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Capitalism and Cooperation : A Few Issues on Cooperative Institutions In a Developing Economy

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Abstract:

Cooperatives as organizational arrangements of collective economic activity can break up interlocked capital, labour and output markets in rural areas and alleviate poverty. The recent parallel law on cooperatives provides an opportunity to take a fresh look at this issue. There is no coherent theory of cooperatives that brings forth general principles for successful cooperative arrangements. We discuss some basic concepts while comparing different types of economic organization, and illustrate them with a few empirical examples to bring forth the conditions under which cooperative arrangements can generate economic surplus and alleviate poverty.

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1. Introduction

A basic principle of capitalism is that private ownership of capital and resources provides incentives to agents to utilize resources efficiently and avoid the tragedy of commons. Competition results in collective welfare. The basic tenets take complex forms and several institutional arrangements have evolved over time - small group and large group exchanges, agency relations in the ownership and control of capital, organization of economic activity by large corporate organizations with internal capital and labor markets and hierarchy, and governmental provision of public goods and regulation of economic activity. Capitalism sustains on the basis of the underlying institutions that are a result of collective action, which the general equilibrium approach of the mainstream neoclassical theory does not capture. Economic activity takes place under the constraints of formal laws and informal rules and norms that evolve over long periods through repeated interaction of agents especially in a small group context. Apart from this, an economic organization can be based on several types of institutional arrangements for cooperation and collective action, and generate higher surplus than individuals acting as autonomous agents. The objective of this paper is to discuss some theoretical and empirical issues in the evolution of cooperative institutions and the organizational conditions that determine their durability. This helps us understand the role of cooperatives in generating economic surplus and alleviating poverty in the context of a developing economy.

According to one view, India's move towards free markets since 1991 was motivated by the fact that government failures seemed to be more costly than market failures in fostering economic growth and alleviating poverty. Since embarking on economic reforms, India has been able to achieve about 6 percent annual economic growth. Recent estimates of the World Bank and others (Sundaram and Tendulkar, 2003) show that there has been a noticeable decline in the number of people living below the poverty line since then. This can be

interpreted as evidence for the trickle down theory: as the well-off participate in the market mechanism and become increasingly better-off, a part of the wealth trickles down to the poor. Some economists however dispute this data and interpretation. Repeated drought has led to greater levels of pauperisation in several pockets of rural India. Nearly 30 percent of India's population, close to 300 million, is illiterate and lives below the poverty line. Let us give values ranging from less than 1 and greater than 0 to poverty levels of people living below the poverty line. People at the margin of values ranging, say from 0.9 to 1 may benefit from the trickle down effect if they have a critical level of physical and human capital endowments that enable them to access and participate in the market economy. Even if the Indian economy augments its annual growth rate to 8 percent it is very unlikely to pull the people below the margin out of poverty. Development economists Sen and Dreze (1999) recommend wide spread investment in primary education and entitlements (social capital) as one of the main solutions to poverty. However, investments in primary education should be supported by initiatives for institutional change to pull people out of poverty and facilitate their effective participation in the market economy. As mentioned before, this paper brings out some issues that help us understand the role of rural cooperatives.

2. A Few Examples of Cooperative Institutions and Poverty Alleviation

One of the classic examples of cooperative institutional arrangements helping the poor overcome the institutional trap of poverty is Grameen Bank in Bangladesh (Yunus, 1998). The rural women in Bangladesh were trapped into poverty because local financial markets made them dependent on middlemen for short-term finance. Under the then existing institutional arrangements, labor and capital markets were interlocked, the poor borrowed money from the local middlemen and sold their output to them at very low prices, leaving them with a pittance for sustenance. The inability of the poor to access finance and sell output at the right prices traps them into a poverty cycle. Grameen Bank (micro finance) was founded by Mohammed Yunus, and made a significant impact by breaking up the interlocked

capital and labor markets and hence, alleviating poverty. It is important to notice that an outside (an exogenous) intervention with an almost altruistic motive was responsible for the emergence of the micro finance institution. Once it was organized and established, the members run the cooperative without outside intervention (Yunus, 1998). At present, the Grameen Bank has more than two million members in 34,000 villages, organized into subgroups of five members. These are joined together into 40 member centers (Pretty and Ward, 2001). However, some have argued that Grameen Bank is closer to a being *provider* rather than a *promoter*, in the sense that it provides all financial services and gives little control or flexibility to borrowers (Rutherford, 2000).

Another success story is the case of Mann Deshi Mahila Sahakari Bank (Mann Land Women's Cooperative Bank) of Mhaswad village in the state of Maharashtra started by poor rural women. The village Mhaswad, once a prosperous village, declined economically owing to the demise of the handloom weaving industry. Apart from this, frequent drought conditions drove many low caste and illiterate women to absolute poverty scratching a living through goat rearing. A micro credit bank was initiated in the early 1990s by Ms Gala Sinha, an MBA, who moved into the village from Bombay as a social activist. The cooperative bank, started with each member contributing Rs.5. It now has total assets worth Rs 30 million. The scheme spread to about 126 villages around Mhaswad. The organization also takes up productivity enhancing schemes and provides funds for the members and has made a significant contribution towards poverty alleviation of the members (Pritha Sen, Sept 2002, www.Indiatogether.org).

Another example is the Thrift and Credit Cooperatives promoted by the Cooperative Development Foundation (CDF) in Warangal and Karimnagar Districts of Andhra Pradesh. With a total membership of about 100,000 and savings and assets in excess of Rs.200 million, these cooperatives have made a significant impact on the local economy and on poverty levels. Unlike the Grameen Bank model, CDF promoted cooperatives are more like Credit Unions in the US. They have been a role model for cooperatives in other states as well.

Amul is a remarkable story of small rural milk cooperatives, started in 1946, turning into a very successful enterprise. Today Amul is a large enterprise with complex and highly efficient horizontal and vertical organizational structure and linkages competing very effectively in the national market. The cooperative was started in 1946 to help marginal farmers supplying one to two liters of milk per day. Prior to this, Polson acted as the middleman and collected milk from farmers and supplied it to Bombay. Being the sole purchaser of milk, Polson could charge high rents for acting as middleman. In order to overcome this, farmers were organized into a cooperative by Tribhuvandas Patel and later led by Verghese Kurien who brought in extraordinary leadership. They invested time and resources in organizing the farmers. As most members were small farmers with liquidity constraints, they made sure that they got frequent and reliable cash payments for supply of milk. Later on, the organization expanded horizontally, linking several villages for milk procurement. They also undertook substantial investments in infrastructure for storing, processing and transporting milk. As the cooperative became more successful, it expanded vertically into consumer products like milk powder, and chocolates (Chandra and Tirupati, 2003).[1]

The above cases describe some successful cooperative institutional arrangements. However, there are several cases of failures as well - one of the striking examples in contemporary India is the failure of Urban cooperative banks which destroyed savings worth billions of rupees of small investors. The non-performing assets of cooperative banks across the country amounted to Rs.56 billion in 2000. About 118 urban cooperative banks are under liquidation and another 261 are supposedly in trouble (Reserve Bank of India).

