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Determinants of Borrowing Behaviour of Farmers – A Comparative Study of Commercial and Co-operative Banks§

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Abstract

The preference of farmers between commercial and co-operative banks for borrowing has been studied with the objectives of finding (a) distribution of institutional credit across various categories of farmers and to assess the coverage and quantum of credit, and (b) socio-economic factors which affect the borrowing behaviour of farmers towards commercial and co-operative banks. In the study, based on 100 farmer borrowers, the discriminant analysis has been carried out. The study has offered some suggestions also for a better access of farmers to institutional credit.

Introduction

The development of agriculture depends on the adoption of new technologies and the adoption of new technology demands agricultural credit (Aroutselvam and Zeaudeen, 2000). The agricultural credit structure in the developing countries is characterized by dualism, that is, the co-existence of institutional (formal) and non-institutional (informal) credit agencies (Singh *et al*., 2001). The Reserve Bank has been very active in reinvigorating the co-operative credit movement in the country through a variety of initiatives (Mohan, 2006). With the acceptance of the recommendations of All India Rural Credit Review Committee (1954), efforts were directed towards the development of co-operatives. Meanwhile the review undertaken by the All India Rural Credit Review Committee (1969) suggested that the efforts of the co-operatives had to be supplemented along with commercial bank lendings. The adoption of multi-agency approach for the provision of credit to the rural areas with a larger role of the commercial banks so that the desired level of progress in agricultural production could be achieved (Agarwal *et al*., 1997).

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After the nationalization of commercial banks in 1969, they were directed to lend more to agriculture. Several policy measures, such as introduction of Lead Bank Scheme (1969), establishment of Regional Rural Banks (1975), Service Area Approach (1989), Micro Finance Scheme (1992) and Kisan Credit Card System (1998-1999) were initiated due to which institutional credit comprising commercial bank credit and co-operative credit increased from 7.3 per cent in 1951 to 60 per cent in 1996. Credit provided by commercial, co-operative and regional rural banks reached the level of Rs 87,000 crore during 2003-2004. The share of commercial banks increased from 50 per cent in 1998-1999 to 60 per cent in 2003-2004, but the share of co-operative banks declined from 43 per cent to 31 per cent in the same period, whereas the Regional Rural Banks were the marginal players with 7 – 9 per cent market share in agricultural credit (GoI, 2004).

The co-operative sector suffers from non-viability of primary units, overdues, lack of professionalism and high administrative and operational costs. Co-operative structure in many states is at the verge of collapse. High incidence of overdues has made many of these co-operatives week and ineffective recycling of funds suffered considerably (Priya, 2006).

Under this background, many previous studies (Singh *et al*., 1991; Singh and Mruthyunjaya, 1992;

Pandey *et al*., 1983) have attempted to analyse the distribution of credit. However, these did not compare the borrowing behaviour of the farmers towards the commercial and the co-operative banks. Moreover, the credit policy of the commercial and co-operative banks has some variations. The borrowing preference of farmers was also expected to differ towards the commercial and co-operative banks for borrowing. Therefore, the present study has been attempted to compare the choice of farmers between commercial and co-operative banks for taking loan and to find the plausible reasons behind that behaviour. The specific objectives of the study were:

- To study the distribution of institutional credit across different categories of farmers and to assess the coverage and quantum of credit, and
- To identify the socio-economic factors which affect the borrowing behaviour of farmers between commercial and co-operative banks.

Methodology

The data for the study were collected from primary sources. A multi-stage random sampling procedure was followed for selecting the sample of borrower farmers. In the first stage, Thondamuthur block in the Coimbatore district was selected, as it was one of the high credit-intensive blocks and had access to both commercial and co-operative banks. In the next stage, the banks located in the block, namely State Bank of India, Indian Overseas Bank, Primary Agricultural Co-operative Societies and Land Development Banks were selected. From the borrowers list provided by these banks, one hundred borrower farmers during 2003-2004 were selected randomly. The distribution of the selected borrower farmers is given in Table 1.

