



**Research Paper**

# Growth in formal credit to agriculture over period of time in Bikaner region of Rajasthan

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**ABSTRACT :** The study was conducted to analyse the growth of agricultural credit over period of time, credit disbursement pattern and their utilization, credit gap, repayment performance, overdues and impact of agricultural credit on agricultural development and constraints in advancing the agricultural credit. The study was conducted in the district of Bikaner region viz., Sriganganagar, Hanumangarh, Bikaner and Churu district. A lead bank of each selected district was selected purposively for collection of secondary and primary data in respect of agricultural loan supplied to the farmers. The selected banks were Oriental Bank of Commerce from Sriganganagar, State Bank of Bikaner and Jaipur from Hanumangarh and Bikaner districts and Bank of Baroda for Churu district. A sample of 30 farmers was drawn as borrower farmers from each selected district by probability proportion to the number of borrower farmers in each group (small, medium and large farms). Similarly, 30 non-borrower farmers was also selected from each district using the similar method as borrower farmers to analyse the impact of credit. The analysis of data revealed that the higher growth rate 29.40 per cent was on credit supplied for crop loan followed by 26.10 per cent for minor irrigation system, 20.50 per cent for farm machinery and 10.10 per cent for land development in Bikaner region as whole.

**KEY WORDS:** Growth, Formal credit, Agriculture over period of time

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## INTRODUCTION :

Agriculture has got a prime role in Indian economy. It holds the key to rapid economic development because of its size, potentiality for growth and capacity to transform the entire outlook of the economy. This sector provides the raw material and demand for various industrial products like textile fertilizer, agriculture implements industry etc. In export, agriculture and its related goods contributes about 38 per cent. The contribution share of agriculture in GDP in capital formation was 14.2 per cent in 2011-12. It is the single

largest occupation which provides employment to about 61 per cent county's work force. In spite of this picture, the share of agriculture in GDP and employment work force of the nation is continuously declining. Productivity of this important sector of the economy is very low.

## MATERIALS AND METHODS :

### Compound growth rate:

The growth of formal credit to agriculture over the period of time, the following compound growth rate model was used:

$$Y_t = ab^t e_t \dots\dots (1)$$

where,

$Y_t$  = Amount of loan advanced by selected branch in time period t (Rs.)

t = Time element that takes the value 1, 2, 3,.....n

a and b are parameters to be estimated

b = (1 + r); where 'r' is compound growth rate

$e_t$  = Error term

Thus, eq. (1) can be written as:

$$Y_t = a (1+r)^t e_t \dots\dots (2)$$

On logarithmic transformation of eq. (2) we get :

$$\text{Log } Y_t = \text{log } a + t \text{ log } (1+r) + \text{log } e_t \dots\dots (3)$$

The compound growth rate was obtained as per cent

$$r = [(\text{Antilog of } b) - 1] \times 100$$

The standard error of CGR is given by:

$$\text{S.E.}(r) = \frac{100b}{\text{Log } e} \times \text{SE}(\text{Log } b)$$

The significance of CGR was tested by using following formula :

$$t = \frac{r}{\text{SE}(r)}$$

## RESULTS AND DATA ANALYSIS :

The growth in formal credit to agriculture over period of time in Bikaner region. The growth rate of the credit advanced by the selected lead banks, district wise data from the records of the selected banks for the 10 years period (from 2003-04 to 2012-13) the result are presented in Table 1 to 5.

The Table 1 shoe that the production credit (crop loan) supplied to the farmers of Sriganganagar by the selected bank increased tremendously over period of time from Rs. 94252 in 2003-04 to Rs. 4275500 thousand rupees in 2012-13. A continuous increasing trend was observed in crop loan advance during this period. The highest (about 80 %) variation in crop loan advance was during 2010-11 to 2011-12. 2246580 thousand crop loan was disbursed in 2010-11 which increased to 4053211 in 2011-12. Credit provided for minor irrigation was Rs. 400 thousand in 2003-04 which increased to 3500 thousand in 2012-13 which was eight time more. No particular trend was observed in loan as varies for minor irrigation system. The highest amount of 4658 thousand was advanced in 2008-09. However, this amount continuously increased from 1095 to 3500 thousand in 2012-13. Similarly, no particular trend was seen in loan advance for purchasing farm machinery. The highest (Rs. 63300 thousand) farm machinery loan was advanced to the farmers in 2006-07. This shows that more than six times amount of loan increased from the year 2003-04 to 2006-07.

