



Econometric Analysis of Demand and Supply of Institutional Credit to Agriculture in Jammu and Kashmir

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Abstract

The study looked into the demand and supply of institutional credit to agriculture in Jammu & Kashmir. It was observed that the agricultural credit has increased in absolute terms since 1980's but its share in total credit has gone down for 12.4 to 7.8% of total credit disbursed in the economy between 1980 and 2010. The results revealed wide disparity across regions with respect to the disbursement of direct credit to agriculture. Moreover, there is a huge gap in the financial requirement and supply of institutional credit to agriculture in the state. The estimates of regression analysis indicated that real farm prices, gross irrigated area, coverage of rural banks, loanable cash balances of commercial banks, state gross domestic product and agriculture domestic product were significant positive determinants of direct credit supply to agricultural sector. On the other hand higher level of permanent income, rural literacy, technology level and value of farm assets have contributed in the improvement of demand for institutional credit. While temporary income and cooperative agricultural credit appeared negative indicating that it supplement farmers' financial requirement and in turn resulted in declining demand for institutional credit. Based upon the findings, the study put forth few policy suggestions.

Keywords: Demand, supply, institutional credit, determinants

Agricultural business is gradually commercializing and shifting to resource intensive enterprises that improve yields. The adoption of scientific package could be considered as a function of farmer's resource position and accordingly it indicates that the adoption of new technology demands higher capital deployments. The adoption of improved technology without adequate capital may lead to reduction in net returns because of lack of proper combination of inputs (Baba, *et al.* 2012; Vijaya Kumar, 1976). The key policy instruments for improving the livelihood of farming community are the transfer of technology with effective credit programmes and extension delivery. The seasonal and inter-annual income fluctuations, major cause of indebtedness, of farm households pose a major problem for food security. To alleviate Indian cultivators from the vicious circle of

poverty, one of the important measures which has to be taken is to curtail the bonds of debt that shackle agriculture. Since late 1990s', government policy has been to compete away informal agents, particularly moneylenders, through the provision and encouragement of formal sector alternatives. Rural credit has been an area of policy intervention for nearly four decades in India and recent banking reforms of early 2000s emphasized upon doubling of agricultural credit in three years (RBI, 2008). Even though the creation of the cooperative banks, RRBs and NABARD has improved the share of institutional credit in total rural credit, the informal sector still plays dominating role (Reddy, 1990).

There are wide disparities in the disbursement of agricultural credit in different regions (Baba *et al.* 2014a).

Jammu and Kashmir, a north-western Himalayan state is predominantly a agrarian state. Although state is poised for improvement of agricultural productivity, to feed growing population, which demand adaption of capital intensive technologies, but about 3.00 lakh farmers are indebted in the state (IASRI, 2009). Further there exists a considerable gap between estimated demand and the supply of credit by institutional sources in the state (Baba *et al.* 2014b). To encourage science/ market led farming, institutional credit has to come up with their financial requirements that necessitate analysis of determinants of demand and supply of agricultural credit. In this context, analysis of the structure of demand and supply of agricultural credit is important. The understanding of the quantitative shifters of demand and supply relationships, not only provide a basis for more meaningful projections of loans, but also facilitate analysis of policy issues concerning agricultural finance.

Database and Methodology

The secondary data with respect to institutional credit advanced to agricultural sector, rural population/literacy, agricultural gross domestic product, cultivated and cropped area, etc were obtained from various published/unpublished records of RBI and NABARD, Government of India and Directorate of Economics and Statistics, Government of J&K. The quantity of total agricultural credit as supplied by commercial banks has been considered as stock of debt outstanding. All the variables in monetary terms were converted into real terms at 1980-81 prices using state specific price deflator. Data on state-wise average value of individual items of farm assets (farm land, farm building, livestock and equipment and machinery) per rural cultivator is collected from All India Debt and Investment Survey, Reserve Bank of India (RBI) at three points of time i.e. 1971, 1981, 1991 and 2001.