The survey method was used to collect information from the borrower farmers. Interview schedules were used to collect information on the socio-economic profile of farmers, amount borrowed, amount repaid, overdues, farm and family expenses, etc. for the period 2002-2003 to 2003-2004 using pre-tested questionnaire. The discriminant analysis was used as the econometric tool, as suggested by Muralidharan (1977).

Discriminant Analysis to Identify Borrowing Behaviour

To identify the socio-economic factors, which affected the borrowings from commercial (Group I) and co-operative (Group II) banks, the discriminant analysis was carried out by taking into account nine socio-economic characteristics: education, landholding size, crop loan amount, family size, non-farm income, household expenditure per annum, utilization of credit, cost of production, and family labour, using a linear multiple discriminant function of the form :

$$Z = L_1X_1 + L_2X_2 + L_3X_3 + L_4X_4 + L_5X_5 + L_6X_6 + L_7X_7 + L_8X_8 + L_9X_9$$

where, Z = Total discriminant score for commercial and co-operative bank borrowers, X_1 = Educational level (0-illiterate, 1-primary, 2-secondary, 3-higher secondary, 4-collegiate), X_2 = Landholding size (ha), X_3 = Crop loan amount (Rs), X_4 = Family size (No.), X_5 = Non-farm income (Rs), X_6 = Household expenditure per annum (Rs), X_7 = Utilisation of credit (Rs), X_8 = Cost of production (Rs) and X_9 = Family labour (No.).

Results and Discussion

Distribution of Credit

The distribution of agricultural credit was analysed as follows:

Farmers' Category-wise Distribution of Agricultural Credit

The distribution of agricultural credit to farmers in the selected block by the commercial and co-operative

Table 1. Distribution of sample borrower farmers

Sl No.	Farmers' category	Commercial banks		Co-operative banks		Total	
		No.	Percentage	No.	Percentage	No.	Percentage
1	Marginal	4	28.6	10	71.4	14	14
2	Small	12	33.3	24	66.7	36	36
3	Medium	17	58.6	12	41.4	29	29
4	Large	12	57.1	9	42.9	21	21
	Total	45		55		100	100

Table 2. Farmers' category-wise distribution of crop loan from commercial and co-operation banks

Farmers' category	Institutional source of credit				Number of accounts	Total (in lakh Rs)
	Commercial banks		Co-operative banks			
	Number of accounts	Amount (in lakh Rs)	Number of accounts	Amount (in lakh Rs)		
Marginal	4	1.25	10	3.52	14	4.77
Small	12	3.46	24	7.94	36	11.42
Medium	17	7.02	12	5.06	29	12.08
Large	12	5.30	9	4.50	21	9.80
Total	45	17.03	55	21.02	100	38.05

Table 3. Farmers' category-wise distribution of investment loan from commercial and co-operative banks

Farmers' category	Institutional Source of Credit				Total	
	Commercial banks		Co-operative banks			
	Number of accounts	Amount (in lakh Rs)	Number of accounts	Amount (in lakh Rs)	Number of accounts	Amount (in lakh Rs)
Marginal	-	-	4	0.80 (19.66)	4	80,000 (8.82)
Small	2	4.50 (90.00)	5	1.70 (41.77)	7	6,20,000 (68.36)
Medium	-	-	5	1,17,000 (28.74)	5	1,17,000 (12.90)
Large	1	0.50 (10.00)	1	40,000 (9.83)	2	90,000 (9.92)
Total	3	5 (100.00)	15	4,07,000 (100.00)	18	9,07,000 (100.00)

Note: Figures within the parentheses indicate percentage to column's total.

banks has been depicted in terms of crop loan in Table 2 and in terms of investment loan in Table 3.

