

# Subvention and Solvency: PACS Performance under India's Interest Subvention Scheme in Vidisha

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**Abstract** – Interest subvention lowers the price of short-term crop credit for farmers, but it shifts a liquidity and margin burden onto the primary agricultural co-operative credit societies (PACS) that originate the loans. This study examines the effect of the Interest Subvention Scheme (ISS) on loan disbursement, profitability, share capital and recovery of PACS in Vidisha district, Madhya Pradesh, where prompt repayers borrow at an effective 0%. A mixed-methods design combines district records for 2019–20 to 2023–24, a survey of 500 farmer-borrowers and a structured survey of 8 PACS. Crop-loan disbursement increased by 134.2% (CAGR 23.7%) while fertiliser distribution rose 22.3%. Seven of eight societies reported higher disbursement, expanded share capital and improved recovery, six reported higher profit, and all eight identified delayed claim reimbursement as a structural weakness. Among farmers, 98.0% reported personal benefit and 75.0% rated the disbursement effect positive. The findings support the scheme's credit-deepening and discipline-building role but indicate that institutional solvency is conditional on the timeliness of reimbursement. Policy and research implications are discussed.

**Keywords:** Interest Subvention Scheme, Primary Agricultural Co-operative Credit Societies, Crop Loan, Prompt Repayment Incentive, Share Capital, Loan Recovery, Madhya Pradesh

## I. Introduction

Timely institutional credit is a precondition for the adoption of improved seed, fertiliser and mechanisation, and empirical work links agricultural credit with higher farm output [1]–[3]. Rural credit markets, however, are characterised by information asymmetry, which produces rationing, weak enforcement and high default risk [4]. Because a large share of cultivators has limited savings and, historically, limited access to formal lenders [5], governments have relied on concessional credit delivered through banks and the co-operative system, whose revival has itself been a policy concern [6].

The Interest Subvention Scheme (ISS), introduced in 2006–07, is the principal instrument of this approach. Crop loans of up to ₹3 lakh are offered at a nominal 7% per annum, the Centre reimburses lenders for a basic subvention, and a prompt repayment incentive (PRI) of 3% rewards on-time repayment [7]. Madhya Pradesh has supplemented the central scheme since 2012–13 so that farmers borrowing through primary agricultural co-operative credit societies (PACS) pay an effective 0% if they repay within the due date.

Evaluations of the ISS have been concentrated on borrowers and on state or national aggregates [8]. The institutional question—what the scheme does to the PACS that lend first and are reimbursed later—has received comparatively little micro-level attention, although delayed claim settlement and margin compression are documented elsewhere [9]. This paper addresses that gap for Vidisha district. It contributes (i) district-level evidence on PACS credit growth under the 0% regime, (ii) a paired reading of borrower and society responses on disbursement, profitability, share capital and recovery, and (iii) a set of operational recommendations. Section II sets out the policy and conceptual framework, Section III reviews the literature, Sections IV and V state the hypotheses and methods,

Sections VI–VIII present results, discussion and limitations, and Section IX concludes.

## II. Policy and Conceptual Framework

### A. Structure of the scheme

Under the central framework, short-term crop loans carry a nominal 7% rate against a reference market rate of 9%; the 2% basic subvention is paid to lenders, and a further 3% PRI reduces the effective rate for prompt payers to 4% [7]. In Madhya Pradesh the state adds 1% to the basic subvention and 4% to the PRI, producing an effective 0% for prompt repayers borrowing through PACS. Claims are routed through NABARD for central shares and through the Registrar of Co-operative Societies for state shares. Loans are disbursed at subsidised rates upfront, and the PACS carry the receivable until reimbursement.

