Demand for Agricultural Credit: A Study in the District of South 24 Parganas, West Bengal, India

Sebak Kumar Jana
Professor of Economics, Department of Economics, Vidyasagar University, West Bengal, India

Atanu Mitra
Ph. D. Scholar, Department of Economics, Vidyasagar University, West Bengal, India

Abstract

Agriculture is a vital sector of Indian economy and agricultural credit plays an indirect but instrumental role in increasing agricultural productivity. It has been pointed out that access to credit for vast majority of rural farming households in India has been very poor in terms of proportion of borrowing households in the total agricultural households. In the present paper, situation of rural agricultural credit of the farmer households has been explored based on the primary survey conducted in the saline zone of the district of South 24 Pgs in the state of West Bengal in India. The findings from the primary survey reveal that many farmer households have no access to formal credit and still depend very much on informal sources of credit. The results of the analysis suggest that some of the factors affecting the credit amount taken by the surveyed households are access to irrigation, Kisan Credit Card, availability of different types of credit, number of dependent members, food security status, average rate of interest charged by different sources for the households.

Keywords: *Rural Credit, Agriculture, Irrigation, Saline Zone, India*

1. Introduction

Agriculture is a dominant sector of our economy and agricultural credit plays an indirect but instrumental role in increasing farm productivity as the timeliness in application of these inputs largely depends on timely and adequate availability of credit. Credit in the hands of poor farmers enables them to reap the economies of scale and discover new and better products. There are evidences to show that access to credit is positively correlated with the decline in rural poverty and increase in secondary and tertiary output (Burgess and Pande, 2003). Availability and access to adequate, timely and low cost credit from institutional sources is of great importance especially to small and marginal farmers. Agricultural credit is disbursed through multi-agency network consisting of Commercial Banks (CBs), Regional Rural Banks (RRBs) and Cooperatives. Various initiatives in India have been taken to improve the flow of agricultural credit like farm credit package like Interest subvention to farmers, Collateral free loans, Kisan Credit Card Scheme, Agriculture Debt Waiver and Debt Relief Scheme, (ADWDRS) etc. However, it has been pointed that access to credit for vast majority of rural households in India has been very poor in terms of proportion of borrowing households in the total, share of institutional sources in credit supply, extent of coverage of credit needs and so on. It is especially so for marginal and small farmers and weaker sections including women (Satyasai and Premi 2014).

According to Karmakar (2008) the post-nationalization banking progress in 1969 continued until the end of the 1980s, received adequate attention due to the positive role played by

banks in accelerating the process of development in India. Orebiyi et al (2011) designed their study to investigate the demand for institutional credit among small-scale farmers in Imo State in Nigeria and they recommended that in order to raise the level of farmers' income and their standard of living; there is need for credit demand and utilization for farm production. Umdor (2008) shows that high income households borrow more from formal sources and households with lower income depend more on informal sources of credit. The findings of the study of Laha et al (2011) have brought about some insightful policy implications to create an enabling environment for increasing agricultural productivity by modifying and facilitating appropriate rural institutions, namely, rural credit and tenurial contracts. Abankwah and Awunyo-Vitor (2012) examine credit demand by maize farmers and analyse factors influencing their use of informal and formal credits in Ashanti and Brong Ahafo Regions of Ghana during May-July 2010 and the result of the bivariate probit model suggests that formal and informal credits complement each other to provide credit needs of farmers in maize production. According to Satyasai et al (2014), the lower proportion of borrowing operational holding in rainfed districts coupled with the inability of the farmers there to offer collateral highlight the need for different institutional arrangements in these regions. Perhaps, SHG bank linkage programme and programmes to build producer organizations need special drive to bring financial inclusion and thereby inclusive growth. Joint Liability groups (JLGs) can be the other intervention to bring tenants and other excluded sections into institutional fold. Satyasai (2012) has empirically examined the relative access of different categories of farm households to formal credit and its impact on fertilizer-use and the study has brought out that inequality in the distribution of number of loans vis-à-vis operational holdings have increased over time. Akudugu (2012) estimates the determinants of credit demand by farmers and supply by Rural Banks in the Upper East Region of Ghana and it was found that age of farmers, gender and political affiliations among others are the main determinants of credit demand by farmers. Using the Uganda household surveys Paul (2008) argued that skills and vocational training are needed to enhance production in appropriate use of credit. Tang et al (2010) based on their study in China found that the credit demand is significantly affected by household's production capacity and Transaction costs. The study by Olomola et al (2014) in Nigeria reveal that that there is a higher probability that farmers will be rejected than that they will be given a loan amount lower than what was requested. Jude et al (2011) examined the determinants of credit demand and supply in informal credit markets among food crop farmers in Akwa Ibom State of Nigeria and they suggested that steps for reducing the high interest rates charged by informal credit suppliers should be taken. Calum (2010) empirically estimates individual household credit demand elasticities based on 897 farm households surveyed in Shaanxi and Gansu provinces in China in October 2009 and found some interesting demographic and cultural indicators of loan demand. Baffoe et al (2014) found in their study in Ghana that access to credit helps the household to diversify the livelihood more and diversification further, allows such to have access to more credit. According to Gashaw et al (2015), financial cooperatives and microfinance institutions (MFIs) are the two major sources of rural finance in Ethiopia and the results of their study suggest that access to institutional finance has significant positive impacts on both the adoption and extent of technology use.

