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Study on Flow of Institutional Credit and its Diversion by Dairy Farmers in Kerala

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Abstract

Institutional credits being diverted for non-productive purposes poses a significant concern in the realm of dairy farming in Kerala. Study conducted in two districts of Kerala observed that, majority of farmers fell within the range of 45 – 60 years of age and had completed at least secondary level of education. Most farmers had farming experiences varied from 11 to 20 years, constituted 40 percent in Palakkad and 58 percent in Wayanad for non-borrowers, and 54 percent in Palakkad and 44 percent in Wayanad for borrowers, respectively. Notably, borrowers in Wayanad diverted a higher percentage of credits compared to Palakkad. The average loan share in total investment was slightly higher in Wayanad (89.27%). Key factors influencing credit diversion included age, area under dairy farming, farming experience, number of family members, and monthly per capita consumption expenditure. The study emphasizes the impact of poor financial literacy and low education levels on hindering effective credit utilization among farmers.

Keywords: Institutional credit, Ratio of sanctioned loan, Credit diversion, Credit default

JEL Classification: D14, E51, G21, Q12, O16

Introduction

Credit is essential for establishing sustainable and profitable farming systems along with other inputs (Chen *et al.,* 2021). Access to timely and low- cost credit from institutional sources is of greater importance to the farmers (Lian and Wen, 2019). India has pursued a supply lead approach in distribution of institutional credit with the motto of enhancing institutional agricultural credit flow to all the regions and sectors of the nation (Guleria *et al.,* 2022). Replacement of moneylenders, relieve farmers from indebtedness, achieving higher levels of agricultural output and investment were the outcome of this approach. People borrow money from institutional and non-institutional agencies to meet their short and long-term credit demands (Naranjo *et al*., 2019). An efficient rural credit system is highly desirable in order to make agriculture a sustainable source of income for farmers (Sinha *et al.*, 2014). Farmers need money for cultivating crops, adopting new technologies, purchasing technological inputs and investing on farm productive assets as well as for other personal expenditures (Sinha, 2022). Animal husbandry, especially dairy farming is an integral part of India's agricultural sector (Sharma, 2023). Livestock sector plays an important role in the national economy and the socioeconomic development of the country by contributing significantly not only through value added in allied sectors, but also by providing employment and incomes to millions of people in both urban and rural areas (Shelke *et al.,* 2016). Access to timely and low cost credit from institutional sources provides much recipe to dairy farmers (Wu *et al.,* 2016). In our country, the states of southern India contributes to high share of institutional credit flow and have an excellent banking system with widely covered network *viz.* high levels of deposits, high credit-deposit ratio, higher percentage of functioning offices of commercial banks and high percentage of outstanding agriculture credit on comparing with the other regions (Vedamurthy *et al.,* 2014). Most of the southern states have a much more active co-operative movement and hence their share of institutional agricultural credit is likely to be even higher in future. One of the best strategies to enhance the production and productivity levels as per the growing demand is to provide adequate institutional credit support, which enables the farmers to invest in modern technologies (Sharma, 2021).

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Data Sources and Methodology

Kerala is a model state for financial inclusion where every household had access to at least one bank account. The performance of Kerala's dairy sector lags behind, even though 94 per cent of total cattle population in the state is exotic/crossbred cattle. About five lakh out of seventy lakh families in Kerala are dependent solely on livestock for their livelihood, while another five lakh depends on livestock as a subsidiary means for supporting their livelihood. The state was divided into two strata based on amount of institutional credit disbursed viz. High and Low institutional credit disbursed districts. One district was selected randomly from the stratum of high and one from low institutional credit disbursed districts. Total of two districts had been selected from the state. From each selected district, two blocks were selected and from each block, 25 borrowers and 25 non-borrowers of institutional credit were considered from the earmarked villages after the consultation with staff of prevailing banks in the study area.

Multiple linear regression analysis was utilized to identify the factors affecting rate of diversion of loans obtained by the dairy farmers in study area as suggested by Kazianka *et al*., 2021.

The functional form of the model is given below,

$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8)$

The model considers several independent variables *viz.* X_1 represent gender, indicating the gender of the farmer. X_2 represents the age of the farmer, reflecting the farmer's age in years. X_3 represents education, representing the education level of the farmer. X_4 represents the area under dairy farming, indicating the extent of the farm dedicated to dairy farming measured in hectares. X_5 represents farming experience, reflecting the number of years of experience the farmer has in farming. X_6 represents the number of family members, indicating the size of the farmer's family. X_7 represents per capita consumption expenditure, reflecting the monthly per capita expenditure of the farmer in rupees. X_8 represents annual income, representing the farmer's annual income in rupees. These variables were assumed to influence the dependent variable, *i.e* loan diversion (Y).