### B. A carrying-cost argument

Let  $L$  denote the loan outstanding,  $s$  the combined subvention rate receivable by the society,  $d$  the reimbursement delay in months and  $r$  the society's cost of funds (typically DCCB refinance). The financing cost borne by the society per cycle is approximately

$$C = L \cdot s \cdot r \cdot (d / 12) \quad (1)$$

Equation (1) is illustrative, but it shows that the burden rises linearly in both the subvention rate and the delay. For a society whose margin is already thin and whose non-credit income is limited, a long  $d$  can offset the volume and capital benefits of larger  $L$ . The BIRD Lucknow study documents delays of 8–16 months in Uttar Pradesh and 3–25 months in Haryana [9]. This logic motivates the three outcomes studied here—disbursement (volume), profitability and share capital (balance-sheet strength), and recovery (liquidity recycling)—and the expectation that gains in the first and last may coexist with strain in the second.

### III. Review of Literature

The case for credit subsidies is contested. Fan, Gulati and Thorat show that public investment in agricultural research, roads and education yields larger growth and poverty effects than input or credit subsidies [10]. Meyer stresses that the design of subsidy policy requires knowledge of borrowers' interest-rate sensitivity relative to other determinants of credit demand [11], and Hoda and Terway argue that interest is a small share of cultivation cost, which weakens the economic case for further subvention [12]. On the demand side, Iqbal finds that the demand for funds among agricultural households responds to the cost of credit, most strongly in low-income groups [13].

State-level PACS studies mostly report favourable effects on volume and repayment. Positive disbursement effects are reported for Punjab [14], Maharashtra [15] and for national samples [16]. The prompt repayment incentive is associated with improved repayment and lower default in Haryana [17] and with better recovery in Rajasthan [18]; for Uttarakhand, expanded credit flow and stronger society viability are reported [19], and for Uttar Pradesh, higher net income and recovery [20]. Evidence on profitability is less uniform: Kavyashree and Raju report that capped rates compressed margins and lowered net profit among PACS in Karnataka [21]. For Madhya Pradesh, Babu and Shrivastava find wider inclusion and membership but liquidity constraints arising from delayed state subvention [22].

Two further strands bear on distribution and sustainability. The Reserve Bank of India's Karnataka study finds that only a minority of farmers realise the full benefit of the capped rate and that awareness among small and marginal farmers is low [23]. A long-run assessment concludes that the scheme's benefits to PACS depend on the timeliness of claim settlement [24]. The literature therefore leaves open whether, in a state that has pushed the effective rate to zero, the volume and capital gains to PACS outweigh the reimbursement burden. District-level evidence that combines institutional records with borrower and society surveys is scarce, and it is this gap that the present study addresses [25].

### IV. Objectives and Hypotheses

The study has three objectives: (O1) to determine the impact of the ISS on crop-loan disbursement by PACS; (O2) to analyse PACS profitability in relation to increased share capital; and (O3) to assess recovery rates and their implications for sustainability and long-run credit availability. The corresponding hypotheses, stated in the alternative, are:

H1: The ISS has a positive impact on crop-loan disbursement by PACS.

H2: The ISS has a positive impact on PACS profitability through increased share capital.

H3: The ISS has a positive impact on PACS recovery rates, supporting sustainability and long-run credit availability.

### V. Data and Methodology

#### A. Study area

Vidisha is an agrarian district of central Madhya Pradesh in which wheat (notably Sharbati), gram and soybean predominate. The district has 142 bank branches, of which 21

belong to the District Central Co-operative Bank (DCCB) Vidisha, with 154 affiliated PACS. PACS in the district have issued about 1.53 lakh Kisan Credit Cards and also distribute inputs and procure at minimum support price, making them the main institutional lender and a good setting for studying the scheme's institutional effects.

#### B. Design and sampling

A descriptive-analytical mixed-methods design with two primary cohorts was adopted. Cohort 1 comprises 500 farmer-borrowers selected by simple random sampling from the borrower registers of the selected societies, covering marginal, small, medium and large holdings. Cohort 2 comprises 8 PACS selected by stratified random sampling across blocks to reflect variation in location, loan volume, membership and past performance; society managers, directors or senior officials answered a structured administrative questionnaire. Responses were collected through printed schedules and Google Forms.