The district of South 24 Pgs in the state of West Bengal in India has been selected for primary survey for the present study (Jana 2016, Jana et al 2018). The major objectives of the study are to find agricultural credit situations of farmer households, sources of credit, credit demand and credit received, formal credit access, rate of interest charged for different types of credit, Kisan Credit Card (KCC) and determinants of the agricultural credit taken by households.

2. Study Area and Sampling

Study area of the present study falls in the saline zone in the district of South 24 Pgs in the state of West Bengal where surface irrigation like irrigation from water bodies like tanks is the major source of irrigation. The district is backward in agricultural development as well as economic development with a cropping intensity being much lower than the state average and the poverty ratio in the district being higher than state average. The study sites are located in six blocks in the district of South 24 Pgs. The blocks where the selected schemes have been implemented are: Kakdwip, Patharpratima, Sagar, Kulpi, Bishnupur-1, Mandir bazar. The primary survey for the present study was carried out in 2016. In Table 1, the locations of the selected villages for our study have been presented. In total 440 households have been selected of 240 households have access to irrigation facilities from water bodies (tanks and *khals)* and this group is called treated group. Untreated group consists of 200 agricultural households having no access to irrigation facilities from water bodies.

Table 1: Household Selected by Blocks in the South 24 Pgs, West Bengal

Blocks Selected	Number of *Gram Panchayats*[a]	Number of Villages	Households with Irrigation (Treated)	Households without Irrigation (Untreated)
Sagar	5	5	80	60
Kakdwip	2	3	60	80
Patharpratima	3	3	40	40
Kulpi	2	2	20	20
Bishnupur-I	1	2	20	0
Mandirbazar	1	2	20	0
Total Sample	15	17	240	200

Source: Primary Survey

3. Agricultural Credit Situations of Farmer Households under Survey

Credit is an important component of a farmer. It is provides a smother flow of money in times when there are constrictions of cash flows that would otherwise cause disruptions in production and consumption.

3.1 Borrowing Status of Surveyed Farmers

It is found from Table 2 that 70 % of the households in the treated area and 68.5% of the households in the non-treated have borrowed for different purposes. Table 2 also indicates that 58.3% of the households in the treated group and 53% of the households in the non-treated group borrowed from different sources for agricultural activities. It is also observed that 30% of the household in the treated area and 31.5% households in the non-treated area have not access to credit.

