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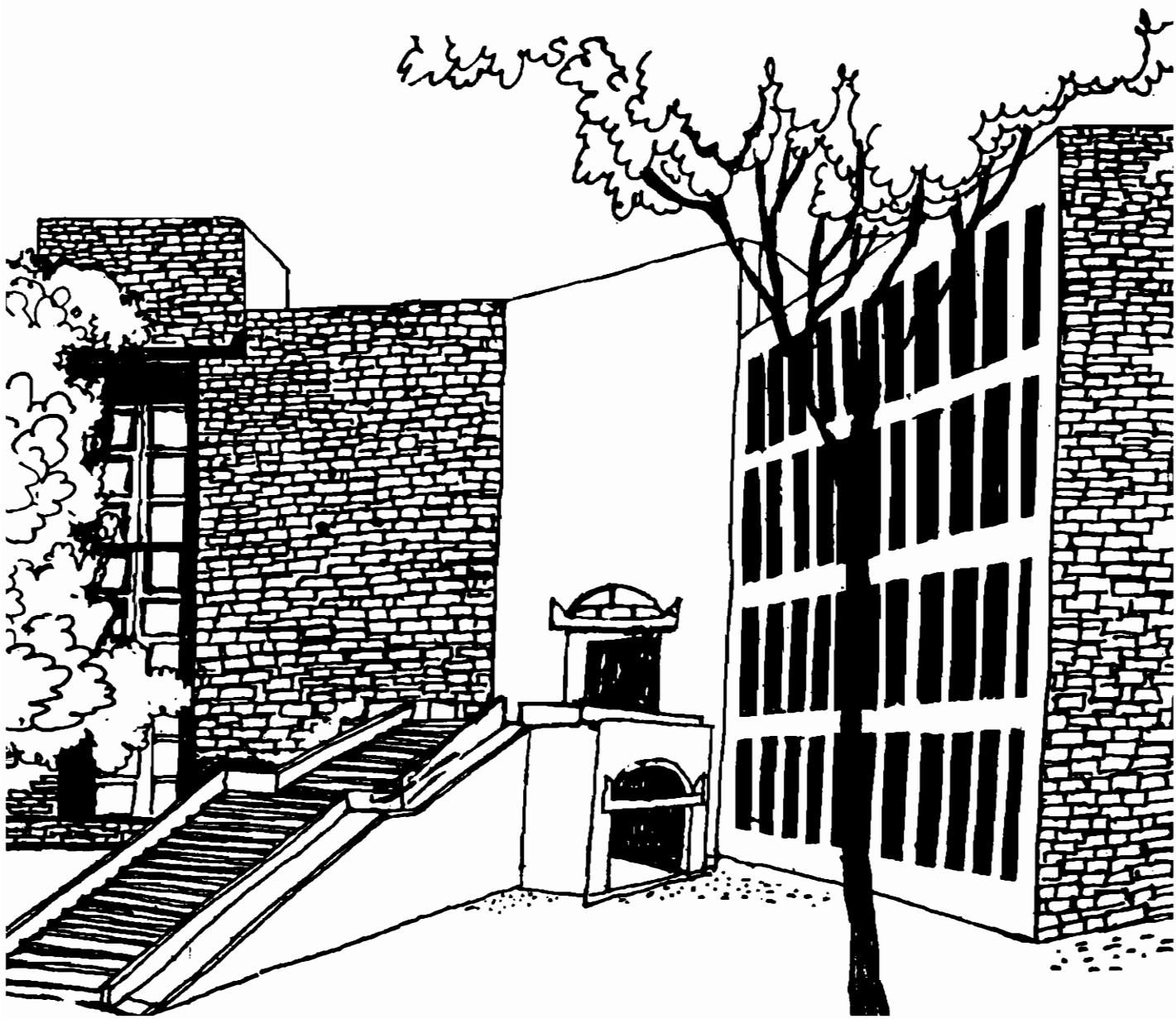

COOPERRATIVE RURAL BANKING: ANAD SHOWS THE GROWTH-ORIENTED PATH

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Cooperative Rural Banking: Anad Shows the Growth-Oriented Path

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Preliminaries

Anad Farmers Service Cooperative Bank (FSB) in Trivandrum district in Kerala is an innovative rural cooperative bank. What is innovative about its banking is that it has not only branches but also farm input depots, agricultural commodity procurement centres, and consumer stores. What is innovative about its cooperation is that it is a cooperative not only on paper but in spirit of its membership, successive leadership and most of its staff who hail from the local area. While this latter innovation is not so infrequent, the former is rare. Further both these innovations have occurred within the same macro rural credit policies which are being questioned these days. This case study on Anad FSB therefore analyses how these innovations could occur with this bank. More specifically it is about how its leadership and management, organizational principles, and banking operations have enabled this bank to be both financially viable and growth-oriented. The study is based on historical information and data related to these three aspects of this bank. The historical information on qualitative aspects was solicited through long and intensive discussions with the leadership and management personnel of the bank. Historical data to assess quantitative performance were collated from this bank for the period from 1969-70 to 1991-92.

In the next section 2 we discuss the evolution of this bank and the role its leadership played in this evolution. In section 3 we discuss organizational and management structure of this bank. Section 4 deals with how the organizational principles of vertical integration, density, reach, and multiple and diversified operations of this bank has made it serve its clientele better. Before concluding we also analyse financial viability of the bank by considering its profitability, loan delinquency, and scale and scope economies in various costs.

Evolution of Anad FSB and Role of Leadership

Anad FSB serves two panchayats namely, Anad and Panavoor which together comprise cultivated area of about 4200 hectares farmed by about 12900 households in 1981. Over 90 per cent of the farm households have less than 1 hectare.

This bank originated as a mutual thrift and service society in early this century about 8 km away (at Panavoor) from its present headquarters (at Anad). This was initiated as a collective body of leading local citizens under the guidance of Nair Service Society. And it was registered as a multi-purpose cooperative society in 1924 under the Cooperative Societies Registration Act of 1905. Its main business then was distribution of fertilizers. After some years when rationing was introduced by the government in the wake of shortages the Registrar of the State Cooperative Department asked this society to undertake sale of sugar. This prompted more membership from the neighbouring village (that is Anad). These two initial activities of distribution of fertilizers and sugar suggest that "credit and thrift" followed rather than preceded the two "real" goods on group basis in this cooperative.

Until 1954 the villagers became members of this multi-purpose cooperative society just to get an access to group facilities such as fertilizers, sugar and occasionally credit. Between 1954 and 1960 this society had unlimited liability for its members. But in 1960 the society got registered as a cooperative society with limited liability principle. It became a service cooperative bank in 1974 before being registered as a Farmers Service Cooperative Bank - its present status - in 1978.

The leadership of this bank took an active interest in each of these new guises in which it got evolved. For example, in 1954 the leadership played an active role in being federated to the District Central Cooperative Bank (DCCB) with a view to enlarge its loanable resources. Three more illustrations could be given. One of these is that during 1958 to 1964 the society had large arrears with its DCCB. But both the leadership and management organized peer pressure as well as persistent loan

recovery notices including filing arbitration cases with the defaulting members. These enabled clearing these arrears. And it has now set a healthy tradition of prompt and regular loan repayments by members. Second example is that of making the cooperative society truly multi-purpose by convincing the DCCB and the state to allow them to open a farm input depot and branch. By late 1970s this service cooperative had earned a name of a transparent and well managed cooperative **of** and **for** members. In 1978 it was thus chosen to become its present formal form of Farmers Service Society. And this brings us to highlight the third illustration of how it could become a full fledged bank. Under this new nomenclature it opened some more branches and depots at the request of its members. It moreover not only made crop loans and agricultural term loans but even promoted loans to buy house roof tiles, and consumer goods. What is innovative about this is that when the President of the bank was asked by an IAS officer why the bank promotes loans other than those related to land his prompt answer was that his bank serves farmers and just not land.

Thus, the seeds of innovation in this bank were sown early. Not only were they sown but sustained by the successive leadership. Two of the five Presidents that Anad FSB had since 1954 are particularly a significant testimony to these. One of these two was elected as a President consecutively for 13 years from 1954. He was a rich farmer with dedication to serve the people in his village. He commanded respect in the local community because of his benevolent approach to land reforms, cooperative movement, and such other programmes of the state government. This approach of him is exemplified by his donating land for construction of buildings for this cooperative and also for public library.

The other enlightened leader emerged in 1967 from within the general membership only. Although he remained as President in his elected office for only three years he had left his imprints by his threefold values and traditions that he thought he had observed with the first President. These are (1) service to the people, (2) soliciting and abiding to the state government and

the DCCB's cooperation whenever needs arise, and (3) transparent management in his organization by involving not only the members of the board but even the smallest in the staff. This President was a teacher by profession though in his early years he was a truck driver. He earned his graduate degree as an external candidate. During 1970s two new Presidents got elected. Both of them were also teachers. They continued with the set of transparent management practices that were evolved over time in this bank. Soon after the new guise of the FSB that emerged in late 1970s the second president got re-elected. He was successively elected for three terms of five years each. But during the third term the state government changed its policy of duration of the elected board from five to three years which roughly coincides with the last year considered for this study, i.e. 1991-92. Thus, during 1969-70 to 1991-92 the bank had three elected presidents who not only maintained the good functioning of the bank but even strengthened the earlier stated three traditions. These have led to the development of democratic, innovative and effective management of the bank. We discuss these features next.

Organizational and Management Structure

The administrative structure of the bank consists of (1) a representative body elected by A-class members (i.e. individuals in the two villages who are members of this cooperative), (2) the board of directors elected by this representative general body, and (3) the Managing Director and the supporting staff of the bank.

The present representative body consists of 200 members elected by the bank's general body of about 18450 members. The board of directors consists of 11 members including the Managing Director as ex-officio. The present Managing Director has been associated with the bank in various capacities since early 1960s. Of the 10 elected board members six are from marginal and small farmers, one from scheduled caste/tribe, and one woman representative. While 3 of the 10 elected board members are graduate, the rest have schooling up to secondary level.

The board is further sub-divided into four smaller committees for (1) receipts and payments, (2) purchases, (3) marketing, and (4) branch offices and depots. The board members participate in various activities like evaluation of loan applications, sanctioning of loans, loan recovery, deposit collection, purchases and so on. Most loans are made on the mortgage of land and two sureties. The mortgage of land requires the borrowers to deposit land ownership registration document with the bank. This simple document is returned to the borrower on repayment of the loan.