Specifically, an attempt was made to estimate the demand and supply functions of agricultural credit from scheduled commercial banks. The study period consists of 31 observations which extend from 1980-81 to 2010-11. Using cost of cultivation data for different crops in different States of India, Gadgil has examined the behaviour of rural borrowers in relation with interest rates (Gadgil, 1992). Number of studies conducted in India employed single equation loan demand models and ignored its supply side (Pani, 1966, Tewari, *at al.* 1974, Sarma and Prasad, 1978 and Subbarao, 1980) and these studies seem to be inadequate as they do not take into account the supply side of agricultural credit. The a

priori models of demand for and supply of credit in the agricultural sector with following structural form has been specified and estimated:

$$CRDT^d = f(INT, PINCM, TINCM, PRINV, COOP, IR, HYVs, LIT, U) \quad (1)$$

$$CRDT^s = f(INT, COOP, PBINV, CRDT_{IN}, IR, CSH, AGDP, SGDP, TOT, COVR, U) \quad (2)$$

Where $CRDT^d$ = Demand of commercial banks credit to a (Direct finance to farmers) (₹/ha), $CRDT^s$ = Supply of commercial banks (Direct finance to farmers) (₹/ha), INT = Rate of interest charged on total agricultural credit by commercial banks (%), IRA = Gross irrigated area that is irrigation (%), COOP = Credit supplied by cooperative institutions (₹/ha), PBINV = Public investment in agriculture (₹/ha), $CRDT_{IN}$ = Indirect credit advanced to agricultural sector (₹/ha), COVR = Coverage of rural banks (% of total bank offices), CSH = Loanable funds available with commercial banks (₹ in crores), AGDP = Agricultural gross domestic product (000' ₹/ha), SGDP = State gross domestic product (₹ in crores), TOT = Terms of trade (agricultural price deflator/non-agricultural price deflator) (%), PRINV = Value of real farm asset held by cultivator (₹/ha), HYVs = Area under high yielding varieties (%), LIT = Rural literacy (%), PINCM = Permanent agricultural income (₹/ha), TINCM = Transitory agricultural income (₹/ha) and U = Error term.

It is assumed that equilibrium is achieved between demand and supply in each time period and hence,

$$CRDT^d = CRDT^s$$

The amount of credit demanded is expected to be inversely related to the cost of credit which includes terms and conditions of loan and borrowers' transaction costs besides the rate of interest on credit. Due to data limitations, the rate of interest is the only cost factor which is considered in this study. Another variable put as independent to demand of credit is net farm income. The demand for credit will be inversely related to the rate of saving in the agricultural sector and net farm income has been taken as a proxy for this economic factor. Since agricultural income is characterized by considerable fluctuations over time, therefore, income in a particular year can be divided into transitory and permanent components. The concept of transitory income has been included in this study to account for the variation in demand for credit that arises because of transient and unpredictable variations in income. It is

hypothesised that demand for credit would increase in years of low income. The banks are also expected to increase their rural advances for carry-on purposes in years of drought and unexpected price falls. Permanent income, on the other hand, is based on farmer's anticipated future income and is a long run concept. It is assumed that borrowing would also take place in high income years because high income levels are likely to be associated with buoyant expectations about future income levels and thus lead to borrowing for capital expenditure.

Another set of exogenous variables is agricultural production technologies, which consists of high yielding variety seeds, chemical fertilizers and irrigation water, is highly capital intensive. Adoption of new technology may induce borrowers to undertake the expenditure required to exploit new opportunities. In accordance with this, the technology variables were specified as exogenous variables in the demand function of institutional credit. Theory of the firm suggests that the real price of farm products is an important determinant of demand for inputs used in agriculture. Considering the demand for credit as a derived demand for capital used in agriculture, the demand for credit will increase with increase in the real price of farm products. It is postulated that, on an average, borrowing behaviour of farmers is characterised by risk aversion and the degree of risk aversion would be inversely related to the asset level of the borrowers. In other words, the demand for credit has been taken to be directly related with the value of assets held by borrowers.

