

Institutional Transformation of Primary Agricultural Cooperative Societies in Punjab

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Abstract

This study examines the institutional transformation of Primary Agricultural Cooperative Societies (PACS) in Punjab, focusing on their growth, financial performance, and economic impact. Using secondary data from 1980 to 2022, the research highlights significant expansion in cooperative membership, share capital, and credit disbursement. Cooperative membership increased significantly in Punjab with a growth rate of 14.69 per cent per annum along with increase in share capital from Rs. 35.17 crore to Rs. 557.29 crore i.e. 16 times over the last 42 years. The tremendous growth of loans advanced with growth rate of nearly 193 per cent per annum led to a huge spur in loans outstanding from Rs. 146 crore to Rs. 6,649 crore depicting an increase of 45 times due to more credit disbursed by the co-operatives compared to their repayment. While PACS have played a crucial role in agricultural credit delivery, but soaring loan overdues, necessitates targeted policy reforms to restore financial sustainability and enhance effectiveness of cooperatives.

Key words: Primary agricultural cooperative societies, Growth rate, Share capital, Loan outstanding

JEL Classification: G21, Q14, P13, O18, H81, R51

Introduction

Agriculture scenario in Punjab has witnessed a fast transformation since the mid 1960's. The agricultural sector in Punjab has transitioned from traditional subsistence farming, which relied on animal power, to a highly mechanized system that employs modern machinery, including tractors, diesel engines, and electrical motors (Rafie and Kumar, 2020). While the state has many small landholdings, its agriculture is particularly advanced in terms of mechanization. The use of new technologies necessitates a greater capital requirement. The introduction and use of new capital-intensive agricultural technology has significantly boosted the need for agricultural credit and investment (Ray, 2007). According to the International Cooperative Alliance (ICA), cooperatives are organizations formed by individuals who voluntarily come together to meet their shared economic, social, and cultural needs through collectively owned and democratically governed enterprises. It is an organization in which members have their share capital and it is run by them on non-profit basis (Rao, 2016). These non-profit organizations significantly contribute to agricultural GDP growth, which plays a critical role in reducing rural poverty. Research indicates that economic growth driven by

agriculture is at least twice as effective in alleviating poverty compared to growth from other sectors (Swaminathan and Sivabalan, 2016; Kumar and Mehta, 2018).

As of 2020, there were 65,113 PACS in India, covering over 13 crore farmers. The total membership of PACS in the country is around 14.5 crore, with an average membership of 2,200 per PACS. The total business turnover of PACS is around Rs. 1.5 lakh crore, with an average business turnover of Rs. 2.3 crore per PACS. PACS disbursed around Rs. 1.2 lakh crore as credit to farmers in 2020-21, with an average credit disbursement of Rs. 1.8 crore per PACS. The recovery rate of PACS is around 80 per cent, indicating a high level of repayment discipline among farmers. Maharashtra leads among the states with higher number of PACS i.e. 13,144 followed by Uttar Pradesh (12,444), Madhya Pradesh (9,444), Bihar (8,444) and Andhra Pradesh (7,444). The membership also shows the same trend in these top 5 states ranging from 2.5 crore members in Maharashtra to 1.3 crore members in Andhra Pradesh (NABARD, 2021).

Punjab is one of the leading states in India in terms of PACS performance. A study by the Punjab State Cooperative Bank found that the average credit disbursed per member by PACS in Punjab increased from Rs. 30,000 in 2015-16 to Rs. 45,000 in 2019-20 indicating a growth of 50 per cent, In Punjab, the average supply of inputs per member PACS has

increased by 50 per cent. Similarly, the average marketing services revenue per member rose from Rs. 6,000 in 2015-16 to Rs. 10,000 in 2019-20, reflecting a growth of 67 per cent. Additionally, the average extension services revenue per member increased from Rs. 2,500 in 2015-16 to Rs. 4,000 in 2019-20, making a growth of 60 per cent. Similarly, the average per member marketing services revenue and extension services revenue has shown a growth of more than 60 per cent in last 10 years (Punjab State Cooperative Bank, 2020).