The Managing Director is the overall custodian of the bank. He is assisted by 47 staff members who work at the head office, 3 branches, 5 input depots, 8 procurement centres, and 12 consumer stores of the bank. The Managing Director together with four more staff are graduates. Twenty six other staff members have studied secondary school and a diploma in cooperation. Nine more have secondary school certificate. Two staff members who have a degree/diploma in agriculture constitute the bank's technical service though all the employees being from within the local area have working knowledge of agriculture. Only 6 of the 48 employees have formal education less than the secondary school certificate.

The head office of the bank is divided into 7 sections consisting of (1) loans, (2) purchase and sale of farm inputs and consumer goods, (3) procurement of agricultural produce, (4) chits, (5) deposits and money transactions, (6) agricultural extension, and (7) general administration. For most of these the bank formulates targets and methods to achieve them. These are monitored regularly in meetings that are held every month. **Figure 1** picturizes the organizational structure of the bank.

From the preceding discussion what follows is that the management and organizational structure of the bank is democratic, decentralized and yet accountable. This has led to popular faith among members, high standards of integrity, and positive attitudes and initiatives in introducing new activities by the bank. That the bank has been proactive in translating its basic goal of promoting agricultural and rural development is

evident from the operational objectives given in **Exhibit 1.** Both these conclusions can be validated from the quantitative performance of the bank which seems to reflect four organizational principles of rural banking. These are discussed in what follows.

Organizational Principles of Rural Banking

Considering Denai and Mellor's organizing principles of rural banking we find that Anad FSB seems to have vertically integrated structure with the larger environment, high density of its field-level units, larger reach of its clientele, and multiple and diversified operations that are horizontally integrated.

Vertically Integrated Structure: As noted earlier, Anad FSB was federated to DCCB in 1954. It enabled the bank to enlarge its loanable resources whenever it was short of its own resources. It also provided an opportunity to transfer its excess funds whenever it had limited opportunity to use them for local purposes. The link with the DCCB also made it possible to obtain managerial guidance necessary to effectively manage this grassroot level cooperative.

From **Figure 2** it can be also seen that Anad FSB is vertically integrated with those institutions that have a bearing on functioning of agricultural inputs distribution (AIS), and agro-marketing and consumer goods distribution (AM&CGS) sub-systems. State Cooperative Marketing Federation, IFFCO, Rubber Board, Coconut Development Board, and KERAFED have more explicit linkage for the former i.e. AIS. For example, while Rubber and Coconut Boards related affiliation facilitates technical services for agricultural production sub-system (APS), the linkage with IFFCO and State Marketing Cooperative facilitates purchase of farm inputs.

Some of these very institutions even have a linkage for AM&CGS. These include State Cooperative Marketing Federation, and KERAFED whose agency enables the bank to procure consumer

goods for its stores and supply the agricultural produce its procurement centres purchase from the farmers. Similar is the case with its vertical link with the Consumer Federation, and District and Taluka Cooperative Marketing Societies. Anad FSB has established this vertically integrated structure by purchasing the shares of these institutions.

To conclude, while this vertically integrated structure with the DCCB enables Anad FSB to participate in larger financial environment, such a structure with the other institutions enables it to be linked with the larger markets for real goods and services in AIS and AM&CGS. Both of these make it possible for this bank to enlarge and diversify its business and thereby facilitates forging backward (BWL) and forward (FWL) linkages with agricultural production sub-system in which its members are engaged (see **Figure 2**).

Density of Field Level Units: Two distinct features of Anad FSB are that it has branches to perform the banking operations, and it has farm inputs depots, procurement centres and consumer stores that perform the operations in real good and services. The density of both these infrastructures has increased over time (see **Table 1**). Considering both these infrastructure together the bank has now about 6 field-level units for every 1000 ha of net cultivated area.

The density of branches, input depots and procurement centres increased more in the decade of 1970s, while that of consumer stores it increased more in the decade of 1980s (see **Table 1**). Both these have emerged at the request of its members. All the 20 wards under the two panchayats that the bank serves are now within 3 to 5 km radius of the bank's offices. Given that agriculture is geographically dispersed and agro-climatically diverse this decentralized physical infrastructure of rural banking is mutually advantageous to the bank and its clientele.

The members could have both banking and non-banking services at their doorsteps. The major advantage to the bank is that it can better plan and implement its business including loan

recovery. Moreover, when it owns such infrastructure it builds capital formation for itself. Anad FSB has its own buildings for head office, all the three branches, and 3 consumer stores. For some of these buildings the bank had NCDC grant and loan bearing an interest rate of 10 per cent. The rest of the physical infrastructure is in rented premises. To conclude, Anad FSB has a very high density of its field-offices. And this infrastructure is highly decentralized not only for its banking but also for non-banking operations.

Reach of Farmers: The number of households served by Anad FSB has increased from 7443 in 1969-71 to 12855 in 1989-91. Thus, by late 1980s the bank had almost universal coverage of the farm-households. There was phenomenal growth in total membership which includes both landless and land owners. It increased from 2522 in 1969-71 to 19650 in 1989-91. This suggests that overtime multi-membership from one and the same household emerged (see row 4 in **Table 2**). This occurred partly due to sub-division of small holding and more importantly, to avail of the bank's wide variety of services that we shall discuss later. While the share of membership from SC/ST declined, that of landless and marginal farmers increased (see rows 5 to 7 in **Table 2**). The increase in total membership seems to be due to among other factors the emergence of more consumer stores that sell groceries and other daily necessities of the people.

Even in regard to the share of borrowing membership in total membership the bank's reach is impressive. This is particularly dramatic for borrowing non-agricultural loans such as those for consumer non-durable, education, non-agricultural vocations and even consumer durables (see rows 8 to 13 in **Table 2**). But the stagnancy or decline in borrowing membership of agricultural loans could be a cause for concern. This is because it may arrest growth in agricultural investments (including working capital) with its adverse implications to agricultural growth. Such implications could even prove a problem for the bank in recovering not only agricultural but also non-agricultural loans. We have more to say on this subsequently.

To conclude, Anad FSB's very large reach of its clientele suggests that the bank may have enjoyed scale and scope economies in its various costs. The scale economies would emerge from spreading common costs such as those for administration on a larger business. And scope economies would emerge from saving in costs of searching a clientele for one business like loans for another operation like inputs and consumer goods sales. These economies would improve financial viability of the bank.

Multiple and Diversified Operations: This is obvious from the preceding discussion. Before we elucidate this it is important to analyse how the bank has generated financial resources.

Like all credit cooperatives Anad FSB requires their members to pay membership fee and equity capital to become a member. The share of equity capital from the government and financial institutions ranged from only about 6 to 14 per cent during the study period. The bank has also built reserves from its past surpluses for such purposes as bad debt, trade risks, buildings, etc. The share of reserves in total equity (i.e. share capital plus reserves) increased from 29 per cent in 1969-71 to 42 per cent in 1989-91 (see **Table 3**). Yet another common source of finance for the bank is borrowings from the DCCB. Such borrowings could be 20 times of total equity. Not only this bank has surplus borrowing capacity but it has reduced its dependence on the DCCB. This is evident from the fact that the share of these borrowings in total working funds (i.e. Share Capital + Reserves + Borrowings from DCCB + Deposits) declined significantly from 72 per cent in 1969-71 to 30 per cent in 1989-91 (see **Table 3**). This has become possible because of both growing equity and more importantly dramatic rise in deposits mobilized by the bank (see **Table 3**).

Anad FSB has mobilized deposits even when it functioned like a Primary Cooperative Credit Society (PACS). Since it became a bank in 1978 it has introduced wide variety of deposit schemes. At present it mobilizes deposits by administering five major deposit schemes. These are current deposits, saving deposits, call deposits, fixed deposits with maturity of as short a

duration as one day to five years, and minor's saving deposits.

Total deposit balances increased from about Rs.0.5 lakh in 1969-71 to Rs.32 lakh a decade later and further to over Rs.285 lakh in 1989-91. This amounts to an annual compound growth rates of 55 and 24 per cent respectively. The corresponding growth rates for saving, fixed and other deposits were respectively 71, 82, and 37 per cent for 1970s, and 14, 33, and 25 for 1980s. In the decade of 1970s the savings deposits were maximum (see rows 1.1 to 1.3 in **Table 4**). But in the decade of 1980s this was the case for fixed deposits. Interestingly saving and other deposits were fairly comparable in this period (see rows 1.1 and 1.3 in column 3 in **Table 4**). Among this latter type of deposits include such innovative schemes as house safe deposits, trade deposits and daily collection deposits. These features also hold for flows of deposits (i.e. collected during the year). Only exceptional finding is that the share of other deposits in 1980s was insignificant (see rows 2.1 to 2.3 in **Table 4**).

Number of factors have enabled the bank to perform so well in deposit mobilization. Significant ones are: expansion of branch and other services infrastructure, both elected members and staff mobilize deposits, all deposits are insured by the government, NRI deposits, fixed depositors being allowed to borrow to the extent of 90 per cent of their deposits at an interest rate of one per cent more than the rate offered on deposits, and improvement in the well-being of the rural folks with consequent higher preference for financial savings. Interest rates offered on such deposits as current and very short durations may have also contributed to the growth in deposits. The interest rates on various deposits range from 1 per cent on current deposits to 13.5 per cent on fixed deposits of more than 5 years. Thus, Anad FSB seems to have satisfied liquidity, safety, and returns motives so peculiar to rural depositors.

This bank promotes both agricultural and non-agricultural loans to its members. Agricultural loans are short-term crop loans and term loans for such purposes as rubber, pepper, coconut and betel-wine cultivation, livestock and poultry farming, digging of wells, irrigation equipments etc. Both these types

of agricultural loans increased significantly from little over Rs.5 lakh in 1969-71 to Rs.32 lakh in 1979-81 to over Rs.166 lakh in 1989-91. The annual compound growth rates are 16 per cent for 1970s, and 19 per cent for 1980s. The corresponding for short-term loans are 15 and 18 per cent. And for the term loans they are 46 and 26 per cent.

The term structure of these loans is dominated by short-term crop loans (see **Table 5**). Over time though the share of term loans has increased, the increase is not all that significant. This is because agriculture in the villages served by the bank is highly small scale. The term structure will continue to be dominated by short-term crop loans. The crop loans are given for wide variety of field crops by implementing crop loan system that consists of cash and kind components (see **Table 6**).