Credit provided for land development was not common to the farmers of Sriganganagar during the period from 2003-04 to 2007-08. A small amount (Rs. 200 to 600 thousand) was given for land development purposes during this period. In 2004-05 and 2007-08 credit advance for land development was nil. In the year 2008-09, 2735 thousand were given for land development which advance to Rs. 507 thousand in 2009. However, after 2009-10 the loan amount for land development increased

**Table 1: Growth in credit advanced by financial institution in Sriganganagar district, 2003-04 to 2012-13 (Rs.' 000)**

Year	Crop	Minor irrigation	Farm machinery	Land development	Total
2003-04	94252	400	19082	200	113934
2004-05	111072	700	26690	-	138462
2005-06	270700	1400	42581	700	315381
2006-07	994000	2350	63300	600	1060250
2007-08	1303000	600	7250	-	1310850
2008-09	1545119	4658	30213	2735	1582725
2009-10	1723967	700	8550	507	1733724
2010-11	2246580	1095	39075	12272	2299022
2011-12	4053211	2980	41205	15020	4112416
2012-13	4275500	3500	45200	17100	4341300
R <sup>2</sup>	0.906	0.34	0.022	0.792	0.913
CGR	0.436**	0.163 <sup>NS</sup>	0.035 <sup>NS</sup>	0.641**	0.413**
t-value	8.77	2.03	0.421	4.78	9.16

\*\* indicate significance of value at P=0.01

NS= Non-significant

tremendously from Rs. 507 thousand in 2009-10 to Rs. 17100 thousand in 2012-13.

The total amount of credit advanced for crop production, minor irrigation, farm machinery and for land development was recorded continuously in increasing trend. The total amount of credit supplied to the farmers of Sriganaganagar was not much impressive during the period from 2003-04 to 2005-06. But from 2006-07 to 2012-13 a considerable increase in the amount Rs. 1060250 thousand was supplied by the financial institution in 2006-07 and it increased Rs. 4341300 thousand in 2012-13. It reveals that the total amount advanced to the farmers of Sriganaganagar district for various purpose increased 43 times from 2006-07 to 2012-13.

The compound growth rate of the credit advanced to the farmers of Sriganaganagar district for various purpose by financial institute during 2003-04 to 2012-13 was worked out and is presented in Table 1. On all components such as crop production, minor irrigation, farm machinery and land development, the positive compound growth rate was recorded in credit advancement over period of time. The compound growth rate in the credit advanced to the farmers for crop production was worked out 43 per cent which was highly significant at one per cent level of significance. Similarly, the compound growth rate in credit advanced for land development was 64 per cent which was also highly significant at one per cent level of significance. But in case of credit advanced for minor irrigation and farm machinery, the growth rate was very low and was not significant at one per cent level of significance. The compound growth rate in total amount

of credit advanced for all purposes was about 41 per cent and was highly significant at one per cent level of significance.

The analysis of growth in the credit advanced to the farmers of Hanumangarh district during 2003-04 to 2012-13 shows Table 2 that the financial institute supplied large amount of credit during this period. The total amount advanced by the bank was 800617 thousand in 2003-04 and it increased to 4278526 thousand in 2012-13, a 5 time increase. Credit advanced for crop production during 2003-04 to 2012-13 was found in increasing trend. It was 714051 thousand in 2003-04 and increased to 3695826 thousand in 2012-13. The higher increasing trend was observed from 2009-10 to 2012-13. The amount advanced in 2012-13 increased about 417 per cent from the year 2003-04. The loan advanced for minor irrigation purpose was found continuously in increasing trend from 2003-04 (Rs.31228 thousand) to 2007-08 (Rs.101400 thousand). But in the year 2008-09 only Rs.18900 thousand was advanced for minor irrigation. However, from 2009-10 to 2012-13, it was again started in increasing trend from 5000 to 378600 thousand. This reveals that minor irrigation was also a important component for the farmers of Hanumangarh district for which bank provided a considerable amount of credit.

