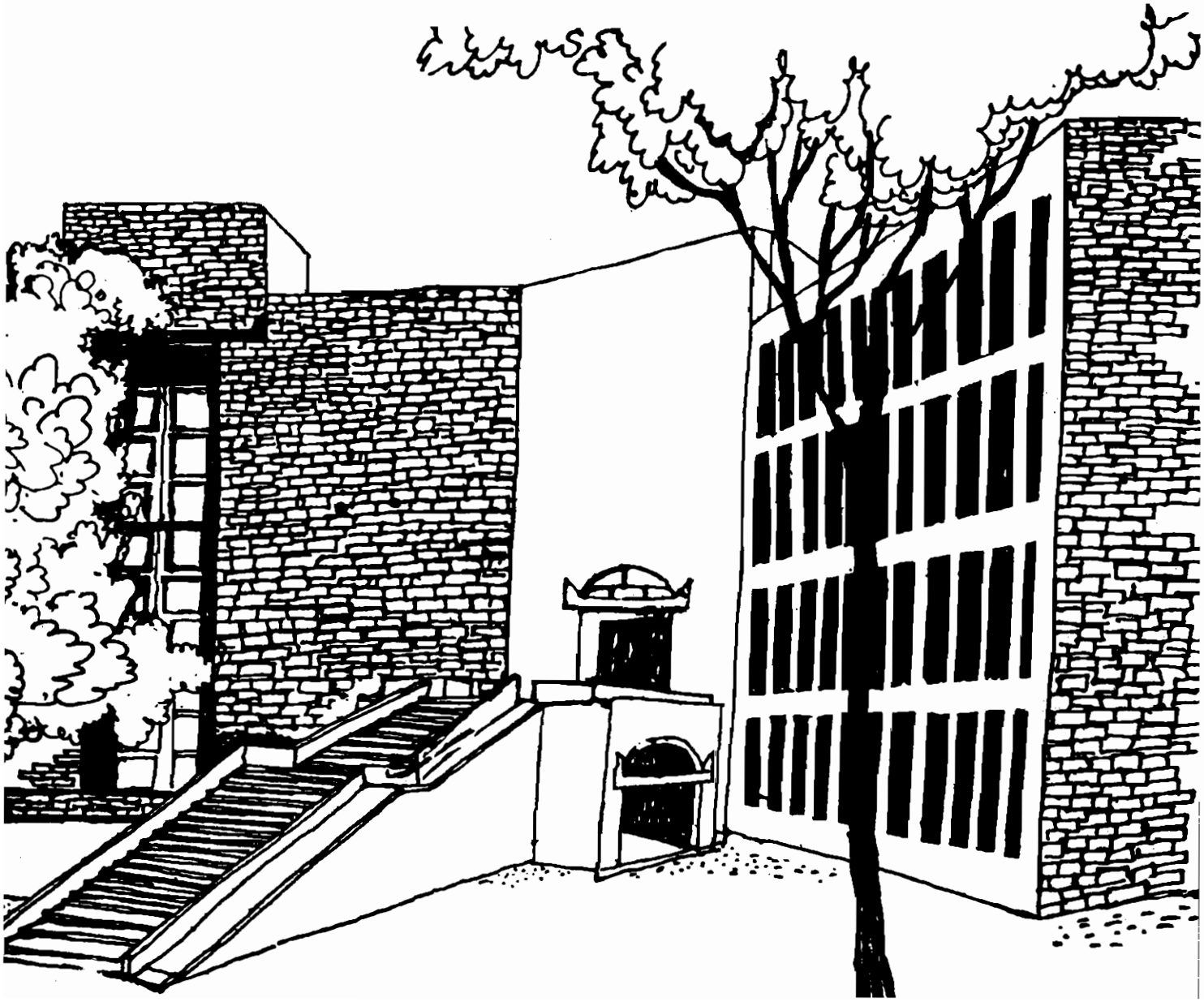
विद्याविनियोगाद्विकासः
IIM
AHMEDABAD

Working Paper



PERFORMANCE OF INSTITUTIONAL FINANCE FOR AGRICULTURAL DEVELOPMENT

By

Bhupat M. Desai

&

N. V. Namboodiri

W P No. 946
June 1991

INDIAN INSTITUTE OF MANAGEMENT
AHMEDABAD-380 015
INDIA

Abstract

This paper analyses the performance of rural institutional finance system and based on that draw implication for improving this performance. Section II provides a conceptualization of performance criteria. Section III discusses the results. And Section IV recapitulates main conclusions and implication. Main conclusions are that the rural institutional finance system has performed well but only considering long run performance. Short run growth rates display a disperate performance. Moreover, this system has performed better in deposit mobilization than in financing agricultural output and investment. Its performance on the functional structure of loans and loan recovery leaves much to be desired. Despite this, the RFIs are viable and have not suffered from scale diseconomies in their transaction costs. Similarly, agricultural productivity and investment have increased with the increase in various functions of the rural institutional finance system.

PERFORMANCE OF INSTITUTIONAL FINANCE FOR AGRICULTURAL DEVELOPMENT

Bhupat M. Desai
N.V. Namboodiri

I. Introduction

Two-fold objectives of this paper are to analyse the performance of the rural institutional finance system and based on that draw broad implications for improving this performance. Rural institutional finance system (RIFS) considered include three-tier cooperative financial institutions, cooperative land development banks (CLDBs), commercial banks, regional rural banks (RRBs), and rural electrification corporations (RECs).

Rationale for this study originates from three concerns. One, that agricultural credit has grown substantially in nominal terms but not in real terms. Two, that functional structure of rural financial institutions (RFIs) is not conducive to meeting the financial services needs of the agricultural sector. And three, RFIs are nonviable and have high transaction/ administrative costs. In the context of the second concern, this is for their farm level credit operation. Some of the past studies have shown some lack of support to the first two concerns and empirical support to the third concern. Examples on the former include studies by Desai, Gupta and Tripathi, Gadgil, Jodha, and Mohnan. Prominent example on the latter include a study by Gadgil. As far as Gadgil's analysis of the first

concern is concerned, he does not examine full time series data. Moreover, his support to the third concern has both conceptual and methodological weaknesses as will be shown latter. On the second concern Desai, Gupta and Tripathi, Jodha, and Mohnan's evidences are based on small sample of RFIs. Analysis in this paper overcomes these limitations. It utilizes long time series data from 1961-62 to 1985-86. These data are obtained from (a) Statistical Statements relating to Cooperative Movement in India, (b) Statistical Tables relating to Banks in India, and (c) Report on Currency and Finance.

Section 2 lays down a research framework for studying the performance of institutional finance. Section 3 interprets the results, while section 4 recapitulates main conclusions and implications of the study.