Table 2: Number of Borrowers (Purpose-Wise) and Non-Borrowers

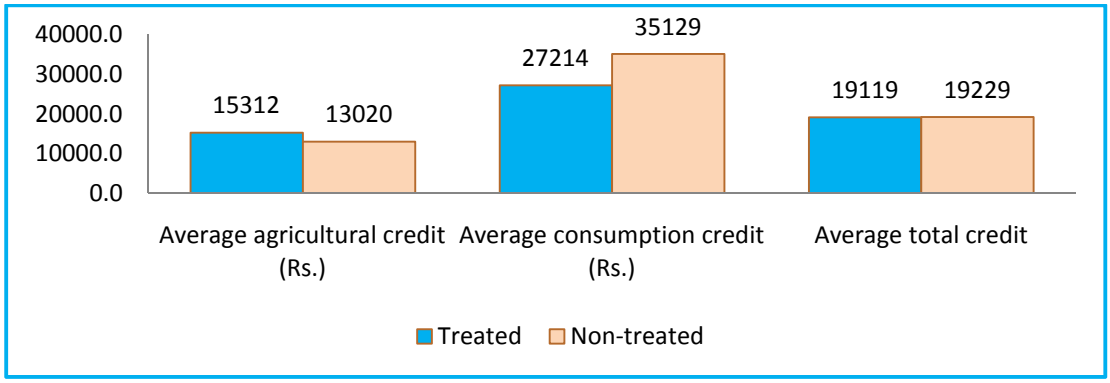
	Items	No. of Households		Percentage of Households	
		Treated	Non-Treated	Treated	Non-Treated
1	For Agriculture	140	106	58.3	53.0
2	For consumption	8	16	3.3	8.0
3	Agriculture & Consumption	20	15	8.3	7.5
A(1+2+3)	Borrower Total	168	137	70	68.5
B	Non-Borrower Total	72	63	30.0	31.5
Total		240	200	100	100

Sources: Primary Survey

3.2 Agricultural and Consumption Credit

Average agricultural credit and average consumption credit per household are presented in the Fig. 1. Though average agricultural credit is higher for treated group compared to non-treated group, it is found that average consumption credit is lower for the treated group. The average agricultural credit in treated group is Rs. 15,312/- and that for non-treated group is Rs. 13,020/- . Average consumption credit of the treated group is Rs. 27,214/- and that for non-treated group is Rs. 35,129/-. The average consumption credit is much higher than the agricultural credit for both the groups. For the whole sample under survey, average credit of the treated group is Rs. 19,119/- and that for non-treated group is Rs. 19,229/-.

Fig.1: Average Amount of Agricultural and Consumption Credit (Rs.)



Sources: Primary Survey

3.3 Reasons for Non-Borrowing

In the sample of 440 households, it is found that 135 households have not borrowed from any source. Table 3 presents the reasons of the not borrowing. Most important reason for not borrowing was found as interest rate of loan too high for both the groups with 30.6% households in the treated and 27% households in the non-treated group. Other important reasons as stated by the households are lack of collateral, fear that they might not be able to repay and not repaying the previous loan.

Table 3: Important Reasons for Not Borrowing by Farmers

Sl. No.	Items	No. of Households		Percentage of Households	
		Treated	Non-Treated	Treated	Non-Treated
1	Never had a need for loan	7	8	9.7	12.7
2	Application was rejected	4	6	5.6	9.5
3	Lack of Collateral	9	10	12.5	15.9
4	Interest rate to high	19	17	30.6	27.0
5	Had not repaid the previous loan	11	6	15.3	7.9
6	Not aware of any credit institution	7	6	9.7	11.1
7	Fear that might not be able to repay	15	10	16.7	15.9
Total		72	63	100.0	100.0