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[1] It is important to note that Amul ensured management of the Cooperative by members only and did not allow bureaucratic and political interference.

One major flaw in these institutions is the motivation and incentive structure. Generally these banks are formed by a small group of people who attract depositors by luring them with promises of very high returns or interest rates on their deposits. The capital is loaned to people at high interest rates and under lenient conditions. This is a typical '*lemon problem*' of information economics, and the arrangement attracts low quality borrowers who do not have any intention of paying back the loans. The second factor is the organization of the banks with high agency costs. In most cases, capital is loaned to the directors and their relatives. In quite a few cases, local politicians controlled the banks. One of the worst features of the banks is that the depositors have no say in the running of these so-called Cooperative banks (Hindu, 12 September 2003). It can be compared to the way communism functioned in Eastern Europe- collective ownership of resources led to high control rights of the communist party.

3. A Few Conceptual Issues

In the basic tenets of communist philosophy, private ownership of capital and resources are ruled out under the premise that owners of capital realize surplus value by exploiting labor. Under this logic, private property rights are denied and common ownership of capital and resources is adopted. But in practice, in most communist countries, the common ownership of capital meant government ownership through State Owned Enterprises (SOEs), which beset high control rights to government agents (the party).

As mentioned before, under capitalism private property rights is a very important institutional arrangement that provides the right incentives for utilizing resources efficiently while common ownership can result in the tragedy of commons- people free-riding and causing degradation of resources. It is well-known that the issue of property rights under capitalism is subject to complex definitions and issues because several resources have common property characteristics. To give a simple example, a private agent can own a piece of land but ground water is basically a common property. A single person misusing ground water can result in negative externalities to others and everybody becomes worse off. One of

the reasons for water scarcity in several urban and rural areas in India is the misuse of ground water by private agents due to lack of well defined, enforceable rules and social norms.

In the advanced capitalist economies there are elaborately defined rules for managing common property resources. In several villages in India, common property resources such as irrigation-water are managed not by the laws of the government but by evolved norms of social behavior. The commitment to resource management in small societies arises because it results in collective well-being. This is where free-wheeling capital, with no long-term commitment can do damage to management of resources. To give an example, the fishermen community of the Kerala and Tamil Nadu coast carried out fishing for centuries using highly evolved norms that preserved the resources. The introduction of large fishing trawlers owned by multinationals and local large firms in the early 1990s led to over-fishing and rapid depletion of fish, eroding the livelihood of thousands of fishermen (Patibandla, 1998).[2] In other words, even under capitalism, if capital has no long-term commitment to resources it can result in a similar tragedy of commons. One interpretation could be that the 'norms' maintained by small fishermen or farmers have survived partly because they remained small and that makes it beyond their technical capability to do harm to environment. When producers become large compared to the environment, the historical experience is that conservation norms start disappearing, even in the pre-capitalist social formation. This is when formal laws and rules should come into play in neutralizing costs of freewheeling big capital (Patibandla, 2004B).

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[2] There are several examples of similar outcomes especially in the post reform period when controls on capital are removed without proper regulatory rules and proper definition and enforcement of property rights. If the negative externalities of growth are properly accounted for, economic growth rate would be lower than what it is officially shown.

We can illustrate a part of the above discussion of members' commitment to collective activity by taking the example of institutional arrangements in China. Under the communist system, China established extensive and large scale presence of SOEs. Despite pumping in large sums of capital into these enterprises, most of them turned out to be operationally inefficient which can be interpreted as an outcome similar to the tragedy of commons. The Chinese government undertook widespread privatization of these enterprises through foreign direct investment (Huang, 2002; Patibandla, 2002). However, on the other side, China's Township and Village Enterprises (TVEs) are very successful. TVEs are cooperative institutional arrangements with common ownership of capital of local people and their economic performance is remarkable. In 1991, there were about 19 million TVEs, which made up of about 67 percent of the rural industrial sector.

Levi and Pellegrin Rescia (1997) observe "The TVEs have been characterized as organizations where there is no owner according to traditional property rights theory: there is no residual claimant in the traditional sense and the assets are non-sellable, nontransferable and non-inheritable. Ownership and control are mainly collective and community based." Membership is not voluntary but all local residents have automatic membership, an institutional arrangement initiated (or imposed) by the government. Unlike the SOEs, which were provided with large sums of capital under soft budget constraints, TVEs were subject to hard budget constraints and to competitive market conditions. Their total factor productivity during 1979-91 grew three times faster than that of SOEs and was comparable to the private firms (Levi and Pellegrin Rescia, 1997). What explains their success? Perhaps a combination of capitalist incentives of hard budget constraints and competitive markets and a cooperative institutional arrangement with commitment (not in terms of membership, as it is involuntary, but in terms of restraining free riding), made them perform efficiently. When each TVE is able to realize high TFP and compete effectively, it generates surplus for all members. All members being local residents have a social commitment to their small community and the TVE is its economic extension. A free rider may face social stigma as individuals interact

repeatedly and cheating results in social boycott. Secondly, as long as an individual is better off being a member of the cooperative than by defecting, he or she has the incentive to remain committed.

We characterize two types of cooperative institutional arrangements. In the first, ownership of resources and capital is common. In the second, each member owns her own physical and human capital but the cooperative deals with input and output markets to realize higher surplus through collective action. In this paper, we focus on the latter one.

One of the important points is that a cooperative succeeds if the surplus for members from the cooperative is higher than what they can realize individually. As discussed in the case of Amul, small farmers acting alone could not transport milk economically to consumers in a far away city. The middlemen incurred transaction costs of collection of milk and transportation and charged a mark up. We can express the surplus equation of a farmer in a cooperative as follows:

$$S = QP - b\,Q - (TC+TP+M)/N \qquad (1)$$

Q is the quantity of milk, and b is the average cost of production. P is the price realized in the larger city market. N is the number of farmers and it is assumed that each farmer supplies a unit of milk. TC and TP are the total transaction and transport costs and M is the total markup of the middleman. If the markup is competitive, one can argue the middleman's job has economic efficiency. If the markup is based on monopsony behavior then the cooperative arrangement becomes superior. Even if the markup is competitive, the cooperative still can provide welfare enhancing outcomes because M becomes the income of the cooperative, which can be shared by the members. Apart from this, farmers might be able to save on transaction costs under the cooperative as compared to dealing with middlemen. Williamson's (2002) theory of contracts shows that in the presence of uncertainty, private agents have to incorporate contractual safeguards, which reflect in higher transaction costs. The middleman in the market may pass on these costs to farmers especially when he/she has higher bargaining

power. When farmers form into a cooperative with high mutual stakes, these transaction costs go down. These costs will go down in a cumulative way when the organization gets vertically integrated from milk production to production of milk-based consumer goods. This exactly where the creative organization of Amul contributed to the generation of surplus, which is utilized for developing local infrastructure and investment in the productivity of farmers.