Results and Discussion

Age of the Respondents

Based on the data collected from the sample farmers regarding the age group, they were classified into four different categories (Nawai and Shariff, 2010). The results of the different age groups *viz.,*<30 years (youth), 30-45 years (adulthood), 45-60 years (middle adulthood) and >60 years (old age) were given in Table 1. Among both non-borrowers and borrowers, the majority of farmers fell within the 45 - 60 age group, constituted 72 percent in Palakkad and 78 percent in Wayanad for non-borrowers, and 62 percent in Palakkad and 74 percent in Wayanad for borrowers. Notably, there were no farmers in the < 30 age range among both borrowers and non-borrowers in both the regions of the current study as mentioned by Singh et al., 2014. The overall dataset included 200 dairy farmers, with the largest proportion (71.5%) fell in the 45 - 60 age groups, followed by 24.5 percent in the > 60 age group, and only 5.5 per cent were in the 30 – 45 age group.

Educational Status of the Respondents

The farmers were classified into illiterate, primary, middle, secondary, pre-degree/HSC, graduation and diploma (Shivappa, 2005) as presented in Table 2. Among both non-borrowers and borrowers, the largest proportion of farmers had secondary level of education, accounted for 66 percent in Palakkad and 68 percent in Wayanad for non-borrowers, and 58 percent in Palakkad and 54 percent in Wayanad for borrowers, respectively. Additionally, the Pre-degree/Higher Secondary education level was also significant, it constituted 18 percent in Palakkad and 26 percent in Wayanad for non-borrowers, and 32 percent each in Palakkad and Wayanad for borrowers. Notably, there are no illiterate farmers among both borrowers and non-borrowers in both regions. The overall sample included 200 farmers, with the majority (61.5%) having a secondary education, followed by 27 percent with a higher secondary level, and 7.5 percent with a middle school education. Primary Level and Graduates made up 1.5 percent of the farmers, respectively, in the dataset.

Table 1. Age wise classification of the respondents

Category of farmers		Age profile (Years)				Total
		< 30	30 – 45	45 - 60	> 60	
Non-Borrowers	Palakkad	0(0)	4(8)	36(72)	10(20)	50
	Wayanad	0(0)	0(0)	39(78)	11(22)	50
Borrowers	Palakkad	0(0)	6(12)	31(62)	16(32)	50
	Wayanad	0(0)	1(2)	37(74)	12(24)	50
Total		0(0)	11(5.5)	143(71.5)	49(24.5)	200

Source: Field survey, 2023

Table 2. Educational status of the respondents

Category of farmers		Education							Total
		Illiterate	Primary	Middle	Secondary	Pre-degree/HS	Graduation	Diploma	
Non-Borrowers	Palakkad	0(0)	1(2)	6(12)	33(66)	9(18)	1(2)	0(0)	50
	Wayanad	0(0)	1(2)	2(4)	34(68)	13(26)	0(0)	0(0)	50
Borrowers	Palakkad	0(0)	1(2)	2(4)	29(58)	16(32)	1(2)	1(2)	50
	Wayanad	0(0)	1(2)	5(10)	27(54)	16(32)	1(2)	0(0)	50
Total		0(0)	4(2)	15(7.5)	123(61.5)	54(27)	3(1.5)	1(0.5)	200

Source: Field survey, 2023

Table 3. Classification of respondents based on farming experience

Category of farmers		Experience in Rice farming			Total
		≤10 years	11 to 20 years	>20 years	
Non-Borrowers	Palakkad	28(56)	20(40)	2(4)	50
	Wayanad	17(34)	29(58)	4(8)	50
Borrowers	Palakkad	22(44)	27(54)	1(2)	50
	Wayanad	23(46)	22(44)	5(10)	50
Total		90(45)	98(49)	12(6)	200