The supply of credit to agriculture is hypothesized to be a positive function of the cost of credit or the rate of interest on credit. Since term credit is given against some collateral offered by farmers, it is hypothesized that lenders consider the value of assets in deciding how much credit to extend to a particular category of farmer or credit worthiness of a farmer. The supply of credit offered to agriculture is expected to be a function of lenders expectation concerning the ability of farmers to repay the loan, it is hypothesized that the lenders consider real prices of farm products while extending loan to farmers for his farming business. Supply of credit to the agricultural sector is hypothesised to be directly related with the level of loanable funds available with the lender banks. After the nationalization of the banks in 1969, the banks were directed by the Reserve Bank of India (RBI) to open large number of their branches in rural areas to enhance the supply of credit to rural cultivators. Thus, the relationship of this variable with the supply of credit is expected to be positive. In the

agricultural credit, commercial banks are required to follow a policy of mutual substitutability with cooperative institutions because the agricultural credit policy envisages that where cooperatives are weak, commercial banks would strengthen the supply of credit. Thus total credit supplied by cooperative institutions is included as an independent variable in the supply function to test the relationship that exists between lending behaviour of commercial banks and cooperative institutions.

According to the definition used for commercial banks credit, we use the series of amount of credit outstanding (direct finance to farmers) at various ranges of interest rate. From this series, the average interest rate is 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 $\frac{\sum BR}{\sum B}$ the summation extending over all the ranges of interest rates.

Net farm income is measured by net domestic product at factor cost from agricultural sector at constant (1980-81 prices). From this series, the transitory income (X_1) is calculated as the difference between current income and permanent income, where the latter is computed as the weighted average of the incomes of the three (Y_1 , to Y_3) years. The equation for permanent income (X_2) is: $X_2 = 0.43 Y_3 + 0.32 Y_2 + 0.25 Y_1$. The weights are taken from the study by Bhalla (1978).

Data on state-wise average value of individual items of farm assets (farm land, farm building, livestock and equipment and machinery) per rural cultivator is collected from All India Debt and Investment Survey, Reserve Bank of India (RBI) at three points of time - and 1971, 1981, 1991 and 2001. The value of each item of asset is multiplied by total number of cultivators at these three points of time to get the value of each item of asset held by the cultivators. Interpolation between the years and extrapolation beyond 2001 to 2010 was done to arrive at consistent series of private farm asset which was then deflated at 1980-81 prices.

Total loanable funds of commercial banks are defined as total deposits left with banks after meeting the cash-deposit ratio (C-D ratio), investment-deposit ratio (I-D ratio) and minimum cash balances kept for operational purposes, the data on cash balances kept for operational purposes is not available. Considering the proportion of cash balances kept for operational purposes in the total deposits in banks being very less, only C-D ratio and I-D ratio are incorporated in the study.

These two ratios are the important credit control instruments of central monetary authority. Through these ratios, the monetary authority regulates the availability of loanable funds out of total funds of the banks.

The structural coefficients of demand and supply models are estimated using ordinary least square regression technique. Besides, other development indicators were also kept in the model, however, only those variables which give the best fit to our model were kept in the final form of model.

Results and Discussion

The credit outstanding to agricultural and non-agricultural sector has been documented in Table 1. The total credit advanced to agricultural sector constitutes only 12.4% of total credit outstanding during 1980 while the rest amount goes to non-agricultural sector. The credit outstanding has gradually increased in both the sectors up to 2000-01. Later owing to much appreciated banking reforms the quantum of growth in agricultural credit has spurted after 2004. While the total credit has observed the influence of reforms between 2000-01 and 2005-06, agricultural credit has shown a three-fold increase after 2005-06. The credit advanced to non-agricultural sector increased more prominently during early 2005 compared to the post-reforms period. While in absolute terms agricultural credit outstanding has increased by 21 folds since 1980's but its percentage share in total credit outstanding has drastically gone down from 12.4 to 7.8%

from 1980 to 2010. It can be seen from the estimates of compound growth rates in table that SCBs credit advances to non-agricultural sector has increased with more annual growth rate (11.8%) compared to just 8% growth in agricultural sector. In consideration of the role of agriculture towards state economy, there is a need of enhancing the proportion of agricultural credit in total institutional advances.

