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Agricultural credit in Punjab: trends and future potential

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Abstract This study examines various aspects of agricultural credit in Punjab using primary and secondary data. Under state-directed lending policies, the institutional agricultural credit has witnessed massive expansion since 2004-05. However, the credit disbursement far outpaced the actual demand for agricultural credit. It caused a significant amount of credit diversion towards house construction, immigration of family members, purchase of vehicles, expenditure on social ceremonies, etc. Changing consumption habits and rising incomes enhance the demand for processed products and increase the potential for credit expansion for agro-processing. The crop diversification efforts will also require a substantial allocation of institutional agricultural credit. Skill development, agri start-ups, FPOs, agro-machinery service centers, etc., are other important sources for expanding institutional agricultural credit in Punjab.

Keywords Institutional agricultural credit, credit diversion, credit expansion in agriculture, absorption capacity, Punjab agriculture

JEL codes Q1, Q14, Q10, Q18

Institutional agricultural credit has witnessed tremendous growth in India, from Rs 4352 crore in 1982-83 to Rs 1.17 lakh crore in 2017-18. Its share in agricultural GDP also went up from 18.55% in 2004-05 to 40.86% in 2017-18 (at 2011-12 prices) (Mohan 2006; Golait 2007; Kanz 2016; Kumar et al. 2017; Nair 2017). As a result, the proportion of farmers borrowing from non-institutional sources declined significantly from 90% in 1951 to about 28% in 2015 (AIDIS 2013; Mohan and Ray 2017; NABARD 2017). The sharp expansion in credit resulted from the Union government's policy to expand institutional agricultural credit and the provision of interest rate subvention (Narayanan 2016; Rajeev and Vani 2019).

The institutional agricultural credit played a vital role in transforming Punjab agriculture by enhancing the productivity and profitability of farming (Sidhu et al. 2001; Sidhu et al. 2008; Sidhu and Vatta 2012). However, since the 1990s, there has been a significant rise in input costs, investments in borewell deepening/

replacement due to falling groundwater table, and a decline in profitability (Kalra 1996; Kaur 2010; Simpy et al. 2012; Kaur et al. 2014; Namboodiri 2005; Radhakrishna et al. 2007; Hoda and Terway 2015). The crisis of rising costs, fixed investments, and falling incomes combined with the ever-rising credit disbursement has led to farmers' large-scale indebtedness (NSSO 2005; Sidhu and Rampal 2016; Singh et al. 2017). Many studies have linked indebtedness with the rising number of farmers' suicides in India (Shergill 1998; Sidhu 2002; Singh et al. 2014; Singh 2018).

The extent of farmers' debt in Punjab has risen from Rs 51029 in 1997 to Rs 218092 in 2013 per farm household (Shergill 1998; Singh et al. 2014). Such a situation has led to the demands for farm loan waivers and other financial packages (Mukherjee et al. 2018; Khanna 2020). The present situation calls for a critical examination of the growth in institutional agricultural credit, gaps between demand and supply, credit

diversion, and options for optimal utilization and expansion of institutional agricultural credit. The present study has examined these aspects in Punjab in a paradoxical situation of massive expansion in agricultural credit, large-scale indebtedness, and stagnation in agricultural growth.

Data sources

The study is based on both primary as well as secondary data. The secondary data on various aspects of institutional agricultural credit, gross state domestic product (GSDP), and gross value of output (GVO) were obtained from the reports on Currency and Finance published by the Reserve Bank of India (RBI), State Focus Papers of NABARD, Annual Credit Plans and reports of State Level Bankers Committee (SLBC) for the period of 1980-81 to 2017-18. In addition, multiple primary surveys were conducted during 2019-20 to collect data on credit availed, end-use, and other related parameters. The details of these surveys are given as under:

- The first survey covered 321 rural households from 15 districts (a total of 22 districts) of Punjab (one village in each district). There were 21% landless households, 30% small farmers (below 2 hectares), 32% medium farmers (2-6 hectares), and 17% large farmers (6 hectares and above).
- The second survey covered 21 commercial dairy farmers who were active members of the Progressive Dairy Farmers Association (PDFA), Punjab. The PDFA has a total membership of about 8000 dairy farmers.
- The third survey covered 24 poultry farmers who were active members of the Independent Poultry Association (IPA). The IPA has a total of 35 members in Punjab.
- The fourth survey covered 23 Progressive Piggery Farmers Association (PPFA) members. There are a total of 150 members of PPFA.
- The fifth survey covered 20 goat-rearing farmers, members of the Progressive Goat Farmers Association (PGFA). The PGFA has a total membership of 32.
- The sixth survey covered 20 member farmers of the Innovative Fish Farmers Association (IFFA), with a total membership of 55.

