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Institutional Credit to Mountain Agriculture: Issues of Structural Changes and Impact in Jammu & Kashmir[$]

S.H. Baba*, M.H. Wani, S.A. Wani, B.A. Zargar and N.A. Qammer

Division of Agricultural Economics & Marketing, Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir, Shalimar Campus, Srinagar-190 025, Jammu & Kashmir

Abstract

The study has looked into the institutional credit in relation with agricultural productivity in Jammu & Kashmir. The results have revealed that although the credit deployment of scheduled commercial banks (SCBs) to agriculture has increased in absolute terms, its percentage share in the total credit outstanding has declined sharply. The intensity of agricultural credit has also declined over the years. Despite significant changes since 1980s, direct agricultural credit continued to contribute a higher proportion and had a spurt in late-2000s owing to the inception of banking reforms. The share of rural banks has declined due to a decline in the number of RRBs. Direct agricultural credit outstanding in different regions has revealed wide disparity across the state; Kashmir region alone received around 60 per cent while Ladakh region have a meagre proportion of it. The SCBs have been found advancing only 7.61 per cent of the credit requirement in the state and this gap is more pronounced in the Ladakh region. The estimates of simultaneous equation model have revealed a significant contribution of credit in enhancing agricultural productivity in the state. The study has given some policy suggestions for enhancement of growth and intensity of agricultural credit and revival of rural banks.

Key words: Institutional credit, agricultural productivity, mountain agriculture, Jammu & Kashmir

JEL Classification: Q14, Q12

Introduction

The gradual sophistication of agricultural technology in India has been forcing to adopt increasing quantities of input technologies and productive assets. These possibilities, however, demand a higher capital deployment to be augmented from the outside sources. Borrowers of credit can enhance inputs use (Mishra, 1994), adopt modern technologies (Rajeev and Dev, 1998), cultivate remunerative crops and increase cropping intensity (Rajendra *et al*., 1995) to enhance net returns per unit area and generate more capital stock at their farms (Baba *et al*., 2014). Accordingly, any pushing through latest technology would prove counter-productive without a well-conceived credit policy. Contrary to this, most farms in India are resource-starved and free access to credit institutions for the farmers, with little asset backing and meagre landholdings, is limited (Abdul, 1992; Vyas, 2004).

For centuries the informal financial agencies have been providing credit services in agriculture that has pushed farming community in viscous circle of indebtedness. The Reserve Bank of India through its special credit programmes has played an important role in breaking the shackles of indebtedness, yet the informal sector still dominates the rural credit scene. Since agriculture continues to depend on the monsoon, it is perceived as a high risk area. The policy framework

* Author for correspondence
Email: drshbaba@gmail.com

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of agricultural financing has evolved over the years with the aim of creating an enabling environment for the smooth flow of resources to agriculture. The creation of the cooperative banks, RRBs and NABARD coupled with inception of recent banking reforms of 2004 that emphasize on doubling of agricultural credit in three years (RBI, 2008), has improved the share of institutional credit in total rural credit, though the prominent role of informal agencies is still intact. Moreover, there are wide regional disparities in the disbursement of agricultural credit. The state of Jammu & Kashmir has predominance of resource-poor farmers with small/marginal landholdings, of which about three lakh farmers are indebted (IASRI, 2009). Since the provision of credit is an effective way to increase farm returns under the rainfed hilly conditions (Tripathi *et al*., 1994), it necessitates a comprehensive analysis of the existing institutional credit system to agriculture in the state. With this view, this study has investigated agricultural credit in relation with agricultural growth in the state.

Data and Methodology

The study is based on the secondary data obtained from various published/unpublished records of Reserve Bank of India (RBI), Government of India, Directorate of Economics and Statistics, Government of Jammu & Kashmir and other sources. For simple comparative study of the behaviour of institutional credit outstanding in agriculture, the entire period (1980-81 to 2010-11) was divided into three sub-periods, viz. Period-I (1980-89), Period-II (1990-99), and Period-III (2000-10).

The Simultaneous Model

To quantify the determinant and impact of credit on agricultural growth, simultaneous equation model of the following form was formulated and estimated. The single equation approach to this phenomenon seems to be inadequate, and therefore, it is desirable to employ a method of estimation which takes into account simultaneous interdependence between the variables.

