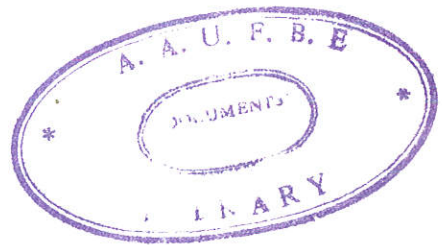


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THE DEVELOPMENT OF AGRICULTURAL PRODUCERS'  
COOPERATIVES IN ETHIOPIA: CASES FROM ARSI REGION

A Thesis  
Presented to the  
School of Graduate Studies



In Partial Fulfilment of  
the Requirements of the Degree  
of Master of Science in Economic  
Development and Planning

By  
Wegenie Yirko

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THE DEVELOPMENT OF AGRICULTURAL PRODUCERS'  
COOPERATIVES IN ETHIOPIA: CASES FROM ARSI REGION

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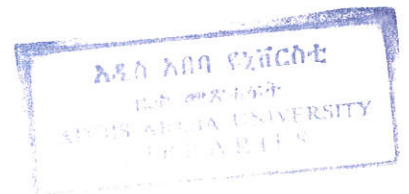
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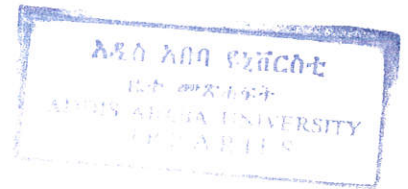


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THE DEVELOPMENT OF AGRICULTURAL PRODUCERS'  
COOPERATIVES IN ETHIOPIA: CASES FROM ARSI REGION

A B S T R A C T

This thesis is directed at the performance evaluation of the cooperatives sub sector - both at the macro and micro levels--as well as the study of the problems of development of the cooperatives with a view of making recommendations which may enhance the development of the agricultural sector in general and the cooperative sector in particular.

Results indicate that the performance of the cooperative sub sector at the macro level have been less than satisfactory. While the cooperative farms are becoming more and more resource intensive, productivities of the main factors of production, land and labor are declining. This imply a need to counteract against factors which cause the decline. The climatic condition is one obvious cause. The need to counteract the drought condition on the one hand, and the availability of huge, unutilised labor on the other than suggests labor investment towards the development of irrigated agriculture. Macro level studies also indicated poor performance of the cooperative sector compared with the individual and state farms in terms of yield. From the view point of maximizing returns from land to the society, this suggests retaining land under private holdings than placing them under cooperatives, which in turn may imply a slow rate of growth of that sub sector.

The performance evaluation of the cooperatives at the micro level was specifically directed at looking into their allocative efficiency. Towards that end this study was conducted on 26 Agricultural producers' cooperatives in Arsi Region. These cooperatives were classified into groups on the basis of technological factors. Representative farms were derived from each group and Linear Programming models were developed for each of the representative farms. Comparison of the actual with the optimal pattern indicated sub-optimality in their cropping pattern. In all cases results suggested a reallocation of land away from the two basic products of the region. Wheat and barley - to other crops. The optimal pattern which was obtained from the computer analysis differed from one typical farm to another - a situation which suggest a differentiated land use policy.

As far as resource use is concerned, land, in the optimal solution, was found to be a limiting factor, in all the cooperatives, whose marginal value product increases with a decrease in land - labor ratio suggesting a need for an appropriate land holding and land allocation policy for each of the cooperatives which takes resource availability of the cooperatives into account. Our study also showed underutilization of plowing labor and ox power. Still, however, during this operational period, cooperatives utilize hired tractors. Underutilization<sup>of</sup> labor and ox power, on the one hand, and the use of hired tractors on the other then implies a need to avoid hired tractors, which, in turn suggest a

need to look into the governments' policy of hiring stations. The optimal solution also showed that weeding, harvesting and/or threshing labor are limiting for some cooperatives. In these cooperatives, however, there exists abundant unutilised family labor. This then suggest a need to draw policy which will ensure the flow of family labor into the operations of the cooperatives. In most of the socialist countries this problem was resolved by introducing family contract system.

