



Role of institutional credit in agricultural growth of Kerala

Dr. Sujatha G.S

Assistant Professor · College of Engineering Trivandrum

ABSTRACT

Agricultural credit is an essential part of economic development of India. In 2021-22, the agriculture share in total GDP was 16.8 per cent. In Gross Capital Formation of Indian economy, 9.2 per cent is contributed by the gross capital formation of agriculture and allied sector in 2020-21. It was 8.5 percent in 2011 which means that agricultural contribution towards Indian economy has been increasing. Lack of finance is the one of the main problem faced by the farmers for doing agricultural activities. The current paper tries to evaluate the effect of institutional credit movement in agriculture and also to analyze the performance of institutional credit schemes agency wise and district wise in Kerala. The data collected from reports of SLBC were used to examine the effect of institutional credit movement in agricultural sector. The study mainly evaluated the three institutional agencies' role, namely public sector commercial banks, regional rural banks and cooperative banks, on institution credit flow. The outcome of the research reveals that more volume of agricultural credit is disbursed by Commercial banks. The agricultural credit share in the whole credit issued by regional rural banks is very high compared to the other two financial agencies.

Key words: Institutional Credit, Gross Domestic Products, Agricultural Growth, Farmers, Cooperative Banks, Commercial Banks, Regional Rural Banks.

1. Introduction

Agriculture is an unavoidable sector of Indian economy while considering its contribution to GDP. Agriculture performance is supported by many production factors: agriculture credit is one of them. Agricultural development needs adequate and timely supply of essential inputs. Most of the farmers have no sufficient funds to meet their farming activities such as purchase of seeds, recommended dose of fertilizers, hiring farming machine etc. as they are poor. Therefore lack of finance is one of the main problems for deficiency of agriculture productivity. Agricultural credit enables the farmers to buy modern inputs and use modern technologies. For maintaining a steady and self-sustained development in agriculture sector, a proper institutional credit system is required.

Agricultural credit requirement is needed in India as economic conditions of farmer in India are very poor. Recognizing the need for increased institutional credit for agriculture, the Government of India and RBI initiated a series of policies to enhance the agricultural credit. To develop a suitable credit delivery system for giving financial support to agriculture and allied activities, All India Rural Credit Survey Committee Report (1954) was started as the foundation for the institutional framework. A multi-agency approach was adopted in the formal sector and it also consists of Co-operatives, Commercial Banks (public and private sectors) and the Regional Rural Banks. Among co-operatives mostly short term and medium term loans provided by the primary agricultural credit societies (PAC's). While long term loans for agriculture provided by the primary co-operative agriculture and rural development banks (PCARDB's). Both short term and long term loans for agriculture and allied activities are provided by the commercial banks including regional rural banks (RRB's).



The apex institute at the national level for agricultural credit is the National Bank for Agricultural and Rural Development (NABARD) and it provides refinance assistance to the above agencies. Non-institutional sources have been adopted in the informal sector like the commission agents, dealers, moneylenders, merchants, relatives and friends etc. A huge task for banks is to provide finance for agriculture. Both RBI and National Bank for Agriculture and Rural Development (NABARD) had taken numerous paces to simplify the procedures and systems and design the advanced credit distribution products for disbursement of agricultural credit. Numerous studies were conducted on various institutional credit agencies and non-institutional credit agencies relating to agricultural finance, different agricultural credit policies and trends of agricultural credit, but no methodological studies were focused on the effect of institutional credit in agricultural sector, their performance agency wise and district wise. Most of the studies revealed that agricultural finance is one of the most vital elements of farming. Hence this research work is trying to trace out the importance of institutional credit agencies in agricultural sector.

2. Review of Literature

Masaoood Moahid, Ghulam Dastgir Khan et.al (2021) examined the topic "Agricultural credit and extension services: Does their synergy augment farmers' economic outcomes". This study tried to find out the dissimilar groupings of agricultural credit, impact of formal and informal agricultural credit, extension services on the economic outcomes of farming households in Afghanistan and the admission to extension services. The study employed a quasi-experimental approach (propensity score matching) and inverse-probability-weighted regression adjustment (IWPR) test. The data were collected from farming households of three districts in rural Afghanistan using simple random sampling method. The outcome of the research indicated that accessibility of agricultural credit shows a positive and distinguished influence on net revenue of farming households and on farming costs. The research work also delivers some applied implication for agricultural progress policymakers such as, an additional maintainable agricultural credit preparation should be added by extension services for Afghanistan's farmers.