II. Research Framework

Rural institutional finance system (RFIs) in India as elsewhere pursues three objectives, namely, agricultural growth, alleviation of rural poverty, and viability of financial institutions. Keeping this and the nature of available data in view the following performance criteria and considerations are conceptualized.

1. Contributions of RIFS as they relate to
   a) size of operations which includes density of banking infrastructure, and size and growth of rural deposits and loans,
   b) functional structure of operations which mainly

considers different types of agricultural loans and in the case of primary agricultural cooperative credit societies (PACS) considers both credit and noncredit operations,

c) association of agricultural productivity and investments with the selected functions of RIFS, and

d) inter-class distributions of 'direct' agricultural credit;

2. Delinquancy rate of 'direct' agricultural loans and its association with the selected functions of RIFS;

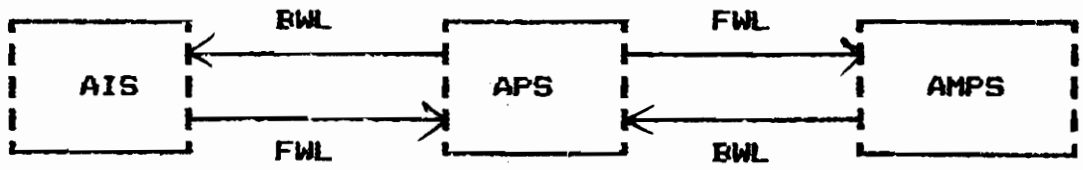
3. Viability, and average transaction costs of different types of RFIs, and

4. Scale economies in transaction costs of various RFIs.

While criteria 1(a), 1(c) and 1(d) are self-explanatory, other criteria need to be discussed. A distinctive feature of studying contributions of RIFS is that loans and nonfinancial operations are visualized as facilitators of investment in modern inputs and assets especially that which induce agricultural progress. It also visualizes deposit mobilization as an instrument to encourage financial deepening of the rural sector.

In regard to the functional structure of loans, a question is raised as to whether loans are extended only to increase demand for investment goods by farmers (termed as agricultural production subsystem i.e. APS) or also for inducing distribution of these goods (termed as agricultural inputs distribution subsystem i.e. AIS) and farm produce marketing and processing

services (termed as agricultural produce marketing and processing subsystem i.e. AMPS). Analysis of this question is important as loans for all these three subsystems would encourage backward and forward linkages among them as is diagramatically shown below.



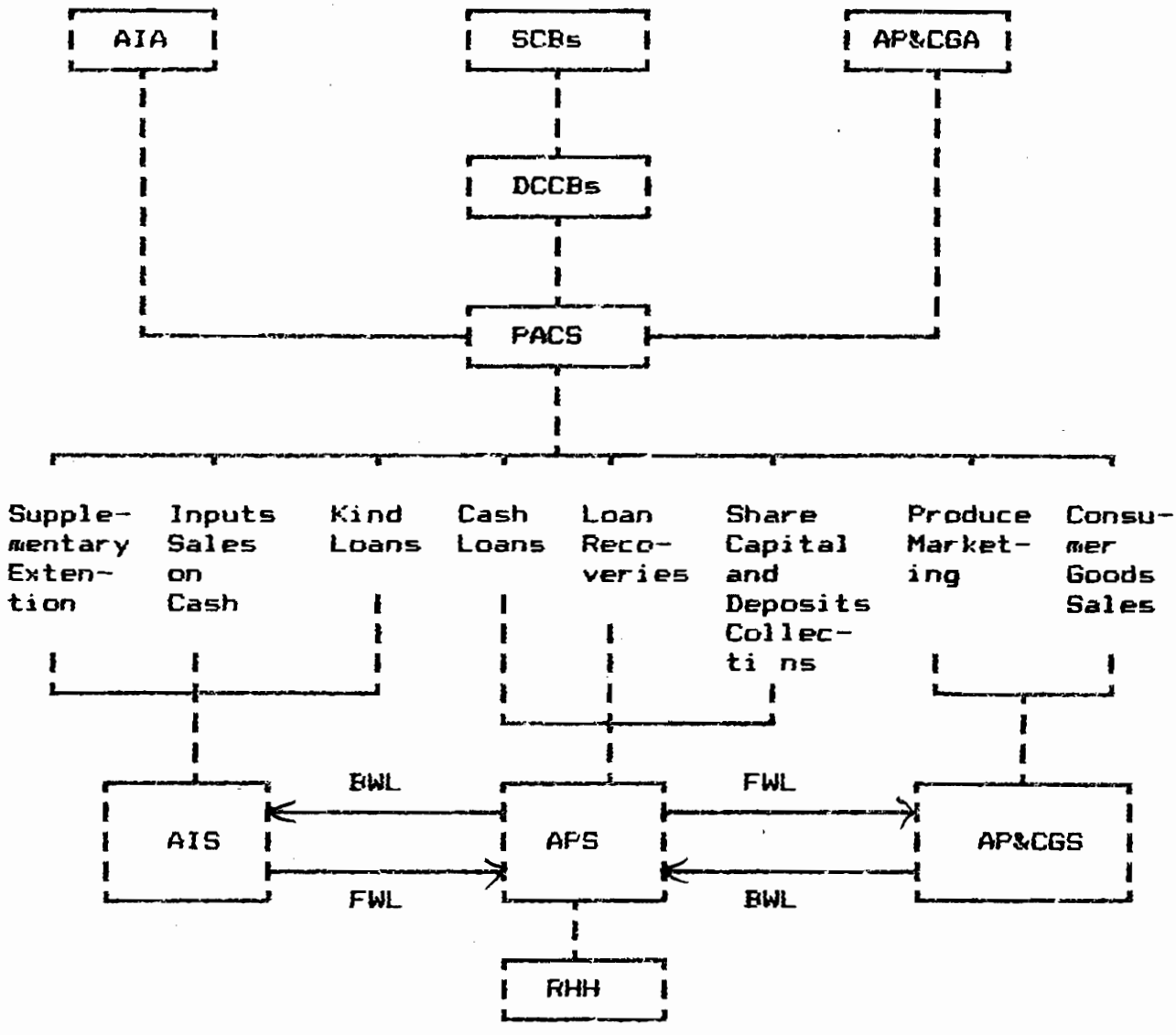
Attainment of these linkages has three advantages. One, farmer-level (i.e. APS) credit acts as an impetus to investment in real resources which must be matched by supplies which can be encouraged by loans to AIS and AMPS. Through these types of agricultural credit, RFIs can accomplish two necessary and desirable features of their operations. These are (a) better balance between demand and supply forces and hence noninflationary impact of credit; and (b) larger production and saving impacts of technological change in agriculture. Two, the resulting increased incomes of agriculturists would also lead to larger consumption linkages of technological change. And three, RFIs by serving three subsystems would reap strongly required scale and scope economies and thereby improve their viability. These would result from (a) spreading many common transaction costs so peculiar to an institution like RFI, (b) possibilities of mobilizing low cost funds and hence their lower interest costs, (c) possibility for extending loans which carry lower as

well as higher lending rates, (d) improving loan recovery rates and hence higher recycling of funds on account of better loan repayment capacity in all the three subsystems, and (e) earnings from many nonfinancial activities such as commission on nonfund based credit, check clearing fees, discount on bills, etc.