Perusal of this table reveals that the share of kind loans in total crop loans varies from only 5 per cent for ginger to 40 per cent for vegetables. There may be a need to further improve not only this component but also the scale of finance considered for a hectare of land under various crops. This could be accomplished by providing greater autonomy to this bank in determining these. These short term crop loans are recovered in one year. However, even this policy could be now left to the bank so that it can coincide the loan duration with the harvest and/or marketing seasons of different crops. We offer these suggestions because of two reasons. One, crop loans for agriculture will continue to be the mainstay of the loan business for the bank. The demand for crop loans arises because of lack of simultaneity between income and expenditure with consequent seasonal cash deficits so peculiar to agriculture. It is also because of small and short-lived cash surplus of farmers, besides the need to combine off-farm market purchased inputs such as seeds, feeds, and fertilizers so critically needed to adopt new technology in agriculture. And two, the bank could improve the recycling of its loaned funds.

Among the non-agricultural loans the bank seems to have innovated significantly. These innovative loans are for both investment and consumption purposes. The former mainly includes:

(i) gold loans for such purposes as education and health (which are given on the mortgage of ornaments at 18 per cent for a maximum of Rs.15000 per borrower), (ii) loans for self-employment and trading business (which are given at 12 per cent for a maximum of Rs.5000 per borrower), and (iii) housing loans. The consumption purpose loans mainly include: (i) ordinary loans, (ii) overdraft for purchase of consumer non-durables from consumer stores (for maximum amount of Rs.500 without interest for one month and at 18 per cent for more than one month), and (iii) instalment loan (of maximum amount of Rs.5000 for purchase of consumer durable at 18 per cent).

The share of the non-agricultural loans for investment purpose has significantly increased from none in late 1960s to about 25 per cent towards the end of 1980s. And the share of ordinary loans which are usually for daily consumption needs has varied from 8 to 25 per cent during this period. These loans are extended at 12 to 18 per cent interest rates. The annual compound growth rate of non-agricultural loans are 57 per cent in 1970s and 20 per cent in 1980s.

In general the share of non-agricultural loans in total loans has increased from 9 per cent in 1969-71 to 52 per cent in 1979-81 to 56 per cent in 1989-91 (see row 1.4 in **Table 5**). This share is even higher for loans issued during the year (see row 2.4 **Table 5**). The increasing share of non-agricultural loans must have enabled the bank to be more viable since most of them carry interest rates ranging from 12 to 18 per cent unlike the agricultural loans bearing interest rates varying from 10 to 16 per cent. To conclude, Anad FSB has diversified loan portfolio not only for agriculture but also for non-agricultural purposes. This must have been mutually beneficial to the bank and its members.

The bank also sells farm inputs such as seeds, fertilizers, pesticides etc., and a wide variety of consumer goods through its depots and stores. The sale of farm inputs increased from only Rs.0.7 lakh in 1969-71 to Rs.34.16 lakh in 1979-81 and further to Rs.109.42 lakh in 1989-91. The annual compound growth rates for input sales are 45 and 11 per cent respectively for 1970s and

1980s. The corresponding for consumer goods sales are 41 and 6 per cent. The higher importance of sale of inputs in total sales is also revealed by its increasing share from just 9 per cent in late 1960s to 69 per cent in late 1980s (see **Table 7**).

Anad FSB procures rubber and copra through its 8 procurement centres. For both of these the bank acts as a commission agent for the State Cooperative Marketing Federation and KERAFED. The procurement increased from 376 tonnes in late 1970s to 496 tonnes in late 1980s. And the value of agricultural produce procured increased from Rs.38 lakh in 1979-81 to Rs.126.18 lakh in 1989-91.

Yet another interesting operation is chits among members bidding to gain an advantage of having lump-sum financial resource. The bank earns a commission of 5 per cent from organizing this activity. The number of participants, total sala (i.e. the amount of a chit which is equally contributed by the participants who offer for bidding), and the maturity period of each chit varies. Generally the bank has a ceiling of 20 per cent of the sala for each bid. The modus operandi of a chit may be described by the following example. A chit with a sala of Rs.10000 and 20 participants matures in 20 months. Every month bidding takes place and the highest bidder gets a sum of RS.10000 less the bidding amount. In this each participant has to contribute a sum of Rs.500 less the bidding amount plus the bank's commission. The bank collects the amount from each participant and makes payment to the highest bidder. This popular activity in Kerala has grown with this bank from a chit of Rs.10000 only in 1969-71 to Rs.1 lakh in 1979-81 and further to Rs.7.7 lakh in 1989-91.

Finally, the bank has also technical services for agriculture. It promotes this through its staff organizing personal contacts with the members, distributing leaflets on new technological practices, growing nursery and seeds on the bank's farm, and organizing demonstrations in collaboration with such agencies as IFFCO, and KERAFED.

In conclusion, the proceeding reveals that Anad FSB through its branches, input depots, procurement centres and consumer

stores undertakes seven different functions, namely, (1) extension service, (2) input sales, (3) production and investment loans, (4) consumption loans, (5) share capital, deposits, and chits collection, (6) agricultural marketing, and (7) consumer goods sales. These operations encourage backward and forward linkages among agricultural inputs distribution, agricultural production, and agro-marketing and consumer good sales sub-systems for its members and other rural folks (see **Figure 3**). These promote production, saving, investment, and consumption linkages and thereby increase their productivity, value added, incomes, and well being (for some evidence on these see Desai and Namboodiri 1993). The horizontally integrated functional structure of the bank has also enabled it to achieve scale and scope economies and lower loan delinquencies with consequent better financial viability as will be shown next.

Financial Viability

Anad FSB is financially viable. It is so considering its profits, return on equity (ROE), and loan delinquency rates.

Profits increased from only Rs.10000 in 1969-71 to Rs.1.24 lakh in 1979-81 and further to Rs.2.09 lakh in 1989-91. This works out to annual compound growth rates of 39 per cent in 1970s, and 5 per cent in 1980s. The return on equity (ROE) increased from only 0.58 per cent in 1969-71 to 7.58 per cent in 1979-81 and then declined to 3.26 per cent in 1989-91. The lower growth rate in profit and lower ROE in more recent times is because of the larger base of profit and equity. It is also due to higher loan delinquency rate in the wake of loan waiver scheme of the GOI in 1989-90.

Loan delinquency rate was under 12 to 15 per cent which was invariably for term loans rather than crop loans the recovery of which always remained close to 100 per cent. But in 1989-91 it shot up to 30 to 40 per cent. This clearly brings out how a highly successful RFI like Anad can be adversely affected by such undesirable government policy. Any genuine problem of loan delinquency caused by such factors as severe droughts or floods should be solved by other well defined policies of rescheduling

such loans. Resorting to loan and interest waivers not only hurts the institution "once" but "permanently" for it leads to the indiscipline of both the borrowers and lenders.

The growth rates discussed above have occurred despite a fall in interest spread from 2.33 per cent in 1979-81 to 1.43 per cent in 1989-91. This fall in interest spread is more associated with inadequate rise in unit (i.e. average) interest revenue because of loan waivers (see row 1.1 in **Table** 7). These undesirable trend in interest spread could not be more than compensated by average non-interest revenue that the bank earns from its other banking and non-banking operations (see rows 3.1 and 3.2 in **Table** 7). Consequently average profit declined. Incidentally average costs and revenues are per Rs.100 of assets plus liabilities rather than just the latter because they are very often common for the sources and uses of funds.

We now study the financial viability by considering Theory of Costs which permits testing whether the average cost curve is U-shaped. This is studied for transaction costs, financial (i.e. interest) costs and both of these i.e. total costs. These costs are influenced by outstanding balances of (a) deposits and borrowings (DB), (b) loan assets (LA) and (c) non-loan assets (NLA) including stocks of farm inputs and consumer goods. In other words, this stock model of costs is C = f (DB,LA,NLA). Similarly, we separately consider these costs being influenced by (a) accretion to deposits and borrowings (DBF), (b) new loans issued (LI) and (c) sale of inputs and consumer goods (SICG) during the year. That is, C = f (DBF, LI, SICG). Both these flow and stock models of cost functions are considered because the costs are not only associated with the operations undertaken during the year but also influenced by servicing the outstanding balances.

These costs functions enable identifying whether the bank has scale economies or diseconomies in its various costs. In other words, it assists in estimating whether the bank's costs increase less or more than proportionately with the expansion in its business volume. When it increases less than proportionately the bank would have scale economies. In this case the scale

parameter would be less than 1. When the bank's costs increase more than proportionately it would suffer from scale diseconomies i.e. scale parameter is more than 1. And when the bank's costs increase just proportionately with the expansion of business volume the scale parameter would be 1 meaning thereby operation of constant returns to scale.

These scale economies are estimated for each of the three business operations stated earlier, and all of them together. The former is termed as partial scale economies and the latter total scale economies. Before the statistical results on these economies are discussed three significant points of this analysis need discussion. These relate to three questions, namely,

(1) What would be the shape of the average (i.e. per unit) cost curve when there are scale economies, diseconomies and neither of them i.e. constant returns to scale?
(2) Why financial costs which are usually associated with deposits and borrowings are considered to be a function of loan and non-loan operations? and
(3) What type of mathematical functional form is required to estimate the cost functions that are consistent with the Theory of Costs?

Our answer to the first question is that when there is a scale economy in any cost the average cost is declining. And when there is scale diseconomies it is increasing, while when there is constant returns to scale this cost is constant i.e. the shape of the average cost curve is horizontal. **Exhibit 2** provides a proof for this.

Considering financial costs being a function of loan and non-loan operations permits specifying opportunity cost of risks in these businesses. Anad FSB has two types of significant risks. One of these is loan delinquency risk and the other is trade risk. This implicit method of considering these risk costs amounts to hypothesizing that when say loan delinquency exists loans outstanding would be larger which in turn would force the average financial costs to rise more than proportionately i.e. scale diseconomies. Same would be the case when transaction

costs are also made a function of loan and non-loan operations. When loan delinquency is high transaction costs would increase because of the need for continuous follow-up with recalcitrant borrowers.