- The seventh survey covered 23 members of the Bee Keepers Association of Punjab.
- The eighth survey covered ten mushroom farmers trained by Punjab Agricultural University, Ludhiana.
- The ninth survey covered 20 flour mills, 12 rice shellers, seven oil expellers, eight honey processing units, 12 cattle feed mills, 18 jaggery making units, and 15 food processing units, totalling 92 agro-processing units.

Current scenario of agricultural credit in Punjab

The institutional agricultural credit disbursement and outstanding have increased continuously in Punjab since the 1980s, but it gained pace after 2004-05. The institutional agricultural credit disbursed (at 2011-12 prices) rose almost 35 times from Rs 1936 crores in 1980-81 to Rs 66711 crores in 2017-18 (Table 1). Such an increase is much higher when compared to the rise in the agricultural GDP of the state. It helped in reducing the overdependence and over-exploitation of farmers by non-institutional sources. However, expansion of institutional credit led to an increase in credit outstanding from Rs 3237 crores to Rs 65597 crores in 2014-15; an increase of 20 times during this period.

Compared to 1980-81 to 2003-04, the growth rate of credit disbursement almost doubled from 2004-05 to 2014-15 (7.4% to 13.8%). However, the growth in credit outstanding more than doubled, from 5.4% to 13% during the later period. It could be attributed to the government's policy of significant expansion in institutional lending in 2004-05. It led to a spike in credit disbursement and created enormous credit outstanding.

To a great extent, the period or nature of credit, short or long term, defines the utilization of loans – productive or non-productive. Short-term credit is observed to be diverted more – not used for the proposed purpose – and is often put to non-productive use compared to term loans due to more frequent disbursement. Literature reveals that the diversion of credit leads to the farmers' indebtedness (Namboodiri 2005). While the amount of short-term credit advanced rose by about 42 times during the period 1980-81 to 2017-

Table 1 Total institutional agricultural loans disbursed and outstanding in Punjab

(Rs crore)

| Year | Credit disbursement | | Credit outstanding | |
|------------------------------------|---------------------|--------------------|--------------------|--------------------|
| | At current Prices | At constant prices | At current prices | At constant prices |
| 1980-81 | 235 | 1936 | 392 | 3237 |
| 1990-91 | 662 | 2759 | 1960 | 8169 |
| 2000-01 | 3719 | 7884 | 6207 | 13159 |
| 2004-05 | 11323 | 19956 | 12321 | 18896 |
| 2010-11 | 33486 | 35249 | 38000 | 40000 |
| 2014-15 | 81924 | 70334 | 76407 | 65597 |
| 2017-18 | 86790 | 66711 | NA | NA |
| Compound growth rate (% per annum) | | | | |
| 1980-81 to 2003-04 | 15.0 | 7.4 | 12.9 | 5.4 |
| 2004-05 to 2014-15 | 21.4 | 13.8 | 19.8 | 13.0 |

Note Constant prices are calculated at 2011-12 prices

Source Report on Currency and Finance, RBI; SLBC 2020

18, the long-term credit increased by only about 18 times (Table 2). It highlights a structural change in the pattern of lending and the resultant inevitability of the indebtedness of the farmers. The growth rate of the amount of credit advanced, both short and long term,

exhibits an increase over time though it is higher for short-term credit.

Credit disbursed as a percentage of gross value added (GVA) of agriculture reveals a significant increase (Table 3). Also, credit as a percentage of gross state

Table 2 Short-term and long-term credit advanced in Punjab

(Rs crore)

| Year | Short-term | | Long-term | | Total | |
|------------------------------------|----------------|-------------------|----------------|-------------------|----------------|-----------------|
| | Current prices | Constant prices | Current prices | Constant prices | Current prices | Constant prices |
| 1980-81 | 154.4 | 1273.9 (65.8) | 80.3 | 662.5 (34.2) | 234.7 | 1936.5 |
| 1990-91 | 411.9 | 1716.8 (62.2) | 250.1 | 1042.3 (37.8) | 662.0 | 2759.1 |
| 2000-01 | 2949.2 | 6252.6 (79.3) | 769.4 | 1631.2 (20.7) | 3718.6 | 7883.8 |
| 2004-05 | 9174.0 | 16168.1 (81.0) | 2149.4 | 3788.1 (19.0) | 11323.4 | 19956.3 |
| 2010-11 | 27390.1 | 28831.8 (81.8) | 6096.1 | 6416.9 (18.2) | 33486.2 | 35248.7 |
| 2017-18 | 70966.8 | 54548.1 (81.8) | 15823.6 | 12162.7 (18.2) | 86790.4 | 66710.8 |
| Compound growth rate (% per annum) | | | | | | |
| 1980-81 to 2003-04 | 15.9 | 8.2 | 12.5 | 5.0 | 15.0 | 7.4 |
| 2004-05 to 2014-15 | 16.9 | 10.7 | 20.0 | 13.6 | 18.0 | 11.7 |