All the 100 farmer respondents were the borrowers of crop loan, whereas 18 farmers borrowed both crop loan and investment loan. The total crop loan availed by the borrowers amounted to Rs 17.03 lakh from commercial banks and 21.01 lakh from co-operative banks. In crop loan, the number of accounts was highest for small farmers, followed by medium farmers; however, the total amount sanctioned was maximum for the medium farmers, followed by small farmers. It may be due to the fact that availing of the loan depends on the area under cultivation.

Among 45 crop loan borrowers of commercial banks, the number of accounts and loaned amount were both higher for the medium category of farmers. Such farmers were large in number and they wanted to borrow more from commercial banks. Out of 55, crop loan borrowers of co-operative banks, the small farmers availed higher amount of loan. It was also noted that the amount of crop loan sanctioned by the co-operative banks was higher than by the commercial banks. It showed better access of farmers to banks of Primary Agricultural Co-operative Societies.

The investment loan is given by the commercial and co-operative (land development banks) banks to improve the farm infrastructural facilities. Amongst 18 farmers who borrowed investment loan, 3 borrowed from commercial banks and 15 from co-operative banks, depicting better access to co-operative banks (Table 3). Among different categories of borrowers of invest loan, small farmers were the major beneficiaries.

Crop-wise Distribution of Crop Loan

The crop loan is a short-term loan covering a maximum period of one year. Its crop-wise distribution among various categories of farmers by commercial and co-operative banks has been shown in Table 4.

Table 4. Farmers' category-wise distribution of crop loan for different crops by (a) commercial and (b) cooperative banks

Crop	Category of farmers								Total	
	Marginal		Small		Medium		Large			
	No. of accounts	Amount (Rs)	No. of accounts	Amount (Rs)	No. of accounts	Amount (Rs)	No. of accounts	Amount (Rs)	No. of accounts	Amount (Rs)
A. Commercial banks										
Banana	-	-	-	-	3	71,000 (10.1)	1	75,000 (14.2)	4	1,46,000 (8.6)
Coconut	3	1,05,000 (84.0)	4	1,50,000 (43.3)	5	2,66,000 (37.9)	1	2,00,000 (37.7)	13	7,21,000 (42.3)
Cotton	-	-	2	25,000 (7.2)	-	-	1	15,000 (2.8)	3	40,000 (2.3)
Groundnet	-	-	-	-	-	-	1	20,000 (3.8)	1	20,000 (1.2)
Paddy	-	-	1	16,000 (4.6)	-	-	2	40,000 (7.5)	3	56,000 (3.3)
Sugarcane	-	-	-	-	1	30,000 (4.3)	-	-	1	30,000 (1.8)
Turmeric	1	20,000 (16.0)	6	1,55,000 (44.8)	11	3,35,000 (47.7)	6	1,80,000 (34.0)	24	6,90,000 (40.5)
Total	4	1,25,000 (100.0)	13	3,46,000 (100.0)	20	7,02,000 (100.0)	12	5,30,000 (100.0)	49	17,03,000 (100.0)
B. Cooperative banks										
Avarai	-	-	1	10,000 (1.26)	-	-	-	-	1	10,000 (0.48)
Banana	-	-	-	-	2	51,000 (10.08)	-	-	2	51,000 (2.43)
Coconut	2	1,10,000 (31.25)	9	4,25,000 (53.54)	2	1,30,000 (25.69)	-	-	13	6,65,000 (31.64)
Cotton	2	19,000 (5.40)	1	21,000 (2.65)	-	-	-	-	3	40,000 (1.90)
Grapes	1	1,00,000 (28.41)	-	-	2	1,20,000 (23.72)	-	-	3	2,20,000 (10.47)
Onion	1	10,000 (2.84)	1	8,000 (1.01)	-	-	1	40,000 (8.89)	3	58,000 (2.76)
Paddy	1	13,000 (3.69)	1	10,800 (1.36)	-	-	-	-	2	23,800 (1.13)
Cholam	1	10,000 (2.84)	3	1,37,000 (17.26)	2	25,000 (4.94)	3	80,000 (17.78)	9	2,52,000 (11.99)
Tomato	2	30,000 (8.52)	3	49,000 (6.17)	-	-	-	-	5	79,000 (3.76)
Turmeric	2	60,000 (17.05)	8	1,33,000 (16.75)	3	1,00,000 (19.76)	5	1,30,000 (28.89)	18	4,23,000 (20.13)
Sugarcane					2	80000 (15.81)	9	2,00,000 (44.44)	3	2,80,000 (13.31)
Total	12	3,52,000 (100.0)	27	7,93,800 (100.0)	13	5,06,000 (100.0)	10	4,50,000 (100.0)	62	21,01,800 (100.0)