The third question of whether Anad FSB's average cost behaviour is U-shaped requires estimating mathematical functions like

Translog, i.e.

$$\ln Y = a + \sum_{i=1}^{N} b_i \ln X_i + \frac{1}{2} c \prod_{i=1}^{N} \ln X_i \qquad (1)$$

Cubic, i.e.

$$Y = a + \sum_{i=1}^{N} b_i X_i + \sum_{i=1}^{N} c_i X_i^2 + \sum_{i=1}^{N} d_i X_i^3 \qquad (2)$$

Log-log-Inverse, i.e.

$$\ln Y = a + \sum_{i=1}^{N} b_i \ln X_i + \sum_{i=1}^{N} c_i \frac{1}{X_i} \qquad (3)$$

Transcendental, i.e.

$$\ln Y = a + \sum_{i=1}^{N} b_i \ln X_i + \sum_{i=1}^{N} c_i X_i \qquad (4)$$

All these four functional forms give inverted S-shape of total cost curve and hence U-shaped average cost curve. We have estimated all these four functional forms and finally chosen translog. This is because of its better statistical properties such as R^2, significance of t values, D-W statistic, F values and signs of the estimated coefficients. The translog function also permits identifying whether the bank has scope economies in various costs. This is defined as a decline in marginal (i.e.

incremental) cost of one business operation when another operation increases and vice versa. This is given by the parameter obtained by a product of bi+c which should be negative in its sign. **Table 8** gives the partial and total scale economies and scope economies parameters for the stock models, while **Exhibit 3** gives these estimated models. And **Table 9** corresponds to these for the flow models, and **Exhibit 4** gives their estimated equations.

The results of both stock and flow models reveal that Anad FSB has constant returns to scale in its transaction costs, financial costs and both of these for all operations taken together that is, total scale economies. This suggests that these costs in per unit terms (i.e. average) are constant. Secondly, the stock model shows that the partial scale economies in transaction costs is the highest for loans outstanding, followed by deposits and borrowings and finally non-loan assets. But its such economy in financial costs is maximum for non-loan assets and least for the loan assets. And these economies in total costs is maximum for deposits and borrowings, and the least for non-loan assets. Thirdly, the flow model reveals that the bank has the maximum partial scale economies in transaction costs for loans issued, followed by sale of farm inputs and consumer goods and finally accretion to deposits and borrowings. But such economies in financial costs as well as total costs are maximum for sale of farm inputs and consumer goods and least for the new loans issued. Fourthly, the preceding two findings reveal that in regard to the transaction costs the bank has the largest scale economies in loan operation, but in respect of financial costs such economies are largest for non-loan assets related operations. In other words, per unit transaction costs decline more rapidly for loan operation, while per unit financial costs decline more with the expansion in non-loan business volume. And lastly, the stock models for the three costs show that the bank has no economies of scope. But the flow models reveal such economies for financial and total costs. This rather interesting result may be interpreted to suggest that the Anad FSB could reduce its marginal (i.e. incremental) financial and

total costs through economizing in costs of say loans when it increased its such other operations as inputs and consumer goods sales and vice-versa. Such economizing results from search costs for identifying the clientele and also from lower loan delinquency and trade risks.

To conclude, the preceding analysis of scale economies suggests that Anad FSB has a declining average (i.e. per unit) costs of all the three types for each of its three operations namely, loaning, input and consumer goods sales, and funds mobilization (see first three panels in **Figures 4 and 5** which are derived from the estimated equations and the values of explanatory variables in their range observed in the bank's data). Moreover it also indicates that the bank's **total** average (i.e. per unit) costs for all three operations together has first rapidly declined and then remained almost constant (see the fourth panel in **Figures 4 and 5**). This implies that the bank has not only achieved highly desirable financial viability but has also a potential to improve it further under the **existing** structure of interest rates and (unit) gross margins. And the bank can further reduce its per unit cost by expanding and diversifying its volume of business, and thereby improve its per unit revenue and profit.

Anad FSB has maintained its audit class of A ever since 1977-78, and has consistently declared dividend varying from 3 to 7 per cent for its members.

Concluding Observations

The **initial conditions** in which Anad FSB emerged in early this century seem to be quite common with many PACS that existed then. These include poor infrastructure (like roads, education and electricity), small scale agriculture with low productivity resulting from traditional technology, and crop-pattern being dominated by foodgrains like paddy, pulses etc. Even its leadership appears to be quite common in nature with hardly any affiliation with any institution or freedom movement. The macro rural credit policies that were prevalent then until their major change in mid-1950s were also roughly similar. And yet Anad FSB

is a success story. This seems to be due to three major factors. These are (1) strategy of nothing succeeds like success howsoever small it is, (2) organizational continuity that is democratic, decentralized and yet accountable, and (3) organizational principles of vertically integrated structure, high density of field-level offices, larger reach of clientele, and multiple and diversified operations. These are discussed in what follows to highlight how Anad FSB became a success that it is.

Kerala unlike many other states adopted a strategy of choosing its relatively more successful PACS to make them more resourceful and better credit cooperatives under the all-India policy of promoting Farmers Service Societies. This strategy appears to have better results because when a credit cooperative diversifies the organizational capacity to manage such diversification and larger financial resources is the key determinant of its success. Anad FSB had this capacity built much more by both its enlightened leadership and effective management.

The organizational continuity in Anad FSB is revealed by its successive leadership that generally shared the values of (1) service to the people, (2) soliciting and abiding to the state's policies including regular elections, and (3) broad-based and transparent involvement of the managing committee and local people including staff. All these three features of organizational input have sown the seeds of initiatives and innovations, preparing the institution's leadership and personnel in implementing them, and finally monitoring and controlling the implementation process. This organizational continuity seems to have epitomized in transparent, decentralized and yet accountable management which has enabled this bank to be unique in the practice of both cooperation and banking. This brings us to highlight the third factor. And that is about its banking operations.

What is unique about Anad FSB's banking is that it not only has branches but also input depots, farm produce procurement centres, and consumer stores. This organizational principle of density of field-level offices has encouraged this bank to adopt

the principles of vertically integrated its organizational structure, larger reach of its clientele and diversified operations that are horizontally integrated. In other words, what this bank seems to convey is that intra-organizational capacity built for some limited activity has to be transformed into developing some of the basic infrastructure so that it can promote wide variety of services for its members. These services include not only agricultural but also non-agricultural loans, deposits, extension service, inputs and consumer goods sales, and agro-marketing for its members. Thus, Anad FSB seems to have a synergy in its organization, credit, and technology. And this synergy has made this bank not only financially viable through reaping scale and scope economies and lower loan delinquency but also growth-oriented for itself as well as its member-clientele.

But all these would not have occurred if in the formative years of this cooperative the leadership and management had taken loan arrears with the DCCB for granted. To put it differently, the loan arrears were nipped in the bud. to create high loan repayment ethics in the bank. The key to nip the virus of loan delinquency is that any financial institution must convince itself and its clientele that prompt and regular loan repayments are in the mutual interest of both the parties as has been quite successfully shown by Anad FSB. It is this conviction of ours which forms the basis for our recommendation that all financial institutions should declare a moratorium on loan and interest waivers. But this amounts to saying what not to do by the macro policy makers. Moot question is what macro policy lessons follow from this case study for these policy makers.

These can be in two broad policy areas, namely, interest rates and institutional development. As regards interest rates what emerges is that the past policy of guided and tiered rates with minimum and maximum seems to have reasonably worked well. This is because real interest rates on agricultural credit have been positive, stable, not very low, and have encouraged scale and scope economies in the costs of Anad FSB and other rural financial institutions (RFIs).

In regard to institutional development what Anad FSB

experiment suggests is that the principles of transparent and decentralized management, vertical integration with larger environment, high density of field-units, larger reach of clientele and diversified portfolio of services are quite sound. These have resulted from such instruments as government seed capital, federating field-level units, rural branch expansion, recovery linked refinance, organizing regular elections in cooperatives, guidance in determining unit cost of investments for term loans and scales of finance for crop loans, credit guarantee and deposit insurance cover, encouraging grassroot level institutions to be agents for the higher level institutions and so on. All these can therefore continue excepting that now the time is ripe for further decentralization.

The delegation and decentralization for RFIs is most needed in such matters as appropriate changes in cooperative by-laws, unit cost of investments, scales of crop loan finance, loan sanction and documentation requirements and in formulating need-based credit and other services. This is to adapt to local variations that exist in agriculture. Equally importantly it is because banking is more of an "art" as the British economist, Hawtrey has said. But the RFIs like nationalized commercial banks and RRBs may view that Anad FSB could open input depots, consumer stores etc. because it is a cooperative.

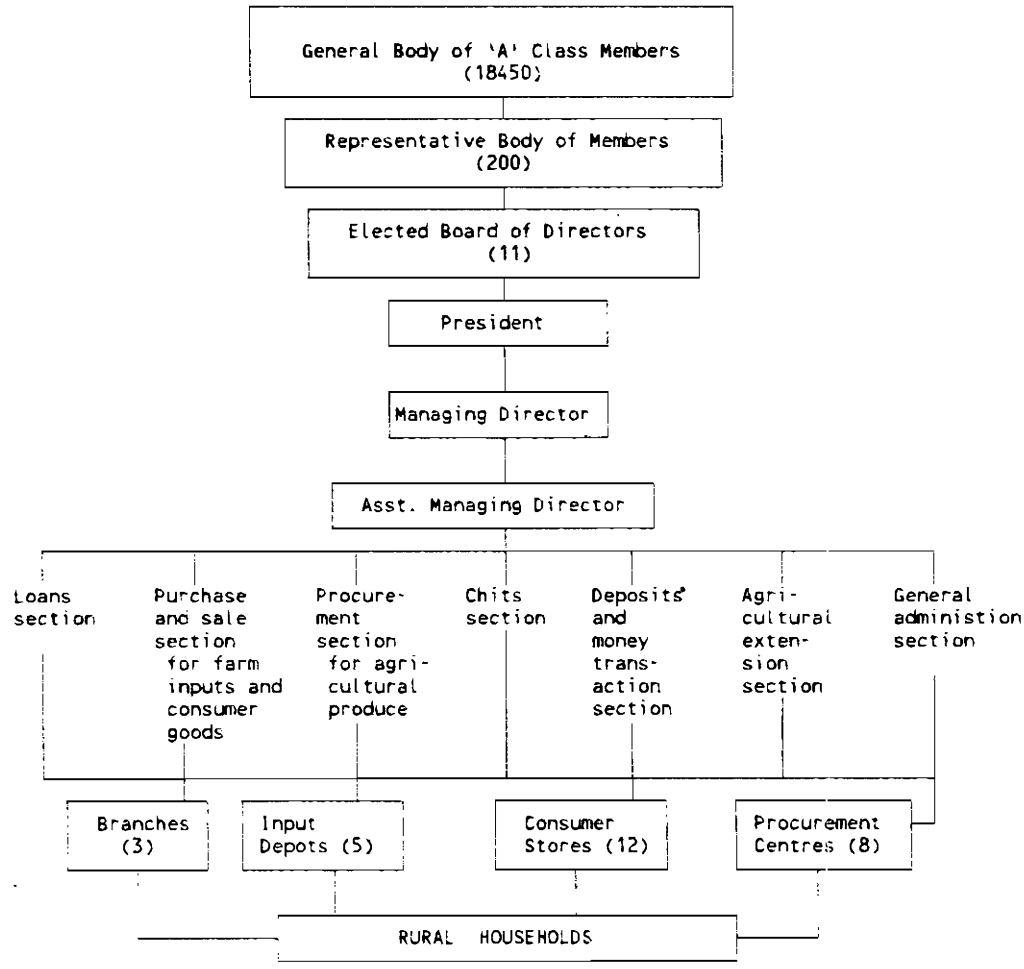
There are however three options for this. One, is that these banks can also innovate by judiciously creating such commercial infrastructure especially when they clamor for diversification. Second is to promote pro-actively the farm input dealers, consumer stores etc. including PACS by extending loans as a part of innovative indirect rural credit policy. This would encourage better backward and/or forward linkages in agriculture especially when such loans are made in areas where their (i.e. RFIs) farm-borrowers are. Such geographically dispersed linkages are highly desirable. And the third option is to make administrative arrangements of tie-ups for their farm-borrowers with farm input dealers, consumer stores, and produce marketers including PACS. All the non-cooperative RFIs do recognize promoting these linkages as their legitimate function.