The number of cooperative societies at village level in Punjab is about 4000 and their membership has increased tremendously from 17.84 thousand in 1980-81 to 33.13 thousand in 2021-22 with an increase in its share capital from Rs. 35 crore to Rs. 557 crore. PACS are performing various functions, prominent among them are delivering inputs, advancing short term loans and renting of farm machinery. The purpose of this study is to examine the overtime performance of PACS with respect to important economic parameters signifying the role these institutions have played in agrarian development.

Data Sources and Methodology

To examine the overtime performance of PACS, the study has analysed important economic variables, *i.e.*, owned funds, shared capital, deposits, borrowings, memberships, loans advanced, overdues and outstanding credit. The data on these variables have been compiled from various sources such as Statistical Abstract of Punjab and Office of Registrar, Co-operative societies, Chandigarh covering a period of the past four decades to capture the long-term trends in the growth and functioning of PACS in Punjab.

Compound growth rate was calculated for the period 1980-2022, covering key indicators such as membership, share capital, working capital, owned funds and loans advanced etc.

Compound growth rate was calculated as below:

$$Y_t = a + b^t u_t \quad (1)$$

Where Y_t = value of the key indicators for the year 't'

a = constant

b = growth coefficient = $(1 + r)$, where 'r' is the compound growth rate,

u_t = random error term

Log transformation of equation (1) gives:

$$\ln Y_t = \ln a + t (\ln b)$$

Where, $\ln a$ and $\ln b$ are the parameters of the function estimated by ordinary least square (OLS) method.

Once the above equation is estimated, r can be computed as:

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

Where,

r = Compound annual growth rate (%)

b = Regression coefficient

The significance of the average growth rate for the different periods and for the whole period is tested by using student's t-statistic given as:

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

with (n-2) d.f.; n= no. of observations, under the null hypothesis $H_0: r = 0$ and alternate hypothesis $H_1: r \neq 0$. SE (r), *i.e.*, the standard error of growth coefficient 'r' is given as:

$$SE(r) = \frac{\ln(b) \times SE(\ln b)}{\ln 10}$$

Results and Discussion

Institutional Growth of PASC in Punjab

Table 1 reveals the growth trajectory of PACS in Punjab from 1980-81 to 2021-22, showing mixed but generally positive performance indicators. While the number of societies declined marginally from 4,266 to 3,971 but overall, growth was significant with CAGR value of 2.94 per cent. This was primarily due to consolidation of defunct societies into viable ones. Not only this, membership also demonstrated robust growth, increasing from 17.84 thousand to 33.13 thousand with a significant compound annual growth rate of 14.69 per cent. This indicated that farmer participation in cooperative activities has enhanced over the years. The financial strength of PACS exhibited extraordinary growth across all key indicators, with share capital registering a CAGR of 104.92 per cent, escalating from Rs. 35.17 crore to Rs. 557.29 crore over the study period. Similarly, owned funds demonstrated exceptional performance with a CAGR of 170.83 per cent, surging from Rs. 56.46 crore to Rs. 3,507.81 crore, while working capital showed the most dramatic expansion at a CAGR of 371.48 per cent, rising from Rs. 231.24 crore to Rs. 17,377.92 crore. Deposits also witnessed substantial growth from Rs. 24.63 crore to Rs. 2,852.14 crore (CAGR of 333.9%), while borrowing outstanding increased dramatically from Rs. 153.62 crore to Rs. 12,557.71 crore (CAGR of 236.55%), reflecting the expanded credit operations of PACS. All growth rates were statistically significant at 5 per cent or 1 per cent levels, demonstrating the consistent and substantial expansion of PACS operations in Punjab over the four-decade period.