Information economics show that interest rates in rural credit markets tend to be high because of adverse selection and high loan defaults. This is accentuated when there is high risk in production due to environmental uncertainty, high transaction costs of small loans and underdeveloped output markets (Akerlof, 1970; Stiglitz and Weiss, 1981). In the case of India, agricultural productivity is highly dependent on monsoons, which is a major source of risk and uncertainty. Secondly, commodity and futures markets are not fully developed, which results in small farmers realizing low prices or even distress sales at the time of harvest. The problem of adverse selection and loan defaults cannot be solved by the government setting up rural banks charging lower interest rates than the private credit markets. Timely access to loans remains a problem. Lower interest rates provide an incentive to arbitrage and make money at the cost of the farmer. They in turn have an incentive to default on payments.

However, cooperatives can be an effective solution at least on two dimensions- one is collective action in the input and output markets reduces transaction costs, and two, they could operate as insurance by sharing risk among a larger number of agents. Further, if cooperative activity is successful it could develop output markets by reinvesting a part of the surplus.

Let us take the case of two farmers i and j ,operating in the input and output markets. If they act independently, the total transaction costs incurred by i and j can be expressed as;

$$T_i(q_i, l_i) + T_j(q_j, l_j) = T \qquad (2)$$

Where q is output and l is the credit (loan)

If they pool efforts to access loans and output for marketing, the transaction cost is:

$T_v (q_i, l_i, q_j, l_j)$ (3)

and if $T > T_v$ then $(T-T_v)$ is the transaction cost saved through collective effort

The surplus generated by a cooperative can be expressed as;

$[M+ (T- T_v) + K] - e$ (4)

K is the surplus realized through externality effects of cooperative action and e refers to internal organizational costs, which can be simplified as the extent of free riding within the organization. One of the ways K can be realized is that a part of the surplus is invested in enhancing collective productivity of members. If each member acts alone these investments will not take place either because they are too costly for individual agents or because of market failures due to externalities. One more source of externality is cost saved by spreading risk in the input and output markets through collective action.

A cooperative can reduce transaction costs incurred by members. But some transaction costs still remain because there is no total integration of all economic activity as discussed by Coase and Williamson in their theory of the firm. For instance in Amul, each member owns her own assets but pools the output in the cooperative. In such an arrangement, transaction costs associated with contractual safeguards may be eliminated but not all transaction costs. Amul guarantees that it will buy all the output supplied by the members. This results in costs when supply exceeds demand.

Imperfect information, adverse selection and moral hazard under agency relations do not vanish once a cooperative is formed. These operate within the organization and their incidence increases as the members increases. We can argue that as long as the surplus equation is positive, a cooperative has economic rationale. However, this condition alone is

not enough. A cooperative has to adopt incentive compatible practices in sharing the surplus and in the assignment and distribution of control rights for its durability. These issues are discussed in section 5 of this paper.

One of the essential points we would like to bring out from the above discussion is that even if the middleman's behavior has market efficiency, cooperatives that eliminate middlemen in the market can generate higher surplus to members by providing them an additional economic role (jobs). This will be especially true of cooperatives made up of people with low income. One more point is that generally it is an outsider with larger or altruistic goals who starts the process of collective action and incurs transaction costs of organizing the cooperative, but later, members with long-term stakes manage them. This issue has theoretical implications, which we will discuss in the section 5.

4. A Case Study of Marginal Farmers in the Andhra Pradesh State

The following case study of marginal farmers is illustrated on the basis of one of the authors' extensive involvement in the field. Large areas of Telengana and Rayalaseema are unirrigated and are inhabited by small and marginal farmers. They are able to get at most one crop per year and practice low cost, low risk and low yield farming, focusing on groundnut, pulses, minor millets and oil seeds with some amount of soya and cotton. About 30% of their income is from farming and the rest largely from unskilled labor. The Government of Andhra Pradesh defines the poverty line to be Rs.12000 per family per year and most of them are below it. The poor have repeatedly voiced several concerns – lack of water for irrigation purposes, credit and market linkages. Small and marginal farmers suffer from at least five losses of income:

(i) Credit related. Either credit is not available, or they pay high interest rates for loans, sometimes more than 50%. This translates for instance into Rs.750 for interest for a loan of Rs.3000 for one acre over 6 months. At 15%, they would

pay only Rs.225 and save Rs.525. At an average land holding of three acres, this works out Rs.1575 or about 13% of annual income. Sometimes farmers choose to take smaller loans than what is required for proper cultivation.

(ii) Poor quality seeds, fertilizers and pesticides obtained at higher price. This sometimes happens because the dealer provides credit for purchase of agricultural inputs and palms off substandard items to the farmer. Also, prices are sometimes higher in interior villages.

(iii) Poor farming practices. They are unable to apply fertilizer and pesticide at the right time in the right quantities during the season, often because of lack of money. As a result of (i) (ii) and (iii), their output is low, sometimes 50% of what a well to do farmer obtains.

(iv) Tied sales: they are forced to sell their output to the money lender at low prices as part of the loan condition. This perhaps is the single largest reason in some places for loss of income.

(v) Distress sale of any left over produce immediately after harvesting when prices are low. Well to do farmers can hold on to stocks and sell when prices rise a few months later, but small and marginal farmers need immediate cash for day to expenses. The difference in price between the flush and lean season for some crops cultivated by the poor could be 100% or more.

[Figure 1 about here]

These five factors (see Figure 1) place them in a vicious cycle from which they are unable to escape. Conventional thinking has focused on rural credit. The idea is that once this is available, all problems will be solved. However, this has not worked. Firstly, credit itself continues to elude the small and marginal farmers. They continue to be dependent on the informal credit networks with the attendant income haemorrhage referred to in Figure 1. Even

if this credit is available, it still does not address the problem of low yields or distress sales. Credit is only a partial solution. A sustainable institution or organization is needed that will help farmers. Institutions that are run by outsiders are not answerable to the poor and eventually decline over time. Several well intentioned 'cooperatives' run by the Government have not performed well (in a sense this is against the cooperative principles since by definition a cooperative is run by its members). Since alternate models have not succeeded, there is a need to seriously consider genuine cooperatives of the farmers, by the farmers, for the farmers- owned, managed and run by them. Experience has shown that where the cooperative is well designed, it has immensely benefited its members and has the potential to eliminate all the five losses discussed. It could borrow money from banks at reasonable interest rates and provide it to members, ensure better farming inputs by buying directly from seed and fertilizer companies, improve farming practices by hiring an agriculture graduate, avoid distress sales during the harvest, hold on to stocks, and sell when prices go up. Perhaps no intervention other than a cooperative can bring long term sustained benefits to farmers. An individual small or marginal farmer cannot do what the cooperative can do.