Note: Figures in parentheses are % to total. Constant prices are calculated at 2011-12 prices

Source: Report on Currency and Finance, RBI; SLBC 2020

Table 3 Credit advanced vis-a-vis GSDP and GVO of Punjab

| Year | % of GSDP Agri-allied | % of GVO Agriculture |
|---------|--------------------------|-------------------------|
| 1980-81 | 9.5 | NA |
| 1990-91 | 8.0 | 8.8 |
| 2000-01 | 13.9 | 22.9 |
| 2003-04 | 27.7 | 41.9 |
| 2004-05 | 35.8 | - |
| 2010-11 | 52.1 | 85.6 |
| 2017-18 | 67.1 | NA |

Source: Report on Currency and Finance, RBI and SLBC 2020

domestic product (GSDP) of allied activities exhibited a similar trend. However, after 2004-05, the credit advanced as a percentage of GVA and GSDP increased rapidly. In other words, with time, the share of agriculture in state development is primarily driven by capital infusion through credit to farmers.

When compared to GSDP, it was found that agricultural credit advanced as a percentage of GSDP from agri-allied activities increased from 9.5% in 1980-81 to 27.7% in 2003-04. But under the doubling of the farm credit proposal initiated by the Union government in 2004-05, it had increased from 35.8% in 2004-05 to 67% in 2017-18. Similarly, agricultural credit advanced as a percentage of Gross Value of Output (GVO) in agriculture was 8.8% in 1990-91, but it showed a tremendous increase to 85.6% in 2010-11.

We have examined the credit intensity of agricultural loans, which increased tremendously on per ha of net area sown (NSA) and gross cropped area (GCA) basis. On net sown area basis, short-term credit at constant prices was Rs 3039 per hectare in 1980-81, which increased to Rs 132403 per hectare in 2014-15 (Table 4). On the other hand, long-term credit was Rs 1581 per hectare of net sown area and has increased to Rs 38352 per hectare during the same period. As a result, total agricultural credit advanced has increased from Rs 4620 per hectare of NSA in 1980-81 to Rs 170755 per hectare in 2014-15 at constant prices. In terms of GCA, it was Rs 2863 per hectare in 1980-81 and jumped to Rs 89517 per hectare in 2014-15. Both these proportions indicate a massive pumping in agricultural credit, especially since 2004-05.

Credit availed, absorption capacity, and diversion

Institutional sources dominate the credit disbursement to the agriculture sector in Punjab. They accounts for more than 78% of the credit to small farmers and reaches 96% for large farmers (Table 5).

The study shows that per farm credit availed from institutional sources was 79% (Table 6). On the other hand, landless households availed of 36% credit from non-institutional sources, more than the landholding categories due to the requirement of no collateral security. On the other hand, medium and large farmers availed almost 77% and 85% of per farm household loan from institutional sources.

Table 4 Agricultural loans advanced in Punjab

(Rs crore)

| Year | Short-term credit | | Long-term credit | | Total agricultural credit | | | |
|---------|-------------------|------------------|------------------|------------------|---------------------------|------------------|----------------|------------------|
| | Rs/ha of NSA | | | | Rs/ha of NSA | | Rs/ha of GCA | |
| | Current prices | Constant prices# | Current prices | Constant prices# | Current prices | Constant prices# | Current prices | Constant prices# |
| 1980-81 | 368 | 3039 | 192 | 1581 | 560 | 4620 | 347 | 2863 |
| 1990-91 | 977 | 4071 | 593 | 2472 | 1570 | 6543 | 883 | 3678 |
| 2000-01 | 6939 | 14712 | 1810 | 3838 | 8749 | 18550 | 4683 | 9928 |
| 2004-05 | 21843 | 38496 | 5118 | 9019 | 26960 | 47515 | 14277 | 25162 |
| 2010-11 | 65873 | 69340 | 14661 | 15433 | 80534 | 84773 | 42361 | 44590 |
| 2014-15 | 154222 | 132403 | 44672 | 38352 | 198894 | 170755 | 104269 | 89517 |