The study also indicated a number of problems which hamper the development of cooperatives. One important problem is the input - output pricing system which creates disincentive on the cooperatives to increase their products. This problem is mainly the result of the marketing policy of the government which restricts the cooperatives sale of their produce to the AWC - a problem whose solution call for the introduction of competition in the purchase of inputs and the sale of output. Other problems include the problem of declining income of members which cannot cover their expenditure, problems of forced membership and absence of democracy in the decision making process the solutions of which respectively require untying labor from unnecessary operations of the cooperatives, so that it may create additional income, by introducing the family contract system, establishing the cooperatives in accordance with the principle of voluntarism and enhancing members' participation in the decision making process.

## CHAPTER 1

### INTRODUCTION

#### 1.1. BACKGROUND AND STATEMENT OF THE PROBLEMS

Agriculture has been and still is the mainstay of the Ethiopian economy in terms of its contribution to the gross domestic product, employment and foreign exchange. And much of the development policies of Ethiopia have been agricultural led ones. This has been well articulated in policies drawn after the Third Five Year Plan. Since then, all policies which have been drawn and applied both by the Imperial Government and by the Revolutionary Government after 1974 aimed at developing that sector.

Irrespective of the various policies drawn to develop the sector, however, the performance of this sector, has been less than satisfactory. Between 1963/69 and 1982/83 agricultural gross domestic production grew by about 19.8 percent in real terms while the agricultural population grew by about 31 percent. The result is a decline in the per capita income of the agrarian population by 11.2 percent.

The sluggish growth of the agricultural sector has resulted in a low rate of growth of agricultural surplus and has caused an increase in imports of food into the country. Further, the lag in agricultural development has made it impossible to stock any reserve thereby making it impossible to control the drought problem that the country has been facing repeatedly. What really are the causes for such unsatisfactory performance of that sector? What are its problems of development? what are the solutions to the problems?

For long, while the structure of the agricultural sector, that is, its dependence on individual farms has been given as one explanation for its bad performance, changing that structure on the basis of modern and large scale farms has been suggested as the solution for the problems. In view of this, the task of organizing the scattered peasant farms into producers' Cooperatives<sup>1</sup> has been the concern of the Ethiopian Governments both in the past and the present.

Cooperatives as instruments for development of the agricultural sector were first proposed for use in the pre revolutionary period with the promulgation of Decree 44/1960. Their importance was further emphasized in subsequent years of the previous Government, i.e., during the periods of the Second and Third Five Year Plans.. According to the document of the Second Five Year plan, in an economy planned with the objective of increasing production, raising saving potential, improving living conditions, providing social services and offering all the citizens an equal opportunity of contributing to the economic and social progress of the country, the cooperative form of organization can play a very important role. Hence, the document argues for a comprehensive use of different forms of cooperatives to enlarge the scope of economic and social progress of the people in the empire (Second Five Year Plan, 1962). Subsequently, during the second plan period a cooperative society legislative law was enacted. In the Third Five Year plan document an increasing use of the cooperatives in a wider range of productive activities was emphasized. However, in view of the overwhelmingly agricultural character of the economy, its greatest use was to be in the rural sector.

After the 1973/74 revolution, Ethiopia opted for the socialist way of development which gave a wider scope for the use of the cooperatives. The scope of their utilisation has increased because socialism is based on social ownership of the means of production in two forms - state and cooperatives. Given this requirement, the development of producers' cooperatives in post revolutionary Ethiopia has become a necessity. The fact that they are the requirements of the socio economic system is indicated by the various policies of the Government which provide various incentives to enhance their development. The state has given a legal ground which encourages their establishment in the directive of June 1979. They receive preferential treatment in supply of agricultural inputs including agricultural credits. They also enjoy lower land tax and disproportionate support from ministry of Agriculture extension and cooperative staff.

Irrespective of the various incentives that are provided to them, however, the development of producers cooperatives has not been an impressive one as the following table indicates.

Table 1.1. Development of Producers' Cooperatives

Y e a r	Area under cultivation by producers's cooperatives as percent of total cultivated land	Output produced by cooperatives as percent of total Agricultural production
1979/80*	0.1	0.3
1980/81*	1.5	1.1
1981/81*	2.2	1.3
1986/87**	2.29	2.24

Source: \* Calculated From NBE, Annual Report, Various issues

\*\* PMAC, Three Year Plan P. 41.