#### C. Instruments, secondary data and analysis

The farmer questionnaire covered awareness, perceived benefit, disbursement, profitability, service quality, recovery, access bottlenecks, borrowing behaviour and training needs; the society questionnaire covered disbursement, profit, share capital, recovery, sustainability, demand, enrolment and reinvestment. Likert-scale internal consistency exceeded Cronbach's  $\alpha = 0.70$ , and content validity was established through expert and supervisory review. Secondary data comprise DCCB Vidisha records of crop-loan disbursement and fertiliser distribution for 2019–20 to 2023–24, audited society statements, and NABARD and co-operative department abstracts. Data were processed in SPSS and Excel using frequencies, percentages and compound growth rates. Each hypothesis is assessed by triangulating the farmer response, the society response and the district series; agreement across the three is treated as support.

## VI. Results

#### A. District credit and input trends

Table 1 and Fig. 1 show that crop-loan disbursement rose from ₹740.19 crore to ₹1,733.75 crore between 2019–20 and 2023–24, an increase of 134.2% (CAGR 23.7%). Fertiliser distribution grew by 22.3% (CAGR 5.2%). Credit therefore expanded much faster than physical input volume. Part of this divergence may reflect revisions in the scale of finance and input prices; the data do not allow these effects to be separated from that of the ISS.

**Table 1: PACS crop-loan disbursement and fertiliser distribution, Vidisha**

| Year    | Loan (₹ crore) | Loan YoY (%) | Fert. (MT) | Fert. YoY (%) |
|---------|----------------|--------------|------------|---------------|
| 2019–20 | 740.19         | —            | 69,258     | —             |
| 2020–21 | 951.00         | 28.5         | 74,476     | 7.5           |
| 2021–22 | 1,157.01       | 21.7         | 78,674     | 5.6           |
| 2022–23 | 1,338.34       | 15.7         | 82,627     | 5.0           |
| 2023–24 | 1,733.75       | 29.5         | 84,671     | 2.5           |

Source: DCCB Vidisha records as compiled in [25]; growth rates computed by the authors.

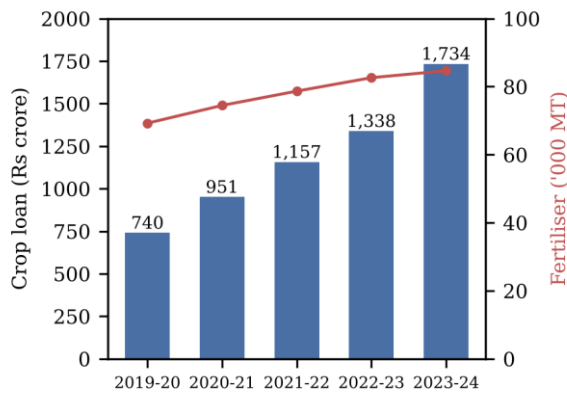


Fig. 1: Crop-loan disbursement (bars) and fertiliser distribution (line), 2019–20 to 2023–24.

### B. Farmer-borrower responses (N = 500)

Table 2 summarises the farmer survey. Awareness is fairly high (74.0%) but leaves a quarter of borrowers unfamiliar with the scheme, a gap also reported in Karnataka [23]. Almost all respondents (98.0%) reported personal benefit from larger crop loans, and 75.0% rated the effect on disbursement positive (46.0% very positive, 29.0% positive). The use of credit was mostly productive or liquidity-related: 40.0% expanded farming activities, 33.8% covered liquidity constraints and 19.2% invested in better inputs. Yet only 51.2% reported improved household well-being, while 39.2% saw no improvement, citing volatile yields and input costs—an observation consistent with the argument that interest is a minor component of cultivation cost [12].