Loan advanced to purchase farm machinery was also in increasing trend during 2003-04 to 2007-08. It increased about 240 per cent during this period. But 3.5 times fluctuations were seen in advanced from 2008-09 to 2012-13. The disburshed amount in 2008-09 was 77400 thousand which increased continuously upto 2010-11. But

**Table 2 : Growth in credit advanced by financial institution in Hanumangarh district, 2003-04 to 2012-13 (Rs.' 000)**

Year	Crop	Minor irrigation	Farm machinery	Land development	Total
2003-04	714051	31228	32210	23128	800617
2004-05	924161	51029	40310	24422	1039922
2005-06	1052723	72033	60310	37720	1222786
2006-07	1256902	92021	80620	39822	1469365
2007-08	1476840	101400	109800	42920	1730960
2008-09	1658400	18900	77400	25400	1780100
2009-10	1871500	125000	78676	33100	2108276
2010-11	2797223	168720	90552	40282	3096777
2011-12	3487153	331502	65320	98163	3982138
2012-13	3695826	378600	86400	117700	4278526
R <sup>2</sup>	0.982	0.564	0.454	0.614	0.977
CGR	0.184**	0.237**	0.084*	0.143**	0.183**
t-value	20.97	3.22	2.58	3.57	18.45

\* and\*\* indicate significance of values at P=0.05 and 0.01, respectively

again it was in 2011-12 (Rs. 65320 thousand). Overall no wide variation was seen in the credit advanced for farm machinery.

Credit provided for land development was also found in increasing trend during 2003-04 to 2007-08. During this period it increased 2 times. But in 2008-09, the loan amount for land development decreased to Rs. 25400 from Rs. 40282 thousand only in 2010-11. However, it again increase to Rs. 98163 thousand during 2011-12 and to Rs. 117700 during 2012-13. In general, the lead bank of the area had given equal consideration in advancing the loan for all the important components to the farmers of Hanumangarh district.

The compound growth rate in credit advanced to the farmers of Hanumangarh district during the period from 2003-04 to 2012-13 was recorded positive for all the components. The compound growth rate in advancing the total loan for all the components was 18 per cent and highly significant at one per cent level of significance. Among all components, the highest compound growth rate (24 %) was seen for minor irrigation followed by for crop production (18%) and land development (14%).

In case of farm machinery, a very low but significant compound growth rate (about 8 % only) was observed. Thus, it was revealed that the financial institution of the area played a positive role in advancing credit to the farmers for various purposes.

The analysis of credit advanced to the farmers of Bikaner district during 2003-04 to 2012-13 by the selected bank shows 3 that bank had provided a good amount of loan for various purposes over the period of time. The

total amount advanced for all the components was observed in increasing trend during 2003-04 to 2008-09. The total loan advanced in 2003-04 was Rs. 186634 thousand which increased to 1759418 thousand in 2008-09. However, it decreased during 2009-10. After that it again increased to 1743828. However, in 2012-13, a tremendous increase was observed in the total loan advanced. It was Rs. 5395039 thousand which was 3 times more than the previous year (2011-12) amount of loan.

The data regarding the loan advanced to the farmers of Bikaner district for various purposes during 2003-04 to 2012-13 indicated that the contribution of crop loan in the total loan advanced in 2003-04 was only 12.48 per cent against 15.15 and 68 per cent loan provided for minor irrigation and land development purposes. But in 2012-13 the share of crop loan had increased 83.09 per cent of the total loan against 7.12 and 2.89 per cent loan supplied for above two purposes, respectively.

The loan advanced for crop production started increasing continuously upto 2008-09. The amount of loan advanced in 2003-04 was Rs. 23300 thousand which increased to Rs. 1454039 thousand in 2008-09. But during 2010-11 to 2011-12, the decreasing trend was observed in loan advances for crop production. It was Rs. 1241322 thousand in 2009-10 and Rs.1131282 thousand in 2010-11. However, after that the increasing trend was seen in crop loan advances Rs. 4482769 thousand was advanced in the year 2012-13 which was about 192 times of the amount advanced in 2003-04. No major variation was found in loan advances for minor irrigation purpose during

**Table 3 :Growth in credit advanced by financial institution in Bikaner district,2003-04 to 2012-13 (Rs.' 000)**

Year	Crop	Minor irrigation	Farm machinery	Land development	Total
2003-04	23300	28282	7520	127532	186634
2004-05	71480	26770	70220	18590	187060
2005-06	199300	26500	106300	36537	368637
2006-07	517243	28565	112682	35325	693815
2007-08	622112	63568	217675	35120	938475
2008-09	1454039	82572	192217	30590	1759418
2009-10	1241332	88273	109929	30222	1469756
2010-11	1131282	78484	241372	35717	1486855
2011-12	1311948	95389	293078	43413	1743828
2012-13	4482769	384142	398934	129194	5395039
R <sup>2</sup>	0.861	0.811	0.662	0.025	0.906
CGR	0.484**	0.251**	0.301**	0.032 <sup>NS</sup>	0.338**
t-value	7.04	5.86	3.96	0.45	8.80

\*\* indicate significance of value at P=0.01

NS= Non-significant

2003-04 to 2006-07. It was Rs. 282282 thousand in 2003-04 and Rs. 28265 thousand in 2006-07. But from 2007-08 to 2012-13 a increasing trend was observed, except 2010-11. But the increase in the loan advance in 2012-13 was about 66 times that of the land advanced in 2007-08.