Further, various macro level studies show that the producers' cooperatives have not yet achieved average yields for the main cereals which are comparable with those obtained on average by individual farmers (World Bank, 1987). Other qualitative - comparative investigations also rank cooperatives second after the individual peasant farms in terms of their allocative efficiency (measured in terms of the capacity to absorb labor, rate of profit on capital, and crop yields) and second after the state farms in terms of the provision of marketable surplus. The virtues of producers' cooperatives was observed only in the potential that they provide for accumulation [Griffin and Hay, 1985]. While macro level studies involve the usual aggregation biases, the study made by Griffin et al was not supported by quantitative evidence.

What we have provided above, then give rise to the following specific problems.

- How did the producers' cooperatives develop in the pre and post 1974 period?
- What had been their performance? Is it really as indicated by the various macro level studies?
- What are the constraints of development of the cooperatives?<sup>2</sup>
- What are the solutions to the problems?

## 1.2. OBJECTIVES

Given the above problems, the specific objectives of this paper include:

1. To outline the evolution and development of agricultural producers' cooperatives to the present.

2. To evaluate their performance systematically in such variables as: membership, area cultivated members' income, capital and their allocative efficiency.
3. To look into the various factors that have constrained their development.
4. From (2) and (3) arrive at policy recommendations which may contribute to the development of producers' cooperatives.

### 1.3. METHODS OF THE STUDY

#### 1.3.1. General

- 1.3.1.1. Pieces of published informations were pulled together in outlining the evolution and development producers' cooperatives to the present.
- 1.3.1.2. Performance evaluation of the cooperatives was carried out using the variables indicated in the objective part both at macro and farm levels.
- 1.3.1.3. Much of the problems of development of the cooperatives were captured from interviews carried with the officials (Executive committee members) of the cooperatives and individuals members.

#### 1.3.2. Data Requirements and Data Collection

The study involved the use of both aggregate data and data generated at farm level from cooperatives.

- 1.3.2.1. To study the evolution and development of Agricultural producers' cooperatives and to evaluate their performance at macro level aggregate data on membership, area cultivated, production, utilization of different factors of production, and other welfare indices such as income and others were

required. Most of these data were collected from various institutions including, Ministry of Agriculture Peasant Association and Cooperative Development Department Central Statistics Authority and the National Bank of Ethiopia.

1.3.2.2. Performance evaluation of the cooperatives at the micro-level requires data generated from the cooperatives farms. Such data were obtained from cooperatives in Arsi Region.

Various factors have entered in the choice of Arsi as a study region.

- (i) The availability of a comprehensive, relatively reliable and a well/organised list of cooperatives at the level of the Ministry; a list which includes data on different variables. Such a list is not available for other regions, or if it is available it lacks proper organization and clarity.

This was found to be important and was used as a choice variable because the list was used as a sample frame and the data with it to arrange the cooperatives into different strata.

- (ii) The relatively high level of development reached by Agricultural Producers' Cooperatives in that region. According to the 1986/87 Annual Report of the Peasant Association and Cooperative Development Department of the Ministry of Agriculture, 51 percent of the total cooperatives established and developed in the country are found in three administrative regions; namely Arsi, Shoa and Gojjam. Of the three regions

Arsi provides relatively well developed cooperatives for the study. Table 1.2. provides the picture.

- (iii) A relatively longer experience in cooperative work. Arsi was and still is taken to be a development region. Because of this, in the past, development agencies such as CADU and ARDU were operating in it. In promoting agricultural development in the region, these institutions were organising Cooperatives and were providing institutional support to enhance their development. Thus, cooperative work in this region has a longer history and experience than others, which makes it pertinent for the study.

Table 1.2. The Situation of Cooperatives in Three Administrative Regions (1979 E.C.)

Administrative Region	No. of coopts		Cooperative Members as percent of PA members	Capital per member (Birr)	Ox-man Ratio	Land - man Ratio (ha)
	Malba	Wolba				
ARSI	76	319	16.4	635.56	1.39	2.07
SHOA	483	147	2.3	469.96	1.34	1.94
GOJJAM	440	37	9.3	516.90	1.04	1.87

Source: Ministry of Agriculture, Peasant Association and Cooperative Development Department, Annual Report 1979 E.C.