Financial Position and Credit Performance of PACS in Punjab: An Analysis of Loans and Overdues (1980-81 to 2021-22)

The analysis of loans advanced, recovery patterns, outstanding amounts, and overdue positions as presented in Table 2 provides crucial insights into the operational

Table 1: Growth of PACS overtime in Punjab, 1980-81 to 2021-22

Item	Unit	1980-81	1990-91	2000-01	2010-11	2020-21	2021-22	CAGR (%)
Societies	Number	4266	4633	4084	3968	3941	3971	2.94**
			(8.6)	(-11.85)	(-2.84)	(-0.68)	(-0.76)	
Membership	Thousand	17.84	20.4	21.22	23.29	29.73	33.13	14.69***
			(14.35)	(4.02)	(9.75)	(27.65)	(11.44)	
Share Capital	Rs. Crores	35.17	60.19	142.58	313.03	546.61	557.29	104.92***
			(71.14)	(136.86)	(119.54)	(74.62)	(1.95)	
Owned Funds	Rs. Crores	56.46	142.06	440.87	781.26	3751.36	3507.81	170.83***
			(151.61)	(210.34)	(77.21)	(380.17)	(-6.49)	
Working Capital	Rs. Crores	231.24	716.63	2099.11	6920.31	17398.32	17377.92	371.48***
			(209.9)	(192.91)	(229.68)	(151.41)	(-0.11)	
Deposits	Rs. Crores	24.63	62.52	282.79	1100.85	2950.23	2852.14	333.9***
			(153.82)	(352.32)	(289.28)	(167.99)	(-3.32)	
Borrowing Outstanding	Rs. Crores	153.62	449.96	1323.45	-----	10074.66	12557.71	236.55***
			(192.89)	(194.12)			(4.65)	

Note: Figures in parentheses indicates per cent increase/decrease from previous year

*** and *** indicates significance at 5 and 1 per cent level respectively*

efficiency and sustainability challenges faced by these cooperative institutions.

PACS in the state witnessed an unprecedented credit expansion, with loan disbursements surging from Rs. 199.20 crore to Rs. 9,029.04 crore over four decades. This does not only reflect growth, but also represents a fundamental shift in the scale and scope of cooperative lending. The CAGR of 193.54 per cent highlights exponential growth in credit disbursement that reflects the expanding role of PACS in meeting the agricultural financing needs of Punjab's farming community and aligns with the increased mechanization and capital-intensive nature of modern agriculture in the state.

However, the loan recovery performance presents a contrasting picture, with recoveries growing from Rs. 163.23 crore to Rs. 7,904.71 crore at a CAGR of 198.9 per cent. While the recovery growth rate marginally exceeds the disbursement rate, the absolute gap between disbursement and recovery has widened considerably.

One of the most concerning trends is the sharp rise in outstanding loans of cooperative societies, which grew from Rs. 146.25 crore in 1980-81 to Rs. 6,649.00 crore by 2021-22, a growth rate of 174.24 per cent per annum. These loans represent not just deferred payments but a growing accumulation of risk within the cooperative credit structure. It raises serious concerns about the long-term financial sustainability of PACS operations as this outstanding amount represents capital tied up in non-performing assets. This phenomenon can be attributed to various factors including

agricultural distress, inadequate repayment capacity of borrowers and recovery mechanisms.

In addition, the overdue analysis reveals the institutional transformation as it increased dramatically from Rs. 50.33 crore to Rs. 12,809.80 crore. The percentage shift from 35 per cent to 92 per cent of outstanding loans signifies a more profound story of outstanding loans that had become overdue.

Although this shift may be seen as supporting broader policy objectives focused on farmer welfare, it poses serious concerns for the long-term sustainability of the system as the cooperative credit model relies on effective loan recovery cycles.

The trends revealed in Table 2 further highlight fundamental structural problems within the PACS credit system in Punjab. The exponential growth in credit disbursement without proportionate improvement in recovery mechanisms has created an unsustainable debt burden. As overdue loans grew from 35 per cent to 92 per cent, PACS shifted from being credit providers to merely serving mainly as channels for financial aid.

This transformation, while potentially serving social objectives of providing credit access to farmers, undermines the financial viability and institutional sustainability of the cooperative credit structure. The findings suggest an urgent need for comprehensive reforms in credit policies, recovery mechanisms, and borrower education to restore the financial health of PACS and ensure their continued role in agricultural development.