This may be because such linkages fructify rural credit much more than would be the case otherwise. Thus, these banks can adopt any of these three options depending on what is required in their rural areas of operations. These options may even vary from one such area to another within any single region.

We offer one final comment lest we are misunderstood about our perception of learning from Anad FSB. And that is that the organizational capacity of the RFIs has to be both high and internalized for sustaining the organizational principles mentioned earlier. That capacity would, however, trigger if the (macro) credit policy makers trust the grassroot level institutions as is indicated by Kerala's Anad FSB experience. After all banking is an "art" for these policy makers also.

Figure 1

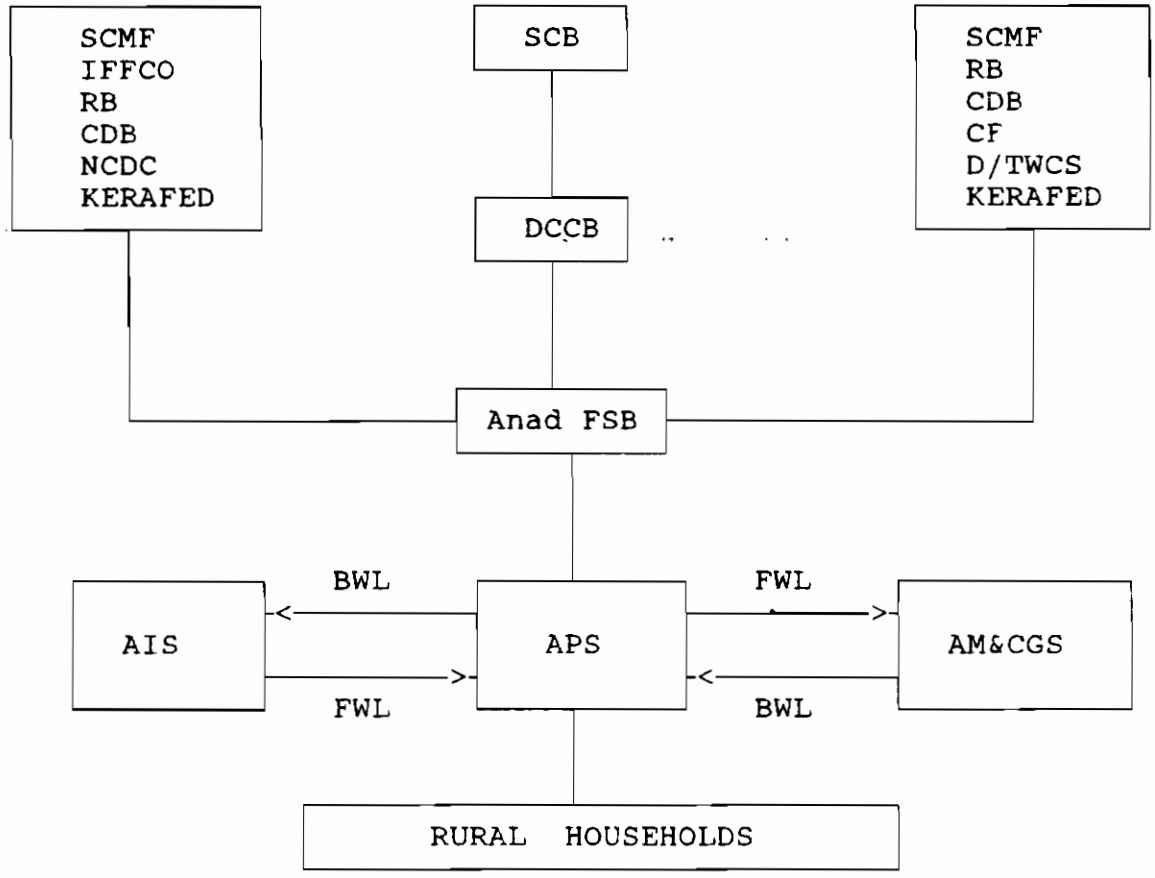
Organizational Structure of the Anad Farmers Service Cooperative Bank



Figures in brackets are number of members, directors, and units.

Figure 2

Vertically Integrated Organizational Structure of Anad FSB

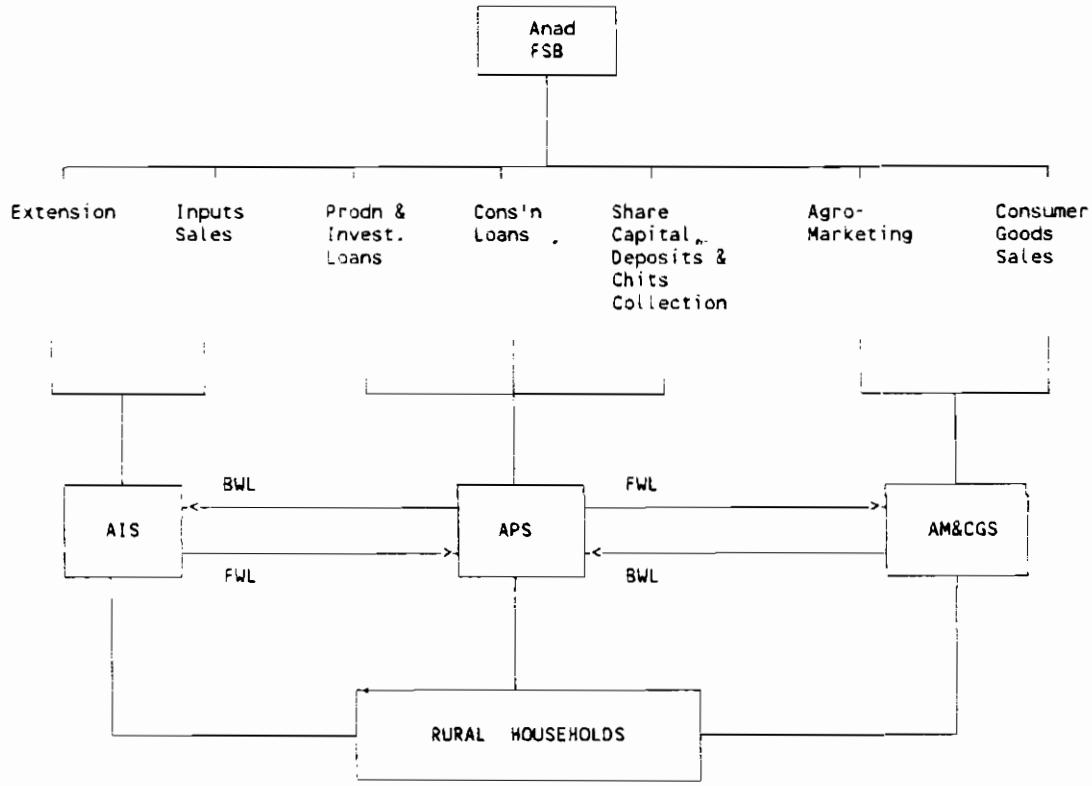


Legends

SCB	=	State Cooperative Bank
DCCB	=	District Central Cooperative Bank
SCMF	=	State Cooperative Marketing Federation
RB	=	Rubber Board
CDB	=	Coconut Development Board
NCDC	=	National Cooperative Development Corporation
CF	=	Consumer Federation
D/TWCS	=	District/Taluka Wholesale Cooperative Society
KERAFED	=	Kerala Kera Karshaka Sahkarna Federation
AIS	=	Agricultural Inputs Distribution Sub-system
APS	=	Agricultural Production Sub-system
AM&CGS	=	Agro-marketing and Consumer Goods Sales Sub-system
BWL	=	Backward Linkage
FWL	=	Forward Linkage

Figure 3

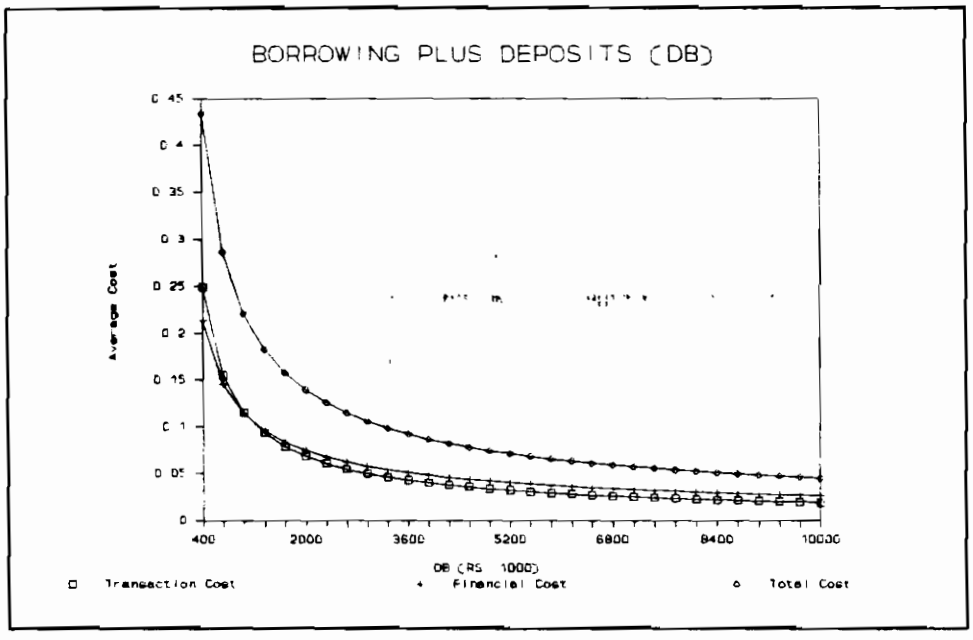
Horizontally Integrated Functional Structure of Anad FSB