Note: Figures within the parentheses indicate percentages to column's total.

The analysis has revealed that both commercial and co-operative banks provided higher amount of loan for coconut and turmeric crops. It was due to the fact that the cultivation of coconut and turmeric dominates in the cropping pattern. The scale of finance fixed by the lead banks for these crops is also higher and thereby these crops could avail higher amount of loan.

Coverage and Quantum of Credit

To find the coverage and quantum of credit, distribution of loan in terms of per account, per hectare and per capita were computed for all the categories of farmers and the values have been shown in Table 5 for both crop and investment loans. A perusal of Table 5 revealed that per borrower crop loan disbursement had a positive relationship with farm size, except for small farmer category by both commercial and co-operative banks. It was because the loans were given by the banks to the farmers on the basis of scale of finance for different crops and also the size of operational landholdings.

The per hectare crop loan from commercial banks as expected, declined with the size of landholding, but from co-operative banks, not only quantum was higher, it remained almost the same with size of landholding. It indicates preference of even large and medium farmers for co-operative banks. The per capita crop loan was in the range of Rs 10,000 to Rs 15,000 from both commercial and co-operative banks. It was higher for marginal farmers from commercial banks and for medium and large farmers from co-operative banks.

The amount of investment loan per borrower distributed by the commercial bank was found to be higher for small farmers' category, inspite of their larger number. It was due to the fact that small farmers had availed the loan for the purchase of tractors for which the scale of finance was higher. On the other hand, it was higher for large farmer borrowers from the co-operative banks.

The per hectare investment loan declined as the handholding size increased for both commercial banks and co-operative banks. It indicated less need of loan for infrastructure development by larger farmers. The per capita investment loan was higher for small farmers from both commercial and co-operative banks.

Borrowing Behaviour — Discriminant Analysis

To identify the socio-economic factors which led to discrimination between commercial and co-operative banks for borrowing, discriminant analysis was carried out. The first step in this analysis was the estimation of mean and standard deviations of the included variables, and these have been shown in Table 6. A perusal of Table 6 revealed that the borrowers from commercial banks possessed bigger size of landholdings, had higher non-farm income, and more farm and household expenditure per annum, whereas the borrowers from co-operative banks had taken higher amount of loan, and possessed higher value of family labour and education.

Table 5. Distribution of crop loan and investment loan per borrower, per hectare and per capita

(in thousands Rs)

Farmers' category	Per borrower		Per hectare		Per capita	
	Commercial banks	Co-operative banks	Commercial banks	Co-operative banks	Commercial banks	Co-operative banks
			Crop loan			
Marginal	31.3	35.2	37.4	30.9	14.8	10.2
Small	28.8	33.1	23.3	25.6	10.4	10.7
Medium	41.3	42.2	22.4	30.2	10.5	12.7
Large	44.2	50.0	14.3	31.2	11.1	14.9
			Investment loan			
Marginal	-	200.0	-	247.1	-	100.0
Small	225.0	340.0	185.3	216.2	791.7	153.3
Medium	-	234.0	-	128.2	-	613.3
Large	500.0	400.0	164.7	760.3	125.0	100.0