Among various RFIs all except PACS, CLDBs, and RECs have loan portfolio for the three subsystems. What is the trend in and share of these loans and how is it associated with the degree of agricultural progress need to be studied. This analysis is relevant not only for commercial banks and RRBs, but also for state cooperative banks (SCBs) and district central cooperative banks (DCCBs). This is because these cooperative banks extend AIS and AMPS loans to the cooperatives including PACS which are federated to these banks. In the dynamic context of development of PACS these are critical in enabling them to supply AIS and AMPS related services to their members as they themselves are agencies providing these services.

For PACS, therefore, not only the size, growth and functional structure of APS loans and deposits are important to analyse but these also need to be studied for their noncredit operations. Such operations have also a potential to improve degree of agricultural progress and welfare in general as is shown in Chart 1.

Chart 1



AIA = Agricultural Inputs Distribution Agencies
AP&CGA = Agricultural Produce and Consumer Goods Distribution Agencies
AM&CGS = Agricultural Marketing and Consumer Goods Sub-system
RHH = Rural Households

Another distinctive feature of the analysis of functional structure of RFIs is that APS loans are categorized into three different types. These are (a) loans that encourage current production growth and stability (CPGS which includes loans for purchase of farm inputs and assets like sinking or repair of wells, bullocks and carts, camels and carts, minor improvements to land, new irrigation wells and tanks, diesel engines, electric motors, other lift irrigation devices, tractors and other agricultural implements and machineries), (b) loans that encourage current production diversification and growth (CPDG which includes loans for purchase of poultry, milch cattle, sheep, goat, pig and gobar gas plants), and (c) loans that minimize current production loss (CPLM which includes loans for conversion/rephasement/rescheduling of past loans, and debt redemption).

As regards the criterion and considerations related to loan delinquancy two points must be stressed. One, delinquancy rate is measured as 100 minus loans recovered to those outstanding instead of due wherever data permited. This is because it reflects relatively more accurate measure of delinquancy as it includes loan recoveries sometime after the maturity date which usually coincides with the harvest time. Such phenomenon occurs due to avoidance of distress sale of farm harvests, delay in receiving sale proceeds, and in income from other occupations. Two, delinquancy rate is correlated with the selected features of lenders operations instead of both lenders and borrowers.

This is not to suggest unimportance of the latter, but to merely address to the question of which of the operations of lenders may reduce delinquancy.

On the third performance criterion of viability and average or unit transaction costs it is strongly emphasized that this should be studied for an institution rather than its single activity like loans. Very few studies on this issue deal with the former.[1] There are four reasons for this approach. One, policy concern is for the viability of an institution and not its one single activity. Two, the approach which studies viability of one single activity like lending assumes that all transaction costs can be attributed to lending which in reality cannot be done without borrowing from somewhere. Three, financial institution is characterized by multi-and joint products. Examples of the former include loan operations, deposits mobilization, share capital collection, borrowing from the central monetary authority, non-fund based credit etc. Examples of the latter are multiple credit creation feature of deposits, refinance being provided only after lending, and cooperatives being allowed to borrow from central financing agencies certain times of their owned funds and/or some

---

[1] Exceptions are studies by Varde et al and Verghese. But neither of them recognize joint product character of financial institutions in their conceptualization of profitability. Their concepts are baed on financial management discipline. Some other exceptions are Desai, and Desai and Mellor who utilize the approach and the underlying economic concepts adopted here.

proportion of their loan recoveries and/or their performance in deposit mobilization. And four, transaction costs are common to all these activities and hence their allocation to various activities is arbitrary and artificial. Thus, viability is defined as profit (i.e. all revenues minus all costs) as a percent of all assets plus liabilities excluding contra items.[2] This is also different from other studies on viability as they consider certain norms like area of operations, volume of loan business etc. But this study considers these variables as a part of its performance criterion [1(a)]. Average or unit transaction costs[3] (which include salaries, wages, travel, stationery, printing, rent, depreciation, postage etc.) is also defined as total transaction costs as a percent of all assets plus liabilities excluding contra items.

---

[2] Viability defined on the basis of financial management discipline can be obtained from this by merely doubling the profit so obtained as assets equal liabilities.

[3] Transaction costs are of two types--one of these is administrative and the other is to account for bad debts. This study addresses to the former, though it does not undermine the importance of the latter. High overdues and the implied bad debts suggested in some studies grossly overstate the problem. This is because loan delinquancy measure and the implied suggestion of restrained supply of credit does not allow for such factors as loans repaid after reasonable period of maturity date, age of overdues, unsatisfactory loan appraisal and recovery policies, and demand for loans from borrowers with genuine delinquancy and from erstwhile nonborrowers. This study could not estimate the extent of bad debts due to nonavailability of this type of data.

Viability and average transaction costs so defined are studied for rural operations of the three-tier cooperative financial institutions, cooperative land development banks and RRBs. But for commercial banks they are studied for these banks rather than for their rural branches as the required data on the latter are not available.

A study of the fourth criterion of scale economies in transaction costs is important for two reasons. One such economies in agencies like financial institutions especially for the rural sector do not occur unless volume of business is large enough.[4] Despite this, this issue has not been much researched (see, for some exceptions studies by Desai, and Desai and Mellor). Two, achieving economies of scale in transaction costs is yet another alternative to raising interest rates or margins for viability of RFIs. This alternative instrument is far more desirable than raising interest rates on loans[5] because the latter can lead to lower loan demand and thereby adversely affects volume of business of RFIs, besides lowering private investment in agriculture with the consequent decline in

---

[4] This is also the case for other agencies like that for agricultural inputs, agricultural research and extension, agro-marketing and procesing, rural roads, transportation and electrification.