AIS = Agricultural Inputs Distribution Sub-system
APS = Agricultural Production Sub-system
AM&CGS = Agro-marketing and Consumer Goods Sales Sub-system
BWL = Backward Linkage
FWL = Forward Linkage

Figure 4

Average Cost Curves for Borrowing and Deposits, Loan Assets and Non-loan Assets and Total Average Cost Curves for Transaction, Financial and All Costs based on Stock Model for Cost Functions



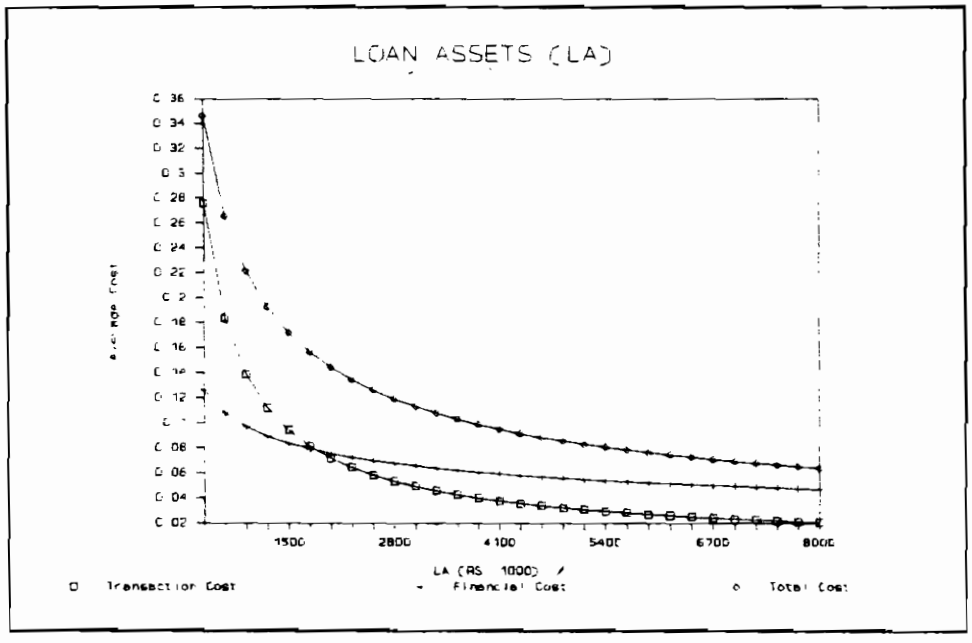
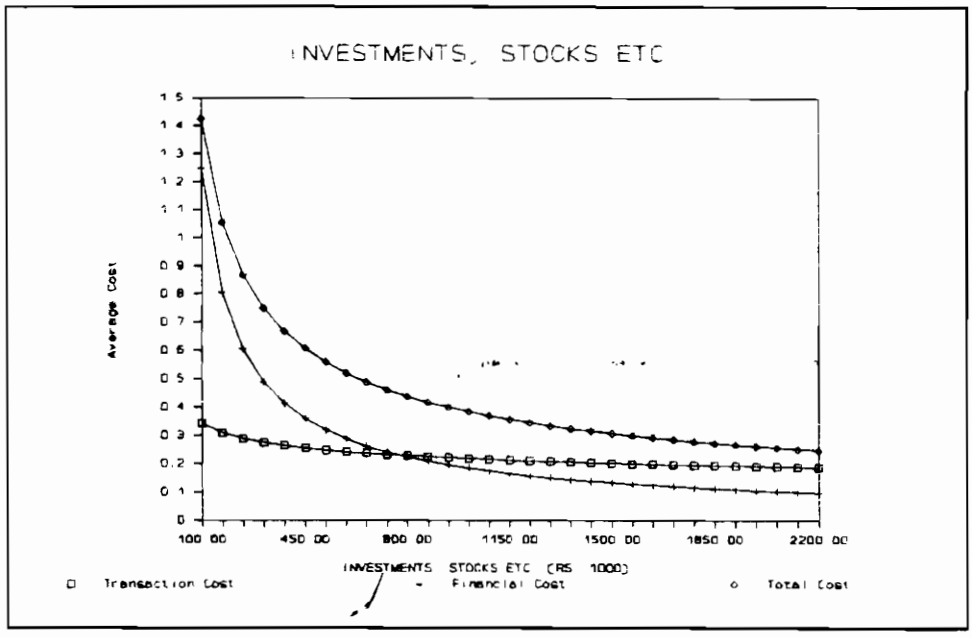


Figure 4 (contd.)



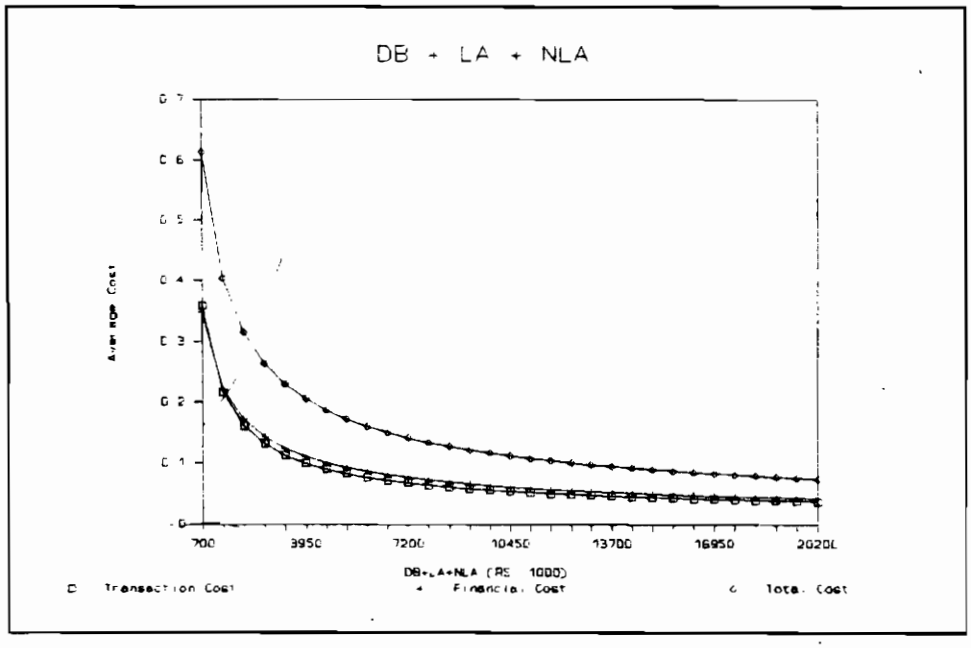
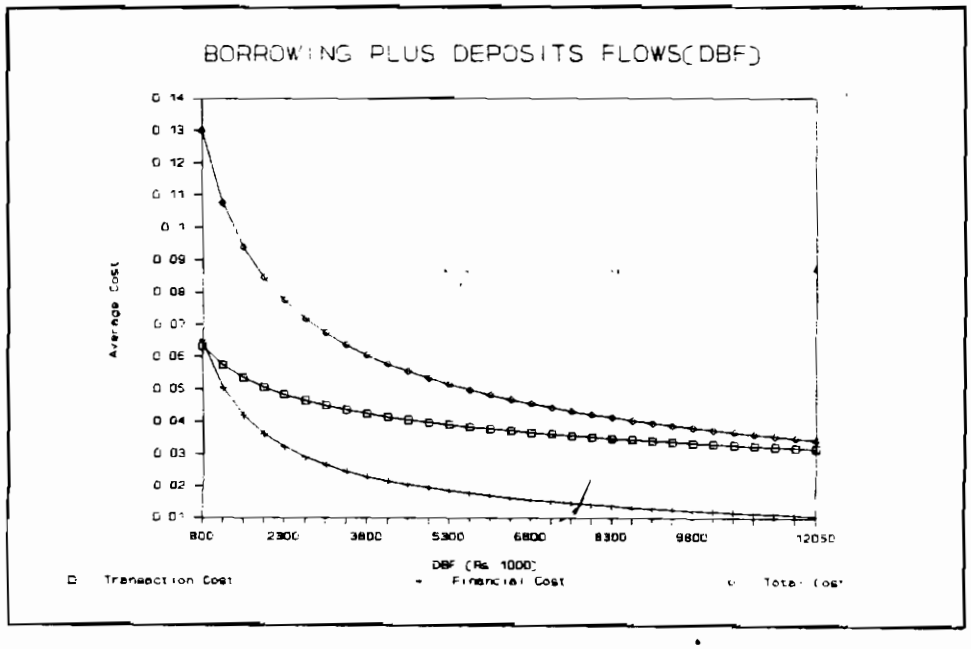


Figure 5

Average Cost Curves for Loans Issued, Borrowing and Deposit Flows, Sales and Total Average Cost Curves for Transaction, Financial and All Costs based on Flow Model for Cost Functions