Table 6. Mean and standard deviations of selected variables

Factors	Commercial banks		Co-operative banks	
	Mean	Standarddeviation	Mean	Standard deviation
Education (X_1)	1.4444	1.1591	1.5273	1.2301
Landholding (X_2)	3.6243	5.5616	2.2571	2.2823
Crop loan amount (X_3)	37,444.4444	29,716.0467	38,214.5455	34,601.5169
Family size (X_4)	3.6889	1.1643	3.6000	1.1155
Non-farm income (X_5)	6,111.1111	18,336.7765	4,272.7273	12,678.6559
Household expenditure per annum (X_6)	38,623.8667	27,634.5592	36,330.2545	15,159.0347
Utilization of credit (X_7)	0.2222	0.4204	0.2182	0.4168
Cost of production (X_8)	1,06,680.9111	1,40,646.7018	63,203.0909	60,996.6589
Family labour (X_9)	325.2222	1,280.2792	577.9091	1,910.6245

Table 7. Wilk's lambda (U-statistics) of selected variables

Factors	Wilk's lambda	F-ratio
Education (X_1)	0.999	0.118
Landholding (X_2)	0.973	2.761
Crop loan amount (X_3)	1.000	0.003
Family size (X_4)	0.998	0.151
Non-farm income (X_5)	0.996	0.349
Household expenditure per anum (X_6)	0.997	0.277
Utilization of credit (X_7)	1.000	0.002
Cost of production (X_8)	0.958	4.280*
Family labour (X_9)	0.994	0.575

Note: *Denotes significancy at 5 per cent level

Initially, to test the mean differences between the selected groups, Wilk's lambda (U-statistics) and its equivalent univariate F-test (one-way analysis variance) were carried out and for the selected variables, these have been shown in Table 7.

When the value of Wilk's lambda approaches one, there is no significant difference between the means of two groups and vice versa. The estimated value of Wilk's lambda approached one for all the factors, except cost of production. It showed that the borrowers of commercial and co-operative banks differed widely in relation to cost of production. The other tests used in the process of discriminant analysis were correlation between discriminating variables and canonical discriminant function and relative discriminating power of the variables.

The pooled within group correlation between the discriminating variables and canonical discriminant function has been shown in Table 8. The correlation co-efficients were ranked according to their contribution in the discriminating function. It was apparent from Table 8 that the cost of production had the highest contribution (0.752) to the function. On the other hand, the utilization of credit had the lowest contribution (0.017). It revealed that the utilization of credit did not contribute to the variation in borrowing behaviour from commercial and co-operative banks.

The relative contributions of the selected socio-economic factors to distinguish the borrowers of commercial bank from co-operatives were calculated and are given in Table 9.

The relative discriminating power of the variables was calculated based on the non-standardized co-efficients obtained from the analysis. The non-

Table 8. Correlation between discriminating variables and canonical discriminant function

Factors	Correlation co-efficient
Cost of production (X_8)	0.752
Landholding (X_2)	0.604
Family labour (X_9)	-0.276
Non-farm income (X_5)	0.215
Household expenditure per annum (X_6)	0.191
Family size (X_4)	0.141
Education (X_1)	-0.125
Crop loan amount (X_3)	-0.021
Utilization of credit (X_7)	0.017

Table 9. Relative discriminating power of variables

Factors	Unstandardized discriminant co-efficients	Relative discriminant power
Education (X_1)	-0.347722	5.384
Landholding (X_2)	0.052705	13.457
Crop loan amount (X_3)	-0.000010	0.002
Family size (X_4)	0.124661	2.069
Non-farm income (X_5)	0.000024	8.239
Household expenditure per anum (X_6)	0.000002	0.857
Utilization of credit (X_7)	0.482450	0.360
Cost of production (X_8)	0.000008	64.958
Family labour (X_9)	-0.000099	4.672

standardized co-efficients of the variables formed the discriminant equation:

$$Z = -0.668389 - 0.347722X_1 + 0.052705X_2 - 0.000010X_3 + 0.124661X_4 + 0.000024X_5 + 0.000042X_6 + 0.482450X_7 + 0.000008X_8 - 0.000099X_9$$

In the equation, positive sign was observed for landholding, family size, non-farm income, household expenditure per annum, utilization of credit and cost of production It indicated that the borrowers of commercial banks with higher landholding, family size, non-farm income, household expenditure per annum, utilization of credit and cost of production were distinguished from the borrowers of co-operative banks.