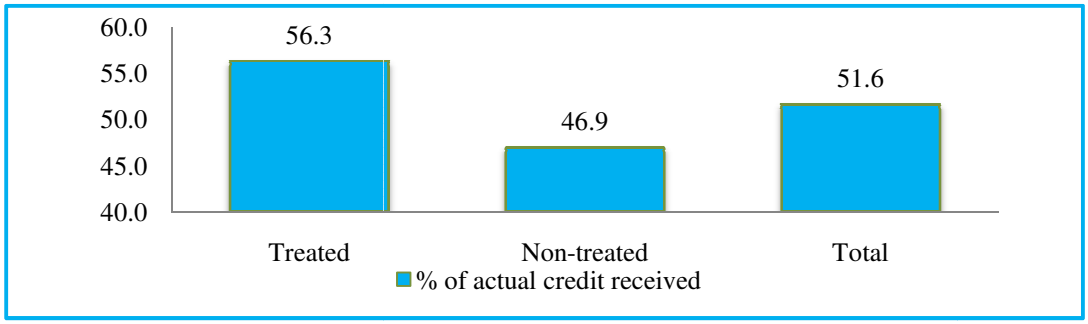
Sources: Primary Survey

3.4 Credit Demand and Credit Received from Formal Credit Sources

It has been revealed form the primary survey (Fig. 2) all credit demands by households were not met from formal sources. It is observed that 56.3 % of the credit demand was received by

the treated household and it was 46.9 % for the non-treated household. On average 51.6 % amount was received to total credit demand.

Fig. 2: Percentage of Credit Received to Total Credit Demand (Amount)



Source: Primary survey

3.5 Sources of Credit

Table 4 presents type wise (formal or informal) access to credit of the treated and non-treated groups. The formal source of credit is 61.3% in treated group and 56.2% in non-treated group. The informal source of credit is 32.1% for treated group and 38% respectively for non-treated group. It is found that 6.5% households in the treated group and 5.8% households in the non-treated group accessed credit both formal and informal sources.

Table 4: Number and Percentage of Households by Sources of Credit

Items	Number of Households		Percentage of Households	
	Treated	Non-Treated	Treated	Non-Treated
Formal credit	103	77	61.3	56.2
Informal credit	54	52	32.1	38.0
Formal & Informal	11	8	6.5	5.8
Total	168	137	100.0	100.0

Sources: Primary Survey

3.6 Types of credits taken

Table 5 presents percentages of farmer households under survey by types of banks and loans i.e. short term (below 1 yr), medium term (1yr- 3 yrs) and long term (above 3 yrs). In the treated group, the percentages of households using different sources of credit are as follows: Commercial Bank: 33.5%, Regional Rural Bank (RRB): 12.8%, Co-Operative – 10.6%, Non Banking Financial Corporation (NBFCs): 6.7% and informal source: 36.3%. In the non-treated group, the percentages of households using different sources of credit are as follows: Commercial Bank: 27.6%, Regional Rural Bank (RRB): 9.7%, Co-Operative – 14.5%, Non Banking Financial Corporation (NBFCs): 6.9% and informal source: 41.4%. It is also seen from Table 5 that the percentage of short-term loan is higher in the treated group (74.9%) compared to non-treated group (55.9%). The major portion of short-term loan is found taken from informal sources for both groups.

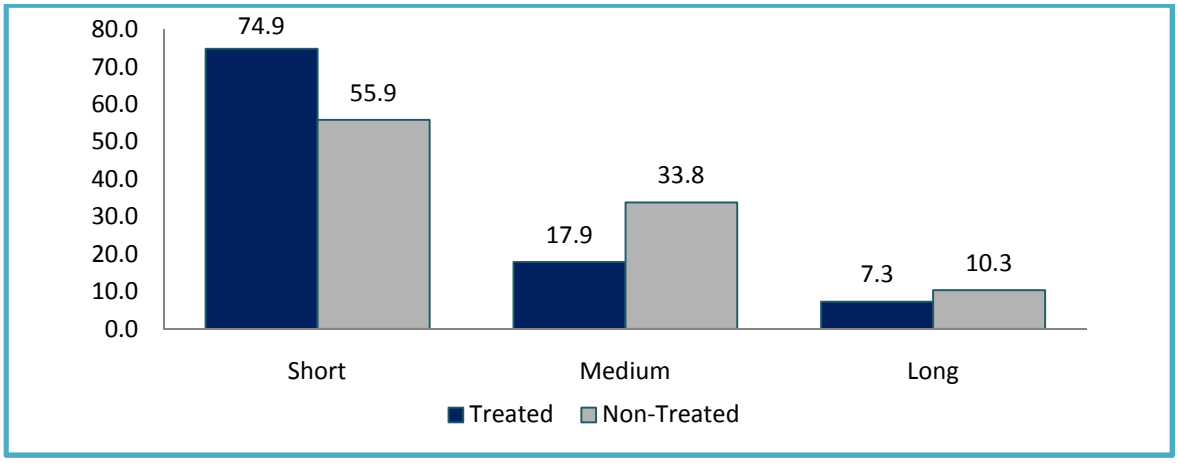
Table 5: Percentage of Households Taking Loan by Bank Type and Time Period