Note that at this stage, we are not yet talking of value addition through food processing. Even without that, the potential benefits to the poor are substantial. In fact, as we show later, simple cooperatives based on tying up credit, purchasing quality inputs directly from companies rather than through dealers, holding onto stocks and selling them during the lean season can provide value only to the poor. For the well to do farmer, there is no need to join such a cooperative.

4. i. A Case Study

Over 50,000 poor families in Adilabad district of AP grow soya beans. The current average yield is around 5 quintals per acre, whereas good farming practices can yield around 12 quintals. The market price of soya is around Rs.1000 per quintal immediately after the harvest. The poor farmers realize something between Rs.650 to Rs.900 per quintal, or an

average of Rs.850 per quintal due to tied sales and because markets in interior rural areas are not efficient. Through the cooperative, we assume a very conservative average future yield of 8 quintals. Prices in late March and April, a few months after the harvest in October are around Rs.1400 per quintal. Approximately 2 acres per farmer are devoted to soya cultivation. Anantapur, the largest groundnut-producing district in the country has a similar story. Table 1 captures the losses due to various reasons that are eliminated with a cooperative. The figures are approximate, but are indicative of the ground situation. The figures also do not capture the effects of severe drought alternating with a year or two of good rains, or the effects of changes in prices. However, as we show later, even under adverse conditions, the poor farmer is better off in a cooperative than operating individually.

Table1: Losses without Cooperation

	Soya	Groundnut
Extra interest burden[a]	875	600
Loss of income at harvest time[b]	1500	900
Loss of income due to inability to access proper price a few months later[c]	4000	4200
Positive externality due to better agricultural practices[d]	4100	3975
Total loss that cooperation eliminates	10475	9675

Notes:

[a]For the subsistence farming they practice, investments are low – about Rs.2500 per acre in Adilabad and Rs.2000 in Anantapur. With the cooperative, this would go up and give higher yields per acre. The interest differential between formal and informal credit is assumed to be 35% in Adilabad and 20% in Anantapur, and average cultivation is 2 acres and 3 acres respectively

[b]Harvest prices are about Rs.1000 and Rs.1700 per quintal in the two districts, whereas the poor are able to realize Rs.850 and Rs.1550. Average yield is 5 and 2 quintals per acre – this is the severe drought yield of groundnut in Anantapur.

[c]Post harvest prices are Rs.1400 and Rs.2400 respectively in the two districts.

[d] In Adilabad (Anantapur), the Cooperative enables them to get 3 quintals (1 quintal) extra per acre but needs an additional Rs.2000 (Rs.1000) per acre. This enables them to earn a net increase of 3xRs.1400-Rs.2000-Rs.150 (interest cost) = Rs.2050 and Rs.1325 per acre.

If we assume that cost of running a cooperative is about Rs.2500 per member, this still leaves a surplus of about Rs.8,000 per member in Adilabad. For 50,000 families with an average soya cultivation of 2 acres, this adds Rs.40 crore to the incomes of the poor and has the potential to transform the rural economy of the district within three to five years as surpluses accumulate with the poor. In Anantapur, the surplus per member would go up by about Rs.7000, and with over 60,000 farmers in this plight, it adds an extra Rs.42 crores to their incomes. This model does not take into account reduction in price as output goes up. But it is clear that in any case, substantial benefits will go to the poor.

This can be modelled as follows. Suppose there are N farmers, each having an identical cost function. We simplify the transaction cost incurred by each as:

$$c_b + r_a I \qquad (5)$$

where c_b is the cost due to being forced to sell below market price, r_a is the cost incurred due to borrowing above market interest rates, and I is the investment per member. With respect to the example from Adilabad, c_b includes the loss at harvest time and the loss due to the inability to hold onto stocks for a few months. The total cost is:

$$T = N(c_b + r_a I). \qquad (6)$$

With cooperation, this cost is eliminated. However, there is an organizational cost of running the cooperative of F. If

$$F < N(c_b + r_a I), \qquad (7)$$

the cooperative is economically viable and the surplus per member m is

$$m = c_b + r_a I - F/N. \qquad (8)$$

If we assume that positive externality K will accrue due to enhanced productivity, then

$$m = c_b + r_a I - F/N + K. \qquad (9)$$

For our example above, total loss per quintal at harvest time is Rs.150 in Adilabad, loss due to inability to take advantage of subsequent price rise is Rs.400, and with an average yield of 5 quintals per acre and land holding of two acres, c_b = Rs.5550. The extra cost of interest is

Rs.875 as shown in Table 1. The positive externality K due to increase in productivity per member is Rs.4100.

4.ii. Some Important Lessons from the Case study

Notice that for a well off farmer, c_b, r_a and K are all zero. He can access credit at market rates, access markets, and does not need any help from the cooperative to enhance productivity. In fact, he is worse off by joining the cooperative since he incurs a part of the transaction costs of running it. Therefore, without substantial investment in value addition that gives higher profits, this type of cooperative is of no use to him. This is a crucial point that is often missed in the literature on cooperatives. Analysis usually does not take into account the costs c_b, r_a and the benefit K, and is done largely from the point of view of someone who has access to credit and local markets. From this analysis, it might turn out that the cooperative model is economically not viable since value addition, branding and marketing requires a scale of operation that is very hard to organize. *In summary, this kind of cooperative is only beneficial to the poor.*

Another important lesson is that the real loss (Rs.5500) is due to inability to access local markets at the right time when prices rise. Efforts to reduce interest rates through Government subsidies can at best bring in a benefit of about Rs.875. *Therefore it is far better to focus on proper marketing than on reducing interest rates.* However, even this reduced rate usually does not benefit the poor since there is the perennial problem of accessing credit. The poor are looking for accessible, reliable and timely loans and not for subsidies. Perhaps only institutions answerable to them can provide this –and the cooperative is one example of this.

Efforts at productivity enhancement alone without investment in establishing cooperatives can sometimes work against the interests of the poor. Without a cooperative, the poor cannot access markets at the right time (and hence cannot realize Rs.1400 per quintal, but only Rs.850). However, they incur higher investment costs (Rs.2000 per acre) and interest (Rs.500

@ 50% over 6 months). Many tribal farmers in Adilabad in fact pay higher interest, and realize a lower price than the conservative estimates we have used. Clearly, they are better off without productivity enhancement in the absence of the cooperative at least in this example. This also explains to some extent why schemes to promote and enhance productivity are not taken up by the poor in large numbers. There is perhaps some wisdom in the low investment, low risk farming taken up by dry land farmers. *Therefore, productivity enhancement with attendant increase in investment will not pay off unless the poor can access credit and commodity markets.*

Finally, traditional analysis over emphasizes fluctuations in market prices and risk. It argues that given this uncertainty, it is not clear that this type of cooperative will benefit the poor. However, for poor farmers, the surplus equation $m = c_b + r_a I - F/N$ is always likely to be greater than zero even if prices fall because $c_b > 0$ and $r_a > 0$. He is still better off in a cooperative than operating individually. This issue is related to the one raised previously of using a high investment, high return approach to farming to raise productivity. This immediately exposes the farmer to a much higher risk than he can bear. In fact, farmer suicides are typically among middle peasants trying this approach and failing due to drought, pest attacks or price crashes, rather than among small and marginal farmers.