Source Report on Currency and Finance, RBI and SLBC 2020

Calculated at 2011-12 prices

Table 5 Farm-size-wise availing of institutional and non-institutional credit in Punjab

| Farm-size category | (% farmers) | | |
|--------------------|-------------|----------------------|--------------------------|
| | No Loan | Institutional credit | Non-Institutional credit |
| Landless | 8.8 | 39.7 | 61.7 |
| Small | 1.0 | 78.1 | 58.3 |
| Medium | 0.00 | 90.2 | 54.9 |
| Large | 0.00 | 96.4 | 49.1 |
| Overall | 2.2 | 76.9 | 56.4 |

Source: Primary Survey (2019-20)

Source-wise credit availed per borrower presented the same picture, with more credit availed through institutional sources. On average, small, medium, and large farmers had taken Rs 30, 35, and 55 lakh loans, of which Rs 19, 23, and 42 lakh came from institutional sources. We have analyzed the credit absorption capacity of farmers based on short-term production needs, consumption needs, and investment needs. However, we have estimated the absorption capacity mainly on the first type. An attempt to find the relation between absorption capacity and credit disbursed revealed that a tremendous amount of credit was disbursed from the year 2005-06 and onwards. A

considerable amount of credit was disbursed above the requirement, leading to credit outstanding of Rs 33 thousand crores in 2010-11 to Rs 76 thousand crores in 2015-16.

The absorption capacity of borrowers vis-a-vis loans disbursed was analyzed by developing three scenarios considering the demand for agricultural credit. In the first scenario, small farmers needed their entire capital requirement, medium farmers needed 75% of their capital requirement, and large farmers needed half of that through credit. The second scenario assumed that the small and medium farmers required 100% and the large farmers needed 75%. The third scenario took 100% capital requirement for all the farm size categories through credit. A comparison of demand and supply of credit based on these three scenarios is presented in Table 7. It reveals a shift in the pattern of credit disbursement in Punjab. Till 2001-02, credit disbursement and its demand were better synchronized. However, it started far exceeding the demand after 2000-01 and reached almost two and half times the actual credit requirement during 2015-16. It is probably the most significant cause of a sharp rise in outstanding credit in Punjab agriculture after 2000-01.

About 52% of farmers received credit above their absorption capacity, with small farmers being 62.5%,

Table 6 Per farm and per borrower institutional v/s non-institutional credit availed by sample households

| (Rupees) | | | | | |
|----------------------------|-------------------------------|----------------------------|-----------------------------|----------------------------|------------------------------|
| | Landless | Small | Medium | Large | Overall |
| Institutional | | | | | |
| Average per farm household | 91794 (64.3) | 313300 (73.8) | 612304 (77.1) | 1342364 (84.8) | 535526 (79.0) |
| Non-Institutional | | | | | |
| Average per farm household | 50897 (35.6) | 110979 (26.1) | 181324 (22.8) | 239909 (15.1) | 142695 (21.0) |
| Institutional | | | | | |
| Average per borrower | Landless 1484424 (80.0) | Small 1987826 (65.5) | Medium 2329951 (66.0) | Large 4178008 (75.0) | Overall 2711129 (74.4) |
| Non-institutional | | | | | |
| Average per borrower | 370788 (20.0) | 1048056 (34.5) | 1202765 (34.0) | 1386975 (24.9) | 935510 (25.6) |

Note Figures in parentheses represent the % of total credit

Source Primary Survey (2019-20)

Table 7 Absorption capacity vis-a-vis loans advanced

(Rs Crore)

| Year | Scenario-1 | Scenario -2 | Scenario-3 | Credit disbursement | Credit outstanding |
|---------|------------|-------------|------------|---------------------|--------------------|
| 1981-82 | 795 | 1049 | 2015 | 154 | 392 |
| 1985-86 | 1026 | 1351 | 2545 | 492 | 960 |
| 1990-91 | 1441 | 1884 | 3756 | 668 | 1817 |
| 1995-96 | 2324 | 3082 | 6180 | 956 | 2609 |
| 2000-01 | 3178 | 4221 | 8940 | 2861 | 5378 |
| 2005-06 | 4070 | 5390 | 11470 | 9174 | 11321 |
| 2010-11 | 6028 | 7957 | 16907 | 18920 | 33000 |
| 2015-16 | 8806 | 11567 | 24361 | 63524 | 76407 |