Narendra Kumar and Shweta (2021) discussed a topic titled "Present position of agricultural credit in India: An analysis of Institutional contribution in providing credit to agriculture sector". In their study, they tried to analyse the contribution of different institutions at different intervals. The main intention of the current paper was to examine the relation between agriculture and the economy of India. This paper also made an attempt to know the essentiality of Agricultural credit and various kinds of agricultural credit. Various statistical tools like tabulation were used in this study for analysing the secondary data. The outcome of the research showed that agriculture has a vital role in Indian Economy. In Indian GDP, agriculture is one of the maximum contributors. This study also revealed that agricultural sector is depended by most of the Indian population for their livelihood. One of the important input of agriculture in India is agricultural credit as Indian farmers are not self-sufficient in arranging finance for their agriculture purpose. When summarizing this research, the study suggested that the Government should take some important steps to enhance the providing agricultural finance.

Suresh Kumar Maurya and Neha Vishwakarma (2021) made a research on "Status of agricultural credit and indebtedness in India: An analysis". This paper examined the comparison of agricultural credit indebtedness among dissimilar land size clusters at all India level and analyzed the incidence of indebtedness on main Indian states. Secondary data were employed in this research and the data was collected from Agricultural statistics at a glance 2018 published by Ministry of agriculture and farmers welfare department of agriculture and Cooperation & Farmers welfare directorate of Economics and Statistics, Government of India. The study selected 11 states in India, namely, Andhra Pradesh, Bihar, Karnataka, Madhya Pradesh, Maharashtra,

Odisha, Punjab, Rajasthan, Uttar Pradesh, West Bengal and Telangana. The outcomes of the research revealed that majority of the short term and medium term agricultural loans are occupied by marginal land size clusters in India. This research paper also found that the percentage of indebted agricultural households is more than the percentage of holdings in Punjab, Uttar Pradesh, Andhra Pradesh, West Bengal, Karnataka, Odisha and Rajasthan. The study suggested that the Government should focus on providing long term credit for small and marginal farmers.

Sujith.T.S. and M.Sumathy (2022), in their study "Technical and Scale of efficiencies in Primary Agricultural Credit Societies (PACS) in Kerala", they investigated technical and scale efficiencies in PACS in Kerala with the help of Charnes-Cooper-Rhodes (CCR-I) model and Banker-Charnes-Cooper (BCC-I) model. CCR efficiency score is a measure of technical efficiency which is measured under the assumption of Constant Return to Scale (CRS). BCC efficiency score is a measure of pure technical efficiency which is measured under the assumption of Variable return to Scale (VRS). This study selected fourteen PACS in Thrissur and out of these fourteen PACS, two of them have base efficient practices. They are Thanniyam and Pappinivattom. Engandiyoor and Perinjanam PACS are the two most inefficient PACS among these fourteen PACS. The study found that the reason for inefficiency is the shortage of non-interest income. Therefore the study suggested that PACS should enhance fee base income by deploying more funds in investment and business.

YinanWang, Yujie Xu (2023), in their article "Study on relationship between agricultural credit, fiscal supports, and farmers' income-Empirical analysis based on the PVAR model", evaluated the relationship between agricultural credit, fiscal support for agriculture, and farmers' income in China from 2003 to 2020 from a dynamic perspective by constructing a panel vector autoregressive (PVAR) model. This evaluation pointed out that farmers' income growth is effectively contributed by both agricultural credit and fiscal support for agriculture. This study opined that the positive correlation between agriculture credit and income growth of farmers is lesser than that of fiscal support for agriculture. This study also tried to say that income growth of farmers, both in regional samples and national samples show similar performance. Another finding of this study was that in the long run, larger contribution is made by fiscal support for agriculture, while in the short run, larger contribution is made by agricultural credit.

From the reviewed literature, it is clear that the institutional credit system and performance in the agricultural credit disbursement of institutional agencies has been studied. It is evident from the collected review that agricultural finance is the major single factor that affects the developmental needs of the agricultural sector. Numerous studies were conducted on various institutional credit agencies and non-institutional credit agencies relating to agricultural finance, different agricultural credit policies and trends of agricultural credit, but no methodological studies were focused on the effect of institutional credit in agricultural sector in Kerala, their performance agency wise and district wise.

3. Objectives of the Study

1. To evaluate the role of institutional credit in agricultural sector in Kerala.
2. To analyze the performance of institutional credit agency wise and district wise.

4. Methodology

The present research is based on both secondary data and primary data. But the main base is secondary data, and it depends on various reports. The secondary data were employed for this study from the RBI reports, Department of Agriculture, State Level Bankers' Committee (SLBC), sample branches implementing the

scheme, various issues of economic review published by Kerala state planning board and other electronic sources. The data collected from reports of State Level Bankers' Committee were used to evaluate the effect institutional credit flow in agricultural sector. The tenure of collected data is 11 years, from the year 2011-12 to 2021-22. Mainly evaluated the three institutional agencies' role, such as public sector commercial banks, regional rural banks and cooperative banks, on institution credit flow. Each bank's share in agricultural credit out of their total credit was analyzed. District wise analysis of institutional credit is also done with the help of data collected form SLBC report.