AGP = F(CRDT, CRDTIND, PUB, PRIV, HOLD, CI, IR, COOP, ROAD, RLIT, U) …(1)

CRDT = F(AGP, COVR, PUB, LBF, INT, COOP, CRDTIND, TOT,U) …(2)

where,

AGP = Agricultural productivity (=Agricultural gross domestic product/hectare of cropped area) (₹\ha),

CRDT = Direct institutional credit to agricultural sector (₹/ ha),

CRDTIND = Indirect institutional credit to agricultural sector (₹/ ha),

RLIT = Rural literacy (%),

PUB = Public investment in agriculture (₹/ ha),

PRIV = Private investment in agriculture (₹/ ha),

TOT = Terms of trade,

HOLD = Average holding size (ha),

CI = Cropping intensity (%),

IR = Cropped area under irrigation (%),

ROAD = Road density (km/ ha of GA),

COVR = Coverage of rural banks (% of total bank branches),

LBF = Loanable funds (in crore ₹),

INT = Interest rate of institutional credit (%),

COOP = Credit extended by cooperatives (₹/ ha), and

U = Error-term.

A number of variables were attempted in the model on the basis of their expected impact on endogenous variables; however, only those variables that gave best fit to the estimates were specified in its final structural form.

The total agricultural credit supplied by commercial banks was considered as the stock of debt outstanding. The nominal amount of credit was converted into real terms at 1980-81 prices using state-specific price deflator (used by The Directorate of Economics & Statistics, Government of J&K for deflating state gross domestic product to constant terms). According to the definition used for commercial banks credit, we used the series of amount of credit outstanding (direct finance to farmers) at various ranges of interest rate. From this series, the average interest rate was calculated as follows: If *B* denotes the amount of credit outstanding, *R* the mid-point of the range of interest rate, the average interest rate for a year is computed as the weighted arithmetic average S*BR*/SB, the summation extending over all the ranges of interest

rates. Besides this, due care was taken to rule out the multicolinearity and autocorrelation problems.

Results and Discussion

Growth of Bank Network and Decline in the Number of Rural Banks

Institutional credit is advanced to agriculture through a network of scheduled commercial banks (SCBs). Over the years, there has been a good progress in branch expansion and advancement of credit. The period-wise growth of bank branches revealed that there were 646 bank branches in the state during period 1980-90 (Table 1). The number of branches of SCBs went up significantly over the years and reached 876 during period 2000-11. Other banks (including private banks) alone constituted one-third of the total branch offices in all the periods, and the remaining two-third bank branches belonged to Regional Rural Banks (RRBs), Nationalized Banks (NBs) and State Bank of India and Associates (SBI&As) in order of their importance.

The rural banks are to cater to the needs of rural masses, particularly of the farming community. As evident from Table 1, about 65 per cent of the total bank branches were in the rural areas and 24 per cent were in the urban areas. While the number of bank branches in urban and semi-urban areas increased consistently, their number in rural areas first increased from 456 (1980-81) to 570 (1990-2000) and then declined to 543 (2000-11) despite significant demand of credit in the rural sector, particularly in agriculture.

To find the pattern of growth in rural and urban bank branches, compound growth rates were estimated for different periods (Table 1). The estimates indicated that branches of all the bank groups by and large increased significantly during period I, but RRBs expanded at more pace (13.7%). The growth of branches in all the bank groups decelerated during period II, which was probably due to various types of regulations/bindings on banks in advancing credit. But, in period III, the reform process culminated into the progress of all bank groups and all banks attained a rising trend, except Regional Rural Banks whose branches declined significantly at 0.75 per cent per annum. The rural bank branches have exhibited a declining trend from first to third period, while the number of urban and semi-urban branches has grown.

Sectoral Lending through Scheduled Commercial Banks (SCBs)

Consistent with the changing scenario of investment, lending and profit maximization, the credit advanced to various sectors of economy kept on changing. The sectoral deployment of SCBs credit has revealed more than two-fold increase in the total credit outstanding in the state from period I to period II and another fivefold increase towards period III, which was

Table 1. Number and growth of SCB branch offices in J&K

Period	Unit	State Bank of India and Associates	National-ized Banks	Regional Rural Banks	Other banks	Rural branches	Semi-urban branches	Urban branches	Total
Period I	No.	105	108	195	238	456	59	131	646
(1980-90)	CGR	2.7*	7.0*	13.7*	3.07*	6.9*	3.9*	2.8*	6.05*
	Standard error	0.3	0.8	2.3	0.57	0.9	0.4	0.5	0.79
Period II	No.	120	135	267	275	570	74	153	797
(1990-00)	CGR	0.6*	0.3*	0.4*	1.0*	0.6*	2.5*	1.6*	0.68*
	Standard error	0.1	0.1	0.1	0.1	0.01	0.1	0.1	0.05
Period III	No.	126	147	257	346	543	126	207	876
(2000-11)	CGR	1.45*	1.73*	-0.75*	3.22*	-1.5	11.00	5.2*	1.54*
	Standard error	0.36	0.26	0.22	0.22	0.3	1.1	0.3	0.21