Table 2: Selected farmer survey results (N = 500)

| Indicator                                    | n   | %    |
|----------------------------------------------|-----|------|
| Familiar with the ISS                        | 370 | 74.0 |
| Personally benefited from higher loans       | 490 | 98.0 |
| Disbursement impact positive/very positive   | 375 | 75.0 |
| Household well-being improved                | 256 | 51.2 |
| PACS recovery improved significantly         | 280 | 56.0 |
| Scheme contributes to PACS profitability     | 498 | 99.6 |
| Notable improvement in PACS services         | 300 | 60.0 |
| Perceived significant fall in interest rate  | 380 | 76.0 |
| Loan terms clear and understandable          | 378 | 75.6 |
| Likely/highly likely to recommend PACS loans | 390 | 78.0 |
| Want financial-literacy workshops            | 458 | 91.6 |

On institutional outcomes, 56.0% of farmers saw significantly better PACS recovery (a further 20.0% marginal), 54.0% reported easier access to credit through improved fund recycling, and 99.6% believed the scheme contributes to PACS profitability. Fig. 2 shows what farmers value from a stronger society: prompt processing (46.0%) and credit availability (36.0%) far outweigh competitive interest rates (3.0%). Frictions persist: 24.0% found the application process complicated, 10.0% reported approval delays and 8.0% considered loan sizes inadequate.

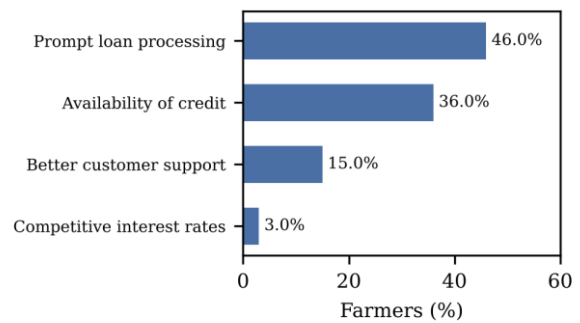


Fig. 2: Benefits farmers value from a more profitable PACS.

### C. Society (PACS) responses (N = 8)

Fig. 3 and Table 3 report the institutional view. Seven of eight societies (87.5%) reported higher disbursement, expanded equity share capital, improved recovery and wider credit availability, and all eight (100.0%) confirmed lower interest rates for borrowers. Six (75.0%) reported higher profitability; five (62.5%) linked share-capital growth to higher profit and five linked better recovery to sustainability. The exceptions are informative: one society reported a profit decline despite a larger capital base, and two reported weaker sustainability despite better recovery.

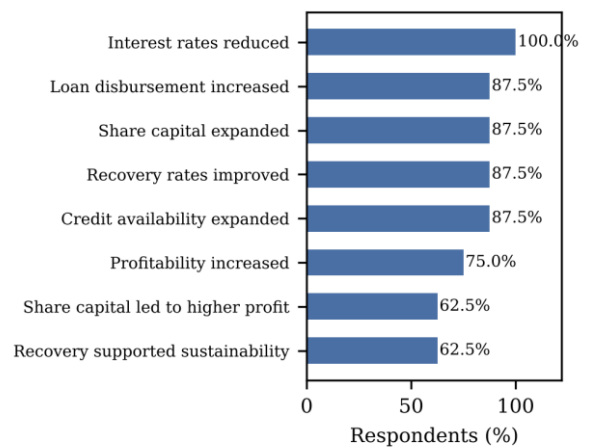


Fig. 3: Share of the 8 PACS reporting each outcome.

Table 3: Society survey results (N = 8)

| Finding                                      | n | %     |
|----------------------------------------------|---|-------|
| Increase in crop-loan disbursement           | 7 | 87.5  |
| Increase in profitability                    | 6 | 75.0  |
| Share capital base expanded                  | 7 | 87.5  |
| Share capital growth supported higher profit | 5 | 62.5  |
| Recovery rates improved significantly        | 7 | 87.5  |
| Improved recovery supported sustainability   | 5 | 62.5  |
| Repayment compliance clearly improved        | 4 | 50.0  |
| Increase in seasonal loan demand             | 5 | 62.5  |
| Wider farmer participation/enrolment         | 5 | 62.5  |
| Delayed claim reimbursement a major weakness | 8 | 100.0 |
| Interest rates on crop loans reduced         | 8 | 100.0 |

Operationally, officials identified the incentive for timely recovery (50.0%), reduced non-performing assets (37.5%) and membership and capital growth as strengths, and the carrying cost of delayed reimbursement, margin compression and dependence on DCCB refinance as weaknesses. Retained profit was reinvested mainly in expanding loan offerings (62.5%), with 25.0% investing in infrastructure and digital systems.