Source Authors' estimates from the secondary data available and data on absorption capacity

Table 8 Absorption capacity and credit diversion by the farmers in Punjab

| Category | Loan as% of absorption capacity | % of farmers who diverted loan | | Credit diverted as% of credit borrowed | |
|----------|---------------------------------|--------------------------------|-----------|--|-----------|
| | | Short-term | Long-term | Short-term | Long-term |
| Small | 378.0 | 56.2 | 33.3 | 52.2 | 19.1 |
| Medium | 184.2 | 56.4 | 40.0 | 51.4 | 23.6 |
| Large | 117.0 | 64.1 | 37.5 | 51.7 | 33.5 |
| Overall | 168.6 | 58.0 | 37.0 | 51.6 | 27.4 |

Source Primary Survey (2019-20)

medium farmers being 49.0%, and large farmers being 41.8%. A farmer's average amount of institutional credit was almost 1.68 times his absorption capacity (Table 8). The situation is worse for small farmers, where the ratio is 3.7, and is 1.8 for medium farmers. The institutional credit of large farmers exceeded their absorption capacity by only about 17%.

The diversion of credit is happening with almost all the farmers and for short and long-term credit. About 58% of farmers diverted their short-term credit and long-term credit diversion occurred with 37% of farmers (Table 8). Out of an average short-term loan of Rs 6.7 lakh, diversion amounted to Rs 3.4 lakh with a share of 52%. About 27.4% of the long-term loan was diverted to non-agricultural purposes. Maximum diversion of long-term loans was found with large farmers, whereas nearly one-third of the borrowed amount was for non-agricultural purposes.

The perusal of table 9 highlights that, on average, farmers diverted Rs 3.4 lakh of the borrowed short-term credit mainly for construction/renovation of the

dwelling house (23.4%), wedding ceremonies (19.4%), and purchase of the land (17.5%), etc.

The diversion of long-term credit is also presented in Table 9, and it reflects significant diversion towards the purchase of luxury vehicles (36.2%), immigration of family members (28%), and investment in other business avenues (10.0%), etc.

Allied enterprises, food processing, and institutional credit

Over time, agriculture has expanded horizontally and vertically with many commercial activities in the allied sectors. Large-scale adoption of allied activities can raise the stagnating farm incomes and diversify agriculture. We analyzed the credit situation for various allied activities through primary surveys and focused group discussions with multiple stakeholders in such supply chains. The access to credit and its sources, level of investment, and potential demand for institutional credit are examined for dairy, poultry, piggyery, goat farming, fish farming, bee-keeping, and mushroom cultivation activities.

Table 9 Purpose-wise diversion of short-term and long-term credit in Punjab

| (Rs/household) | | |
|--|-------------------|------------------|
| Purpose | Short-term | Long-term |
| Wedding ceremonies | 67273 (19.4) | - |
| Sending family members abroad | 51877 (14.9) | 4743 (28.1) |
| Construction/ renovation of dwelling house | 81166 (23.4) | 791 (4.6) |
| Consumption Expenditure | 20302 (5.8) | 1186 (7.0) |
| Purchase of land | 60968 (17.5) | - |
| Leasing in of land | 5968 (1.7) | - |
| Investment in business ventures | 28439 (8.2) | 1680 (10.0) |
| Purchase agricultural machinery | 11858 (3.4) | 845 (5.0) |
| Paying off old debts | 5138 (1.4) | - |
| Purchase of vehicles | 5494 (1.5) | 6126 (36.2) |
| Installation of the solar system | 3557 (1.0) | - |
| Litigation | 2372 (0.7) | - |
| Medical Expenses | - | 1520 (9.0) |
| Miscellaneous | 2134 (0.6) | - |
| Total | 346547 (100.0) | 16897 (100.0) |

Note Figures in parentheses indicate the percentage to total

Source Primary Survey (2019-20)

The data on credit availed by the farmers (pursuing allied activities) from various institutional and non-institutional sources is given in Table 10. On average, the credit availed by a dairy unit was Rs 9.13 lakh, by a poultry unit was Rs 83.03 lakh, by a bee-keeping unit was Rs 4.50 lakh, by piggery unit was Rs 3.56 lakh, goat rearing unit was Rs 1.44 lakh, by the mushroom unit was Rs 10.18 lakh and by a fishery unit was Rs 4.23 lakh.