Note: *indicate significance at 05 per cent or better levels
Source: Baba *et al*. (2012)

Table 2. Sectoral distribution of credit outstanding from SCBs at 1980-81 prices

(in lakh ₹)

Sector	Period I (1980-1990)		Period II (1990-2000)		Period III (2000-2011)	
	Amount	%	Amount	%	Amount	%
Agriculture	2281	12.3	3521	7.7	12412	5.9
Industry	6245	33.6	11187	24.4	55399	26.3
Transport	2934	15.8	3291	7.2	7501.7	3.6
Trade	4379	23.6	11247	24.6	37647	17.9
Others*	2751	14.8	16545	36.1	97764	46.4
Total	18590	100.0	45789	100.0	210722	100.0
Artisan	0	0.0	572	1.2	2487	1.2
Small scale industries	3303	17.8	4133	9.0	7048	3.3

Note: *include credit for personal and professional economic sector, etc.
Source: Baba *et al*. (2012)

in accordance with the favourable policy reforms and improved access to banking facilities through expansion of bank branches (Table 2).

The credit to industry has increased from ₹ 6245 lakh in 1980-90 to ₹ 55399 lakh in 2000-11. The declining proportion of credit to industry was due to their increased reliance on other sources of funding, especially the equity market (RBI, 2008). The outstanding credit by SCBs for transportation grew sharply from ₹ 2934 lakh (period I) to ₹ 7502 lakh in period III. Trade loans registered an increase of one per cent from period I to period II but from period II to period III, it declined by 5.7 per cent. Loan under this head is expected to improve in view of the expanding tourism sector in the state. The construction of hotels/ restaurants and other sub-head under this head would definitely demand more credit in future.

Although RBI through its network of bank branches has increased agricultural credit in absolute terms its percentage share in the total credit outstanding by scheduled commercial banks (SCBs) has shown a sharp decline at the end of first decade. Within agriculture the share of direct credit has also decreased from about 11 per cent to 5 per cent of the total credit advanced through SCBs during 1980 to 2011.

While in absolute terms, the agricultural credit outstanding has increased 21-fold since 1980s, its share in total credit outstanding has drastically gone down from 12.4 per cent to 7.8 per cent during 1980 to 2010 (Figure 1). It appeared that the non-agricultural credit outstanding has increased more rapidly (11.8% annual growth) compared to just 8 per cent growth in the agricultural sector.

Direct/Indirect Agricultural Credit Outstanding

Historically, agricultural credit comprised the credit provided directly to the cultivators, also called "Direct Finance to Agriculture". Direct ûnance to agriculture includes short-term credit or credit for seasonal agricultural operations, credit for medium- and long-term investments in agriculture. The second component of agricultural ûnance is called "indirect ûnance", which does not go directly to the cultivators, but to the institutions that support agricultural production. The typical form of indirect ûnance to agriculture goes to input dealers and electricity boards. This kind of loan although takes time to become productive, its benefits flow for years.

Consistent with this, the institutional credit to agriculture increased steadily from ₹ 1266 lakh (1980-81) to ₹ 3362 lakh (1985-86). After a minor setback during early-1990s, the institutional credit increased towards early-2000s (Table 3). It increased drastically in the later part of 2000s owing to the impetus intuitional credit received from the banking reforms of 2004.

The agricultural credit outstanding constituted about 90 per cent of the total agricultural credit and despite phenomenal change, it continued to contribute a higher proportion (85.4%) of credit to this sector.