Source: Field survey, 2023

Farming Experience of the Respondents

The distribution of respondents based on their experience in farming was presented in Table 3. The respondents were grouped according to their experience in dairy farming into ≤10 years, 11 to 20 years and > 20 years (Mehmood et al., 2012). Among both non-borrowers and borrowers, the majority of farmers had experience between 11 to 20 years, constituted 40 percent in Palakkad and 58 percent in Wayanad for non-borrowers, and 54 percent in Palakkad and 44 percent in Wayanad for borrowers. Additionally, a significant number of farmers had experience ranged from less than 10 years, accounting for 56 percent in Palakkad and 34 percent in Wayanad for non-borrowers, and 44 percent in Palakkad and 46 percent in Wayanad for borrowers. On the other hand, farmers with experience > 20 years had appended up 4 percent in Palakkad and 8 percent in Wayanad for non-borrowers, and 4 percent in Palakkad and 10 percent in Wayanad for borrowers. The overall dataset included 200 farmers, with 49 percent having experience between 11 to 20 years, 45 percent having experience between ≤ 10 years, and the remaining 6 percent had experience >20 years in dairy farming.

Estimation of Utilization Pattern of Dairy Loans

To highlight the actual utilization of borrowed funds in total investment, the ratio of amount of credit utilized to total amount invested was estimated district wise as highlighted by Kumar *et al*., 2023. It was observed that the average share of loan in total investment was comparatively higher in the both the districts. The ratio was less in Palakkad district (86.9%) than that of Wayanad (89.3%) as observed from Table 4. The greater percentage in both districts suggested that the farmers relied more on institutional loans for their long-term investments. Credit diversion for unproductive purposes such as repaying of old debts, house construction, house construction etc was observed in both Palakkad and Wayanad districts as observed by Kumar *et al.,* 2021. The Percentage of credit diversion was estimated as the ratio of amount of loan diverted for non-productive purposes to total amount of loan borrowed. And it was observed that borrower farmers from Wayanad district (20.7%) had diverted the credit more than borrowers from Palakkad district (19.1%).

Table 4: Share and utilization pattern of dairy loans in Palakkad and Wayanad

Particulars	Palakkad	Wayanad
Average share of loan in total investment (%)	86.95	89.27
Percentage of credit diversion (%)	19.11	20.68

Source: Field survey, 2023

Factors Affecting the Rate of Diversion of Credit Obtained by Dairy Farmers

Factors affecting the rate of diversion of loans obtained by farmers were estimated separately for the dairy farmers from Palakkad and Wayanad districts of Kerala. A multivariate regression analysis was also done for the pooled data from Palakkad and Wayanad to get the complete picture of the responsible factors affected credit diversion in the overall state (Li *et al.,* 2021). The results were furnished in tables 5

Table 5 : Factors affecting the rate of diversion of loans obtained by dairy farmers in Palakkad district

Particulars	Coefficients	Standard Error	P value
Sex	0.050	1.801	0.978
Age	-2.174***	.0622	0.001
Education	2.573***	1.413	0.076
Area under dairy farm (ha)	35.237*	19.346	0.076
Farming experience	-1.240*	0.691	0.080
Number of family members	-0.666	0.615	0.285
Total monthly per capita consumption expenditure	-0.084***	.006	0.000
Annual income	0.00001**	5.6E-06	0.038
R^2		0.98	
Adjusted R^2		0.97	
No. of observations		50	

** Significant at 10 per cent level, ** Significant at 5 per cent level, *** Significant at 1 per cent level Source: Field survey, 2023*

and 6 respectively. The R^2 value obtained from regression analysis of the dairy farmers in Palakkad district defined that, 98 per cent of the changes in rate of diversion of credit were explained by independent variables such as education of farmer, area under dairy farm, farming experience, total monthly per capita expenditure and annual income of the farmers. The total monthly per capita expenditure and age of the farmers had significantly influenced the diversion of credit at 1 per cent level of significance (Isitor *et al.,* 2016).

The R^2 value obtained from regression analysis of the dairy farmers in Wayanad district expressed that 87 percent of the changes in rate of diversion of credit were explained by factors such as age of farmers, education of farmer, farming experience, annual income of the farmers. The age of farmers, education of farmer, farming experience of the farmers had significantly influenced the rate of diversion of credit as observed by Rathore *et al.,* 2017. Elder farmers with more farming experience were depending on multiple sources of income rather than dairying alone.