Agricultural credit comprised mainly the credit provided directly to cultivators including loans for short, medium and long term investments, called "direct finance to agriculture". A short-term credit or a credit for seasonal agricultural operations has accounted for a major share. The second component of agricultural finance is called "indirect finance", which goes to the institutions like electricity boards, dealers, etc that support agricultural production in rural areas. The institutional credit to agriculture steadily increased from about 1266 lakh (1980-81) to 3362 lakh (1985-86). After few fluctuations, institutional credit steadily increased towards early 2000's. The direct agricultural credit, constituting about 90% of credit outstanding to agriculture, declined steadily during early 1990's. However it resumes its rising trend and reaches 6782 lakh during 2005, subsequent to new reforms of 2004, the direct agricultural finance to farmers has increased by more than 3 folds from 2005-06 to 2010-11. Despite phenomenal change, direct agricultural credit continued to contribute a higher proportion of total credit

Table 1: Credit outstanding to agriculture and non-agricultural sector by SCBs in J&K

Year	Credit outstanding to agriculture and non-agricultural sector (₹ in lakhs)				
	Agriculture			Non-agriculture	Total
	Direct	Indirect	Total		
1980	1134	132	1266	8919	10185
	(89.6)	(10.4)	(12.4)	(87.6)	(100.0)
1985	2749	612	3362	20484	23846
	(81.8)	(18.2)	(14.1)	(85.9)	(100.0)
1990	1965	459	2424	21807	24231
	(81.1)	(18.9)	(10.0)	(90.0)	(100.0)
1995	2781	250	3031	35260	38291
	(91.7)	(8.3)	(7.9)	(92.1)	(100.0)
2000	4048	172	4219	73656	77875
	(95.9)	(4.1)	(5.4)	(94.6)	(100.0)
2005	6782	1152	7934	203275	211208
	(85.5)	(14.5)	(3.8)	(96.2)	(100.0)
2010	23470	4001	27472	324416	351888
	(85.4)	(14.6)	(7.8)	(92.2)	(100.0)
CGR %	8.2*	8.2*	8.1*	11.8*	11.4*
SE	0.7	2.0	0.8	0.5	0.5

Figures within parentheses indicate percentage of total credit outstanding.

*indicate significance at 05% or better levels

CGR = Compound growth rates and SE = Standard error

outstanding to this sector. It could be observed from the figures documented in Table 1 that the impact of reform process seems to have early advent in indirect credit to agriculture.

Since the direct finance to the farming community get into the production process immediately and becomes productive, therefore, the study would stress upon its analysis. The distribution pattern of credit revealed huge disparity across regions. The direct credit advanced in the three regions of the state viz., Kashmir (KR), Ladakh (LR), and Jammu region (JR) (Table 2) revealed that credit advanced to the farmers in KR alone constituted 65%. While the share of JR and LR was 34 and 1%. Since 1980-81 there has been a significant increase in credit advanced in various regions of the state. In absolute terms there has been an increase of 23493 lakh rupees in the state and increase was higher in KR and relatively less in LR.

With an intention to arrive at the growth pattern of direct agricultural credit, compound growth rates were estimated and presented in Table 2. The estimates revealed that direct agricultural credit increased significantly at an annual growth rate of over 8% in the state since 1980s. The direct institutional credit to agriculture in Ladakh region has shown relatively higher growth rate which need to be pursued for desired progress of farming sector. The growth in the direct credit has not accounted for the deficits in the supply of credit despite the fact that scheduled commercial banks (SCBs) have enhanced credit supply to a large extent.

To have different pictures of credit advanced to farmers directly in different regions in the state, the credit per hectare of cropped area was estimated (Table 3) which revealed that pronounced disparity in its distribution across regions. The direct agricultural credit per unit of cropped land was higher in Kashmir region 3765 per hectare in 2010-11, which is almost three times credit advanced in Jammu. The direct agricultural credit per unit of cropped area has shown a drastic increase between 1980-81 and 2010-11 from 118 to 2067 per hectare, respectively.