[5] In the current concern for improving viability of RFIs the debate has completely ignored this alternative and as a result there is an excessive emphasis on improving margins by administrative fiat.

agricultural output.[6]

In this study scale economies in transaction costs are conceptualized in the form of a cost function. In this, transaction costs are a function of assets plus liabilities excluding contra items. Economic logic suggests different mathematical functional forms to estimate this cost function. Those considered are:

1. $y = a + bx + cx^2 + dx^3$ - CUBIC

2. $\log y = \log a + b \log x$ - DOUBLE-LOG

3. $\log y = \log a + b \log x + c\frac{1}{x}$ - LOG-LOG-INVERSE

4. $\log y = \log a + b \log x + cx$ - TRANSCENDENTAL

5. $\log y = \log a + b \log x + c\frac{1}{2}(\log x)^2$ - TRANSLOG

These functional forms allow for prevalence of scale economies, diseconomies, and neither of these i.e. constant returns to scale. When scale economies exist it suggests that for every one percent increase in volume of business transaction costs increase by less than one percent. When scale diseconomies exist it implies that these costs increase by more than one percent. And when these costs also increase by one percent it suggests constant returns to scale. The scale economy parameter

---

[6] For evidence on the interest elasticity of rural loans in India and other developing countries and its implications (see Desai and Mellor).

from these functional forms is given by the elasticity of y with respect to x. The choice from among these mathematical functional forms is based on superiority of its statistical results. These cost functions are estimated by Ordinary Least Squares procedure.

III. Results and their Analysis

Before the results on the four criteria are discussed it is worthwhile to note the performance based on certain macro indicators. Four findings may be highlighted.

One, relative importance of institutional credit has shown an increasing trend in four dicennial large-scale nation-wide sample surveys. This is consistent with the historical experiences of countries like Japan, Taiwan, South Korea, Thailand, Philippines, Pakistan, Sri Lanka, and Nepal. Thus, this trend must be sustained not only in the institutional share of rural credit but also in its share in the number of farmers served. Two, financial deepening of the rural sector and agricultural NDP and output financed by RFIs have both improved continuously. Three, performance of financial deepening is better than that of the proportion of agricultural NDP and output financed by the RFIs. And four, this proportion in India is much lower than that in countries like Pakistan, Philippines, Malaysia, South Korea, and Brazil.

Taking all these together it may be suggested that performance in regard to financial deepening must be sustained

and that of agricultural NDP and output financed by institutional credit must be increased. This is also because the proportions of working and fixed capital investment financed by this credit in early 1980s was only about one-quarter and one-third, respectively. These four criteria are commonly used and hence they must be monitored so that required policy changes can be formulated.

These include institutionalization of rural credit and deposits, and interest rate.[7] Instruments for the former include density of banking infrastructure, size and growth in

[7] Both borrowing (including deposits) and lending rates are relevant. Some of the studies under reference have indicated that current lending rates have constrained some groups of farmers, inputs distribution agencies (including PACS), and some basic food-processing industries for whom nominal interest rate ranges from 13 to 18 percent. Desai and Mellor found that responses of rural deposits and loans to real interest rates are, respectively, feeble and elastic in developing countries including India compared to those in the U.S.A. Lower deposits rates elasticity in the former may be because farmers' preference to hold savings in physical productive assets is higher than for financial deposits. In India intrest elasticity of rural loans has increased over time. This study also shows that though interest rate is relatively a less important factor than non-price determinants in both developing and developed countries, its relative importance in the former is higher for rural loans and lower for rural deposits than in the latter. Thus, interest rate policy for rural loans is important at the margin. This is also because such loans encourage investment and incomes and thereby create a better potential for rural deposits in the future.

operations, and functional structure of RFIs. These* are discussed in what follows.

Rural Banking Infrastructure : Considering all field-level RFIs there was one office for every 1000 hectare of net sown area at the end of the two and a half decades from 1961. But over the five years each in this period it deteriorated (see Table 1). This is because of reorganization of Primary Agricultural Credit Cooperative Societies (PACS). But, this reorganization has not improved PACS viability and scale economies in transaction costs as will be shown later. These imply that larger sized PACS with larger number of villages (and hence area of operations) and volume of credit business for reorganization does not necessarily improve functioning of PACS. Perhaps smaller PACS with more intensified and diversified functions may be a better strategy.

Secondly, density of branches of Cooperative Land Development Banks (CLDBs), and rural plus semi-urban branches of Indian Scheduled Commercial Banks (ISCBs) has continuously improved (see Table 1). But, growth in the density of branches of CLDBs continuously declined and that of the latter first

---

* Some others are more appropriate loan sanction and recovery policies, promotion of both working and fixed capital credit wherever necessary, timely and less procedural delivery of credit, better coordination among various agencies etc. are discussed in some of the studies under reference. A few of these also discuss the need for more appropriate deposit schemes which satisfy 'liquidity' and 'safety' preferences of potential rural depositors. Performance of all these instruments also require continuous monitoring.

Table 1

Density of RFIs and Growth Therein: 1961-62 to 1981-82

Details	1961-62 to 1965-66	1966-67 to 1970-71	1971-72 to 1975-76	1976-77 to 1980-81	1981-82 to 1985-86	1961-62 to 1985-86
1. Density i.e. no. of Offices per 1000 hectare of net sown area						
1.1 Field-level RFIs	1.509	1.245	1.233	1.087	0.981	1.185
1.2 PACS	1.507	1.213	1.146	0.920	0.921	1.175
1.3 CLDBs	0.002	0.003	0.004	0.007	0.012	0.006
1.4 ISCBs	na	0.029	0.002	0.152	0.188	0.091
1.5 RRBs	nr	nr	0.001	0.018	0.064	0.015
2. Annual Compound Growth Rate in Density (%)						
2.1 Field-level RFIs	-2.94	-1.64	0.72	-1.81	-1.81	-1.73
2.2 PACS	-2.97	-3.05	-0.03	-4.42	-0.46	-3.00
2.3 CLDBs	21.40	6.94	3.41	0.31	0.02	0.74
2.4 ISCBs	na	25.22	10.53	11.44	1.87	10.10
2.5 RRBs	na	nr	na	39.36	22.23	23.90

na = not available
nr = not relevant
nc = not computed
RRBs = Regional Rural Banks

deteriorated and then marginally improved. These suggest two-pronged future strategy of more sustained growth in density and more intensive and diversified operations of the already created infrastructure. This is also because rural deposits, besides loans, respond more to accessibility to this infrastructure than to higher interest rate.

Size and Growth of Rural Deposits and Loans, and Agricultural Loans : These are impressive but only considering the long- term performance. However, growth rate in five-years period each is disperate.* These hold for rural deposits, rural loans and agricultural loans and irrespective of their study for the entire system and individual RFIs. These suggest that in future RFIs should ensure more sustained growth rate in shorter as well as longer period instead of the strategy of maintaining high growth rate in a period or two only. Specific conclusions derived from Table 2 are:

One, annual average of rural deposits in 1970-71 prices at the end of two and a half decades was Rs.47.36 billion. The corresponding averages for rural and agricultural loans were, respectively, Rs.30.54 and Rs.22.81 billion. Two, annual compound growth rate was over 18 percent for rural deposits, 13 percent for rural loans, and 12 percent for agricultural loans. Three, this, however, varied significantly from one five-year

---

* Such performance is also found when all the three activities are measured in current prices.