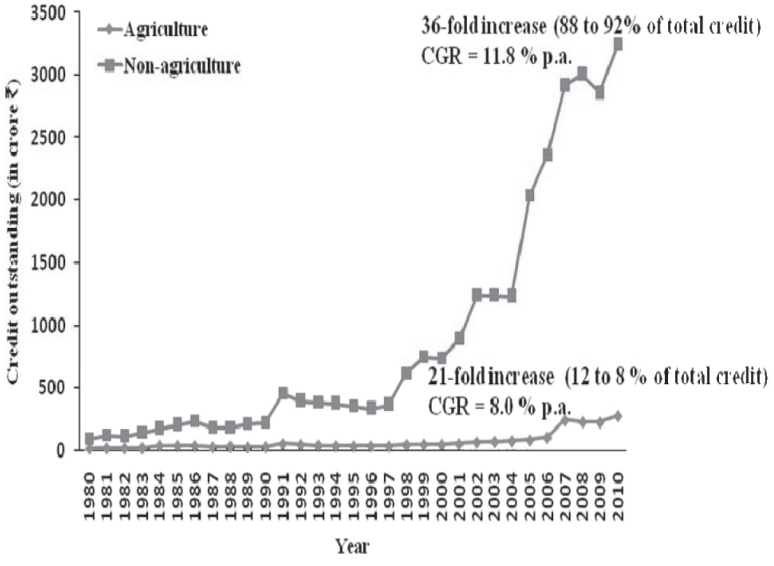

Figure 1. Change in credit to agricultural and non-agricultural sectors

Table 3. Direct and indirect credits outstanding to agriculture from SCBs at 1980-81 prices

('000 ₹)

Year	Direct credit	Indirect credit	Total agricultural credit
1980	1134 (89.6)	132 (10.4)	1266
1985	2749 (81.8)	612 (18.2)	3362
1990	1965 (81.1)	459 (18.9)	2424
1995	2781 (91.7)	250 (8.3)	3031
2000	4048 (95.9)	172 (4.1)	4219
2005	6782 (85.5)	1152 (14.5)	7934
2010	23470 (85.4)	4001 (14.6)	27472
CGR (%)	8.2*	8.2*	8.1*
Standard error	0.7	2.0	0.8

Note: *indicates significance at 5 per cent or better levels
Figures within parentheses indicate percentage of total agricultural credit
Source: Baba *et al*. (2012)

After 1985-86 it declined steadily, however it resumed its rising trend and reached ₹ 6782 lakh in 2005. Subsequent to the new banking reforms, direct credit exhibited more than three-fold increase from 2005-06 to 2010-11. On the other hand, indirect credit to agriculture reversed its declining trend after 2000-01, indicating the impact of reform process on indirect credit to agriculture.

Trend in Agricultural Credit Outstanding Advanced by SCBs

The estimates revealed that both direct and indirect agricultural credit outstanding increased significantly at the annual growth rates of around 8 per cent during 1980s, while during 1990s, the growth of total agricultural finance was insignificant, particularly on account of declining trends in indirect credit outstanding. Later in 2000s, the declining growth was reversed in direct as well as indirect agricultural credit outstanding. During this decade, the agricultural credit grew at the rate of 20.27 per cent per annum, which was signiûcantly higher than the growth rate recorded for the 1990s. In this period indirect ûnance grew at an astonishing annual rate of 27 per cent (Table 4). From 1990s, the area of indirect ûnance to agriculture has been broadened by the RBI (RBI, 2008) which had influenced the growth of indirect ûnance from the mid-2000s. An important point to note here is the revival of agricultural credit after the year 2000 itself. This scenario is in line with the general perception that the revival since 2000 was owing to the government's announcement to double the supply of credit to agriculture.

Intensities of Agricultural Credit

The credit intensities were estimated (credit as % of respective GDP) to observe their growth pattern and the results revealed that the intensity of total

Table 4. Compound growth rates of credit advanced to agricultural sector by SCBs

(Per cent)

Period		Direct credit	Indirect credit	Total agricultural
Period I (1980-90)	CGR (%)	8.12*(2.82)	7.85(8.31)	8.09(3.50)
Period II (1990-00)	CGR (%)	4.85*(1.31)	-25.42*(9.87)	0.78(2.50)
Period III (2000-11)	CGR (%)	20.13*(2.17)	26.57*(5.76)	20.27*(2.01)
All (1980-2011)	CGR (%)	8.15*(0.72)	8.17*(1.97)	8.13*(0.77)

Note: Figures within parentheses indicate standard errors; CGR = Compound growth rates; *indicate significance at 05 per cent or better levels
Source: Baba *et al*. (2012)

Table 5. Intensity of institutional credit advanced by SCBs

(% of GDP)

Period	Agricultural credit			Non-agricultural credit
	Direct	Indirect	Total	
Period I (1980-90)	3.9	0.6	4.5	24.6
Period II (1990-00)	3.1	0.7	3.8	28.1
Period III(2000-11)	6.7	1.1	7.7	53.4

Source: Baba *et al*. (2012)

agricultural credit was 4.5 per cent during the 1980s, it declined drastically to 3.8 per cent in 1990s, but doubled in 2000s (Table 5). The intensity of direct agricultural credit was consistently higher than of indirect credit in all the sub-periods. A higher percentage of domestic product generated by non-agricultural sectors goes back as credit to these sectors and its intensity persistently increased since 1980s.