Sl. No.	Items	Treated				Non-Treated			
		Short Term	Medium Term	Long Term	Total	Short Term	Medium Term	Long Term	Total
1	Commercial Bank	21.2	7.8	4.5	33.5	15.2	8.3	4.1	27.6
2	RRB	11.7	1.1	0.0	12.8	6.9	2.1	0.7	9.7
3	Co-Operative Bank	8.4	2.2	0.0	10.6	10.3	4.1	0.0	14.5
4	NBFC	6.7	0.0	0.0	6.7	6.9	0.0	0.0	6.9
5	Informal	26.8	6.7	2.8	36.3	16.6	19.3	5.5	41.4
6	Total	74.9	17.9	7.3	100.0	55.9	33.8	10.3	100.0

Source: Primary Survey

Fig. 3 shows types of credit taken by time period. As is revealed from the fig. 3, 74.9% households in the treated group and 55.9% households in the non-treated group were taking short term. Medium term credits were taken by 17.9% households in treated group, 33.8 % households in non-treated group. Long time period credit was taken by 7.3 % households in treated group and 10.3 % households in non-treated group.

Fig 3: Credit Taken (% of Households) by Time Period

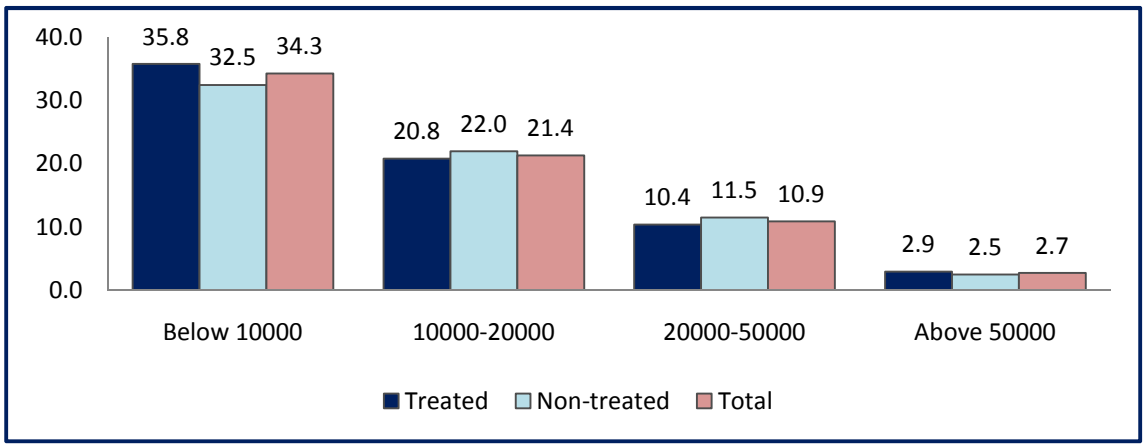


Source: Primary Survey

3.7 Credit Amount

The distribution of households by different ranges of credit amount taken is shown the Fig. 4. 35.8% households in treated group and 32.5% households in the non-treated group accessed credit below Rs. 10,000/-. It is seen that that 20.8% households in treated group and 22% in non-treated group and overall 21.4% households fall in the group of Rs. 10,000 – Rs. 20,000. 10.4% households in treated group and 11.5% in non-treated group and overall 10.9% households fall in the group of Rs. 20,000 – Rs. 50,000. Above 50 thousand amount of credit has been accessed by 2.9% households in treated group and 2.5% households in non-treated group with overall being 2.7% households.