This case illustrates how cooperative institutional arrangements can be one of the ways to break up interlocked capital and output markets, and can contribute to generation of surplus for marginal farmers. However, we do not have a theory of cooperatives that can give us universal principles for organizing successful cooperatives. As mentioned before, under certain conditions cooperatives were successful and under different institutional conditions they failed. We now discuss some conceptual issues for promotion and sustenance of good cooperatives.

5. Theoretical Issues

In Adam Smith's characterization of laissez-faire, individual maximization of economic self-interest in exchange results in the collective good. The equilibrium outcome of the invisible hand is a result of a large number of autonomous agents' pursuit of self-interest in the market. This was given an extensive theoretical formalization by the Arrow-Debreu general equilibrium model in which economic actions of a large number of hyper rational individuals with perfect foresight and in the presence of a complete set of markets results in the general equilibrium that meets the Pareto efficient and optimality conditions. In this theory there is nothing called cooperation and commitment because a large number of anonymous agents act autonomously in the market mechanism.

Developments in game theory have shown that individual maximization of self-interest in competitive interactions does not necessarily lead to collective good. In game theory interactions, agents are not anonymous and there is strategic interaction where everybody knows everybody. In Nash competitive interactions, the outcome in a prisoner's dilemma situation shows that maximizing self-interest makes everybody worse off. The solution to this is cooperation. Cooperation taking place through repeated Nash game interactions is difficult to justify in pure theoretical terms. One way that game theoreticians show cooperation occurs is through learning in repeated games, which can result in avoidance of prisoner's dilemma. However, in pure theoretical Nash interactions, learning is inconsistent with the pure characterization of the Nash game. Generally, learning is introduced through repeated interactions on the basis of ad hoc assumptions. One of the ways to view the assumptions is that an exogenous or outside influence leads to cooperation, which we elaborate below.

Qualitative empirics show that in several societies formal rules and norms that shape the behavior evolve through repeated interactions (North, 1990). Some norms are a result of learning and cooperation taking place through repeated interactions, which help in avoidance of prisoner's dilemma outcomes. Some norms could be such that they perpetuate prisoner's

dilemma interactions resulting in societies being trapped in low level of development. The examples of the latter outcomes are several feudal norms and institutions - for example behavior of landlords and tenants not investing in productivity enhancing practices even though that could make both better off. The other example is Government policies based on political interest groups. Governments may adopt policies that benefit the immediate constituent powerful groups in myopic terms at the cost of the weaker groups although alternative policies benefit everybody (Weingast, 1998). When these institutions take root, one way they can be broken up is either by exogenous shocks (crises) or outside influences. One simple example is India's economic reforms of 1991 introduced owing to the balance of payments crisis. The outcome of the reforms has been increase in economic growth rate, which in turn has made some sections of the people better off in the post-reforms period. Similarly, as mentioned in the previous section, good norms could be destroyed when one introduces outside agents or free wheeling capital that does not have long-term commitment to local resources or institutions, which we illustrated in the previous section with the example of the fishermen in the Kerala coast. The essential issue here is the relevance of exogenous or outside effects in instilling cooperative behavior, which has policy implications. We will discuss this aspect at a latter stage.

Applied game theory in the industrial organization literature suggests that a small group of oligopoly producers collude (cooperate) to jack up prices to monopoly levels at the cost of consumers, the larger group. However, the collusion is always subject to incentives of defection by members if a defecting member could realize a large gain with a one shot pay off. In other words, if one-shot pay-offs of defection are very high, cooperation breaks down. This is the case of one small group of players organizing into a cooperative arrangement against the other less organized large group for re-distributive objectives.

The above issue is well theorized in political economy by Mancur Olson (1965) in his logic of collective action. His basic thesis is that small groups are more effective in organizing into cooperative arrangements than large groups because large groups are prone to high incidence

of free riding by members while small group member can undertake effective reciprocal monitoring. A few powerful sections of a society organize themselves effectively, while the larger sections remain unorganized and misinformed. The organized groups can effectively capture the policies and governmental institutions and redistribute wealth in their favor. A good example of this is the political economy of India in the pre-reforms period. The policies that were adopted in the name of socialism and eradication of poverty were captured by the politicians, bureaucrats, organized large industrialists and organized labor, which derived large rents at the cost of the rest of the population (Patibandla, 1998). These types of cooperative institutions are involved primarily in re-distributive politics and stunt economic efficiency and growth. Similarly, in the feudal societies, certain norms or institutions emerge and sustain when the organized powerful groups impose codes of conduct to perpetuate power and rent seeking. These institutions can trap societies into backwardness and block emergence of more efficient institutions. One striking example of this is the reluctance of some state governments in North India to invest in primary education in rural areas, where literacy of the poor is perceived as a threat both by the upper and lower caste leaders.

Following from the above observation we make a distinction between two types of cooperative arrangements- re-distributive cooperatives and surplus generating cooperatives. The latter type can be considered as efficient cooperative institutions- collective action generates surplus value, which is not at the cost of others. Those cooperative arrangements which destroys monopoly or monopsony rents of other agents can also be considered efficient cooperatives- for example a farmers' cooperative eliminating middlemen in the input and product market. The primary focus of this paper is on this aspect of cooperatives. We derive insights from Ronald Coase's theory of social cost and property rights and the modern property rights theory of Grossman, Hart and Moore, to characterize the concept of efficient cooperative institutions.

In Coase's (1960) theory of social cost, collective action can result in lower social costs in rectifying negative externalities than individuals acting on their own in the absence of

transaction costs. To illustrate this, let us take a factory polluting the river that imposes negative externalities to ten families (agents). If each individual takes remedial action it costs Rs. 20 while it costs Rs 100 to the factory to adopt a technology that stops the pollution. At the aggregate, Rs 100 is the additional costs if individuals act independently. If all ten agents can get together, in absence of transaction costs, they could bargain with the factory to install the machinery or even contribute Rs 10 each for the machinery and still save Rs 100 in the total. However, if there are high transaction costs for individuals to get together, collective action fails to take place. This is the reason why government has to intervene to enforce property rights. However, government agencies themselves impose transaction costs like dealing with courts and legal bodies. This involves larger issues that are beyond the scope of this paper (Patibandla, 2004b). Government, in the present context, can be abstracted as an external or exogenous agent.