Agricultural Credit and Differential Role of Bank Groups

Bank group-wise distribution of credit by SCBs has revealed that the public sector banks, including RRBs, together accounted for about three-fourths (72.7%) of agricultural credit, and the major share was contributed by the State Bank of India & Associates (SBI&A). Over the years, the share of SBI&A has declined, and of nationalized and private sector banks has increased significantly (Table 6). The share of RRBs, primarily established to provide timely institutional credit in rural areas especially to agriculture, declined to 11.0 per cent in period III from about 14 per cent in period I. On the other hand, the share of private sector banks has witnessed a drastic increase implying its increasing role in advancing credit to the agricultural sector. The role of private banks has been more pronounced in indirect credit outstanding to agriculture. Among the private banks, J&K has been predominately serving the rural sector in the state. The declining share of other bank group in total credit, especially of RRBs needs to be addressed on priority.

Issues in Credit Limits

An important policy issue is the "Credit Limit" set by monetary authority up to which institutions can advance credit to any sector. The figures documented in the Table 7 revealed that the credit limit for agricultural advances had increased from ₹ 2139 lakh in 1980-81 to ₹ 9482 lakh in 1990-91, however, it was pushed down to just ₹ 3822 lakhs in 1995-96. Later, it was given due consideration and it showed an increase of more than two-fold by 2005-06 and another three-fold between 2005 and 2010. The credit limit of direct finance from SCBs to farmers has changed in a similar fashion. However, the limit of direct credit steadily declined between 1990 and 1995 and of indirect credit experienced a decline from 1985-86 to 2000-01. The credit limit of direct finance to agriculture per account

Table 6. Bank group-wise credit outstanding to agricultural sector in J&K

(Per cent)

Period	Sector	State Bank of India and Associates	Nationalized Banks	Regional Rural Banks	Other banks	Total (in lakh ₹)
Period I (1980-90)	Agriculture	43.4	15.6	13.7	27.3	2280
	Direct	40.0	15.1	15.3	29.7	1989
	Indirect	69.3	19.3	1.8	9.6	291
Period II (1990-00)	Agriculture	17.9	13.5	27.8	40.8	3521
	Direct	17.7	14.6	22.3	45.4	2861
	Indirect	18.6	8.9	51.4	21.1	661
Period III (2000-11)	Agriculture	7.9	17.0	11.0	64.1	13031
	Direct	8.1	12.5	12.5	66.9	11235
	Indirect	6.4	45.8	1.8	46.0	1796

Source: Baba *et al*. (2012)

Table 7. Credit limits in agricultural credit advanced by SCBs at 1980 prices

(in lakh ₹)

Year	Direct credit	Indirect credit	Total credit
1980-81	1788 (0.04)	351 (0.17)	2139 (0.05)
1985-06	4352 (0.03)	719 (0.72)	5071 (0.04)
1990-91	8861 (0.06)	621 (0.16)	9482 (0.06)
1995-96	3452 (0.03)	370 (0.17)	3822 (0.04)
2000-01	4784 (0.08)	187 (0.14)	4972 (0.08)
2005-06	8821 (0.22)	1418 (1.37)	10239 (0.25)
2010-11	30621 (0.37)	5177 (3.82)	35798 (0.43)

Note: Figures within the parentheses indicate credit limit per account in lakh rupees
Source: Baba *et al*. (2012)

fluctuated between 1980-81 and 2000-01 and increased to ₹ 0.37 lakh per account by 2010-11, whereas for indirect finance it reached ₹ 3.82 lakh per account.

The shift in recent times towards loans with large credit limits are related to the changes in policy on agriculture in India, which increasingly favours the growth of a capital-intensive and export-oriented production pattern in agriculture. The changes in the deûnition of indirect ûnance to agriculture since late-1990s, have also been in line with the new emphasis in government policy. However it is important to note that the agricultural credit, whether direct or indirect, has always been lower than the fixed credit limits. The agricultural credit should be enhanced up to the fixed credit limits and later limits need to be widened.