Given the above justifications, Arsi provided the Universaè to be sampled and each producers' cooperative farm formed the sample unit. A list of cooperatives established in that administrative region, which contained data on different variables, was obtained and was used as a sample frame. Details of the sampling method and method of data collection is provided in chapter 5.

### 1.3.3. Data Analysis

In its analysis part, the paper basically applies quantitative techniques of different levels of complexity.

Ratios, percentages and growth rates are used to evaluate their performance in such variables as membership, area cultivated, production, members income and capital as well as in the study of problems of development of cooperatives.

A more regorous mathematical techniques are used to evaluate the relative efficiency of the cooperative sector and in analysing the optimality of resource use at farm level. While partial productivity indicies were calculated in determining their relative efficiency, the Linear Programming Method was used in the analysis of their allocative efficiency at the micro-level. Details of the methods of analysis are provided in their respective parts.

#### 1.4. LITERATURE REVIEW

The Cooperative sector in Ethiopia, is not as yet well studied. Literature in this area is therefore scarce. Whatever little information available which is concerned with the performance and problems of the sector is reviewed in this section.

Ajit kumar Ghose, has attempted to evaluate the performance of the sector in terms of the number of cooperatives that have been established and concludes that the progress in cooperativisation has been quite disappointing. It is disappointing, according to this author, because no Welland has been found, not have many peasant associations transformed themselves fully into Malbas or Welbas. He explains the disappointing progress by the choice of the Government to accord priority to expanding the state farm sector. This has become a problem because both state farms and cooperatives are supposed to be based on capital and technology intensive large scale farming and hence have become competitors for state investment and imported agricultural goods. Ghose presents the Government programme of cooperativisation that is premised on state investment and imported inputs as the basic flaw in cooperative development. According to him, in Ethiopian condition (where there is no real economic surplus) cooperative farming can be regarded as superior to peasant farming not because the former is larger in scale than the latter, but because the former provides a more effective framework for mobilising surplus labour for capital construction in agriculture than the latter. Unless the realization of this potential is made the central objective, he argues, cooperativisation is unlikely to develop on an enduring basis (Ghose, A.K., 1974).

Bjorn Genber, Michael Stahl and Edward Taube, in their studies conclude that the organisation of peasants in cooperative societies, for development purposes has got well underway in Ethiopia and identify lack of funds for productive investment and lack of trained management personnel as basic problems of development of producers' cooperatives. (Genber et.al, November 1982).

The World Bank, evaluating the performance of the cooperative sector, at macro level, relative to the individual peasant sector in terms of yield for the main cereals, concludes that producers' cooperatives have not yet achieved yields which are comparable with those obtained by individual farmers. It explains this situation by lack of experience in the collective model of production (which requires a considerable time to build), lack of material incentives to produce and the requirement to sell all grains to the Agricultural Marketing Corporation at relatively low prices. The Bank study also raised the development of the non farm sector of the economy as a basis for the development of producers' cooperatives and warns against collectivisation which proceeds too rapidly without due regard for this foundation and the principles of voluntarism and gradualism which may involve a high political, social and economic costs (World Bank, March 25, 1987).

Cohen in his work "Small Holders Vs Agricultural collectives..." compares the economic performance of individual peasant farms and cooperatives and concludes that the small holders strategy is preferred. He observes the resistance of small holders to shift to group farming irrespective of the various incentives provided to them (which according to him is consistent with experience elsewhere) as a problem to the cooperative development in Ethiopia (Cohen, J.M., June 1987).

Besides the above general studies case studies have been made by senior students. One such study was made by Bekele on Kilinto Agricultural Producers' Cooperatives [Bekele, 1986]. The objective towards which his paper was directed at was the identification of major constraints facing the on going cooperativisation process. Bekele, using descriptive analysis of various data obtained through library research, official documents and quantitative and qualitative information obtained through interviews from the particular study area arrives at the following conclusions. The performance of the cooperative, according to him was not impressive both in terms of area cultivated, total output and yield per hectare. He also observed the existence of considerable fluctuation of membership and shortages of food which were repeatedly faced by members of the cooperative.