In a planned economy estimation of financial requirements are important for guiding investments in public and private sectors. Although the credit delivery system has been vastly expanded and strengthened after the nationalization of banks, there are very few attempts to estimate the credit requirements in different farming system. An attempt has been made in this study to estimate the credit requirement in different agro-climatic zones of J&K while taking care of credit worthiness of farmers and agricultural enterprise feasibility on their farms.

The model uses the relationship between the expenditure on material such as seeds, fertilizers, insecticides and other cash expenses and labour (both hired and family). The total cash and kind expenditure of materials and hired labour plus the imputed value of family labour used for the production of a crop is termed as the financial requirement. Credit would be made available to the farmers on a differentiated basis

Table 2: Region-wise direct institutional credit to agriculture in J&K

(in lakh rupees)

Region	1980-81	2010-11	CGR
Kashmir (KR)	689.56	15232.84	7.92*
	(60.81)	(64.84)	
Ladakh (LR)	0.39	170.63	12.99*
	(0.03)	(0.73)	
Jammu (JR)	444.01	8089.78	8.48*
	(39.16)	(34.43)	
State	1133.96	23493.25	8.19*
	(100.00)	(100.00)	

Figures within parentheses indicate percentage of total;

*Denotes significance at 0.05% or better probability levels

Table 3: Institutional credit to agriculture in different regions of J&K

(₹/ha)

Region	1980-81	2010-11
Kashmir	182.6	3765
Ladakh	1.9	801
Jammu	78.7	1138
State	117.9	2067

according to the size of holdings. In first case the small/medium as well as large would get credit to the full extent of cash and kind expenditure plus the imputed value of family labour to be incurred for the production of a crop and livestock. It would cover a part of the consumption credit needed by them to avoid any mis-utilization of credit. The medium and long term credit need was estimated at the actual credit availed by the farmers in the study area from institutions.

In another case the small/medium farmers would get the 100% of cash and kind expenditure plus the imputed cost of family labour for production of a crop and livestock and large farmers would only get 50% of this cost. This is based on the assumption that the large farmers would be able to finance part of crop production from their own savings without substantial help from the credit institutions. However the medium and long term credit requirements were estimated at the actual credit received by farmers in the study area from institutions.

The credit requirements at state level were estimated after working out the financial requirements of all crops and other enterprises and then equated with gross cropped area at the state level. The credit requirements in the state estimated through case I and II in given Table

3. Employing the same methodology the financial requirements for agricultural purposes were estimated for different agro-climatic zones separately and then aggregated for states as a whole (Table 4). The financial requirements for all agricultural activities for the state were estimated at 15775 crores (case I) and 14238 crores (case II). The total direct credit advanced by SCBs at current prices was used to find out the gaps. Considering the case II, As far as advanced to state agriculture is concerned only 7.16% was supplied by SCBs. This proportion of credit supplied by SCBs would go down if we consider case I. Moreover, the analysis of estimating credit requirement was done by employing credit outstanding and not actual loan and an estimate would definitely have upward bias. This S-D scenario of credit indicated that the credit supply need to be double immediately in view of the fact that agriculture in future would be more capital intensive and technology led.

The estimated coefficients of demand and supply function are presented in Table 5. While the results appear to be significant in the sense that a very large proportion of the variation in the dependent variables is accounted for by the specified exogenous variable although not all the estimated coefficients are statistically significant at conventional level of acceptance.

Table 4: Financial requirements and supply of direct credit to agriculture in J&K

(₹ in crores)

Case	Total financial requirement	Total credit outstanding of SCBs	Outstanding as per cent of total requirement
Case I	15775	1083	6.87
Case II	14238	1083	7.61

Table 5: Estimates of demand and supply function

Variables	Demand function	Supply function
Constant	6765.73	4690.14
INT	85.38 (75.21)	25.35 (24.67)
IRA	26.99 (5.63)*	20.99 (9.04)*
COOP	-19.05 (6.71)*	-5.22 (1.72)*
PBINV	—	-0.03 (0.50)
CRDT _{IN}	—	0.71 (0.05)*
COVR	—	48.48 (12.67)*
CSH	—	0.17 (0.02)*
AGDP	—	37.59 (12.29)*
SGDP	—	0.18 (0.03)*
TOT	—	7.16 (2.88)*
PRINV	8.52 (4.00)*	—
HYVs	0.80 (8.36)	—
LIT	176.5 (63.81)*	—
PINCM	7.99 (1.66)*	—
TINCM	-3.21 (1.11)*	—
R ²	0.8787	0.9599
F	19.02	45.49