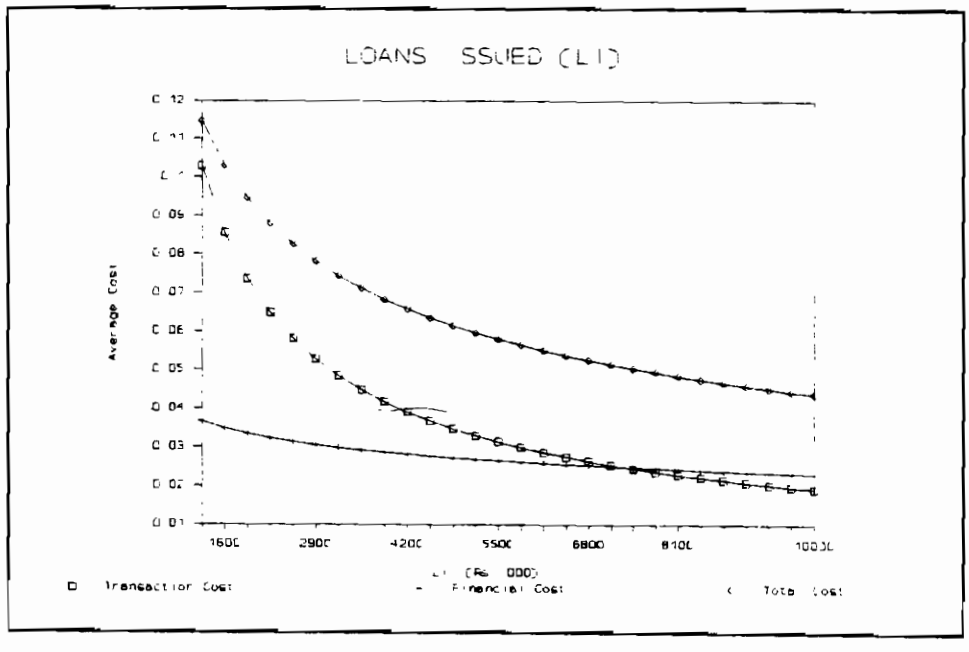
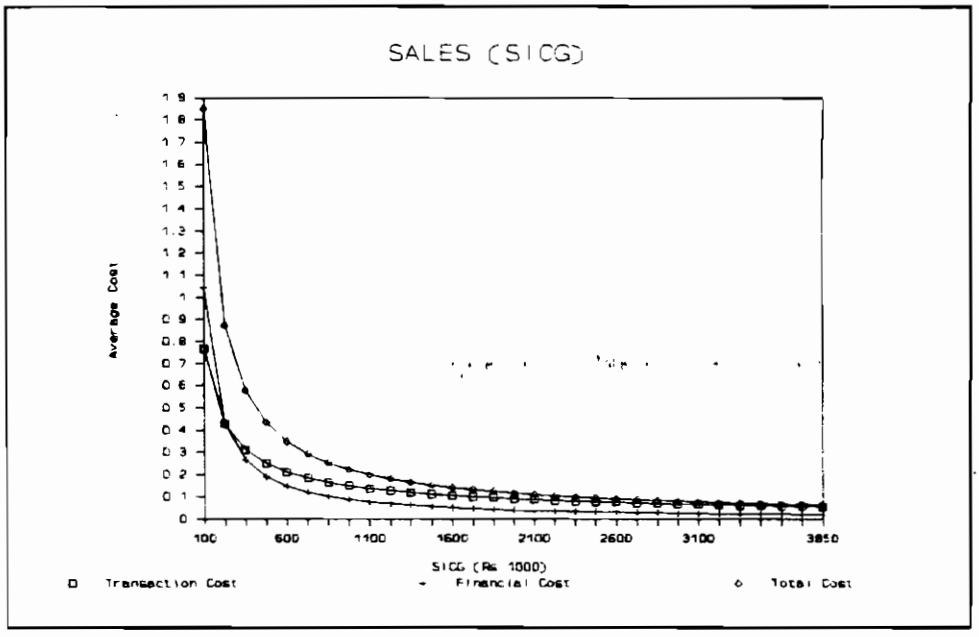


Figure 5 (contd.)



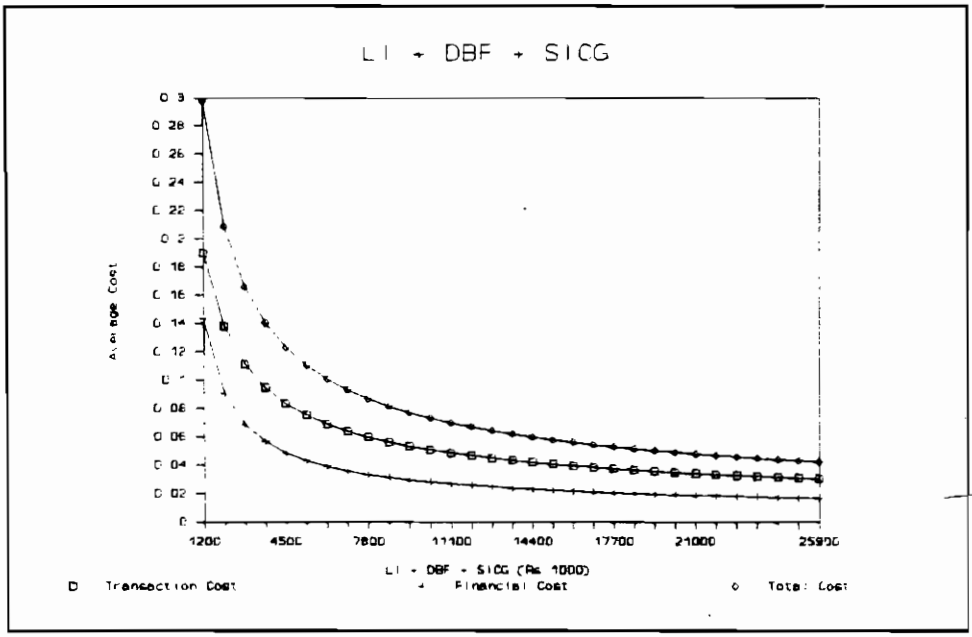


Table 1

Density of Field-level Offices of Anad FSB

Details	1969-70 to 1971-72	1979-80 to 1981-82	1989-90 to 1991-92
1. Number of branches	1	3	3
2. Number of input depots	1	4	5
3. Number of procurement centres	0	6	8
4. Number of consumer stores	3	8	12
5. Branches per 1000 ha.	0.23	0.69	0.69
6. Input depots per 1000 ha.	0.23	0.92	1.15
7. Procurement centres per 1000 ha.	0	1.38	1.84
8. Consumer stores per 1000 ha.	0.69	1.84	2.76

Table 2

Reach of Clientele by Anad FSB

	Details	1969-70 to 1971-72	1979-80 to 1981-82	1989-90 to 1991-92
1.	Population	27063	35194	39882
2.	Households	7443	8654	12885
3.	Members	2522	10303	19650
4.	Ratio of members to households	0.34	1.19	1.53
5.	SC/ST members as a % of total members	10.1	9.1	7.1
6.	Landless members as a % of toal members	9.1	9.4	10.5
7.	Marginal farmers (with up to 0.4 ha)	62.0	72.4	71.4
8.	Borrowing members as a % of all households	21.4	87.6	109.2
9.	Borrowing members as a % of total members	63.0	73.6	71.6
10.	Borrowing members of agricultural loans as a % of all households	13.5	34.4	33.5
11.	Borrowing members of agricultural loans as a % of total members	39.8	28.9	22.0
12.	Borrowing members of non-agricultural loans as a % of all households	7.9	53.2	75.7
13.	Borrowing members of non-agricultural loans as a % of total members	23.2	44.7	49.6

Table 3

Loanable Resources of Anad FSB (Rs.'000)

Details	1969-70 to 1971-72	1979-80 to 1981-82	1989-90 to 1991-92
1. Share capital	120.38	956.43	3701.02
2. Reserves	49.38	678.58	2712.99
3. Total equity (1+2)	169.76	1635.01	6414.01
4. Borrowing from DCCB	588.20	4752.37	14891.85
5. Deposits	57.28	3172.03	28512.74
6. Working funds or loanable resources (3+4+5)	815.24	9559.41	49818.60
7. Percentage of reserves to equity	29.09	41.50	42.30
8. Percentage of borrowing from DCCB to working funds	72.15	60.17	29.89
9. Percentage of deposits to working funds	7.03	33.18	57.23

Table 4

Deposit Balances and Flows of Anad FSB (Rs.'000)

Deposit-types	1969-70 to 1971-72	1979-80 to 1981-82	1989-90 to 1991-92
1. Deposits Outstanding (Balances)			
1.1 Saving Deposits	18.61 (32.49)	1294.18 (40.80)	5128.21 (17.99)
1.2 Fixed Deposits	4.26 (7.44)	960.00 (30.26)	18631.45 (65.34)
1.3 Other Deposits (such as house-safe deposits, thrift deposits, recurring deposits, trade deposits, daily collection deposits etc.)	34.41 (60.07)	917.85 (28.94)	4753.04 (16.67)
1.4 Total Deposits	57.28 (100.00)	3172.03 (100.00)	28512.70 (100.00)
2. Deposits collected during the year (Flows)			
2.1 Saving Deposits	62.65 (24.67)	4592.19 (83.20)	16801.76 (55.89)
2.2 Fixed Deposits	4.60 (1.81)	463.89 (8.40)	13031.11 (43.34)
2.3 Other Deposits	186.74 (73.52)	463.12 (8.40)	230.74 (0.77)
2.4 Total Deposits	253.99 (100.00)	5519.20 (100.00)	30063.61 (100.00)

Figures in brackets are percentages.

Table 5

Advances Outstanding and Loans Issued by Types for Anad FSB (Rs.'000)

Details	1969-70 to 1971-72	1979-80 to 1981-82	1989-90 to 1991-92
1. Advances Outstanding			
1.1 Short-term agricultural advances	459.67 [89.59]	2780.33 [87.86]	13688.76 (81.98)
1.2 Term-loans for agriculture	53.39 [10.41]	384.22 [12.14]	3008.46 (18.02)
1.3 Total agricultural advances (i.e. 1.1+1.2)	513.06	3164.55	16697.22
1.4 Non-agricultural advances	51.61 (9.14)	3389.45 (51.72)	21394.58 (56.17)
1.5 Total advances (i.e. 1.3+1.4)	564.67	6554.00	38091.80
2. Loans Issued during the Year			
2.1 Short-term agricultural loans	387.89 [95.00]	2403.80 [90.63]	8306.80 [90.30]
2.2 Term-loans for agriculture	20.43 [5.00]	248.59 [9.37]	892.87 [9.70]
2.3 Total agricultural loans (i.e. 2.1+2.2)	408.32	2652.39	9199.67
2.4 Non-agricultural loans	49.62 (10.84)	4676.50 (63.81)	31015.06 (77.12)
2.5 Total loans (i.e. 2.3+2.4)	457.92	7328.89	40214.73

Figures in [ ] are percentages with respect to total agricultural advances/loans, while those in ( ) are percentages with reference to total advances/loans.

Table 6

Scale of Finance for Crop Loans of Anad FSB (Rs./Ha.)