Simple mathematical and statistical tools appropriate for the research were employed for the analysis of collected data. Mathematical tools like percentage, growth rate, average annual growth rate and compound average annual growth rate were used. Comparative analysis and regression test were also used. The effect of institutional credit in agricultural sector can be evaluated with the help of descriptive analysis and compound average annual growth.

5. Results and Discussion

5.1. Role of Institutional Credit

It is essential to evaluate the role of institutional credit in agricultural sector because the institutional credit has been a significant economic variable for the development of agriculture. For the purpose of analyzing the role of institutional credit in agricultural sector of Kerala, the secondary data were collected from SLBC in Kerala. For in-depth analysis of role of institutional credit, this study tries to understand the trend and performance of institutional agencies such as Commercial bank, Regional rural bank and Cooperative bank in providing their direct lending, either short term loan or long term loan.

Agricultural credits are provided to farmers for fulfilling their financial requirements connected with agriculture and related activities. They are provided for the purchase as well as creation of assets connected with activities coming under agricultural sector like horticulture, plantation, animal husbandry, fisheries, sericulture, etc. The Reserve Bank of India has always been there to ensure the credit availability for the economy's productive requirements and also to maintain price stability as the central bank of the country. One of the important objectives of RBI is provision of credit facilities for agriculture during its beginning time. This was very appropriately repeated by our first Prime Minister, Pundit Jawaharlal Nehru, who had highlighted the importance of agriculture in our economy, when he stated that all can postponement but not agriculture. In pursuit of the objective of comprehensive growth strategy, the Reserve Bank has stepped up its energies to stimulate financial presence in latest years by growing the penetration of the formal financial sector. It is a very important thing to raise the attention of formal finance in rural sector, particularly in agriculture, so as to defend against the financial weaknesses and risks rising from obtaining finance through informal means from money lenders and other similar entities. The special inventiveness for spreading the outreach of banking services through branch banking and also through a crowd of alternative models have been taken up by Reserve Bank of India. Thus, the financial presence drive was important for attaining inclusive growth objectives as in excess of sixty per cent of the entire work force directly or indirectly was engaged in agriculture.

Table 1 Institutional Credit to Agriculture and its Allied Sectors

Year	Public Sector Commercial Banks	Regional Rural Bank	Cooperative Banks	Other Agencies	Total
2011-12	11,08,22,710	2,80,71,017	83666289	12,80,66,258	350626274

	(31.61)	(8.01)	(23.86)	(36.53)	(100)
2012-13	13,81,15,933 (36.63)	33733003 (8.95)	85569036 (22.69)	11,96,85,476 (31.74)	377103448 (100)
2013-14	22,23,36,835 (51.84)	46193543 (10.77)	94891000 (22.12)	6,54,80,980 (15.27)	428902358 (100)
2014-15	23,49,82,045 (47.88)	54855339 (11.18)	130644222 (26.62)	7,03,17,329 (14.33)	490798935 (100)
2015-16	15,07,11,189 (28.78)	67597475 (12.91)	135678163 (25.91)	16,97,48,803 (32.41)	523735630 (100)
2016-17	246341122 (45.39)	85146561 (15.69)	119529012 (22.02)	9,16,83,487 (16.89)	542700182 (100)
2017-18	317209012 (47.28)	102179458 (15.23)	134387907 (20.03)	11,71,17,948 (17.46)	670894325 (100)
2018-19	326135950 (45.53)	102333576 (14.29)	134769620 (18.81)	15,30,83,580 (21.37)	716322726 (100)
2019-20	33,51,15,259 (45.88)	12,47,65,663 (17.08)	11,26,79,660 (15.44)	15,77,79,830 (21.60)	73,03,40,412 (100)
2020-21	37,01,34,337 (44.54)	12,84,66,317 (15.46)	16,87,17,695 (20.30)	16,36,98,149 (19.70)	83,10,16,498 (100)
2021-22	45,18,28,001 (48.78)	13,39,21,828 (14.46)	11,69,93,783 (12.63)	22,34,46,064 (24.13)	92,61,89,676 (100)
Total	2,90,37,32,393 (44.07)	907263780 (13.77)	1317526387 (20.00)	1,46,01,07,904 (22.16)	6588630464 (100)

Source: SLBC Kerala

As far as Kerala state is concerned, public sector commercial banks have a key role in disbursing loan to agricultural activities. Following the other financial agencies (small finance banks and private commercial banks), cooperative banks and regional rural bank are disbursing agricultural credit. During the period 2011-12 to 2014-15, agriculture credit disbursement of public commercial banks is showing a growing trend. After that it is showing a very declining trend in 2015-16, and again a growing trend is seen in the remaining periods of the study except for the periods 2018-19 and 2020-21. Even though the cooperative banks have more number of branches in rural area, their share in the total agriculture credit disbursement is found to be very low compared to public sector commercial banks.