Table 2

Size and Growth of Rural Deposits and Loans, and Agricultural Loans Balances: 1961-62 to 1981-82

Details (Rs. in Million in 1970-71 prices)	1961-62 to 1965-66	1966-67 to 1970-71	1971-72 to 1975-76	1976-77 to 1980-81	1981-82 to 1985-86	1961-62 to 1985-86
1. Average Size of Deposits						
1.1 Field-level RFIs	4642.2	14893.4	31292.4	67458.1	113982.8	47364.3
1.2 SCBs	1793.8	2135.4	3578.4	7828.9	18857.6	4917.1
1.3 DCCBs	2883.8	3583.5	5279.1	9773.7	14888.8	7232.2
1.4 CLDBs	45.4	57.3	128.4	126.7	116.3	93.2
1.5 ISCBs	na	8397.2	22314.2	58829.8	98483.8	34228.8
1.6 RRBs	nr	nr	8.3	587.8	3925.2	893.8
2. Average Size of Rural Loans						
2.1 Field-level RFIs	7332.6	15188.3	26893.8	48965.2	84583.4	38544.4
2.2 PACS (APS)	5425.7	6328.3	7797.4	12628.2	22784.4	14934.5
2.3 SCBs (AIS+AMPS)	155.2	581.2	1184.4	1333.8	3923.9	1419.6
2.4 DCCBs (AIS+AMPS)	245.4	496.4	941.3	888.6	2911.5	1895.8
2.5 CLDBs (APS)	1586.3	4897.9	6618.8	8228.9	-	-
2.6 ISCBs	na	3756.3	18352.7	25185.5	27288.4	13215.2
2.7 RRBs	nr	nr	na	654.9	2453.9	621.8
2.8 RECs (AIS)	nr	nr	773.2	2728.2	5381.3	2958.3
3. Average Size of Agricultural Loans						
3.1 Field-level RFIs	7332.6	13861.3	21121.9	35998.8	na	22813.5
3.2 PACS	5425.7	6328.3	7797.4	12628.2	na	8324.1
3.3 SCBs	155.2	581.2	1184.4	1333.8	na	854.6
3.4 DCCBs	245.4	496.4	941.3	888.6	na	697.2
3.5 CLDBs	1586.3	4897.9	6618.8	8228.9	na	5285.8
3.6 ISCBs (APS+AIS)	na	1637.5	4588.8	12382.9	na	5428.1
3.7 RRBs (APS+AIS)	nr	nr	na	616.4	na	278.8
3.8 RECs (AIS)	nr	nr	773.2	2728.2	na	954.5

Contd.....

Details (Rs. in Million in 1970-71 prices)	1961-62 to 1965-66	1966-67 to 1970-71	1971-72 to 1975-76	1976-77 to 1980-81	1981-82 to 1985-86	1961-62 to 1985-86
4. Annual Compound Growth Rate in Rural Deposits (%)						
4.1 Field-level RFIs	5.03	61.94	3.02	13.22	7.11	18.15
4.2 SCBs	3.45	15.34	9.46	10.88	7.73	9.71
4.3 DCCBs	4.80	14.78	7.39	11.70	9.87	7.15
4.4 CLDBs	19.44	36.22	1.69	5.32	-6.09	6.32
4.5 ISCBs	na	17.93	1.37	13.33	7.21	14.90
4.6 RRBs	nr	nr	na	62.70	41.15	31.83
5. Annual Compound Growth Rate in Rural Loans (%)						
5.1 Field-level RFIs	5.17	38.22	2.14	9.97	7.26	13.33
5.2 PACS	1.80	12.40	0.50	-0.03	12.18*	6.84*
5.3 SCBs	-11.01	112.62	1.81	6.32	23.58	19.62
5.4 DCCBs	-2.54	55.81	-7.10	5.25	26.80	12.15
5.5 CLDBs	21.29	31.56	-0.39	1.30	-	-
5.6 ISCBs	na	38.17	5.41	13.62	9.23	21.52
5.7 RRBs	nr	nr	na	46.29	7.45	11.11
5.8 RECs	nr	nr	47.74	14.77	14.34	20.45
6. Annual Compound Growth Rate in Agricultural Loans (%)						
6.1 Field-level RFIs	5.16	38.07	4.93	12.83	na	11.63
6.2 PACS	1.80	12.40	0.50	-0.03	na	5.60
6.3 SCBs	-11.01	112.62	1.81	6.32	na	18.60
6.4 DCCBs	-2.54	55.81	-7.10	5.25	na	10.29
6.5 CLDBs	21.29	31.56	-0.39	1.30	na	11.53
6.6 ISCBs (APS+AIS)	na	42.71	43.07	13.30	na	19.23
6.7 RRBs (APS+AIS)	na	na	na	24.43	na	24.43
6.8 RECs	nr	nr	47.74	14.77	na	25.24

* = Including PACS
na = not available
nr = not relevant
SCBs = State Cooperative Banks
DCCBs = District Central Cooperative Banks
RRBs = Regional Rural Banks

period to another in which 25 years are divided.

Functional Structure of Agricultural Operations : This is characterized by domination and stability of the share of loans to Agricultural Production Sub-system (APS). The share of loans to Agricultural Marketing and Processing Sub-system (AMPS) is also stable. But same is not the case for loans to Agricultural Inputs Distribution Sub-system (AIDS). Moreover annual compound growth rate in loans for these three sub-systems varied significantly from one period to another. Even the PACS' credit and non-credit operations are so characterized. Thus, both shorter and longer term strategy should be to correct this disperate performance. Specific conclusions derived from Table 3 are:

One, the percent share of AIS, APS and AMPS loans were 15, 81, and 5 respectively for the two decades. Two, at the end of two decades AIS, APS and AMPS loans averaged to Rs.3.37, 18.39, and 1.06 billion in 1970-71 prices. This amount increased continuously for all the three sub-systems. Three, long-run annual compound growth rate was the lowest for APS compared to AIS and AMPS loans; they being 10.7, 12.5 and 15.3 percent respectively. Four, this growth rate also varied significantly. These findings suggest that despite the innovative macro policy of promoting AIS loans its translation into actual practice is rather poor. Inasmuch as such loans encourage supply of investment goods they may not have adequately satisfied demand for these goods induced by APS loans. This in turn implies