Region-wise Direct Credit Outstanding to Agriculture and Neglect of Backward Districts

The distribution pattern of credit has revealed a huge disparity in its distribution across different regions of the state and neglect of backward districts. The Kashmir region alone received 64 per cent of the total direct credit outstanding to agriculture during first period and it continued to dominate despite various structural changes. The districts of Anantnag, Baramulla, Srinagar and Jammu had a major share in total direct credit outstanding in all the periods (Table 8), though in the third period the share of Srinagar district declined to 9.21 per cent. The eight districts, viz. Budgam, Kupwara, Kargil, Leh, Rajouri, Doda and Udhampur, had only up to 5 per cent share in total direct finance to agriculture. The share of Pulwama district which is gradually gaining importance in terms of productivity enhancement or growth of financial network, had increased during 2000s. Ladakh region had a meagre proportion (< 2%) of total direct credit outstanding in the state in all the periods. While a few districts have received persistently a higher proportion of total credit outstanding, the share of others has shown a decline. With few exceptions, the increase of credit outstanding in different districts from first to third period was in consonance with the growth of state

Table 8. Region-wise direct credit to agriculture by SCBs

District	Direct credit per unit of cropped area (₹/ha)			Percentage of state total credit		
	Period I (1980-90)	Period II (1990-2000)	Period III (2000-10)	Period I (1980-90)	Period II (1990-2000)	Period III (2000-10)
Anantnag	173	103	1238	8.14	3.64	12.8
Budgam	116	157	712	3.33	3.23	3.94
Baramulla	486	477	2196	22.25	15.01	20.4
Kupwara	198	217	603	4.16	3.43	2.79
Pulwama	108	119	1260	4.48	3.36	10.26
Srinagar	1497	2986	3396	21.58	29.38	9.21
Kashmir region	314	410	1471	63.93	58.06	59.11
Kargil	67	39	263	0.33	0.14	0.27
Leh	43	119	1367	0.22	0.43	1.43
Ladakh region	51	75	806	0.55	0.57	1.70
Doda	78	153	526	2.76	4.09	5.11
Jammu	170	269	912	17.41	20.05	18.37
Kathua	151	209	638	8.53	8.69	7.96
Poonch	48	147	465	0.90	2.09	2.12
Rajouri	40	84	232	1.59	2.67	2.27
Udhampur	82	98	290	4.33	3.19	3.35
Jammu region	99	166	555	35.53	41.38	39.18
State	195	266	902	100.00	100.00	100.00

Source: Baba *et al*. (2012)

aggregate outstanding. It is important to note that districts having either more access to credit institutions or more developed agricultural system have received more credit.

The credit outstanding per hectare of cropped area has also shown a pronounced disparity in its distribution across different districts/regions (Table 8). The direct agricultural credit per unit of cropped land was very high in the Kashmir region (₹ 1471/ha) (2000-11), much higher than in Jammu and Ladakh regions. The direct credit-area ratio has drastically increased during period III in all the three regions. In Pulwama district in Kashmir region and Leh district in Ladakh region, the direct agricultural credit has increased ten-fold since period I.

To find the growth of direct agricultural credit in different periods in different districts, compound growth rates were estimated and the results presented in Table 9. With a few exceptions, a consistent growth pattern was observed across different districts. The direct agricultural credit outstanding showed a persistent increase during the first two periods and later it had a spurt and increased with increasing growth rate during period III in all the districts, except Kupwara, Doda and Jammu. In these three districts, the direct credit outstanding showed a steady rising trend since period I. The higher growth rates in direct credit outstanding to agriculture during period III were in accordance with significant increase of credit disbursement after the banking reforms of early-2000s.

Demand-Supply Gaps in Credit

The credit requirement for the agricultural sector in different regions of the state was estimated to be ₹ 14238 crore. It was highest for the Jammu region, followed by the Kashmir region and was relatively lower for the Ladakh region. The SCBs advanced only 7.61 per cent of the total requirement of direct agricultural credit in the state (Figure 2). The direct agricultural credit supplied only 15 per cent of total required credit in Kashmir region and the demand-supply gap was wider in the Ladakh region. The higher

Table 9. Direct-wise and region-wise growth rates in direct agricultural credit outstanding by SCBs

(Per cent)