The share of credit in the total investment is presented in Table 11, and it varied between 11-81% for various activities. The average investment for allied enterprises varied from Rs 7.20 lakh for goat farming to Rs 2.67 crore for poultry farming. The share of credit in the total investment for dairy farming, poultry farming, goat farming, bee-keeping, mushroom farming, fish farming, and pig farming was 56%, 31%, 20%, 11%, 81%, 19%, and 31%, respectively. We have used such

Table 10 Credit availed for allied activities by the farmers in Punjab

(Rs lakh/unit)

| Source of Credit | Poultry | Bee Keeping | Dairy | Piggery | Goatry | Mushroom | Fishery |
|------------------------------|------------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|
| Commercial Banks | 82.26 (99.1) | 4.08 (95.2) | 8.23 (91.6) | 3.11 (89.4) | 0.75 (57.2) | 10.00 (98.2) | 3.54 (97.4) |
| Cooperative Banks | 0.77 (0.9) | 0.20 (4.7) | 0.75 (8.4) | 0.06 (1.8) | 0.15 (11.4) | 0.18 (1.7) | 0.09 (2.5) |
| RRB's and Microfinance Banks | - | - | - | 0.30 (8.7) | 0.41 (31.3) | - | - |
| Institutional Credit | 83.03 (100.0) | 4.29 (95.2) | 8.99 (98.4) | 3.48 (97.5) | 1.31 (90.6) | 10.18 (100.0) | 3.63 (85.8) |
| Non-Institutional Credit | - | 0.21 (4.8) | 0.14 (1.5) | 0.08 (2.4) | 0.13 (9.3) | - | 0.60 (14.2) |
| Total Credit | 83.03 (100.0) | 4.50 (100.0) | 9.13 (100.0) | 3.56 (100.0) | 1.44 (100.0) | 10.18 (100.0) | 4.23 (100.0) |

Note Figures in parentheses are %age to total credit

Source Primary Surveys (2019-20)

Table 11 Average investment and the share of credit for allied activities

| Activity | Investment (Rs lakh) | Credit (Rs lakh) | % share of credit in investment |
|----------------------|-------------------------|---------------------|------------------------------------|
| Dairy Farming | 16.30 | 9.13 | 56 |
| Poultry Farming | 267.84 | 83.03 | 31 |
| Goat Farming | 7.20 | 1.44 | 20 |
| Bee-Keeping | 40.91 | 4.50 | 11 |
| Mushroom Cultivation | 12.57 | 10.18 | 81 |
| Fish Farming | 22.26 | 4.23 | 19 |
| Pig Farming | 11.48 | 3.56 | 31 |

Source Primary Surveys (2019-20)

proportions in the following section to derive the credit potential for such enterprises in the entire state.

Agro-processing units

Currently, Punjab state is focusing heavily on the agro-processing industry to boost growth in the agriculture sector. Different agro-processing units (APUs) are being installed with the state's active technical and financial support. We examined the response of entrepreneurs involved in multiple agro-processing activities for their future expansion and overall expansion of the activity in the state. The agri-entrepreneurs were keen to establish/ expand cattle feed mills, flour mills, rice shellers, and the processed food

industry among different processing units. Out of these, cattle feed manufacturing and processed food products have shown high response, while it was moderate for flour and rice mills. However, the requirement for credit was expressed by 45% of respondents. Despite the considerable potential for expansion, some critical constraints should be adequately addressed to realize the full potential of agro-processing in Punjab. Despite high response for processed products, the area under spices and oilseeds was less in the state, and the supply of these was not regular. In addition, 72% of entrepreneurs reported difficulty in branding, including procedural problems in brand creation, permission from various agencies, etc. Competition from existing units

in terms of prices, quality, advertisement, etc., was also a constraint cited by 45% of units. Marketing difficulties due to limited demand, transportation, packaging, etc., were cited by 56% of units.

Opportunities for credit expansion

In light of excessive funding in agriculture, it appears that the potential for further expansion of institutional agricultural credit is relatively limited. However, many sub-sectors within the farm sector have poor access to institutional agricultural credit and are more expensive. Hence there is potential to develop new lending instruments aiming at delivering credit to those sectors. The following section highlights important avenues of effective credit expansion in agriculture.