Table 3

Pattern of Agricultural Loans Balances:
1961-62 to 1981-82

Details (Rs. in Million in 1970-71 prices)	1961-62 to 1965-66	1966-67 to 1970-71	1971-72 to 1975-76	1976-77 to * 1980-81	1961-62 to * 1981-82
1. % Share of AIS Loans					
1.1 Field-level RFIs	0	7.94	13.89	12.19	14.76
1.2 SCBs	0	1.31	2.55	0.55	1.04
1.3 DCCBs	0	1.36	2.40	0.68	1.13
1.4 ISCBs	0	5.27	5.40	3.93	4.03
1.5 RECs	nr	nr	3.53	7.03	8.57
2. % Share of APS Loans					
2.1 Field-level RFIs	94.54	87.09	81.36	83.33	80.60
2.2 PACS	73.99	48.45	35.61	32.62	36.49
2.3 CLDBs	20.55	31.37	30.23	21.26	23.17
2.4 ISCBs + RRBs	na	7.27	15.52	29.44	20.95
3. % Share of AMPS Loans					
3.1 Field-level RFIs	5.46	4.97	4.75	4.49	4.63
3.2 SCBs	2.12	2.53	2.86	2.89	2.71
3.3 DCCBs	3.34	2.44	1.98	1.59	1.93
4. Average of AIS Loans					
4.1 Field-level RFIs	0	1037.0	3041.3	4717.7	3368.1
4.2 SCBs	0	171.3	558.7	214.2	236.9
4.3 DCCBs	0	177.3	526.1	262.4	257.6
4.4 ISCBs	0	688.4	1183.3	1520.9	919.1
4.5 RECs	0	0	773.2	2720.2	1954.5
5. Average of APS Loans					
5.1 Field-level RFIs	6932.1	11375.5	17812.9	32255.4	18388.1
5.2 PACS	5425.7	6328.4	7797.4	12628.3	8324.1
5.3 CLDBs	1506.4	4097.9	6618.0	8228.9	5285.1
5.4 ISCBs + RRBs	na	949.2	3397.5	11398.2	4778.9

Contd.....

Table 3 (contd.)

Details (Rs. in Million in 1970-71 prices)	1961-62 to 1965-66	1966-67 to 1970-71	1971-72 to 1975-76	1976-77 to * 1980-81	1961-62 to * 1981-82
6. Average of AMFS Loans					
6.1 Field-level RFIs	400.5	649.0	1040.9	1737.1	1057.3
6.2 SCBs	155.2	329.9	625.7	1118.9	617.7
6.3 DCCBs	245.3	319.1	415.2	618.2	439.6
7. Annual Compound Growth Rate in AIS Loans					
7.1 Field-level RFIs	0	nc	11.2	12.9	12.5
7.2 SCBs	0	nc	-18.7	-9.1	-13.0
7.3 DCCBs	0	nc	-19.10	22.2	-5.2
7.4 ISCBs + RRBs	na	2.7	4.3	19.3	10.5
7.5 RECs	nr	nr	47.74	14.77	25.24
8. Annual Compound Growth Rate in AFS Loans					
8.1 Field-level RFIs	5.7	24.7	3.4*	11.3	10.7
8.2 SCBs	2.0	11.7	1.2	6.8	5.8
8.3 DCCBs	21.3	31.6	-0.4	1.3	11.5
8.4 ISCBs + RRBs	na	107.2	18.8	22.2	25.9
8.5 RECs					
9. Annual Compound Growth Rate in AMFS Loans					
9.1 Field-level RFIs	1.3	59.4	11.5	15.0	15.3
9.2 SCBs	-11.0	77.5	13.6	9.9	16.9
9.3 DCCBs	-2.5	26.9	3.9	-1.1	7.2

* = Period from 1981-82 to 1985-86 could not be covered due to non-availability of required data
na = not available
nc = not computed

unsatisfactory attainment of backward and forward linkages between AIS and APS which are critical to improving agricultural productivity, production and value added, besides loan recoveries, viability and scale economies of RFIs. This is also the case for PACS' credit and non-credit including inputs distribution business operations.

Association of Degree of Agricultural Progress and Investments with Selected Functions of RFIs : Despite the disperate performance, both agricultural productivity and agricultural investments are positively associated with the incremental as well as total values of several functions of RFIs. These operations include such variables as banking infrastructure, rural deposits, different types of agricultural loans (i.e. AIS, APS and AMPS), various types of APS loans namely, Current Production Growth and Stability, Current Production Diversification and Growth, and Current Production Loss Minimization and non-ccredit operations of PACS. This suggests that had the performance been more sustained and stable its impact on agricultural productivity, agricultural value added per hectare, and agricultural investments in fertilizers, irrigation, and farm assets would have been still larger.

Inter-class Distribution of 'Direct' Agricultural Loans : Skewness in the distribution of these loans by the PACS decreased. This is also the case for the short-term and term

loans advanced by the ISCBs. But the skewness in the outstanding loans of the ISCBs did not much decline.

The above result for PACS hold irrespective of whether loans are measured in flow or stock terms (Table 4). But skewness in loans advanced (i.e. flow) is by and large lower than in loans outstanding (i.e. stock). Moreover, inequality in the distribution of PACS loans declined irrespective of whether it is measured by considering owner- farmer-borrowers or agricultural labourers and tenants, besides these farmers. The decline in inequality of distribution of loans was higher for PACS than that for ISCBs.

Delinquency Rate of 'Direct' Agricultural Loans : This rate is high considering all field-level RFIs together. It was the highest for ISCBs, followed by CLDBs, PACS and finally RRBs. Reasons for this high rate are varied and complex. Broadly, they are: natural factors like drought and floods, connivence among local politicians, bureaucrats and borrowers, and inappropriate loan sanction and recovery policies. Loan delinquency rate must be decreased to protect implicit viability of RFIs to attain the ultimate goal of building relevant and healthy financial institutions and thereby better agricultural growth.

Loan delinquency rate of all field-level RFIs ranged from 43 to 48 percent when measured as 100 minus loans recovered as a percent of loans due for recovery. Allowing for loan recoveries

Table 4

Concentration Ratio for Distribution of 'Direct' Agricultural loans of PACS and ISCBs

Years	PACS				ISCBs			
	Loans Advanced		Loans Outstanding		Loans Advanced		Loans Outstandi	
	Farmers	Farmers, Agri-cultural Labourers and Tenants	Farmers	Farmers, Agri-cultural Labourers and Tenants	Short-term	Term-Loans	Short-term	Term-Loans
1976-77	0.4071	0.2738	0.4322	0.3122	na	na	na	na
1977-78	0.3470	0.1850	0.3754	0.2427	na	na	na	na
1978-79	0.3798	0.2362	0.4028	0.2686	na	na	na	na
1979-80	0.3732	0.2316	0.3658	0.2190	0.2575	0.4263	0.2279	0.3984
1980-81	0.3643	0.2225	0.3622	0.2188	0.2537	0.4349	0.2484	0.4160
1981-82	0.3570	0.2135	0.3423	0.2576	0.2488	0.4235	0.2356	0.4105

na = not available

made some brief time after the maturity date this may be 5 to 10 percent lower as is found in the case of PACS. Such an allowance is necessary because of avoidance of distress sale, delay in the receipt of sale proceeds and in incomes from other occupations. Even then delinquancy rate is high.