District/region	Period I (1980-90)		Period II (1990-00)		Period III (2000-11)	
	CGR	SE	CGR	SE	CGR	SE
Kashmir region	10.1*	2.5	3.25	1.74	21.3*	2.1
Anantnag	7.6*	3.2	-4.4*	1.1	40.5*	2.8
Budgam	8.1*	1.4	-0.9	2.1	18.5*	3.2
Baramulla	6.7*	3.0	5.7*	1.7	23.0*	1.6
Kupwara	4.7	3.9	7.1	4.2	27.8*	3.0
Pulwama	9.6*	3.7	3.8	2.7	29.4	2.1
Srinagar	17.8*	4.2	3.5	2.7	-1.3	6.0
Ladakh region	28.3*	12.2	12.8*	3.3	36.5*	10.1
Kargil	21.5	19.2	17.6*	5.3	41.2*	10.5
Leh	48.7*	16.0	11.8*	3.4	34.5*	10.4
Jammu region	4.4	3.4	6.6*	2.1	17.1	2.4
Doda	6.5*	1.2	13.6*	1.4	18.7*	5.4
Jammu	0.5	1.9	9.7*	0.9	16.8*	2.3
Kathua	5.3	7.2	0.1	5.9	13.7*	2.4
Poonch	8.5*	3.4	7.2*	0.9	23.6*	7.4
Rajouri	14.5*	4.5	7.0*	0.7	19.4*	3.4
Udhampur	10.5*	5.0	3.9*	2.1	16.3*	2.5
State	8.1*	2.8	4.9*	1.3	19.9*	2.1

Note: *denotes significance at 5 per cent or better level; SE = Standard error
Source: Baba *et al*. (2012)

credit disbursement in the Kashmir region could be due to more advances for the cultivation of high-value cash crops, like apple.

This supply-demand gap of credit in different regions was wider and necessitates doubling of credit supply and its equitable distribution across regions.

Estimates of Credit-Agricultural Growth Model

To find the influence of direct credit on agricultural growth and to identify its determinants, a two-equation simultaneous model was specified and estimated by employing two stage least square (2SLS) procedure and the results are presented in Table 10. The high value of adjusted R^2 for both the equations implied that the overall model was a best fit. The estimated F-values were significant at 0.01 level of probability for both the equations.

The 2SLS estimates for agricultural productivity model revealed that both direct and indirect credits advanced to the agricultural sector had a positive impact on agricultural productivity though the regression coefficient for direct credit (CRDT) was more prominent. The public and private investments in agriculture significantly and positively influenced agricultural productivity. The irrigation has been found to be the most critical factor for intensification of agriculture in the state and would help in adoption of input technologies. In line with these expectations, the per cent irrigated area (IR) has shown a positive and significant relation with agricultural productivity. Keeping in view the role of irrigated area in agricultural productivity, many studies have advocated the expansion of expenditure on irrigation projects (Pendse *et al.,* 1996; Autkar *et al.,* 1996). Literacy is an important determinant of agricultural productivity as an educated person can better put agriculture on scientific lines and can realize the benefits of credit in technology/capital-led agriculture. Road density has also been found to contribute significantly to the improvement of agricultural productivity.

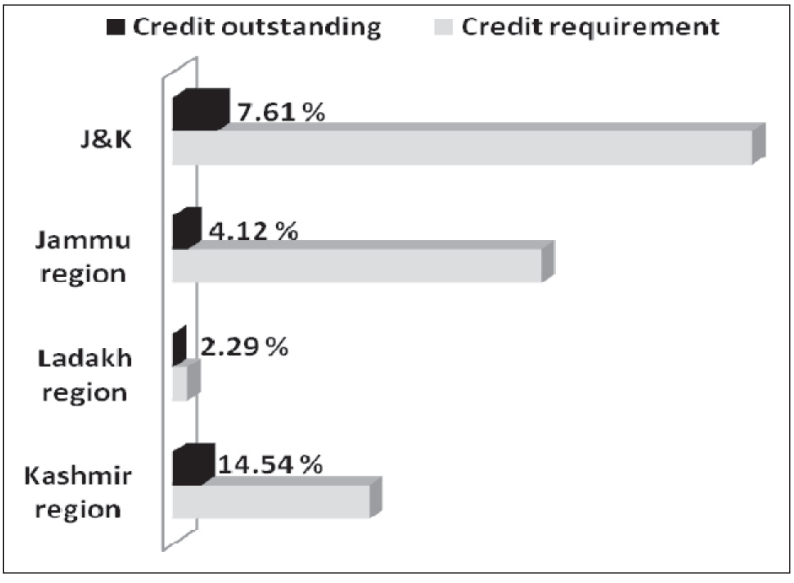

Figure 2. Demand and supply gap in agricultural credit in different regions
Source: Plotted on data collected in Baba *et al*. (2012)