Table 2 Descriptive Analysis of Institutional Credit for Agriculture

Banks	Min	Max	Median	Mean	SD	CV (%)	CAGR (%)
Commercial Bank	110822710	451828001	246341122	263975672.09	106455359.865	40.33	0.14
RRB	28071017	133921828	85146561	82478525.45	38699288.777	46.92	0.15
Cooperative Bank	83666289	168717695	119529012	119775126.09	25211215.006	21.05	0.03
Other financial agencies	65480980	223446064	128066258	132737082.18	47051906.052	35.45	0.05
Total	28071017	451828001	126615990	145809555.84	94791149.541	65.01	0.31

Source: SLBC Kerala

The formal financial agency wise descriptive analysis of agricultural credit flow indicates that the maximum credit amount is issued by Commercial banks, whereas the minimum agricultural credit amount is issued by RRB as they have only some branches compared to other formal financial institutions. It is observed that the highest rate of coefficient variation is shown by regional rural banks (46.92%), followed by commercial banks (40.33%). A least rate of coefficient variation is shown by Cooperative banks. It can be summarized that the agricultural credit disbursement has higher variability in Regional rural bank and in the case of Cooperative banks it is very low as Cooperative banks give much more concentration to provide agricultural credit in every year. The total growth rate of institutional credit for agriculture is found to be 0.31 per cent from the period 2011-12 to 2021-22. Among major official financial institutions (Commercial banks, RRBs and Cooperative banks), Regional rural banks are showing a higher rate of growth with 0.15 per cent followed by Commercial

banks with a percent of 0.14. Cooperative banks stand in the last position with combined growth rate of 0.03 per cent.

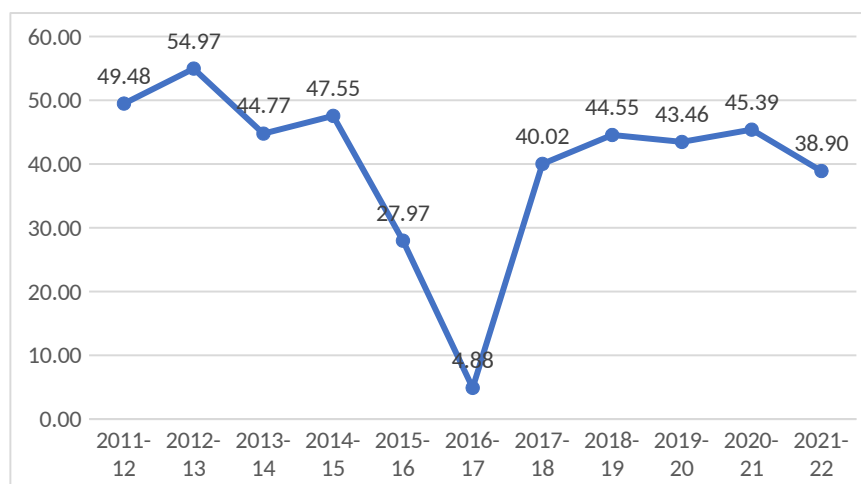
5.2. Agency Wise Analysis of Institutional Credit

During 2021-22, banks had disbursed Rs. 92,61,89,676 thousands to the agricultural sector against target of Rs. 76,21,10,184, Out of which commercial bank, regional rural bank and cooperative banks disbursed Rs. 45,18,28,001 thousands (49 percent), Rs. 13,39,21,828 thousands (14.5 percent), Rs. 11,69,93,783 (12.6 percent) respectively. Commercial banks, regional rural banks and cooperative banks are the main financial institutions functioning in the agricultural credit area. In the present section, the participation of these three banks in agricultural sector in Kerala was studied using secondary data.

6. Role of Commercial Bank

Commercial banks are classified into schedule banks and non-schedule banks. A schedule bank is the one which is involved in Reserve Bank of India Act's (1934) Second Schedule. A bank which is not involved in the RBI's Second Schedule is known as a non-schedule bank. In 1969, fourteen of major scheduled commercial banks that were nationalized as the cooperative banks alone could not meet the farmers' credit wants due to the introduction of new technologies in agriculture which has arisen the demand for agricultural credit.