SCBs delinquancy rate ranged from about 4 to 12 percent. RRBs ranged from 17 to 22 percent. PACS delinquancy rate ranged from 33 to 45 percent. The corresponding rates for CLDBs were 13 to 50 percent and for ISCBs 47 to 50 percent. By and large these rates were much higher after mid-1970s (Table 5).

Loan delinquancies can be decreased with the improvement in non-price related policies and controlling the connievence factor mentioned above. They can also be reduced with the improvement in functional structure of RFIs operations like AIS, APS, AMPS, CPGS loans, rural deposits, and non-credit operations. All these measures must be pursued earnestly and on an urgent basis.

Viability and Unit Transaction Costs: Considering the two decades under reference, all the rural financial institutions (RFIs) are viable (Table 6). State cooperative banks (SCBs) were most profitable, followed by the district central cooperative banks (DCCBs), Indian scheduled commercial banks (ISCBs), cooperative land development banks (CLDBs), primary agricultural cooperative credit societies (PACS), and regional rural banks (RRBs) in that order of importance. In 3 out of 4 periods of 5 years each, this viability declined or remained constant for all

Table .5

Delinquancy Rate (%) of 'Direct' Agricultural Loans

Years	All Field-level RFIs [1]	SCBs [2]	DCCBs [3]	PACS [3]	CLDBs [2]	ISCBs [2]	RRBs [3]
1969-70	na	na	32.7	36.0	13.2	na	nr
1970-71	na	5.6	32.8	35.7	23.2	na	nr
1971-72	na	5.3	28.2	37.5	19.3	na	nr
1972-73	na	7.8	29.1	33.0	45.4	na	nr
1973-74	43.6	7.2	34.7	36.6	27.8	49.3	nr
1974-75	44.1	6.2	30.8	33.6	36.5	48.4	nr
1975-76	43.4	4.3	25.3	33.2	34.4	48.1	nr
1976-77	46.2	5.1	37.7	39.5	39.8	50.0	na
1977-78	46.5	6.4	37.8	40.1	43.4	48.8	na
1978-79	45.4	8.6	40.1	39.9	41.5	46.9	na
1979-80	48.5	12.3	48.8	45.0	50.0	47.9	17.0
1980-81	45.3	10.4	42.6	37.5	46.2	47.1	16.7
1981-82	45.2	8.8	45.8	35.8	40.1	47.7	22.2

na = not available
nr = not relevant

1 Includes PACS, CLDBs, ISCBs and RRBs. It is measured as 100 minus loans recovered as a percent of those due.
2 This is computed similarly as stated in note 1.
3 This is computed as 100 minus loans recovered as a percent of loans outstanding.

Table 6

Unit Profit, Unit Transaction and Unit Financial Costs of RFIs[1] (Rs. per 100 i.e. %)

Details	1961-62 to 1965-66	1966-67 to 1970-71	1971-72 to 1975-76	1976-77 to 1980-81	1961-62 to 1981-82
1. Unit Profit					
1.1 SCBs	3.67	3.45	3.28	3.60	3.51
1.2 DCCBs	0.52	0.46	0.46	0.41	0.43
1.3 PACS	0.66	0.61	0.35	-0.11	0.25
1.4 CLDBs	0.28	0.30	0.25	0.33	0.30
1.5 ISCBs*	0.48	0.35	0.35	0.40	0.40
1.6 RRBs	nr	nr	nr	0.11	0.11
2. Unit Transaction Costs					
2.1 SCBs	1.92	2.49	4.03	4.23	3.48
2.2 DCCBs	0.59	0.88	1.23	1.20	1.06
2.3 PACS	1.02	1.17	1.28	1.38	1.26
2.4 CLDBs	0.28	0.30	0.25	0.33	0.30
2.5 ISCBs*	0.48	0.35	0.35	0.40	0.40
2.6 RRBs	nr	nr	nr	1.03	0.97
3. Unit Financial Costs					
3.1 ISCBs*	1.05	1.48	1.92	2.47	2.12
3.2 RRBs	nr	nr	nr	1.01	1.02

1 These are measured as profit, transaction costs and financial costs as a percent of assets plus liabilities excluding contra items.

* For these banks these are measured at the bank level as data for rural branches are separately not available.

nr = not relevant

RFIs, except CLDBs in whose case it first improved and then declined. In the remaining one period (i.e., 1976-77 to 1980-81), average profit improved for SCBs, CLDBs, and ISCBs, but for DCCBs it declined and for PACS it became negative (Table 6).

Average transaction costs increased for SCBs and PACS over the 4 periods (Table 6). For DCCBs and ISCBs, it increased up to third period and then declined in the fourth period. In the case of CLDBs, it first declined and then increased. Among the various RFIs, unit transaction costs was the highest for SCBs (3.48 percent), followed by ISCBs (1.46 percent), then PACS (1.26 percent), DCCBs (1.06 percent), RRBs (0.97 percent, and finally CLDBs (0.54 percent) considering the entire period under reference (Table 6). These findings suggest that there is no one to one correspondence between unit profit and unit transaction costs.

Scale Economies in Transaction Costs: All RFIs, except PACS, prevailed under constant return to scale in their transaction costs considering the entire period under reference (Table 7). In other words, their transaction costs incresed in the same proportion in which their scale of operations increased. PACS, however, suffered from scale diseconomies in these costs during the entire period as well as during the two subperiods (Table 7). This is also the case for DCCBs and ISCBs, but only during the first subperiod. In the decade of 1970s, the former had a scope

to fully achieve scale economies, while the latter already enjoyed scale economies.

Policy Suggestions : From the preceding findings it is clear that measures to improve contributions, viability and scale economies would vary from one RFI to the other. Broadly, however, they centre around improving scale of operations and restructuring of some of its constituents to correct the disperate performance discussed earlier.