Table 10. Estimates of credit -agricultural growth simultaneous equation model

Endogenous variable	Constant	Regression coefficients		Adjusted R^2	*f*-value
AGP	18.751	+ 0.005 PUB_{-3}* (0.002)	+ 0.054 PRIV* (0.011)	+ 0.004 $CRDT_{-3}$* (0.001)	0.9610	333.8
		+ 6.777 HOLD (5.758)	+ 0.121 ROAD* (0.028)	+ 0.200 IR* (0.031)		
		+ 0.002$CRDTIND_{-5}$* (0.001)	-0.034 $COOP_{-6}$ (0.025)	+0.021 CI (0.031)		
		+ 0.269 RLIT* (0.102)				
CRDT	3629.26	+7.251 INT (25.01)	+1.08CRDIND* (0.211)	+3.998 AGP_{-3}* (0.475)	0.9020	34.4
		- 0.980 PUB_{-4} (0.402)	+43.114 COVR* (14.650)	+ 0.167 LBF* (0.020)		
		-2.259 $COOP_{-2}$* (1.020)	+3.056 TOT_{-2} (1.317)			

Note: *denotes significance at 0.05 or better probability levels
Source: Estimated on data collected in Baba *et al*. (2012)

The estimates of the direct agricultural credit equation showed that all the specified variables turned out to be positive and statistically significant, except public investment and interest rates. The regression coefficient of indirect credit turned out to be positive and significant which confirms complimentarity between two types of credit. The significant value of agricultural productivity coefficient (3.998) indicated that more productivity generates more income and attracts financial institutions. The coverage of rural bank branches and cash balances have emerged significant determinants of direct credit outstanding to agricultural sector. The density of rural banks increases their access to the farming community and enhances

the supply of direct finance to farmers. In the field of agricultural credit, commercial banks are required to follow a policy of mutual substitutability with cooperative institutions. Thus, the total credit supplied by cooperative institutions turned out to be a negative significant function of direct credit supply by SCBs. The regression estimates of total loanable funds (LBF) impressed upon its vital role in enhancement of direct credit supply.

To sum up, agricultural credit helps in enhancement of agricultural productivity and is being determined by it. The estimates have emphasized on the improvement of credit to the agricultural sector and its supply assumes more importance on account of increasing fragmentations of holdings and emergence of resource-poor farmers.

Conclusions and Policy Implications

The study has examined institutional credit to the agricultural sector in relation with agricultural productivity in Jammu & Kashmir. The sectoral credit deployment of scheduled commercial banks (SCBs) has revealed that in absolute terms it has increased significantly in the agricultural sector, but its percentage share in the total credit outstanding has sharply declined. While agricultural credit has increased by 21-fold since 1980s, its share in total credit has gone down from 12.4 per cent to 7.8 per cent between 1980 and 2010. Moreover, the intensity of agricultural credit has been much lower than that of non-agricultural credit in all the periods.

Bank group-wise credit disbursement has revealed a decline in share of RRBs, primarily established to provide timely institutional credit in the rural areas, especially to agriculture. The advancement of direct agricultural credit has revealed a wide disparity across regions; Kashmir region alone received around 60 per cent of the total agricultural credit in the state while Ladakh region had only a meagre share. The SCBs have been found advancing only 7.61 per cent of the credit requirement in the state and this gap was more pronounced in the Ladakh region. The estimates of simultaneous model have revealed that direct agricultural credit has significantly contributed to the enhancing agricultural productivity. Following policy options have emerged from the study:

- The declining trends in the number of rural bank branches and RRBs in particular need to be reversed.
- The declining share of agriculture in total credit advanced in the economy needs to be improved, in pace with other sectors of economy. The limits of the direct credit to the agricultural sector also need to be widened.
- Although the recent banking reforms have given fillip to the institutional credit and there has been many-fold increase in agricultural credit, however, its intensity is far less than the desired priority norms of 18 per cent of gross agricultural domestic product at the national level. Accordingly the intensity of agricultural credit should be improved to harness its expected gains.
- There is a need to frame farmer-friendly credit policy that takes into consideration niches/ comparative advantage and resource endowments while disbursement of credit in the state. These policies should favour all the regions equitably with emphasis on advancing to poor and backward section of the society.
- The small/marginal farmers need to be brought under safety nets of insurance schemes, conditional waivers and concessional interest rate in case of crop failure or market uncertainties.

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