Fig.4: Distribution of Households by Credit Amount (Rs.) in Percentage



Sources: Primary Survey

3.8 Access to Formal Credit

The formal credit sources from which the loans are found to be taken by the households are found as Commercial Bank, Regional Rural Bank (RRB), Co-operative Bank, Non-Banking Finance Corporation (NBFC). Table 6 presents the sources of formal credit for treated and non-treated group. The percentage of households using different formal sources of credit in the treated group are: Commercial Bank - 52.6 %, Regional Rural Bank - 20.2 %, Co-operative Bank- 16.7%, Non-Banking Finance Corporation- 10.5%. The percentage of households using different sources of credit in the non-treated group are: Commercial Bank- 47.1 %, Regional Rural Bank – 16.5 %, Co-operative Bank- 24.7%, Non-Banking Finance Corporation- 11.8%.

Table 6: Source wise Number of Households Accessing Formal Credit

		Number of Households		Percentage of Households	
Sl. No.		Treated	Non-Treated	Treated	Non-Treated
1	Commercial Bank	60	40	52.6	47.1
2	Regional Rural Bank (RRB)	23	14	20.2	16.5
3	Co-operative Bank	19	21	16.7	24.7
4	Non-Banking Finance Corporation (NBFC)	12	10	10.5	11.8
5	Total	114	85	100.0	100.0

Source: Primary survey

Table 7 shows source-wise amount and percentages of credit taken by the households. The shares of amount from different sources of credit in the treated group are as follows: Commercial Bank- 40.7%, Regional Rural Bank (RRB) -11.6%, Co-operative Bank - 7.9%, Non-Banking Finance Corporation (NBFC) - 5.4% and Informal (Mahajan & Relatives) - 34.4%. The shares of amount of different sources of credit in the non-treated group are as follows: Commercial Bank -37.3%, Regional Rural Bank (RRB) -7.2%, Co-operative Bank- 13.3%, Non-Banking Finance Corporation -3.4% and Informal (Mahajan & Relatives) – 38.3%.

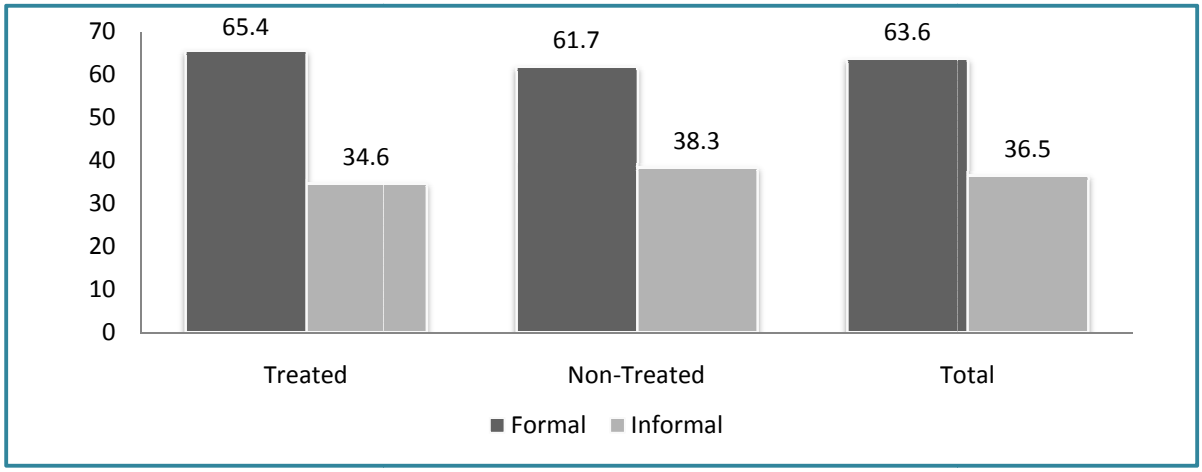
Table 7: Average Amount of Credit (Rs.) Taken by Different Sources

