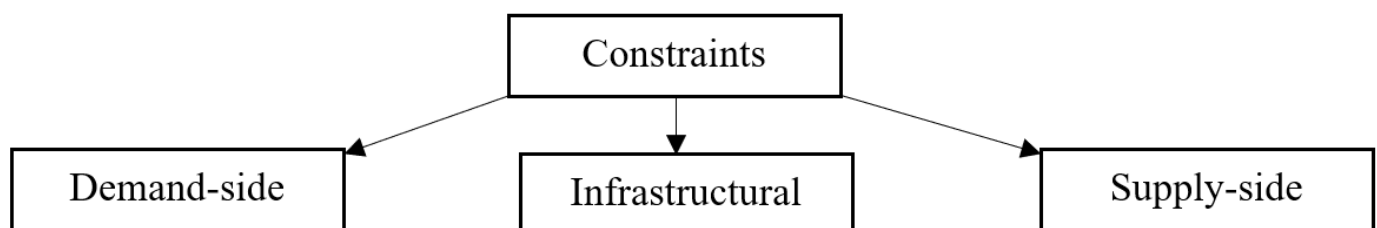


Figure 1

Conceptual framework of credit constraints

Source(s): Authors creation