Figure 1 Commercial Banks' Share in Agricultural Credit out of Total Credit



Source: SLBC Kerala

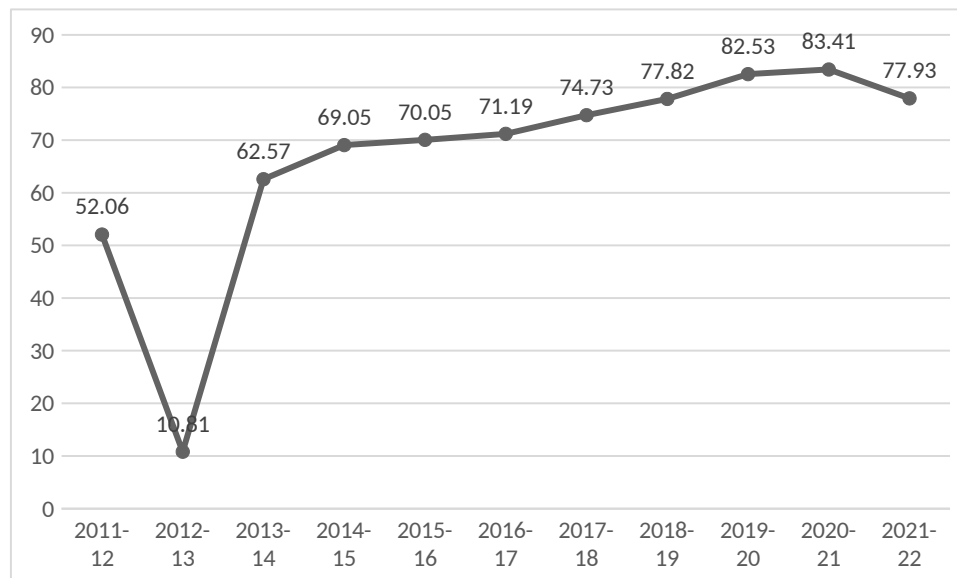
Figure 1 represents the commercial banks' agricultural credit share in total credit during the period 2011-12 to 2021-22. According to the data, a graph was plotted showing the growing trend of share of agricultural credit. The graph shows a negative growth pattern. The agricultural credit share increased from 49.48 percent in the year 2011-12 to 54.97 percent in the year 2012-13. After that, it is showing a declining trend up to the year 2016-17. During the year 2017-18, share of agricultural credit is showing a high growth trend. But after that, the graph shows an erratic growth in the agricultural credit share disbursed by commercial bank.

7. Role of Regional Rural Bank

The possibilities of further expansion of commercial banks which are located in rural zones are identified from the reports of banking commission in 1972. The government of India assigned a working Group under the chairmanship of Sri. M. Narasimham in 1975, which suggested the creation of state sponsored regionally centered banks and rural oriented banks called Regional Rural Banks (RRBs). The major objective of the RRB is

to offer productive credit to landless laborers, small and marginal agriculturalists, rural artisans and other weaker sections of the society.

Figure 2 Regional Rural Bank's Share in Agricultural Credit out of Total Credit



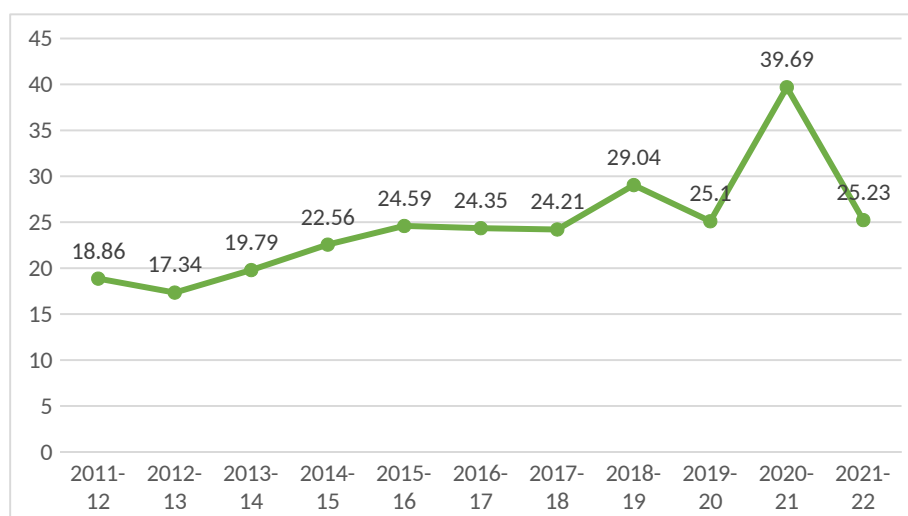
Source: SLBC Kerala

Figure 2 is detailing the agricultural credit share on total credit provided by regional rural bank. From the analysis of the data, it is clear that the graph is showing a growing pattern in the agricultural credit share from the year 2013-2014 to 2020-2021 and after that it is showing a negative growth in the year 2021-22. It is dipped to 10.81 percent in 2012-2013.