In the present context, the role of an external agent is fostering institutions that reduce information imperfection and transaction costs for individuals to get together and form into cooperatives. This becomes pertinent when local people fail to form into collective action either because of high transaction costs or because their myopic prisoner's dilemma behavior constrains them from realizing the benefits of collective action. As discussed in the previous section, in most cases external agents initiated formation of cooperatives.

As mentioned before, the major incentive for cooperative formation is that collective action results in higher surplus than individual action. The next set of issues is the organization of the cooperative that addresses free rider outcomes, surplus sharing mechanisms, and internal delegation under agency relations. We can draw some insights from the theory of the firm.

The modern property rights approach of Grossman, Hart and Moore (1986, 1990), drawing from Williamson's (1985) theory of incomplete contracts, brings forth theoretical underpinnings behind joint collaborations and mergers. Two agents, say *A* and *B* with human and physical capital have an incentive to enter into a contract (joint venture) for joint

production if combining their assets results in higher surplus value than each one acting individually. In other words, the assets in consideration have complementary properties. As contracts are invariably incomplete, each one has residual rights in using his or her own physical assets arising out of the conditions not specified in the contract. Ownership of physical assets is the source of control rights. The incentive for *A* to buy *B* is to take over the residual rights of *B* when *A* needs *B* to increase investments in the relationship specific assets but *B* has low incentives in undertaking the investment. Merger gives *A* full control over all the physical assets for production. The merging outcome is determined by the incentives of agents before and after the merger in undertaking investments and sharing the surplus value. *A* having full control rights after the merger is the source of higher surplus to *A* which in turn reduces the surplus and alters incentives of *B* within the merged firm. Control rights of *A* gives him or her power in assigning tasks to workers and firing them (denying them work with the physical assets of the firm). Two concepts from the theory of the firm are relevant to cooperatives- transaction costs and control rights within the organization.

In the theory of the firm, integration takes place more on vertical lines owing to complementary assets of agents. In other words, two agents possessing similar physical assets do not enter into a contract. In our examples, we show integration through a cooperative can take place on horizontal lines of individuals possessing similar assets and still realize higher value. For example, simple cooperatives can reduce transaction costs, and realize higher value through pooling and selling the output in the market. If we take a small/marginal farmer, he or she has to raise capital in the informal capital markets with high degree of information asymmetry, which in turn forces him or her to accept high interest rates. In the output market, given the relatively small output, the farmer might have to incur disproportionately high transaction costs in finding the right buyer and price for the output. Collective action through cooperatives can reduce these transaction costs and also result in pecuniary economies in the input and output markets and thereby contributing to surplus. The contract with respect to

supply of output is unlike the case of the modern property rights approach because there are no complementary assets to produce an output.

In order to minimize transaction costs and realize economies of scale in transportation, a cooperative has to procure a critical level of output. For this the contract has to stipulate a minimum level of output to be supplied by each member. However, members may differ in the quantity of production assets possessed. If the contract of the cooperative is such that each member supplies a uniform quantity (and quality) of output, a member who can produce more than the stipulated quantity, can treat the surplus as the residual with the freedom to sell it in the open market. If the price of open market and the price offered by the cooperative are the same, the surplus producer has to incur additional (transaction) cost of selling the surplus output in the open market. If the transaction costs of selling output on a individual basis are high, members have incentive to sell all output to the cooperative as the cooperative is formed to reduce the transaction costs and generate surplus in the first place. In the case of Amul, it guarantees that it will buy all the output supplied by members- which is a signal of commitment to members. This agreement is sustainable if the cooperative consists of small producers with marginal variation in the quantity of production assets possessed by the members. This is especially germane to the issue of arriving at efficient control rights and surplus sharing governance structures of a cooperative.

Once a cooperative is set up, the issue is organization- in terms of hierarchy and control rights, which determine individual incentives in the organization and sharing of the residual value. Banerjee, Mookherjee, Munshi and Ray (1997) develop and test a model of Sugar Cooperatives in Maharashtra. They show that the wealthier farmers enjoy disproportionate power, which they use to depress the sugar price paid to poorer farmers and expropriate the surplus. One single price is charged to output of all members, which means the price applies to both small and large farmers. The difference between the price of the processed sugar and the output price is the surplus of the cooperative. The high control rights of the large farmers

in the cooperative gives them access to the surplus, which they can use to serve their own interests.

The above outcome is likely to take place if a cooperative consist of large number of small farmers and a few large farmers where the share of output of small farmers in the total output is larger than that of large farmers. This makes the loss in depressing the price of output to large farmers lower than the surplus realized by the difference between the price of processed sugar and price of sugarcane. Although large farmers would be in small numbers and their output contribution is smaller than the total of small farmers, large farmers end up with the control rights in the cooperative because of their outside influence and contacts with politicians, bureaucrats, and their ability to undertake market transaction costs. The outcome of the sugar cooperatives is interpreted as inverse relationship between efficiency and heterogeneity- a cooperative consisting of unequal members of small and large farmers (Hart and Moore, 1998). In other words, a cooperative may be effective if members are a homogenous group so that the more powerful members do not misuse control rights as in the case of the sugar cooperatives.

In these cooperatives, examined by Banerjee, Mookherjee, Munshi and Ray (1997), the motive of large farmers to join a cooperative is to use the surplus to promote themselves politically in the local area by investing the surplus for cultivating bureaucrats and politicians and investing in the public goods (schools, roads) in the local areas for garnering votes. If a large landholder joins the cooperative with social capital (political connections, connections with government and bureaucracy) acquired a priori, which the small farmers do no have, this becomes an additional input for the cooperative. If investment in public goods have strong positive externalities, it is rather difficult to say that the surplus extracting practice of large farmers has negative connotations for the cooperative, because the small farmers may derive benefits over time.

Let us assume that large farmers appropriate the surplus for personal gains but do not invest in public goods. Our analysis of the case study of marginal farmers shows that it is beneficial for small marginal formers to form into a cooperative but not for large farmers who can incur the transactions costs of the input and output markets. Combining this with the result of surplus extracting high control rights of large farmers implies that a cooperative can be successful if it consists of a homogenous group. Using this logic, inclusion of large farmers in a cooperative is not based on a farmer being better off in the cooperative than going alone. Secondly, the motive of large farmers to join the cooperatives is political rather than economic necessity.

If we take the case of Amul and the Sugar Cooperatives, as discussed before, each member owns her or his own assets for production, but output is pooled into a cooperative for selling in the market. In other words, as a starting governance choice, there is no common ownership of production assets. However, as the cooperative generates surplus, the surplus is utilized to invest in value-adding assets- in the case of milk cooperatives, the milk processing and storing machinery and in the case of sugar cooperative, the sugar processing machinery. These value-adding assets are the common ownership assets. In other words, each member owns the basic production assets but all members own the value-adding assets. In this case, the issue of control rights is subject to complexity. This is because at the first stage, the cooperative has to contract with the members with regard to supply of output. The second stage is the agreement by members with regard to control rights in the use of the commonly owned assets. As mentioned in the case of the Sugar Cooperatives, too much of inequality of members might lead to inefficiency and misuse of control rights by large members (Hart and Moore, 1998). A cooperative becomes cohesive if it has homogenous members and restricts itself to narrowly defined activities.