Table 9 reveals that the cost of production (64.96%) and landholding size (13.46%) were the major factors in discriminating the borrowing from commercial and co-operative banks. Similar findings were reported by Bedback (1985), who viewed that small farmers preferred co-operative banks for borrowing, maybe due to lowest acquisition cost of credit.

Conclusions

The study has revealed that number of accounts in crop loan was higher for small farmers; however, the total amount sanctioned was higher for the medium farmers. Small farmers have been the major beneficiaries of investment loan. The commercial and co-operative banks have provided higher loans for coconut and turmeric crops, maybe because the cultivation of coconut and turmeric dominates in the cropping pattern. The scale of finance fixed by the lead bank for these crops is also higher.

The per hectare crop loan for the borrowers of commercial banks has been found to decline with the size of landholding. The per hectare investment loan has been noted to decline along with the farmers category for both commercial and co-operative banks. Therefore, the per hectare investment loan sanctioned by both commercial and co-operative banks is not in proportion to the landholding size. The cost of production and the size of landholding have been identified as the major factors in discriminating the borrow from commercial and co-operative banks. It shows that those farmers borrow from the commercial banks who have bigger size of landholdings and higher cost of production.

Suggestions

1. The farmers who have borrowed from commercial banks are large farmers and marginal and small farmers are not able to borrow from these banks due to long procedure. Proper measures should be undertaken to reduce the long procedure.
2. The per hectare loan has been less for the medium and large farmers. Hence, the financial institutions should consider the size of landholding while sanctioning the loan.
3. The marginal farmers have availed comparatively less amount of investment loan. The financial institutions have neglected them due to fear of repayment. Hence, the repayment capacity of the farmers should be properly assessed, irrespective of the size of landholding. Adequate amount of investment loan should be provided to the marginal farmers.

References

Agarwal, K.P., Puhazhendri, V. and Sathyasai, K.J.S. (1997) Gearing rural credit for twenty-first century, *National Bank News Review*, **13**(3): 5-19.

Aroutselvam, C. and Zeaudeen, P. (2000) Agricultural credit – A study in Villianur block, Pondicherry region. *Financing Agriculture*, **32**(3): 17-18.

Bedbak, H. (1985) Cost of institutional finance in priority sectors – Reduction of credit acquisition cost is vital. *Indian Co-operative Review*, **25**(1): 263-281.

GoI (2004) Government of India Publications, New Delhi.

Mohan, R. (2006) Agricultural credit in India: Status, issues and future agenda. *Economic and Political Weekly*, **41**(11) : 1013-1024.

Muralidharan, M.A. (1977) An application of discriminant function in agricultural finance. *Indian Journal of Agricultural Economics*, **32**(2): 41-51.

Pandey, U.K., Sahug, K.S. and Manocha, V. (1983) Growth in co-operative credit and prediction of loans and levels of default in Hariyana. *Indian Co-operative Review*, **21**(1): 45-65.

Priya, S. (2006) Determining the borrowing behaviour of farmers in a selected area of Coimbatore District. unpublished *M.Sc. thesis*, submitted to Avinashilingam University for Women, Coimbatore.

Singh, A.K., Singh, R. and Balishter, C. (1991) Impact of bank finance on cropping pattern and income on small farms – A comparative study. *Indian Co-operative Review*, **28**(4): 344-351.

Singh, R.P., Pandey, A.L. and Singh, S.K. (2001) Rural credit and participation of credit agencies – An analysis. *Indian Co-operative Review*, **38**(4): 211-220.

Singh, S.P. and Mruthyunjaya (1992) Credit utilization and overdues on marginal and small farms in Aligarch district of Uttar Pradesh. *Agricultural Banker*, **15**(2): 27-39.