Crops	Cash	Kind	Total
Paddy-Rice (Local)	4522	678	5200
Paddy-Rice (HYV)	4965	1155	6120
Tapioca	5640	600	6240
Pulses	1590	380	1970
Vegetables	7380	4920	12300
Coconut (175 trees/ha)	8605	1355	9960
Ginger	18725	925	19200
Pepper (1000/ha)	8150	1750	9900
Banana	25050	8500	33550

Table 7

Sales of Anad FSB (Rs.'000)

Details of Sales	1969-70 to 1971-72	1979-80 to 1981-82	1989-90 to 1991-92
1. Farm Inputs	68.94 (9.40)	3416.75 (58.92)	10942.49 (69.37)
2. Consumer Goods	664.50 (90.60)	2382.35 (41.08)	4832.03 (30.63)
3. Total Sales (i.e. 1+2)	733.44 (100.00)	5799.10 (100.00)	15774.52 (100.00)

Figures in brackets are percentages.

Table 8

Interest Spread, Average Costs, Average Revenues and Average Profit of Anad FSB

Details	Average of		
	1969-70 to 1971-72	1979-80 to 1981-82	1989-90 to 1991-92
	Rs. per Rs.100 of Assets plus Liabilities		
1. Interest Spread			
1.1 Unit interest revenue (UIR)	1.787	4.810	5.005
1.2 Unit interest cost (UFC)	1.188	2.482	3.579
1.3 Unit interest spread (UIS) [i.e. UIR - UFC]	0.599	2.328	1.426
2. Unit Transaction Costs (UTC)	1.075	2.202	2.165
3. Unit Interest and Non-interest Revenues			
3.1 Unit interest revenue (UIR)	1.787 (77.3)	4.810 (87.7)	5.005 (82.0)
3.2 Unit non-interest revenue (UNIR)	0.525 (22.7)	0.677 (12.3)	1.102 (18.0)
3.3 Unit total revenue (UTR) [i.e. UIR + UNIR]	2.312 (100)	5.487 (100)	6.107 (100)
4. Average Profit (AP) [i.e. UTR - UFC - UTC]	0.049	0.803	0.363

Table 9

Partial Scale Economies (PSE), Total Scale Economies (TSE), and Economies of Scope in Various Costs: Stock Model[1]

Costs	PSE Parameters related to			TSE for all these three operations	Economies of scope parameter[4]
	Deposits and borrowing balances	Loan assets[2]	Non-loan assets[3]		
(a) Transaction Costs[5]	0.1972	0.0917	0.8043	1.0932*	0.1435
(b) Financial Costs[6]	0.3480	0.6567	0.1737	1.1784*	0.0801
(c) Total Costs (a + b)	0.2949	0.4095	0.4320	1.1364*	0.1312

Partial Scale Economies (PSE), Total Scale Economies (TSE), and Economies of Scope in Various Costs: Flow Model[1]

Costs	PSE Parameters related to			TSE for all these three operations	Economies of scope parameter[4]
	Deposits and borrowings flow	New loans issued	Sale of inputs and consumer goods		
(a) Transaction Costs[5]	0.7428	0.1862	0.2838	1.2128*	0.0416
(b) Financial Costs[6]	0.3305	0.7760	0.0002	1.1067*	-0.0282
(c) Total Costs (a + b)	0.5086	0.5329	0.0729	1.1144*	-0.0051

1 PSE, TSE and economies of scope parameters are derived from estimated cost functions reported in Exhibits 3 and 4.

2 Loan assets include short-term agricultural loans and all non-agricultural loans.

3 Non-loan assets include stocks of farm inputs and consumer goods, investments and fixed assets

4 Economies of scope exists when this parameter is negative.

5 This include salary and allowances for staff, travel costs, commission, stationery, postage, rent and depreciation.

6 This includes interest paid on deposits and borrowings.

* Statistically not different from 1 suggesting thereby prevalence of constant returns to scale.

Exhibit 1

Operational Objectives of Anad FSB

The major objective of the bank is to provide credit and other services (such as distribution of consumer goods) to farmers, particularly small and marginal farmers, rural artisans, agricultural laborers and those engaged in cottage and small-scale industries to create employment and to enhance their production and income. To meet this objective, the bank may undertake the following activities/functions in coordination with other agencies or by acting as their agent:

1. To grant short-term, medium-term and long-term loans and advances to members for production purposes. To grant loans for medical and educational purposes, and to extend loans for clearing old debts.
2. To purchase/procure and supply agricultural inputs like seeds, fertilizers, manures, implements, cattle feed, pesticides, etc.; fish harvesting equipment, raw materials, machines and appliances for cottage and small-scale industries of the members; and, domestic requirements and other necessary supplies.
3. To procure/purchase and sell agricultural produce, products of dairy and poultry, products of cottage and small-scale industries either directly or on agency basis so as to derive maximum benefits to the producers.
4. To promote or own or hire agricultural and dairy processing units.
5. To own or hire or provide custom hiring services of tractors, power tillers, bulldozers, sprayers, pumpsets, etc.
6. To render services for improving the breed of livestock by owning or by providing services like stud bulls, breeding rams, etc. and to support/run a model dairy farm.
7. To own or hire a godown to stock fertilizers; products of agriculture and agro-based industries for sale; agricultural

inputs for sale; and, to undertake activities which are of general interest of the community.

8. To popularize and distribute high-yielding variety seeds by undertaking suitable schemes and run a model farm by acquiring or leasing land.
9. To undertake construction of roads, digging of wells, construction or repairing of tanks, canals, and other irrigation works etc. through members or with their help with a view to provide seasonal employment.
10. To organize, execute, own and maintain lift irrigation schemes.
11. To encourage thrift, self-help and cooperation among members.
12. To open branches, depots, and sale centres, showrooms and workshops to fulfil the above objectives of the by-laws.
13. To provide agricultural extension service by employing technical personnel, running a model farm, etc.
14. To raise funds by way of deposits and borrowing from members, non-members, cooperative banks, government, and other financial institutions.
15. To act as an agent of the land development bank or the marketing society or processing society which has jurisdiction over the area of operation of the society for the disbursement and recovery of long-term loans, for the supply of agricultural inputs, consumer goods or for the sale of agricultural produce of dairy, poultry, etc.
16. To undertake other nominal activities which are suitable for fulfilling the above-mentioned objectives with the approval of the financing bank.

Exhibit 2

Proof Showing Average Costs Behaviour Suggests Scale Economies and Diseconomies

Scale economies is defined as a proportionate change in one variable say cost (c) with respect to a proportionate change in another variable say loan operation (L). In other words, it is an elasticity which can be written as

$$\frac{\Delta C}{C} \Big/ \frac{\Delta L}{L}$$

which can be rewritten as

$$\frac{\Delta C}{\Delta L} \Big/ \frac{C}{L}$$

which in other words means

Marginal Cost (MC) / Average Cost (AC)

When this ratio (SP) is less than 1 it implies prevalence of scale economies and AC is declining. When this ratio (SP) is greater than 1 it implies scale diseconomies and in that event AC is rising. And when this ratio (SP) is 1 it suggests constant returns to scale and AC would be constant having horizontal shape. This is evident from the graph given below.

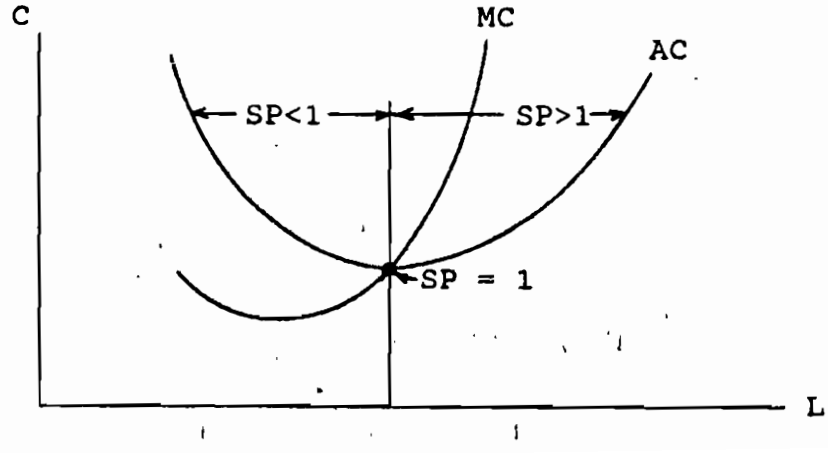


Exhibit 3

Estimated Stock Model for 1969-70 to 1991-92

Costs	Constant	Deposits plus Borrowing balances (DB)	ST Agri-Loans plus All other loans (LA)	Fixed Assets, Investments and Stock of Inputs and Consumer Goods (NLA)	0.5 * DB * LA * NLA	R^2	D.W. Statistics	F
Transaction costs	-5.854 (-2.99)a	0.409 (0.80)	0.310 (1.99)b	1.069 (5.62)a	-0.008 (-0.92)d	0.98	2.08	279.25
Financial costs	-4.925 (-3.00)a	0.415 (0.96)d	0.725 (2.75)a	0.256 (1.68)c	-0.003 (-0.43)	0.99	1.84	432.03
Total costs	-4.443 (-3.04)a	0.412d (1.07)	0.530 (2.26)b	0.578 (4.07)a	-0.005 (-1.09)d	0.99	1.88	521.13

a Significant at 1 per cent
b Significant at 5 per cent
c Significant at 10 per cent
d Significant at 20 per cent

Exhibit 4

Estimated Flow Model for 1969-70 to 1991-92

Costs	Constant	Deposits plus Borrowing Flows (DBF)	Loans Issued (LI)	Inputs plus Consumer Goods Sales (SICG)	0.5 * LI * DBF * SICG	R^2	D.W. Statistics	F
Transaction costs	-4.581 (-1.37)c	0.191 (0.83)	0.748 (1.81)b	0.290 (1.37)c	-0.002 (-0.05)	0.89	2.29	146.97
Financial costs	-2.201 (-0.79)d	0.675 (3.52)a	0.232 (0.68)	-0.199 (+1.095)d	0.004 (1.12)d	0.98	2.24	230.47
Total costs	-2.288 (-0.86)d	0.457 (2.52)a	0.435 (1.33)c	-0.013 (-0.07)	0.002 (0.75)	0.98	2.41	245.60

a Significant at 1 per cent
b Significant at 5 per cent
c Significant at 10 per cent
d Significant at 20 per cent

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