8. Role of Cooperative Bank

Cooperative banks are one of the accessible and reliable agricultural credit sources in the rural economy and its credit is offered through various schemes. The cooperative movement in Kerala was originated as a measure to protect the poor farmers from their chronic indebtedness and usual worst practice by the money lenders.

Figure 3 Cooperative Banks' Share in Agricultural Credit out of Total Credit



Source: SLBC Kerala

The graph shows an erratic trend regarding cooperative banks' share in agricultural credit out of their total credit since these banks sustain their concentration to issue agricultural credit to poor farmers. The agricultural credit share provided by cooperative banks whopped to 39.69 percent in 2020-21 periods. It is dipped to 25.23 percent in 2021-22. Although, these banks give much importance to provide agricultural credit. Among cooperative banks, Kerala state cooperative agriculture and rural development banks give more concentration towards agricultural financing.

8.1. District Wise Analysis of Institutional Agricultural Credit

Kerala consist of fourteen districts. Among these districts, Thrissur district has the largest number of farmers in Kerala registered in Krishi bhavans across Kerala. Wayanad district has the least number of farmers. This district is also the least populous district in Kerala. While considering the proportion of farmers to total population, Wayanad stands first in Kerala (18.4 percent) and Malappuram the last even though it has the largest population in Kerala. Ernakulam stands before Malappuram. The percentage of farmers in total population of this district is 8.42 percent. Considering Kerala state as a whole, 12 percent of the entire population are farmers. The percentage of farmers in entire population in each district is depicted in the table 3.

Table 3 District Wise Percentage of Farmers in its Total Population

Thiruvananthapuram	Kollam	Pathanamthitta	Alappuzha	Kottayam	Idukki	Ernakulam	Thrissur	Palakkad	Malappuram	Kozhikode	Wayanad	Kannur	Kasargod	Total
11.7	13.63	13.88	16.79	13.00	13.79	8.42	14.10	8.89	7.71	12.23	18.54	14.65	12.80	12.00

Source: Compiled source of Agriculture Information Management System, Department of Agriculture Development and Farmers Welfare, Government of Kerala and 2011 census report

Table 4 Distribution of Institutional Agricultural Credit across Districts of Kerala

Year	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
TVPM	35498125 (10.12)	24209901 (6.42)	38907964 (9.07)	56660214 (11.54)	38698056 (7.39)	41677490 (7.68)	46033801 (6.86)	45676104 (6.38)	5,12,13,886 (7.01)	5,13,74,968 (6.18)	10,94,91,648 (11.82)	539442157 (8.19)
Kollam	50292779 (14.34)	37466868 (9.94)	27958911 (6.52)	26947730 (5.49)	26603265 (5.08)	35833378 (6.60)	49342917 (7.35)	58388673 (8.15)	7,62,90,893 (10.45)	8,63,11,234 (10.39)	6,94,81,025 (7.50)	544917673 (8.27)
Pathanamthitta	18075698 (5.16)	17237178 (4.57)	20658972 (4.82)	26690894 (5.44)	21578638 (4.12)	18687197 (3.44)	22443577 (3.35)	23650943 (3.30)	2,09,47,406 (2.87)	2,72,14,867 (3.27)	4,22,60,097 (4.56)	259445467 (3.94)

The share of agricultural credit of each districts in Kerala are depicted in table 4. In Kerala, Ernakulum has relatively larger share in providing agricultural credit through formal financial institutions. During the period

2017-18 Ernakulum contributed the largest share of 15.24 per cent among the data collected period from 2011-12 to 2021-22. Among the districts in Kerala, Pathanamthitta and Kasargod contributed least to agricultural credit. Wayanad and Idukki is also providing a low per cent of share in agricultural credit of Kerala i.e., around 4 or 5 percent even though these districts are the most farmers populous. Considering the Trivandrum district, it is showing a declining trend in the year 2012-13 and 2015-16, and in the remaining periods, it displaying a growing trend. After the period 2015-16, agricultural credit provided by Kollam district is showing a growing trend up to the year 2020-21. The contribution of Alappuzha district's agricultural credit towards the overall agricultural credit of Kerala is 5.25% even though Kuttanad known as "the rice bowl of Kerala" belongs to Alappuzha district. Also Alappuzha district stands in the second place when considering the percentage of number of farmers in total population of district. After the period 2018-19, Alappuzha's share agricultural credit is declining. Trissur, Kottayam and Malappuram districts are concentrated to cultivate paddy. These districts' share in agricultural credit is more than 8%. The total cropped area to geographical area is 76% in Kannur district, while their agricultural credit share is low. Kozhikode is more concentrated in the production of coconut. This district's share in agricultural credit is high comparing the share of other certain districts in this regard. Government of Kerala gives much importance to coconut farmers.