Fruit and vegetable farmers

The Government of Punjab is showing a keen interest in diversifying its cropping pattern in the immediate future. The state is currently focusing on diverting 12 lakh hectares from paddy to other crops such as maize, cotton, sugarcane, oilseeds, pulses, vegetables, and fruits. The average scale of finance for paddy and wheat

is Rs 62500 per ha, and for fruits and vegetables is Rs 112500 per ha. Expanding the area under fruits and vegetables in Punjab will lead to enhanced opportunities for institutional lending. Based on our discussions with various stakeholders, the current area and targeted area under different vegetable and fruit crops, along with the demand for credit as per the scale of finance, is given in Table 12. The state intends to expand the area under fruits and vegetables by 206.4 thousand ha. The annual demand for credit for fruits and vegetables is Rs 3123 crore, which will grow to Rs 5445 crore per annum due to such diversification. Such diversification efforts will cause an increase in demand for credit by Rs 2322 crore annually.

The financial institutions (FIs) should focus heavily on fruit and vegetable growers. The Department of Horticulture in Punjab promotes horticultural crops in Punjab through extension services, subsidies, and other related facilities. The FIs should forge collaboration with the Department of Horticulture. As horticultural farmers have better repayment capacity than the other farmers, the problem of defaults and NPAs is likely to be significantly less.

Table 12 Current and targeted area under vegetables and fruits for crop diversification plan in Punjab

| Crop | Current area (thousand ha) | Current demand for credit (Rs crore) | Target area (thousand ha) | Future demand for credit (Rs crore) | Projected expansion in demand (Rs crore) |
|----------------------|-------------------------------|---|------------------------------|--|---|
| A. Vegetables | | | | | |
| Pea | 38.8 | 436.50 | 100.0 | 1125.00 | 688.50 |
| Potato | 100.0 | 1125.00 | 130.0 | 1462.50 | 337.50 |
| Onion | 10.2 | 114.75 | 20.0 | 225.00 | 110.25 |
| Garlic | 7.6 | 85.50 | 15.0 | 168.75 | 83.25 |
| Chilli | 9.5 | 106.88 | 18.0 | 202.50 | 95.62 |
| Cauliflower | 16.7 | 187.87 | 24.0 | 270.00 | 82.13 |
| Tomato | 10.0 | 112.50 | 20.0 | 225.00 | 112.50 |
| Carrot | 11.0 | 123.75 | 20.0 | 225.00 | 101.25 |
| Muskmelon | 5.6 | 63.00 | 10.0 | 112.50 | 49.50 |
| B. Fruits | | | | | |
| Kinnow | 53.0 | 596.25 | 100.0 | 1125.00 | 528.75 |
| Guava | 9.1 | 102.37 | 15.0 | 168.75 | 66.38 |
| Pear | 3.2 | 36.00 | 6.0 | 67.50 | 31.50 |
| Litchi | 2.9 | 32.63 | 6.0 | 67.50 | 34.87 |
| Total | 277.6 | 3123.00 | 484.0 | 5445.00 | 2322.00 |

Source: Authors' Estimates

Table 13 Lending opportunities for allied enterprises in Punjab

| Enterprise | Unit cost (Rs lakh) | Physical units (No.) | %age of credit in total unit cost | Credit potential (Rs Lakh) | Total credit potential (Rs Crore) |
|---------------------------------|------------------------|-------------------------|--------------------------------------|-------------------------------|---|
| Dairy (10 animals) | 8.40 | 113317 | 56 | 3.69 | 4188.19 |
| Poultry (5000 broilers) | 15.90 | 4384 | 31 | 10.97 | 480.97 |
| Poultry (5000 layers) | 20.25 | 5843 | 31 | 13.97 | 816.41 |
| Goat Farming (40+2) | 2.42 | 6600 | 20 | 1.94 | 127.78 |
| Bee-keeping (50 beehive colony) | 3.58 | 8695 | 11 | 3.19 | 277.04 |
| Mushroom cultivation (100 bags) | 8.40 | 9142 | 81 | 1.59 | 145.91 |
| Fisheries | 6.34 | 6931 | 19 | 5.14 | 355.93 |
| Piggery (10+2) | 5.00 | 3223 | 31 | 3.45 | 111.19 |

Note %age of credit is estimated from the enterprise surveys conducted in this study

Source Potential Linked Plans, 2021

Allied enterprises

Potential Linked Credit Plan (PLPs) provides district-level potentials for rural economic activities in physical and financial terms. NABARD, in 1988-89, took the initiative of preparing PLPs for agriculture and rural development. The broad strategy by NABARD for formulating PLPs envisages the estimation of long-term potential (in terms of physical units) in each sector of agriculture and rural development (Potential Linked Plans 2021). The potential has been assessed for allied enterprises such as dairy, poultry, goat farming, bee-keeping, mushroom cultivation, and fisheries for the year 2020-21 in Punjab based on these district-wise PLP reports. The financial outlay estimates for major allied activities were computed for Punjab. These estimates are provided in Table 13.