Sl. No.		Treated (N=240)	Treated Percentage	Non-Treated (N=200)	Non-Treated Percentage
1	Commercial Bank	5445.8	40.7	4917.5	37.3
2	RRB	1545.8	11.6	950.0	7.2
3	Co-operative	1054.2	7.9	1755.0	13.3
4	NBFC	729.2	5.4	450.0	3.4
5	Informal (Mahajan & Relatives)	4608.3	34.4	5050.0	38.3
6	Average Total	13383.3	100.0	13172.5	100.0

Source: Primary survey

Fig. 5 shows the percentage of formal credit and informal credit of total credit amount in treated and non-treated group. The share of formal credit in the total credit is 65.4% in the treated group and that for the non-treated group it is 61.7%. . The share of informal credit in the total credit is 34.6% in the treated group and that for the non-treated group it is 38.3%.

Fig.5: Percentage of Formal and Informal Credit Amount to Total Credit



Sources: Primary Survey

3.9 Informal Credit

There are two major intermediaries operating in the informal credit market segment as is evident in Table 8. They are private moneylenders, friend and relatives. Moneylenders are the most important source of informal credit, with 76.9% households in the treated group and 91.7% of the household's non-treated households taking informal loan from moneylenders. Table 8 also shows that relatives and friends are another source of informal credit. Relatives and friends offer credit to households at negotiable rates depending on social relationships and reputation.

Table 8: Number of Households Accessing Informal Credit

Items	Frequency		Percentage	
	Treated	Non-Treated	Treated	Non-Treated
Money lenders	50	55	76.9	91.7
Friends and relatives	15	5	23.1	8.3
Total	65	60	100.0	100.0

Source: Primary Survey

3.10 Rate of Interest

The rate of interest differs according to the sources of credit. Table 9 presents the rate of interest charged by different sources. The annual rates of interest charged by different sources in the survey year are follows: Commercial Bank (for agriculture and consumption) – 10.5%, Commercial Bank (for education) – 7%, Regional Rural Bank – 7%, Co-Operative Bank-7%, NBFC– 9.7%, Non-institutional – 24-36%.

Table 9: Annual Rate of Interest for Credit Taken from Different Sources

Items	Rate of interest per annum
Commercial Bank (Agricultural & consumption)	10.5
Commercial Bank (Educational)	7
Regional Rural Bank (RRB)	7
Co-Operative Bank	7
Non-Banking Finance Corporation (NBFC)	9.7
Non-institutional credit (Mahajan)	24-36

Source: Primary Survey

3.11 Kisan Credit Card (KCC)

The status of Kisan Credit Card (KCC) holding among the farmig households at the time of survey is presented in the Table 10.The table reveals that 7.1% of households in the treated group, 5.5% households in the non-treated group and 6.4% of the households for the total sample hold KCCS. The situation clearly depicts that many farmer households have no KCC and they are unable to get access to loan with low interest rate.

Table 10: Number of Households having KCCs

	Number of Households	Percentage of Households
Treated (N=240)	17	7.1
Non Treated (N=200)	11	5.5
Total	28	6.4

Source: Primary Survey

4. Determinants of the Agricultural Credit Taken by Households

To find the determinants of the amount of agricultural credit taken from different sources by the agricultural households under survey, ordinary least square multiple regression technique have been used. The model is given as follows:

$TAC = \alpha + \beta_1 IRRACC + \beta_2 KCC + \beta_3 FOODS + \beta_4 FCRE + \beta_5 IFCRE + \beta_6 FIFCRE + \beta_7 HLEXP + \beta_8 DISTK + \beta_9 REGION + \beta_{10} ARATINT + \beta_{11} DEPENCY + \beta_{12} HSCLING + u$