Loan advanced for purchasing the farm machinery fluctuated widely from 2003-04 to 2012-13. In 2003-04 only Rs. 7520 thousand was supplied to the farmers which had increased to Rs. 398934 thousand in (52.05 %) 2012-13. No particular trend was observed in loan advances for farm machinery during 2003-04 to 2009-10. But during 2010-11 to 2012-13, a increasing trend was found. A minor variation was observed in credit advanced for land development in 2003-04 (Rs.127532 thousand) and in 2012-13 (Rs.129194 thousand). No particular trend was seen in the loan advanced during 2003-04 to 2012-13. In 2004-05 loan amount was only Rs.18590 thousand and it increased to Rs. 43413 thousand in 2011-12 (Table 3).

The compound growth rate of the total loan provided to the farmers of Bikaner district from 2003-04 to 2012-13 was positive and significant at 5 per cent level of significance. It was about 34 per cent. The low compound growth rate was insignificant growth in the loan advances for land development. The compound growth rate for crop loan was also registered positive. It was about 48 per cent. Similarly, the compound growth rate in the loan advanced for minor irrigation and farm machinery was also low. It was 25 and 30 per cent only. The compound growth rate in the loan advanced for land development was very low (0.3 % only) and non-significant.

From the analysis regarding the loan advanced for various purposes to the farmers of Bikaner district, the compound growth rate was observed positive and significant at one per cent level of significance. But the compound growth for land development was worked out non-significant. This was due to large variation in the amount advanced during the study period.

Table 4 shows a large variation in the loan advanced for crop production during 2003-04 to 2012-13. However, except in 2009-10, a increasing trend was seen in the crop loan advances. The crop loan amount was Rs. 22082 thousand in 2003-04 which increased to Rs. 658022 thousand that is about 30 times in 2012-13. A tremendous performance of financial institution was observed in the loan advanced for minor irrigation purpose during 2003-04 to 2012-13. The loan amount was only Rs. 8518 thousand in 2003-04 which had increased about 21 times (Rs.186414 thousand) in 2012-13. From 2004-05, the loan amount had increased continuously till 2012-13 with significant change. However, a very less difference was seen in the amount advanced for minor irrigation purpose. Loan supplied for farm machinery consistently increased from 2003-04 to 2012-13. The increasing trend was seen throughout the period in the amount advanced for farm machinery.

Further analysis of loan advanced for land development shows that bank had not provided loan for land development during the year 2003-04 to 2008-09. The amount advanced for land development was recorded from 2009-10 and increasing trend was seen during 2009-10 to 2012-13. The loan amount for land development in

Year	Crop	Minor irrigation	Farm machinery	Land development	Total
2003-04	22082	8518	22753	-	53353
2004-05	41260	8025	30580	-	79865
2005-06	92102	10582	43239	-	145923
2006-07	116278	20522	48256	-	185056
2007-08	258024	42234	55101	-	355359
2008-09	404270	42022	58222	-	504514
2009-10	339276	44222	64022	7302	454822
2010-11	448276	60220	64452	12868	585816
2011-12	580227	103993	74735	16950	775905
2012-13	658022	186414	98648	27257	970341
R <sup>2</sup>	0.909	0.952	0.917	0.945	0.984
CGR	0.367**	0.344**	0.135**	0.315**	0.423**
t-value	8.93	12.58	9.40	11.24	11.76

\*\* indicate significance of value at P=0.05

2009-10 was Rs.7302 thousand which had increased to Rs. 27257 thousand in 2012-13. It had increased about 4 times in a period of five years. A wide variation was observed in total loan advanced during 2003-04 to 2012-13 and no particular trend was observed during 2003-04 to 2008-09. However, from 2010-11 to 2012-13 increasing trend was observed.