8.2. Relation of Institutional Credit with Agricultural Growth

The evaluation of agricultural credit as a proportion of agricultural Gross State Domestic Product (GSDP) and agricultural Net State Domestic Product (NSDP) is necessary to understand the effectiveness of institutional credit for agricultural growth in Kerala. This research paper also tries to understand the proportion of institutional credit with the gross cropped area (GCA). For understanding how the agricultural growth is impacted by agricultural credit, this study assessed the agricultural GSDP and GCA for eleven years and found out the relation of agricultural credit with these two indicators.

Table 5 Proportion of Agricultural Credit with AgGSDP, AgNSDP and GCA

Year	Agricultural credit/GSDP (%)	Agricultural credit/NSDP (%)	Agricultural credit/GCA(Rs/ha)
2011-12	72.48	87.07	131727.38
2012-13	74.88	92.20	145502.37
2013-14	77.96	97.39	163911.52
2014-15	80.54	101.50	186997.81
2015-16	81.84	103.31	199322.66
2016-17	78.41	99.21	210022.72
2017-18	89.74	114.29	260066.90
2018-19	92.23	118.62	278605.44
2019-20	89.59	116.29	282371.53
2020-21	97.25	127.99	323483.75
2021-22	101.62	133.76	367096.53

Source: Compiled sources of Economic Review, various issues, State planning Board, Thiruvananthapuram and SLBC Kerala

These indicators of agricultural credit performance are noteworthy because the ratio increased from the year 2011-12 to the year 2015-16. A decrease in proportion of agricultural credit to agricultural GSDP and NSDP is shown only in the year 2016-17. The farming sector's high dependence on the institutional credit is indicated by the high ratio. It is revealed from the table 5 that the ratio of institutional credit with Agricultural GSDP and NSDP increased every year during the period from 2011-12 to 2021-22 except in the years 2016-17 and 2019-20. These periods are showing a tremendous rise in agricultural credit per hectare of gross cropped area. It has increased from Rs. 131727 in the year 2011-12 to Rs. 367097 in the year 2021-22. These indicators

pointed out that the agricultural growth is geared by a good agricultural credit system. It also mentioned that rural farmers' availability of credit has increased substantially.

H0: There occurs no significant association between agricultural credit and agricultural GSDP.

Simple linear regression has been employed to test whether there occurs a significant relation between agricultural credit and agricultural growth. This test helps to trace out how agricultural GSDP and NSDP, and gross cropped area of the Kerala state are impacted by the agricultural credit. Table 6 points out that simple linear regression analysis of agricultural credit on agricultural GSDP. Agricultural credit has considered as independent variable (X) and agricultural GSDP as dependent variable for the purpose of analysis. It is revealed from the simple linear regression test that the R^2 value is .979 which denotes that the independent variable contributed 98% towards the dependent variable. The coefficient of agricultural credit is equal to .756, which means that when there is a rise of one rupee in agricultural credit, agricultural GSDP is increased by 75 paise. Since the regression coefficient is determined to be significant at 1 percent level as the probability value is <.01, there occurs a significant association between agricultural credit and agricultural GSDP.

Table 6 Regression results of the agricultural credit on agricultural GSDP of Kerala

Independent Variable	Coefficients	Std. Error	t Value	Sig.
Constant	236871672896.355	22952661351.225	10.320	.000
Agricultural Credit	.756**	.037	20.593	.000
R Square=.979 Adjusted R Square=.977 F=424.087				
** Significant level is 0.01. * Significant level is 0.05.				

H0: There occurs no significant association between agricultural credit and gross cropped area.

Table 7 Regression results of the agricultural credit on GCA of Kerala

Independent Variable	Coefficients	Std. Error	t Value	Sig.
Constant	15.509	.167	92.606	.000
Agricultural Credit	-.037*	.008	-4.419	.002
R Square= .685 Adjusted R Square= .649 F=19.527				

** Significant level is 0.01. * Significant level is 0.05.

The result of simple linear regression analysis of agricultural credit on gross cropped area (GCA) of Kerala is displayed in the table 7. For the analysis, gross cropped area of Kerala is considered as dependent variable (Y) and agricultural credit is considered as independent variable (X). It is understood from the test result that the R^2 value is .685 which denotes that the explanatory variable contributed 69 percent towards the dependent variable. The regression coefficient is determined to be significant at 5 percent level as the probability value is <0.05. Agriculture credit is negatively related with gross cropped area which is significant.

9. Managerial Implication of the Study

This study will be more useful for policy makers as it provides valuable insights to them for preparing agricultural credit policies which would ensure a sustainable agricultural development and increased productivity. This will leads to the long term economic growth of Kerala. This study also highlights the need of banks and financial institutions for farmers to access the agricultural credit. Therefore the banks and financial institutions have to enhance their agricultural credit facilities to small and micro agriculturalists.