Bekele attaches the unsatisfactory performance of the cooperative to various problems including problems of the establishment of the cooperative without assessing the attitudes of members initially pooled together, weakness of the leadership of the cooperative body in exercising genuine democratic management, and lack of follow up from concerned Government offices and assigned cadres.

Another case study was that of Biruk which presents a study of Fodu Gora Agricultural producers' Cooperatives [Biruk, 1986]. He aimed at looking into the merits and problems of producers' cooperatives which are now being used as a means of socializing the agricultural sector. Using a descriptive method of analysis of data collected from the records of the cooperative, Biruk argues that the performance of the cooperative studied

was not attractive over the years it has been in existence. He explained the unsatisfactory performance of that cooperative by considering the average income of its members, which according to him was much below that of private peasants in the surrounding locality. He too was critical of the failure to provide adequate food for its members and the declining trend of the number of its members.

Biruk explains the unsatisfactory performance of the cooperative in terms of four general problems including the scatteredness of the farms of the cooperative, lack of trained manpower, lack of modern instruments of production and corruption and bureaucratic problems.

In his recent report presented to the 9<sup>th</sup> Congress of the Central Committee of Workers' Party of Ethiopia, Comrade Mengistu Hailemariam has also given an evaluation of the development of the cooperative sector. In view of the goals set in the Ten Year Plan, that of organising 53 percent of the rural households in cooperatives by 1993, he claimed our achievement so far can be considered to be nil.

As can be **inferred** from this short review, there is no as yet a well organized and methodologically well founded study of the sector in Ethiopia. Indeed this study aims at making a modest contribution toward this end.

In sum, the literature available has indicated that the performance of that sector has been unsatisfactory and has raised various problems including the low level of development of the non-farm sector, lack of material incentives, problems of management and organisation these problems will be dealt with by the paper.

### 1.5. IMPORTANCE OF THE STUDY

Producers' Cooperatives in socialist countries, are the ultimate destinations of the petty commodity sector.

As far as the Ethiopian condition is concerned, it is one of the objectives of the Ten Year Plan to create favourable conditions for the continuous development of the socialist sector by strengthening and expanding the public sector, service and producers' cooperatives (Ten Year Perspective Plan, Amharic, 1977 E.C.). Eventhough it is not likely to happen in the remaining 4 to 5 years to come the plan also anticipates to bring about 53 percent of the rural households into cooperatives by the end of the plan period.

The Three Year Plan, which is now in operation is also giving priority in the use of resources (next to the state farms) to develop that sector so that the area under cultivation by the sector could increase from 2.29 percent of the total in 1986/87 to 5.79 percent in 1988/89 and its production from 2.24 percent to 6.75 percent during the same period (Three Year Plan, Amharic, 1979 E.C.).

Irrespective of the resources devoted to them, however, past studies show that their performance has been unsatisfactory. Thus, the present study by analyzing their performance and investigating the problems of their development and suggesting solutions may:

- i) help in alleviating their immediate problems
- ii) help in creating conditions in which their development is enhanced and the returns from resources devoted in that sector may be raised.
- iii) direct policy makers into ways of looking into other alternatives which may result in more effective use of resources.

Notes to Chapter 1

1. The Farm Workers' Cooperative, which anticipated to be established in accordance with Decree 44 of 1960 and later in accordance with proclamation 241 of 1966, was in essence the same as the present Agricultural Producers' Cooperative since its establishment was to be based on collective ownership of the means of production. Some authors have already noted this fact. For instance, Kebebew argued that Producers' Cooperatives, in the main, are found in socialist countries with collective ownership of the means of production as a major distinguishing characteristics. It is, according to him, interesting to note why Ethiopia, untypical of her social, economic and political structures then, came out with a decree that aimed at the creation of producers' cooperatives (Kebebew Data, 1978).
  
2. For problems of development provided by other studies see literature review.

## CHAPTER 2

### REVIEW OF THEORIES CONCERNING COOPERATIVES

Agricultural cooperatives exist both in capitalist and socialist countries. But the theoretical basis on which such institutions are established, the principles on which they are founded and the importance of these institutions in the two systems differ. This chapter provides a review of theories and principles on which such ventures are established in each of these two socio-economic systems and the evolving changes in previous thoughts and practices of agricultural producers' cooperatives in socialist countries.