*Denotes significance at 0.05 or better probability level

It can be observed from the Table 5, that out of 10 exogenous variables, only 3 were not significant with the supply of institutional credit. Overall model was a best fit with exogenous variables explaining over 95 of total variation in supply of credit to agricultural sector from scheduled commercial banks. The results indicate that the rate of interest is of no significance in this function. Insignificant estimate of this variable in demand equation indicated that the rate of interest does not perform the equilibrating role which is conventionally postulated.

The real farm prices relative to non-agriculture prices play a positive and significant role in influencing the supply of credit. The lending to agricultural sector by commercial banks appeared positively and significantly related to real farm prices. The higher expected prices of agricultural commodities compared to non-agricultural products assure institutions about improved repayment capacity of farmers by way of expected income that accrue to farmers through sale of their harvests.

Same is the case with gross irrigated area which gives an impression about the multiple cropping and in turn farm returns. The rural bank offices as percentage of total bank branches has positive coefficient in the estimated supply equation in the state. The positive and significant coefficients associated with the loanable cash balances of commercial banks in the supply equation in particular emphasis upon improvement of bank linkages with rural masses to enhance deposits. The inclusion of co-operative agricultural credit as an explanatory variable in the structural supply equation of agricultural credit results with a negative coefficient suggesting that commercial banks follow a policy of mutual substitutability with cooperative institutions in these states. The estimated coefficient of state gross domestic product and agriculture domestic product turned positive indicating that improvement of government reserves have a significant influence on allocating more resources for advancing to priority sectors like agriculture. The positive coefficient of indirect institutional credit suggested complementarity between direct and indirect institutional credit advanced to agricultural sector.

It can be observed from the Table 5, that the estimate R^2 was significant indicative of best fit of the equation with set exogenous variables. The results indicate that the rate of interest is of no significance in the demand functions at the macro level. It has been shown that borrowing cost, especially for small farmers, may be much higher due to transaction costs of obtaining a loan.

The negative sign of coefficients of transitory income in the estimated demand equations is consistent with the hypothesised relationship suggesting that demand for credit increases when the income of the farmers are unexpectedly low. Higher the temporary fall in the current income of farmers, higher will be the demand for agricultural credit.

Jodha (1977) also found a significant role of credit as a means to adjust to unexpected changes in income. The impact of changes in level of permanent income on demand for credit indicates that with the increase in level of permanent income, future prospects of investment also appear profitable due to which investment expenditures are undertaken which are financed partly by increased permanent income and partly by borrowed funds. The impact of increase in level of permanent income on demand for agricultural credit depends upon long term expectation about future prospects of capital investment which in turn depends on overall structure of agricultural sector. The positive and statistically significant coefficients associated with technology level (irrigated area and area under HYVs) in the demand equation, indicated the necessity of credit in modern farming. The adoption of new capital intensive agriculture production technology involves yield and price uncertainty. Therefore, the impact of technology adoption on borrowing from banks will depend on ability of farmers to cope with such risks. The coefficients associated with value of farm assets, as hypothesized, are positive suggesting that the desire of farmers to borrow to undertake capital formation on farms would improve demand for institutional credit. The coefficient of co-operative agricultural credit appeared negative indicating that it supplement farmers' financial requirement and in turn resulted in declining demand for institutional credit. Rural literacy is another variable that have positive impact on the demand for institutional credit as evident from its regression coefficient.