#### D. Assessment of hypotheses

**Table 4: Summary of hypothesis assessment**

| Hyp. | Principal evidence                                                                 | Assessment              |
|------|------------------------------------------------------------------------------------|-------------------------|
| H1   | Loans +134.2%; 87.5% of PACS and 75.0% of farmers report gains                     | Supported               |
| H2   | 75.0% of PACS report higher profit; 87.5% larger share capital; 62.5% link the two | Supported, with caveats |
| H3   | 87.5% of PACS and 76.0% of farmers report better recovery                          | Supported               |

### VII. Discussion

The results are consistent with the volume and recovery effects reported for Punjab, Maharashtra, Haryana and Rajasthan [14], [15], [17], [18], and H1 is the best supported hypothesis because it is corroborated by the district series and by both surveys. The recovery result (H3) is in line with the behavioural logic of the PRI: when default forfeits a zero-rate loan, the cost of delinquency rises relative to servicing [4]. The residual non-compliance reported by a quarter of societies, attributed to crop loss, low financial literacy and expectations of loan waivers, shows that the incentive is not sufficient where income shocks and moral hazard persist.

H2 is the least secure. Profit gains are reported by a majority, but not all, societies, and the Karnataka and BIRD evidence shows how capped rates and delayed claims can erode margins [9], [21]. Equation (1) offers a reading: where the reimbursement lag  $d$  is short, volume and capital growth translate into profit; where it is long, the carrying cost can dominate. The data here do not identify  $d$  society by society, but the unanimous identification of delayed reimbursement as a weakness supports this interpretation and echoes the liquidity strain noted for Madhya Pradesh [22]. Farmers' preference for speed and availability over price also suggests that, from the borrower's side, the marginal value of further rate reduction is small compared with that of reliable, timely lending [12], which is itself conditional on PACS liquidity.

The policy implication is that the binding constraint has shifted from the price of credit to the plumbing of reimbursement. Further reductions in the effective rate would be less valuable than shortening  $d$ , revising scales of finance and diversifying society income.

### VIII. Limitations

Four limitations apply. First, the society sample is small, so percentages move in steps of 12.5 points and are indicative only. Second, hypotheses are assessed through stakeholder-reported outcomes and district aggregates; no inferential tests or society-level audited before-and-after ratios are reported, so causal attribution to the ISS is not claimed, and loan growth may also reflect scale-of-finance revisions, prices and the Kisan Credit Card drive. Third, the district series ends in 2023–24 and has no comparison district. Fourth, the study covers one district and one type of lender. Future work should combine audited PACS panel data with paired or difference-in-differences tests across districts, and should measure reimbursement delay directly.

### IX. Conclusion and Recommendations

In Vidisha, the ISS and the state's 0% model coincide with strong credit growth, expanded share capital and improved reported recovery, and are viewed favourably by both borrowers and societies. The same evidence shows an institutional cost: all eight societies named delayed claim reimbursement as a structural weakness, and some saw weaker profit or sustainability despite larger business. The scheme thus succeeds as a social-banking instrument, but its benefit to PACS is conditional on cash-flow design.

Four measures follow. (i) Governments should adopt an automated, near-real-time claim-settlement portal so that subvention and PRI claims are verified and paid quickly, reducing the carrying cost in Eq. (1). (ii) Repayment windows should allow modest flexibility aligned with harvest arrivals so that marginal and small farmers do not lose PRI eligibility through minor timing slippage. (iii) The DCCB and District Level Technical Committee should review the scale of finance annually for input-cost inflation and standardise digital claim verification across PACS. (iv) PACS should diversify into non-credit services such as input supply, custom-hiring centres and storage, and run pre-season financial-literacy camps, which 91.6% of farmers said they wanted.

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