In the case of dairy, there is a potential of financing to the tune of Rs 4188.19 crore annually, for poultry (broilers) Rs 480.97 crore, poultry (layers) Rs 816.41 crore, piggery Rs 111.19 crore, goat farming Rs 127.78 crore, fishery Rs 355.93 crore, bee-keeping Rs 277.04 crore and for mushroom farming Rs 145.91 crore in Punjab. It is to be noted that almost entire credit is expected to come from institutional sources as the non-institutional sources usually do not finance such investments or do so at a very high interest rate. Owing to the stagnation in the traditional crop sector, allied enterprises offer considerable potential for future growth in agriculture and effective expansion of agricultural credit.

Agro-machinery service centres

Since 2008, the state government promoted agro-machinery service centres (AMSCs) in Punjab through primary agricultural cooperative societies (PACs) and started custom hiring services for agricultural machinery. Some studies highlighted the economical viability of such centres and their positive effect in reducing the fixed costs of farmers, and decline in farmers' debt burden in the long run (Sidhu and Vatta 2012; Singh 2018). The relevance of such AMSCs becomes even more critical in recent times when there is a need for costly machinery and is not required by an individual farmer for a longer duration during a year. At least 4000 AMSCs can be easily promoted in more than 12000 villages of Punjab. Currently, there are approximately 1200 such centres and are mainly working under PACs. The new AMSCs can be promoted under the private sector, emphasising employing the rural youth. It will create a large number of self-employment opportunities. As these centres also require supporting workers, there will be additional employment opportunities in the rural areas. On average, if each centre requires an investment of Rs 25 lakh, setting up of additional 2800 AMSCs in the private sector will require Rs 700 crore. The FIs have a massive opportunity in this segment as a successful model will lead to faster expansion in future and hence the credit expansion.

Farmer producer organizations

FPOs are likely to emerge as potential and viable aggregators in future. For this, they require a significant

amount of financial resources both for infrastructure development and working expenses. Financial institutions should develop specialized lending instruments/ credit packages to finance FPOs. NABARD has planned to set up 10 thousand FPOs in India. There are around 12500 villages in Punjab. While the financial requirements for each FPO will vary as per their activities and their scale, this segment provides a huge opportunity for credit expansion by the FIs.

Agro-processing units

As discussed earlier, the state government extensively promotes various agro-processing units in Punjab, such as flour mills, oil extractors, cattle feed mills, jaggery units, honey processing, and other processed products such as pickles, chutneys, and jams. There is very high interest in starting these activities or expanding them in the future, hence a significant scope for credit expansion in this segment. Currently, there are 313 agro-processing centres (APCs) in Punjab, with a potential of around 2000 APCs in the future as each APC can cover 2-3 villages. The average investment in different types of APCs is about Rs 15 lakh. At the current investment rate, the financial requirements to set up APCs in Punjab would be Rs 300 crore, and it provides an attractive window for credit expansion to the FIs

Startups and new enterprises

As mentioned earlier, i) Skill Development Centre, ii) Punjab Agri-Business Incubator, and iii) Food Industry Agri Incubation Centre have promoted entrepreneurship and new startups in the agriculture sector. These startups need a strong handholding in technical knowledge, government support in subsidies, and institutional credit. The Union Government has also shown immense interest in promoting the startups. The FIs should develop a special credit plan for startups in Punjab agriculture in collaboration with the above facilitators/incubators.

Conclusions

The institutional credit has witnessed a massive expansion in Punjab agriculture especially after 2004-05. The share of agricultural credit in GSDP in agriculture and credit intensity also increased over time reflecting the increased attention to agricultural credit.

However, more than half of the farmers availed credit in excess of their actual demand. It has also led to a sharp rise in outstanding credit in Punjab agriculture. There has been a significant diversion of credit towards house construction, immigration of a family member, purchase of vehicles and expenditure on social ceremonies.

Due to rise in incomes and changing consumption habits, there is a vast potential to expand allied enterprises and agro-processing in Punjab. Hence, focusing on newer areas of credit expansion will help in optimal utilization of institutional agricultural credit. The newer avenues are allied activities, agro-processing, crop diversification towards fruits and vegetables, FPOs, agro-machinery service centres, etc. Such reorientation of institutional agricultural credit will spur future agricultural growth, will limit credit diversion and will check indebtedness.

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