10. Conclusion

This study made an aim to understand the effectiveness of institutional credit for agricultural growth in Kerala. Agricultural credit based on secondary data sources are yearly reports of the lead banks in Kerala, State Level Bankers' Committee (SLBC), and the same were supplemented by the bank officials. This study also examines the growth rate of agricultural GSDP and NSDP in order to find out the agricultural growth in Kerala. The data regarding agricultural GSDP and NSDP were collected from Directorate of Economics & Statistics, Kerala. To understand how agricultural growth in Kerala is impacted by agricultural credit, this research work use regression test to trace out the relation of agricultural credit with agricultural GSDP and gross cropped area of Kerala. The test result reveals that there exists a positive significant relation between agricultural credit and agricultural GSDP. At the same time, agricultural credit has a negative significant relation with gross cropped area.

Considering the role of institutional credit in agriculture, compound average annual growth indicates that regional rural banks have high growth rate in providing agricultural credit, which means that RRB is more concerned to provide agricultural credit. District wise analysis denotes that districts having more proportion of farmers to total population were providing a low amount of agricultural credit. Largest agricultural credit share is provided in Ernakulum district. Wayanad and Idukki have more number of farmers but a very low percent of agricultural credit is provided to them as these districts have very low numbers of bank branches. The relation between agricultural credit and agricultural gross state domestic product indicates that institutional credit is very essential for agricultural growth. This study also identified from the discussion with the farmers that farmers get subsidies through several schemes for buying large equipment but they need to pay the entire amount at that time. For that they approach money lenders and hence they need to pay more interest. Formal financial institutions should also give financial support to farmers when they buy large equipment through subsidy schemes. This research work is based on secondary data, the secondary data which includes eleven financial years only. The study would cover the three institutional agencies such as public sector commercial banks, RRBs and cooperative banks. To make the research more useful, the role of all the institutional lending agencies in Kerala can be incorporated in further studies.

References

- [1] Department of Economics and Statistics, Kerala State., (2021, September). Retrieved from www.ecostat.Kerala.gov.in.
- [2] Government of India. (2021). Agricultural Statistics at a Glance. Ministry of Agriculture & Farmers Welfare, Department of Agriculture & Farmers Welfare. Delhi: Government of India. Retrieved from <http://desagri.gov.in>
- [3] Government of India. (2011). *Annual Report 2010-11*. Department of Agriculture and cooperation, Minsitry of Agriculture, Government of India.
- [4] Kerala State Planning Board., (2014). *Economic Review*. Thiruvananthapuram: Government of Kerala.
- [5] Kerala State Planning Board., (2017). *Economic Review*. Thiruvananthapuram: Government of Kerala.
- [6] Kerala State Planning Board., (2019). *Economic Review*. Thiruvananthapuram: Government of Kerala.
- [7] Kerala State Planning Board., (2021). *Economic Review*. Thiruvananthapuram: Government of Kerala.
- [8] Kerala State Planning Board., (2022). *Economic Review*. Thiruvananthapuram: Government of Kerala.
- [9] Masaood, M., Ghulam, D.K., Yuichiro, Y., Niraj, P.J., & Keshav, L.M. (2021, March 28). Agricultural Credit and Extension Services: Does Their Synergy Augment Farmers' Economic Outcomes? Sustainability, 13. Retrieved from <https://www.researchgate.net/publication/350464277> Bagus, P., Howden, D., & Gabriel, A. (2014). *Causes and Consequences of Inflation*. (December). <https://doi.org/10.1111/basr.12043>

- [10] Narendra, K.B., and Shweta, N. K. (2021, February). PRESENT POSITION OF AGRICULTURAL CREDIT IN INDIA: AN ANALYSIS OF INSTITUTIONAL CONTRIBUTION IN PROVIDING CREDIT TO AGRICULTURE SECTOR. *INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH*, 10(2(5)), 86-94. Retrieved from www.ijmer.in
- [11] Suresh Kumar Maurya, 1. a. (2021). Status of Agricultural Credit and Indebtedness in India: An Analysis. *The Indian Economic Journal*, 69(1), 24-31. doi:10.1177/00194662211015383 journals.sagepub.com/home/iej Frisch, H. (1990). *Theories of inflation*. Newyork: Cambridge University Press.
- [12] T,Sujith & M, Sumathy. (2022). Technical and scale efficiencies in Primary Agricultural Credit Societies (PACS) in Kerala. *IJAR SCT*, 476-483
- [13] Yinan Wang , Y. X. (2023, February 9). Study on the Relationship between Agricultural Credit, Fiscal Support, and Farmers' Income—Empirical Analysis Based on the PVAR Model. *Sustainability*, 1-17. Retrieved from <https://www.mdpi.com/journal/sustainability>