Table 2: Loans and over-dues of PACS, 1980-81 to 2021-22

Item	(Rs. in crores)						CAGR (%)
	1980-81	1990-91	2000-01	2010-11	2020-21	2021-22	
Loans advanced	199.20	346.30	2138.99	8006.67	10558.53	9029.04	193.54***
		(73.84)	(517.66)	(274.32)	(31.87)	(-14.49)	
Loans recovered	163.23	332.83	2019.15	8076.63	12075.17	7904.71	198.9***
		(103.9)	(506.66)	(300)	(49.51)	(-34.54)	
Loans outstanding at the end of year	146.25	481.61	1530.30	5604.75	8814.45	6649.00	174.24***
		(229.29)	(217.74)	(266.25)	(57.27)	(-24.57)	
Over-due at the end of year	50.33	200.39	431.87	938.76	12306.08	12809.80	253.34***
		(298.13)	(115.52)	(117.37)	(1210.89)	(4.09)	
Over dues as percentage of outstanding loan %	35	42	28.22	16.75	71	92	10.67

Note: Figures in parentheses indicate per cent increase/decrease from previous year

**** indicates significance at 1 per cent level*

Capital Adequacy and Lending Capacity: Analysis of Owned Funds versus Credit Disbursement

The results of Table 3 provide crucial insights into the financial stability and self-reliance of grass root level cooperative institutions. The results related to the owned funds of PACS showed substantial growth, rising from Rs. 347.51 crore in 1980–81 to Rs. 24,646.53 crore in 2020–21. This growth points to a more stable cooperative structure and reflects better financial management within these institutions over the years.

Simultaneously, loan disbursements grew from Rs. 199.20 crore to Rs. 10,558.53 crore during the same period, representing a significant expansion in credit operations. However, the growth in owned funds was even faster indicating that capital accumulation outpaced actual credit delivery reflected by the increasing capital to lending ratio. This ratio provides insights into the institutional behaviour and financial strategy of PACS. Beginning at 1.74 in 1980-81, the capital to lending ratio peaked at 2.83 in 1990-91, indicating a period where PACS maintained strong capital buffers relative to their lending activities. This higher ratio during the 1990s suggests lending practices and capital accumulation, possibly reflecting cautious institutional management during economic liberalization. The ratio subsequently declined to 1.39 in 2000-01 and further to 1.14 in 2010-11, marking the lowest point in the study period. This decline suggests that

PACS began using their capital more actively for lending, possibly driven by rising demand for agricultural credit or policy pushes to expand rural financing. Around 2010–11, the institutions were operating with relatively thin capital stock in relation to their lending commitments. By 2020–21, the ratio had climbed back up to 2.33, indicating a shift back toward more effective capital management.

Institutional Efficiency in Cooperative Banking

The financial landscape of grassroot level cooperative societies reveals an institutional efficiency that has intensified over four decades. Rather than uniform institutional performance, some cooperatives are incurring profit whereas some are in loss, creating distinct populations of thriving and struggling cooperative societies.

The number of profit-making PACS has declined from 2,268 in 1980-81 to 2,027 in 2021-22, representing a compound annual decline of 3.13 per cent. This decline of profitable societies contrasts sharply with the expansion of loss-making societies, which grew from 1,022 to 1,619 during the same period at a growth rate of 9.73 per cent. These opposing trends suggest that institutional viability has become increasingly concentrated among fewer societies, while a growing proportion struggles with operational sustainability.