Where,
TAC = Total amount of agricultural credit taken by households (Rs.)
IRRACC= Irrigation access (1=Irrigator, 0=Non-irrigator)
KCC= Kisan Credit Card (KCC card holder = 1, Otherwise = 0)
FOODS = Food security (if household food secured, FOODS =1, Otherwise = 0)
FCRE= Formal credit (=1, if the household access to formal credit; Otherwise = 0)
IFCRE= Informal credit (= , if the household access to informal credit, Otherwise = 0)
FIFCRE= Formal and Informal both(Y = 1)
HLEXP= Household hired labour expenses (Rs.)
DISTK= Distance from Kolkata (Below 30km =1)
REGION= Regional dummy (If the farming land falls in Saline zone=1; otherwise =0)
ARATEINT= Average rate of interest from different sources
DEPENCY= No. of dependent household members (Up to 18, above 65 yrs)
HSCLING= Education of the head of the household (No. of yrs)
u=Error term

The above model is estimated using primary survey data of 440 households. The regression result is reported in Table 11. The results reveal that positive significant variable affecting the credit amount taken by the households are: Households' Irrigation access (IRRACC), having Kisan Credit Card (KCC), accessing Formal credit (FCRE), accessing Informal credit (IFCRE), accessing both Formal and informal (FIFCRE), households' expenses on hired labour (HLEXP), no. of dependent members (DEPENCY). The negative significant variables affecting the credit amount taken by the households are - distance from Kolkata (DISTK) indicating availability of alternative works, food security situation of the hoseholds (FOODS) and average rate of interest charged by different sources (ARATEINT).
The overall model with F-value 32.70 is significant at 1% level. The adjusted R^2 is 0.46.

Table 11: Determinants of the Amount of the Agricultural Credit Demand

Variable Name	Variable Code	B	sig.
Constant	CONSTANT	-724.96	0.66
Irrigation access (1=Irrigator, 0=Non-irrigator)	IRRACC	2725*	0.00
KCC(Dummy, Yes=1,No=0)	KCC	4597*	0.00
Food security(Dummy, Yes=1,No=0)	FOODS	-1764**	0.03
Formal credit (Dummy, Yes=1,No=0)	FCRE	12574*	0.00
Informal credit (Dummy, Yes=1,No=0)	IFCRE	18921*	0.00
Formal & Informal (Dummy, Yes=1,No=0)	FIFCRE	26015*	0.00
Household hired labour expenses	HLEXP	0.32**	0.02
Distance from Kolkata (below 30km=1)	DISTK	-4778*	0.01
Regional dummy (Saline=1, Others=0)	REGION	-2337***	0.06
Average rate of interest from different source	ARATEINT	-257.34**	0.05
No. of Dependency (upto 18, above 65 yrs)	DEPENCY	567.78**	0.05
Education of the Head (yrs)	HSCLING	155.15***	0.10
F – Value			32.70
Sig.			0.00
Adj. R^2			0.46

Source: Own estimation based on primary survey

Note: * significant at 1% level, ** significant at 5% level, *** significant at 10% level.

5. Conclusion

The present paper depicts the credit situation of farmer households in the study area. It is evident from the primary survey that many of the households have no access to credit. In the sample of 440 households, it is seen that 135 households have not borrowed from any source. The shares of formal and informal credit in the total amount of credit taken by the households are found respectively as 63.6% and 36.4%. The rural households under our survey are found still depending very much on informal sources for their credit needs with a large number of the households borrowing from different informal sources. The average agricultural credit taken by the households is found greater for the treated group than that for non-treated group. Moneylenders are the most important source of informal credit. The annual rate of interest charged by moneylenders varies between 24% and 36%. Access to KCCs are to improved on an urgent basis as it is revealed from the primary survey that only 7.1% of households in the treated group, 5.5% households in the non-treated group hold KCCS. There is significant impact of irrigation facility on amount of credit taken by households. The findings of the paper suggest that there is huge demand of agricultural credit in the study area and access to formal sources of credit by the farmer households need to be enhanced.

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