The coefficient of determination (R^2) value reflected in Table 7 after the regression analysis of the pooled data of dairy farmers from both Palakkad and Wayanad district pointed out that, 79 percent of the changes in rate of diversion of credit was explained by independent variables such as sex, age of farmers, number of family members, farming experience and total monthly per capita expenditure of the farmers. More over the age of farmer significantly influenced the rate of diversion of credit. While the area under dairy farm and total monthly per capita expenditure was also significant at 5 per cent level of significance (Ravita *et al.,*

Table 6: Factors affecting rate of diversion of loans obtained by dairy farmers in Wayanad district

Particulars	Coefficients	Standard Error	P value
Sex	-1.477	3.213	0.648
Age	3.928***	1.182	0.002
Education	-18.615***	5.833	0.003
Area under dairy farm (ha)	5214.56	3514.91	0.146
Farming experience	7.434***	1.420	0.000
Number of family members	4.914	5.549	0.381
Total monthly per capita consumption expenditure	-0.021	0.017	0.221
Annual income	0.00005*	0.00002	0.082
R^2		0.87	
Adjusted R^2		0.85	
No. of observations		50	

** Significant at 10 per cent level, ** Significant at 5 per cent level, *** Significant at 1 per cent level Source: Field survey, 2023*

Table 7: Factors affecting rate of diversion of loans obtained by dairy farmers in Kerala

Particulars	Coefficients	Standard Error	P value
Sex (Female)	5.515*	2.937	0.064
Age	5.400***	1.175	0.000
Education	4.373	2.957	0.143
Area under dairy farm (ha)	-99.552**	49.273	0.046
Farming experience	2.626*	1.458	0.075
Number of family members	-2.675*	1.415	0.062
Total monthly per capita consumption expenditure	0.0008**	0.0003	0.016
Annual income	0.00002	0.00001	0.231
R^2		0.79	
Adjusted R^2		0.77	
No. of observations		100	

** Significant at 10 per cent level, ** Significant at 5 per cent level, *** Significant at 1 per cent level Source: Field survey, 2023*

2022). Credit diversion was found decreasing with increasing the farm size. And also it was found that credit was diverted mostly for meeting the consumption expenditure of farmers.

Factors Discriminating Defaulters from Non-defaulters among the Borrower Farmers

Table 8 provided the information on the variables considered in the study, their coefficients, standard errors, and significance levels. The pseudo-R^2 value of 0.84 indicated a good fit of the considered regression model, mentioned that the included variables in the analysis explained a significant portion of the variation among defaulters and non - defaulters of dairy loans (Singh *et al.,* 2019). Moreover, the major factors for the diversion of credits by the farmers from two districts of Kerala were Farming experience, Number of family members, District (Wayanad), Number of milch animals etc. Experienced dairy farmers were less likely to default their bank loans, and it was attributed to their multiple sources of income. Borrower farmers who had faced unprecedented events, such as the occurrence of diseases, were found to be more likely to default on their loans, due to their lower milk productivity.

Conclusion and Policy Implications

Credit diversion for unproductive purposes such as repaying of old debts, house construction, education of family members and family consumption was observed in both Palakkad and Wayanad districts. And it was

Table 8. Factors discriminating defaulters and non- defaulters of dairy loans in Kerala (Pooled data regression)

Particulars	Coefficients	Standard Error	P value
Intercept	34.962*	18.885	0.064
Education	-1.204	1.278	0.346
Area under dairy farm (ha)	-60.654	45.322	0.181
Farming experience	-1.167**	0.488	0.017
No of Milch animals	2.467**	1.234	0.046
Total monthly per capita expenditure	.0081**	0.003	0.018
No of family members	-4.567**	1.834	0.013
Milk productivity	-2.376*	1.335	0.075
Capital Investments	-.00001	9.73×10^{-6}	0.262
Annual Income	-.00005*	0.00002	0.065
District (Wayanad)	-8.069**	3.231	0.013
Pseudo R^2		0.84	
No. of observations		100	

** Significant at 10 per cent level, ** Significant at 5 per cent level, *** Significant at 1 per cent level Source: Field survey, 2023*

observed that borrower farmers from Wayanad district had diverted the more of credit as compared to the borrowers from Palakkad district. The major factors for the diversion of credits by the farmers from the selected districts of Kerala in the current study were age of farmer, area under dairy farm, farming experience, number of family members and total monthly per capita consumption expenditure. Poor financial Literacy and low level of education often hinder the farmers from effective utilization of loan amounts. And thus providing special training to the borrowers for the effective utilization of credit is of the most important strategy ranked by the experts.

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