Despite fewer societies generating profits, the absolute value of profits has grown significantly from Rs. 3.44 crore

Table 3: Share of owned funds to loans advanced

Item	(Rs. crores)				
	1980-81	1990-91	2000-01	2010-11	2020-21
Owned Funds	347.51	981.41	2965.36	9115.46	24646.53
Loans Advanced	199.20	346.31	2138.99	8006.67	10558.53
Capital-to-lending ratio	1.74	2.83	1.39	1.14	2.33

Table 4: Number of PACS Reporting Profit vs Loss, Punjab, 1980-81 to 2021-22

Item	1980-81	1990-91	2000-01	2010-11	2020-21	2021-22	CAGR (%)
Societies reporting profit (No.)	2,268	2,851 (-25.71)	2,712 (-4.88)	2,595 (-4.31)	2,183 (-15.88)	2,027 (-7.15)	-3.13
Amount of profit (Rs. Crore)	3.44	21.82 (533)	36.24 (66)	109.72 (203)	189.27 (73)	282.12 (49)	183.57***
Societies showing loss (No.)	1,022	962 (-5.87)	808 (-16.00)	971 (20.17)	1609 (65.7)	1619 (0.62)	9.73*
Amount of loss (Rs. Crore)	1.97	2.60 (32.14)	11.97 (360.01)	42.53 (255.21)	196.61 (362.28)	103.56 (-47.32)	192.07***

Note: Figures in parentheses indicate per cent increase/decrease from previous year

* and *** indicates significance at 10 and 1 per cent level respectively

to Rs. 282.12 crore, achieving a remarkable growth of 183.57 per cent. This exponential growth in total profits while the number of profitable societies declined indicates significant profit concentration among successful PACS. The results presented in Table 5 regarding per-society profit reinforces this pattern, with average profits per profitable society increasing from Rs. 0.15 lakh to Rs. 13.91 lakh over the study period.

In addition, the results revealed that the average loss per loss-making society has increased from Rs. 0.19 lakh to Rs. 6.40 lakh, indicating that institutional failures have become more severe over time.

The concentration of both success and failure suggests that the traditional cooperative model may require differentiated approaches for different types of societies rather than uniform policies across all PACS. The data indicates that Punjab's PACS system has moved away from the relatively homogeneous cooperative structure that existed in 1980-81 toward a more heterogeneous landscape. This evolution demands recognition that policy interventions and support mechanisms may need to be tailored to address the distinct challenges facing profitable versus loss-making societies, rather than treating all PACS as uniform entities requiring identical solutions.

Conclusions and Policy Implications

Financial performance of PACS of Punjab state over four decades reveals a fundamental transformation in membership, share capital, deposits and funds. But their operational inefficiency has been reflected from the increase in overdue loans from 35 per cent (1980-81) to 92 per cent (2021-22) of total outstanding loans, indicating a near-complete breakdown in loan repayment culture among borrowers. While credit disbursement grew at 193.54 per cent annually, the recovery rate could not keep pace, creating an unsustainable accumulation of bad loans. The institutional landscape has grown more uneven, with fewer societies turning in profit and more slipping into losses, highlighting the growing importance of structural reforms and scale-based strategies to strengthen the cooperative banking system. These findings indicate that PACS have gradually shifted from being efficient credit institutions to merely serving as channels for financial aid which has, in turn, weakened their financial sustainability. Based on these results, the study recommended three key measures: first, implementing separate management approaches for profitable and loss-making societies to address their distinct operational challenges; second, introducing technology-based loan monitoring systems and comprehensive borrower awareness programs to improve repayment discipline and

Table 5: Amount of profit and loss per society, Punjab, 1980-81 to 2021-22

Item	Unit	1980-81	1990-91	2000-01	2010-11	2020-21	2021-22
Societies reporting profit	No.	2,268	2,851	2,712	2,595	2,183	2,027
Amount of profit	Rs. Lakhs	344	2,182	3,624	10,972	18,927	28,212
Amount of profit per society	Rs. Lakhs	0.15	0.76	1.33	4.22	8.67	13.91
Societies showing loss	No.	1,022	962	808	971	1609	1619
Amount of loss	Rs. Lakhs	197	260	1,197	4,253	19,661	10,356
Amount of loss per society	Rs. Lakhs	0.19	0.27	1.48	4.38	12.22	6.40

reduce dependence on loan waivers; and third, developing strategic guidelines for optimal utilization of accumulated capital reserves to enhance credit accessibility while maintaining institutional viability. These interventions are essential to restore the financial health of PACS and ensure their continued contribution to agricultural development in Punjab.

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