\* The chapter is aimed at shedding light on the basis of the difference of such institutions between the two economic systems and within the socialist system. While the theoretical difference between the socio-economic systems are supposed to enable the reader in conceptualising the difference of such institutions in the pre and post revolutionary periods, the evolving changes within the socialist countries are included with the idea of showing the reader how much our thoughts and practices are near to or far away from these changes.

#### 2.1. Western Concepts of Cooperatives

The activities of agricultural cooperatives as they exist in the capitalist countries and developing countries following the capitalist path of development consist mainly in organising joint working of the land, processing of agricultural produce, harvesting, construction of

irrigation, roads and the like. More developed collective labour methods based on common ownership of the land and tools are rarely obtained [Maslennikov, V. 1983].

The cooperative business, in these countries, Koller argues, accepts the fundamental institutions of capitalism including the right of private property, the right to contract, inheritance and the right of **private** enterprise with its emphasis on the importance of the individual. According to him, with respect to many aspects of their daily business operations, cooperatives are like the ordinary enterprise. They use capital to carry on their activities and pay the going rate of interest for it. They hire labour and usually obtain it on the same terms of conditions as other firms. They employ managers and compensate them on the basis of the quality of services they render. Like their ordinary business counterparts, they depend on efficient business methods for success [Fred Koller, 1951].

Cooperatives, however, have specific characteristics in which they differ from other types of business. They are collective property which are owned by their members and are democratically controlled. In cooperatives, unlike their business counterparts, there is a limitation on individual shareholding and shares cannot increase in value and carry only a limited rate of interest. As far as their operation is concerned, cooperatives operate at cost or pay a limited rate of interest on money invested by members [Malcolm Sargent, 1982].

The specific characteristics of the cooperatives in these countries emanate from the fundamental principles on which they are established. These principles which were approved by the International Cooperative Alliance in 1966 are summarized by Sargent as follows:

- 1) Voluntary membership without artificial, social, political or religious restriction to all who can use the services and are willing to accept the responsibilities of membership;
- 2) Cooperative societies as democratic organisations and their affairs to be administered by persons elected by and acceptable to members;
- 3) Limited rate of interest on share capital;
- 4) Surplus or savings to be redistributed fairly by a decision of the members to either develop the cooperative business to provide common services or to the members on patronage basis. According to this principle, any surplus, obtained by the cooperative in excess of the limited rate of interest paid to their members on money invested by them, is returned to members in proportion to their relation with the cooperative business, or is ploughed back into the business.

## 2.2. MARXISM-LENINISM AND, COOPERATIVES

Cooperatives under socialism are basically means of socialising the means of production owned by petty commodity producers. The emergence and development of peasants and artisans cooperatives in socialist societies is explained on various theoretical grounds. In what follows a brief review of the theoretical basis of the development of cooperatives is provided.

2.2.1. THE CLASSICAL MARXIST-LENINIST THEORETICAL FOUNDATION FOR THE EMERGENCE AND DEVELOPMENT OF AGRICULTURAL PRODUCERS' COOPERATIVES

According to Ferenc, et al, the major relevant theses of the classical Marxist Leninist theories may be summed in terms of the following four points [Ferenc et al, 1976].

- Social ownership of the means of production, primarily land
- The development of large scale collective farms in two forms; state and cooperative farms.
- Guidance of the operations of large scale socialist enterprises through plan.
- Achievement of the development of the productive forces by applying advanced technology and scientific farming methods on the large collectively owned enterprises.

It is impossible for industry developing on a socialist basis and agriculture, in which private property predominates to coexist for long. The existence of two such mutually opposed foundation over a long-time would preclude the whole economy from developing along socialist lines. The petty bourgeois trends among the peasantry, and the engendering of capitalist elements by them, are a menace to the cause of socialism and it is mandatory to replace private property by large scale socialist farming [Kozlov, G.A., 1977].

This transformation of agriculture on socialist lines, as proposed by Lenin is to be carried in two ways: by transforming large scale nationalised capitalist estates into state farms and by pooling small scale peasant farms into collectively owned large scale cooperative farms [Serayev, S.1984].