To sum up, the rate of interest does not perform the equilibrating role which is conventionally postulated. On the other hand, insignificant impact of interest rate on the supply states indicate that the target-oriented approach dominates the supply, of credit to agriculture from banks rather than the market and commercial forces. Hence, there is need to review the appropriateness of concessional interest rate policy on agricultural credit in the state. Insensitive borrowing of agriculture funds with respect to interest rate asserts that increase in interest rate will not affect the farmers substantially. If interest rate represents only a small share of borrowing costs, a small change in interest rate will have little effect

on borrowing costs and, thus, loan demand. Therefore, the need of the hour is to reduce the cumbersome procedures and delay in sanctioning of loans by banks which increases the transaction costs of obtaining funds from banks. Prof. Dantwala remarks that poor households need credit but they also need access to good soil, good seed and irrigation water to make them creditworthy. This aspect of public investment in improving infrastructure is generally neglected by the Government in its eagerness to appease the farmers through liberal credit and write-offs. The results suggest that higher the temporary fall in current incomes of the farmers, higher will be the demand for bank's agricultural credit. This supports the policy of government control on banks whereby larger flows of credit becomes possible at the time of natural calamities when incomes of the farmers are reduced drastically.

Since the supply of agricultural credit from commercial banks increases with increase in level of loanable funds, vigorous and innovative efforts are required to further enhance the deposit of banks. Though the study reflects complementary relationship between the banks and cooperative institutions in advancing the loan to agricultural sector, but this phenomenon may not be consistent with the objectives of national agricultural credit policy which envisages that where cooperatives are weak, commercial banks would strengthen the agricultural credit. The policy of spread of banking facilities in rural areas is of much significance in augmenting the flow of agricultural credit in hill states like J&K. As a result, the reformulation of this policy is required along with, uniform loaning policy across different districts needs careful revision.

Conclusion and Policy Implications

This study analyzed demand and supply of institutional credit advanced by SCBs to agriculture in Jammu and Kashmir. Results revealed that agricultural credit has increased by 21 folds since 1980's but its percentage share in total credit has gone down for 12.4 to 7.8% from 1980 to 2010. Growth estimates of credit advanced to agricultural and non-agricultural sector indicates that credit to agriculture has been increasing at lower pace over the years. Despite structural changes, direct agricultural credit constituted higher proportion of agricultural credit. Further results revealed wide disparity across regions with respect to the disbursement of direct credit to agriculture. While Kashmir regions received maximum proportion of direct agricultural credit, Ladakh region has less share it in, though it has acquired higher growth in this region. Another important

finding of this study is that there is a huge gap in the financial requirement and supply of institutional credit to agriculture in the state. The estimates of regression analysis indicated that real farm prices, gross irrigated area, coverage of rural banks, loanable cash balances of commercial banks, state gross domestic product and agriculture domestic product were significant positive determinants of direct credit supply to agricultural sector. On the other hand higher level of permanent income, rural literacy, technology level and value of farm assets have contributed in the improvement of demand for institutional credit. While temporary income and cooperative agricultural credit appeared negative indicating that it supplement farmers' financial requirement and in turn resulted in declining demand for institutional credit. Based upon the findings of the present study, the following policy options have emerged out:

- I. Considering an important role of institutional credit in improvement of agricultural productivity, its declining share in total credit advanced in the economy need to be improved. Moreover, there is a need to increase the supply of credit in relation with financial requirement.
- II. Cooperatives are expected to supplement the credit advanced by Scheduled Commercial Banks; instead cooperative system in the state is paralyzed. The number of PACs has gone down; even the branches of state cooperative banks and district central cooperative banks were very less. There is a need to develop/strengthen the cooperative system at village, block and district levels so as to improve out reach of cooperative system in the state. Moreover, the existing cooperatives should be made functional by imparting professionalism among its members. The recovery rates of cooperative are very poor and may be reason for their decline, therefore, there should be a consensus on the implementation of measure for improvement of recovery rate in rural financial institutions and cooperatives in particular.
- III. There is a need to frame amicable credit policy that take into consideration regional districts/regions in the disbursement of credit in the state and at the same time natural niche/comparatives advantage and supporting resource endowments in each

district. These policies should favour all the regions equitably with an emphasis on advancing to poor and backward section of the society.

- IV. There is a need to expanse network of bank offices of various SCBs across different regions and rural areas of the state to improve their reach to rural community.

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