In order to find out growth in loan advanced to the farmers of Churu district by the bank for various purposes during 2003-04 to 2012-13, a compound growth rate were worked out and presented in table. The positive growth rate was found for all components. No major difference was seen in the compound growth rate for crop production (36%), minor irrigation (34%) and land development (31%). A low compound growth (13%) was observed in farm machinery. The growth rates in all the components were found significant at 1 per cent level of significance.

Thus, from the above discussion it was observed that the compound growth rate was positive for credit supplied to the farmers of Sriganganagar, Hanumangarh, Bikaner and Churu districts of the Bikaner region. In case of crop production, the compound growth rate in advancing the credit to the farmers of selected district was worked out 18.40 to 48.40 per cent. It was highest 48.40 per cent for Bikaner district and lowest 18.40 per cent for Hanumangarh.

The significant growth rate was registered in the crop production. The growth rate in the credit advanced for minor irrigation system was lowest 16.30 per cent for Sriganganagar district and highest 34.40 for Churu

district. Similarly, the growth rate during this period (2003-04 to 2012-13) in the credit advanced for farm machinery and equipment was estimated 4.0 to 30.10 per cent. It was highest 30.10 per cent for Bikaner district followed by 13.50 per cent for Churu and 8.40 per cent for Hanumangarh district. However, the growth rate in supply of credit for machinery and equipment was lowest 3.5 per cent for Sriganganagar district. The compound growth rate of credit provided for land development by the financial institutional varied from 3.15 to 64.10 per cent. The highest growth rate in credit advanced for land development was registered for Sriganganagar district (64.10%) followed by Churu district (32%), but in the case of Hanumangarh and Bikaner district it was only 14 and 3 per cent.

At overall level, the highest growth rate (29.40%) was found for the loan supplied for crop production followed by 26.10 per cent for minor irrigation system, 20.50 per cent for farm machinery and 10 per cent for land development purposes. The growth rate in supply of agricultural credit by financial institutions to the farmers of study area during 2003-04 to 2012-13 for all purposes together was registered 27.50 per cent at overall level in Bikaner region of Rajasthan (Table 4).

At overall level, the growth rate in credit for all purposes was 21 to 28 per cent which was significant at 5 per cent level of significance. However, only 10 per cent growth rate was registered in the loan provided for land development and it was non-significant. The growth rate on supply of credit for various purposes by selected

**Table 5 : Growth in credit advanced by financial institution in Bikaner region, 2003-04 to 2012-13**

Year	Crop	Minor irrigation	Farm machinery	Land development	Total
2003-04	853685	68428	81565	150860	1154538
2004-05	1147973	86524	167800	43012	1445309
2005-06	1614825	110515	252430	74957	2052727
2006-07	2884423	143458	304858	75747	3408486
2007-08	3659976	207802	389826	78040	4335644
2008-09	5061828	148152	358052	58725	5626757
2009-10	5176075	258195	261177	71131	5766578
2010-11	6623361	308519	435451	101139	7468470
2011-12	9432539	533864	474338	173546	10614287
2012-13	13112117	952656	629182	291251	14985206
R <sup>2</sup>	0.977	0.925	0.643	0.289	0.979
CGR	0.294**	0.261**	0.205**	0.101 <sup>NS</sup>	0.275**
t-value	18.28	9.92	5.07	1.80	19.49

\*\* indicate significance of value at P=0.01

NS= Non-significant

financial institutions was also registered significant at 1 per cent level of significance. It was non-significant with the growth rate 3.5 per cent in the credit provided for land development. Among all the components, the highest 29 per cent growth rate was found on the credit provided for crop production. The study revealed that credit provided to the farmers of study area during 2003-2013 increases with positive compound growth rate. But not upto the mark. Thus, a greater attention was needed in advancing the agricultural credit for various purposes in the study area (Table 5). Similar work related to the present investigation was also carried out by Golait (2007); Mahmood *et al.* (2009); Mundinamani (2005); Satya Sai (1988) and Vishvanathan (2005).

### Conclusion :

The overall growth rate in advancing the agricultural loan for various purposes was found 27 per cent. Positive compound growth was recorded for all components in all the selected districts. At overall level, the highest growth rate (29.40%) was found for the loan supplied on crop production followed by 26.10 per cent for minor irrigation system, 20.50 per cent for farm machinery and 10 per cent for land development purposes. The growth rate in supply of agricultural credit by financial institutions to the farmers of study area during 2003 – 04 to 2012-13

for all purposes together was registered 27.50 per cent at overall level in Bikaner region of Rajasthan.

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