A cohesive group is generally defined in terms of low incidence of free riding of members. Free rider outcomes can be avoided if there is mutual reciprocal monitoring by team members and this is more effective in small groups than large groups (Patibandla and Chandra, 1998).

Secondly, free riding can be reduced if strong commitment of members to the team evolves. As mentioned earlier, a producer has an incentive to join the cooperative when he or she realizes higher value for the output operating through the cooperative than acting independently. Commitment to being a member evolves as long as the agent continues to be better off being with the cooperative than going alone. The other factor is that even if the value for an agent is higher in the cooperative than acting independently, the agent should get a fair share of the surplus realized in the cooperative, otherwise the institutional arrangement becomes incentive incompatible. This distinction is important here because an agent just being better off in the cooperative than going alone is not enough. This is because under the neo-classical paradigm (perfectly discriminating monopolist) one can show a bonded labor arrangement is Pareto efficient- the laborer gets paid at the margin on the basis his or her bargaining (Patibandla, 2004B), but the landlord extracts all the surplus.

Commitment to collective action arises if the agents invest in a series of relation specific investments, which increases mutual dependency. If the surplus realized by the cooperative is reinvested in value-adding assets with agents having a stake in these assets and these assets augment productivity of the members, cooperative activity will continue to increase surplus and motivate members to take active participation.

The organizational design of the cooperative can lead to failure if there is asymmetric information among agents such that agents with higher control rights manipulate the surplus. This is illustrated in the case of the Sugar Cooperatives where the members with high control rights depress price given to the output of sugar cane. If the small farmers have perfect information about the market prices of sugar cane and processed sugar, this outcome could be avoided. In other words, we have to make a distinction between commitment that is made because alternatives (individual action) have lower pay offs and commitment made not only because higher value through group action than individual action but also because the members get fair share of the surplus (incentive compatible practices).

One of the possible arrangements of the members can be to elect one of them to be the manager with control rights. Here, the issue is avoidance of conflict of interests. If a large output contributor is the manager but his share is small compared to the rest, the typical outcome of the sugar cooperatives will take place, as discussed before. In other words, the loss through depression of the price is lower than the surplus extraction by the large output contributor. This is especially the case if the small members have imperfect information- either due to illiteracy or either because they do not have resources to invest in information, which is rather counter to the whole idea of organizing into a cooperative.

When a cooperative becomes successful and a large organization, it adopts professional managerial practices as in the case of Amul. Members can delegate some of the control and residual rights to professional managers for monitoring performance and adopting incentives. His or her job is to monitor the output supply of each member in accordance with the contract and selling the processed output to the market. The surplus minus the salary of the manager can either be paid as dividends to members or reinvested in the productivity enhancing practices of the members. The delegation involves agency costs of separation of ownership and management of assets. Minimization of agency costs (moral hazard behavior) on the part of the managers requires members to have access to full information with respect to the actions of the manager (Patibandla, 2004A).

When organizations grow in size, internal organizational costs in terms of agency costs (delegation, monitoring and informational overload at the top) and costs of bureucracy increase. Chandler and Williamson (1985) show that large capitalist firms adopt M-form (multidivisional) organization of decentralized governance to deal with increasing organizational costs of large size. Incentive structures of cooperatives differ from capitalist firms- in large capitalist firms hierarchy resolves the internal incentives and workers are not the owners of the firm. A cooperative firm can be taken as the one similar to a profit sharing firm where workers are given incentives of ownership and performance. Alchian and Demsetz (1972) show that profit sharing practices are more effective in small firms with small teams

than large firms because members of a small team can undertake reciprocal monitoring and restrain free rider outcomes (Patibandla and Chandra, 1998). When a cooperative grows into a large organization, decentralization through small teams linked with each other could be effective. The case of Amul presents the adoption of the organizational structures on these lines.

Amul cooperative grew over the years both horizontally and vertically- horizontal expansion took place through increase in member size and vertical expansion took place in terms of undertaking activities from milk collection, processing to producing milk based products such as Amul butter and Amul chocolates. This organization structure came to be known as the Anand pattern and is now a role model for organization of milk cooperatives. The expansion required Amul to adopt a complex but effective organizational structure on decentralized lines, which sustains incentive compatibility of large members. Chandra and Tirupati (2003) observe: "AMUL is organized as a cooperative of cooperatives (i.e., each village society, a cooperative in itself, is a member of the AMUL cooperative) thereby deriving the advantage of scale and uniformity in decision making. The founders of Kaira Union realized that to fulfil their objectives, a large number of marginal farmers had to benefit from the cooperative – a network of stakeholders had to be built. And once built, it had to grow so as to draw more rural poor to undertake dairy farming as a means of livelihood. The network had to have several layers – the organizational network where the voice of the owners governed all decisions, a physical network of support services and product delivery process and a network of small farmers that could deliver the benefit of a large corporation in the market place. More importantly, a process had to be put in place to build these networks."

6. Conclusion

The mainstream neoclassical economists formalize Adam Smith's notion of invisible hand into a mechanism of large number of anonymous agents maximizing their self-interest and the resulting (Arrow-Debreu) general equilibrium is evaluated by Pareto optimality criteria. In

this mechanism, there is nothing called cooperation. In reality, capitalism can a have meaningful edifice only when it is supported by underlying institutions- the formal laws, norms, definition and enforcement of property rights and government regulation and firms as organizations. Several tenets of institutions are a result of collective action of cooperative behaviour. Once we talk of institutions, there is no theory of optimal institutions and at the best we can understand institutions in comparative economic organization way of benchmarking efficient and inefficient institutions in a relative manner. To just to give an example, two leading supporters of free international capital markets, Rajan and Zingales (2003) observe that capitalism degenerates into a system of vested interest groups if there are too many or too few rules (laws) and regulations. However, they do not have a theory of this '***thin red line***', and they draw inferences based on case studies and historical examples.

Similarly, we do not have a theory of cooperatives to talk of the optimal principles of organizing them. Under certain institutional conditions, cooperative arrangements become very effective ways of bringing out collective action and under different conditions they degenerate into corrupt organizations. The following summarizes some of these issues from the previous sections.