These measures are laregely related to non-price instruments. However, interest rates on borrowings by RFIs and those on their loans need to be revised to some extent. The former have been increased for refinance, temporary credit accommodation, and financial deposits including those with RFIs. Such increases in isolation of changes in lending rates would squeeze unit gross margin for these institutions. But, lending rates have also been increased and despite that unit financial costs and profitability of RFIs have respectively increased and declined to some extent. Further increases in lending rates would be counter-productive for the reasons discussed in footnote 7. On the contrary they may be reduced for those in APS, AIS, and AMPS who are at present charged 13 to 18 percent to improve their incentives. Borrowing rates may also be reduced not only for the banks' resources but also for the company deposits which siphons off financial resources away from the financial institutions. This would enlarge the scale of

Table 7

Scale Economies/Diseconomies in Transaction and Financial Costs

Details	1961 to 1970	1971 to 1981	1961 to 1981
1. Transaction Costs			
1.1 SCBs	CRS	CRS	CRS
1.2 DCCBs	SDE	CRS	CRS
1.3 PACS	SDE	SDE	SDE
1.4 CLDBs	CRS	CRS	CRS
1.5 ISCBs*	SDE	SE	CRS
1.6 RRBs	nr	CRS	CRS
2. Financial Costs			
2.1 ISCBs*	SDE	SDE	SDE
2.2 RRBs	nr	SDE	SDE

CRS = Constant Returns to Scale
SE = Scale Economies
SDE = Scale Diseconomies

* For these banks these are measured at the banks level as data for rural branches are separately not available.

their resources and also act as an incentive to RFIs to mobilize them. As regards non-price instruments they mainly include

(1) reallocation of borrowings (especially from central financing agencies) to make AIS loans to fulfil 'kind' component of crop-loans to those for extending such loans to encourage inputs sales on cash,[18]

(2) improving density of banking infrastructure including promotion of small sized PACS with more intensified and diversified operations,

(3) improving government investment for construction of godowns for PACS,

(4) hiring adequate, well-trained and full-time paid staff especially for PACS,

(5) urgent reduction in loan delinquancies by developing suitable policies for loan recovery and sanction for new loans,

(6) enlarging borrowings from central financing agencies for PACS and RRBs to especially lend for AIS, CPGS and CPDG purposes, for CLDBs to extend loans for large infrastructure related to AIS and AMPS activities, CPGS and

---

[18] This is because funds borrowed to meet 'kind' component of crop-loans itself should be transferred to the inputs supply agencies, according to the macro policy prescribed by the RBI. This is not the case at present. If this is achieved, then all RFIs including PACS would improve their viability as they would not bear interest costs twice and moreover released funds can be utilized to make AIS loans.

CPDG purposes, and that for ISCBs to enable them to promote more sustained growth in APS and AIS loans,

(7) widening the scope of 'indirect' agricultural credit to include AIS loans for seeds distribution and processing, and simple but scientific hand and bullock-drawn farm implements manufacturing and distribution, and AMPS loans for non-cooperatives also,

(8) improving deposits mobilization by formulating fixed deposit schemes for a few fortnights to 3 to 6 months, and credit-linked deposits which permit certain multiple of deposits as credit,

(9) increasing share capital base,

(10) reducing investment in the form of deposits with other banks,

(11) allowing temporary credit accommodation, besides refinance from NABARD and RBI, and

(12) reducing liquidity ratio requirements for ISCBs.

These policy suggestions must be viewed as a package rather than in isolation of each other. Their implementation would improve the performance of RFIs in regard to all the criteria and considerations discussed earlier.

IV. Major Conclusions and Implications

In the two and a half decades from 1961-62, rural institutional finance system has performed well as far as

financial deepening of the rural sector is concerned. But its performance is modest with respect to the proportion of agricultural output and NDP financed; similar is the case as far as its functional structure of loans is concerned. Despite this, it has been viable and has not suffered from scale diseconomies in transaction costs. Similarly, it has increased the use of fertilizer, irrigation, other agricultural investment, and productivity. These have increased with the increase not only in the density of banking infrastructure and APS credit, but also in loans for AIS and AMPS. But, at the all-India level, loan delinquancy is high and scale economies in transaction costs have not been fully achieved. Had these institutions desperate performance in density, coverage of farmers, scale and scope of APS, AIS and AMPS loans not resulted, they would have made much larger impact on agricultural investments and productivity, and on profitability and loans recovery.

Such desperate performance can be avpided by changes in noninterest rates related policies and to some extent by lowering interest rates on borrowings by RFIs and those on some of their loans. Noninterest rate policies largely center around improving density of banking infrastructure, reallocation of borrowings for 'kind' component of crop loans to those for agricultural inputs distribution business on cash, improving government investment for construction of godowns for PACS, hiring adequate and well trained full-time paid staff for PACS, enlarging borrowings from central financing agencies for selected purposes related to AIS

and AMPS loan business, improving deposit mobilization, reduction in liquidity requirements, and widening the scope of 'indirect' agricultural credit to include seed processing and distribution business and simple but scientific farm implements manufacturing and distribution.

References

[1] Desai B.M. "Performance of Group-based Savings and Credit Programmes in Rural India", Prajnan, 15, 2, 1986.

[2] _____, V.K. Gupta, and Gurdev Singh. "Institutional Credit for Green Revolution Areas under Semi-Arid Tropics in India", Indian Journal of Agricultural Economics, 43, 1, 1988.

[3] _____, and N.V. Namboodiri. Food-processing Industries: Development and Financial Performance, Oxford & IBH, New Delhi, 1990 (Forthcoming).

[4] _____, Ranjit Gupta, and B.L. Tripathi. Framework for an Integrative Role of Rural Financial Institutions, Oxford & IBH, New Delhi, 1989.

[5] _____, and Mellor John W. Institutional Finance for Agricultural Development: Cross-National Comparison of Some Critical Issues, International Food Policy Research Institute, Washington, D.C., U.S.A., (Forthcoming).

[6] Gadgil M.V. "Agricultural Credit in India: A Review of Performance and Policies", Indian Journal of Agricultural Economics, 53, 3, 1988.

[7] Hynniewala T., and S.L. Tripathi. National Seminar on Fertilizer Marketing through Cooperatives, Department of Rural Development, V.M. National Institute of Cooperative Management, Pune, 1985.

[8] Government of Gujarat. Report of the Working Group on Fertilizer Distribution System in Gujarat, 1983.

[9] Jodha N.S. "Role of Credit in Farmers' Adjustment against Risk in Arid and Semi-Arid Tropical Areas of India", Economic and Political Weekly, 16, 42 & 43, October 17-24, 1981.

[10] Mohnan N. "Multi Cooperatives in Rural Development - Mulukanoor Shows the Way", Indian Cooperative Review, 24, 2, 1986.

[11] Sikdar B.S. "Credit for Fertilizer Consumption and Distribution", Fertilizer News, 1977.

[12] Shukla Tara. "Agricultural Overdues: A Myth or Reality?", The Economic Times, 29, 1985.

[13] Vachharajans N.M. "Reducing Fertilizer Marketing Costs", Fertilizer News, 1977.

[14] Varde Varsha, and Sampat Singh. Profitability of Commercial Banks, National Institute of Bank Management, Bombay, 1983.

[15] Verghese S.K. Profits and Profitability of Indian Commercial Banks in the Seventies, National Institute of Bank Management, Bombay, 1983.