Interlocking of capital, labour and output markets can trap marginal farmers and low-income people into poverty. Collective action through cooperative behaviour can break the interlocking of the markets and generate surplus, which can be utilized to alleviate poverty. Collective action or cooperation may fail to take place among the low-income people because they are unable to undertake the initial transaction costs of organizing a cooperative and also because they may be trapped into prisoners' dilemma interactions of small group competition. In most cases of successful cooperatives, it is an outside (exogenous) agent, with almost altruistic motives, who undertakes the initial transaction costs of organizing low-income groups into a cooperative. The subsequent success of the arrangement depends on the adoption of incentive compatible organizational practices.

This paper has made a distinction between two type of cooperative arrangements- one with common ownership of assets and the other in which each agent owns her own assets but becomes a member of the cooperative for pooling and marketing the output and for procuring inputs. This paper's focus is on the latter. In the latter case, there could be some assets with common ownership. A part of the surplus generated through cooperation can be invested in some collectively owned assets that improve collective productivity. In this case, the cooperative combines the incentives of the market and private ownership of assets with the cooperative arrangements in overcoming transaction costs in the capital and output markets.

Cooperatives generate surplus for members by eliminating the middlemen and by internalising the markup (M) charged by the middlemen. M can be a direct markup or high interest costs (and low output prices) charged by the middlemen through interlocking of capital and output markets. Another source of surplus can also be that cooperatives reduce transaction costs of markets for each member. Cooperatives can also be an effective institutional arrangement in reducing adverse selection outcomes of imperfect information and high uncertainty of rural credit markets.

Our analysis of the case study of marginal farmers in the Andhra Pradesh state suggests that government credit institutions which are set up to provide finance at concession rates of interest may not be effective in breaking the poverty trap because individual transaction costs of availing the loans would remain high. Secondly, access to finance at lower interest rates without product market development would not induce marginal farmers to invest in productivity enhancing practices. This is because a larger output with additional investments is not beneficial when product prices realized by farmers are lower than what they can be with futures markets for commodities (inter-temporal consumption demand).

Furthermore, our analysis of the case study indicates that it is beneficial for small marginal farmers to get into a cooperative than for large farmers. One way, we can characterize a large farmer is the one who could have access to loans at market price (with zero transaction costs)

and product prices reflecting futures market owing to her ability to store the output instead of selling all at the time of the harvest. Combining this result with the surplus extracting high control rights of large farmers in a cooperative organization implies that a cooperative can be effective if it consists of a homogenous group (here, small and marginal farmers).

The surplus generated by cooperatives can be shared by members or reinvested in productivity and market development practices. Reinvestment of a part of the surplus can generate positive externalities, which augment the surplus of the cooperatives. Each agent has an incentive to remain in the cooperative as long as he or she is better off being in the cooperative than going alone. Apart from this, incentive compatibility of the organization requires not just the previous condition and also that surplus or rewards are shared on the basis of each one's contribution and effort, which requires arriving at efficient control rights.

One of the important aspects of organizational practices is the delegation and distribution of the control rights in terms of monitoring and the decisions with respect to sharing and reinvestment of the surplus. A cooperative has high chances of success if the members are a homogenous and cohesive group with decentralized organizational structures that reduces free-rider and moral hazard behaviour. Secondly, all the members should have a high degree of awareness and information with regard to the actions of the agents, the managers or the members who are bestowed with control rights.

In other words, resolution of incentive problem of organization is similar both in a capitalist and a cooperative firm, except for that in a capitalist firm workers may not own the assets while in a cooperative firm members (workers and managers) may have collective ownership of the assets. The collective ownership of the assets requires devising organizational conditions of efficient control rights for avoiding free-rider outcomes. In the case of large capitalists firms, who raise capital from the public, the ownership and incentive issue relates to minimizing the agency costs of separation of ownership and control of capital.

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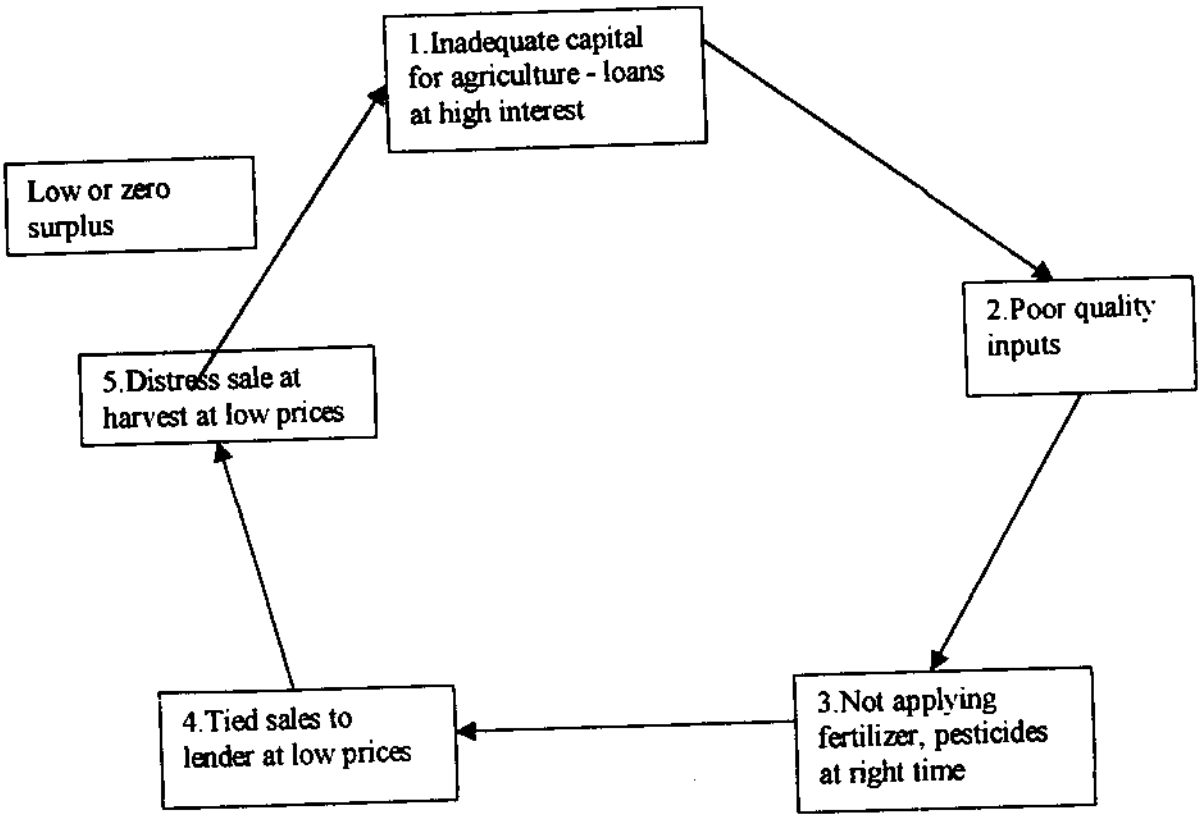

Figure 1. Losses incurred by small and marginal farmer: The poverty trap