Lenin's Proposal may have its origin in the Agrarian Programme adopted in Marseilles in 1892 by French Socialists. The programme suggested that on the day of accession to power, the task of socialists relative to the small peasants consists of effecting a transition of their private enterprise and private possessions into cooperative ones. The programme had also proposed the forcible expropriation of the estates of big land owners and capitalists [Engles, in Marx and Engles, V.3, 1977]. The programme, however, has said nothing about how the reorganisation of the nationalised estates in socialist lines should take place. It was Lenin who proposed that, the proletarian party must advise the rural proletarians and semi-proletarians to organise every landed estate into a suitably large model farm to be run for the public account by the agricultural laborers under the direction of agronomists and with the use of the best technical equipment available (Trapeznikov, V.1, 1981).

Cooperation, it is argued, is precisely the most acceptable way of transformign small peasant economies into socialist ones because it provides the possibility, for the proletarian state to establish continuous control over production activities by means of its plans. In other words, cooperation by making planning in agriculture possible, enables the proletarian state to subordinate private commercial interest, to the common interest of all working people, of the whole society [Lenin, V.33, 1977].

The transformation of the peasants' small private farming into socialist agriculture is also necessitated by the need to resolve the contradiction between a reapidly growing socialist industry and a backward farming system governed by the laws of the spontaneous market and

develops at a very slow rate. In such a situation, it will be impossible to feed the developing working class and to supply industry with agricultural raw materials. In order to resolve this contradiction the development of the forces of production in agriculture is required. But such a development can not be acquired, Marx argues by allowing a few individuals to regulate production according to their whims and private interests, or to ignorantly exhaust the powers of the soil. All modern methods, such as irrigation, drainage, chemical treatment and so forth ought to be applied to agriculture at large. But the scientific knowledge we possess, and the technical means of agriculture we command such as machinery, etc., can never be successfully applied but by cultivating the land on a large scale [Marx, in Marx and Engles, Volume 1, 1977].

Cooperation also may help in terms of releasing labour to industry. In this respect, Engles argued that, if we apply the idea of cooperation to a region of small holdings we shall find that, if these are pooled and the aggregate area cultivated on a large scale, part of the labor power employed hitherto is rendered superfluous. It is precisely this saving of labour that represents one of the main advantages of large scale farming. The labor power so saved can be engaged in the growing industry [Engles, in Marx and Engles, Volume 3, 1977].

While the above, provide the classical Marxist-Leninist theoretical basis for large-scale socialist transformation of agriculture in general, and that of the development of cooperatives in particular, the cooperation is to be achieved by the application of certain principles which are now known as 'Lenins' principles of Building Cooperative, eventhough the

emergence of these principles precede his time. The most important of these principles include the principles of voluntarism, gradualism, and an all round assistance by the proletarian state,

The French Programme seem to have given a recognition to two of the three principles when it held that, the task relative to small peasants consists, in effecting a transition of private possession to cooperative ones was not to be done forcibly but by dint of example and by proffering of social assistance for this purpose. And then of course there would be ample means of showing to the small peasant prospective advantages that must be obvious to him even today [Engles, in Marx and Engles Volum 3, 1977].

Lenin however, emphasized that it would be madness of course for anybody to imagine that joint cultivation of the land can be decreed from above and imposed on people. According to Lenin, tens of millions of people will not make a revolution to order, but will do so when driven to it by dire need, when their position is an impossible one, when the joint pressure and determination of tens of millions of people break down the old barriers and are actually capable of creating a new way of life [Lenin Collected Works, V. 24, 1976].

Lenin has also argued that a social system emerges if it has the financial backing of a definite class. According to him, the cooperative system is the social system to whom the proletarian should give more than ordinary assistance. A number of economic, financial and banking privileges

must be granted to cooperatives - this is the way the socialist state must promote the new principle on which the population **must** be organised [Lenin, volume 33, 1976].

Lenin also considered gradual transition from the simplest forms of cooperation (consumer and marketing) to the highest form (production) to be no less important. Participation by the poor and middle peasants in the simplest forms of cooperation involving marketing, supply, and consumption does not demand special training and economic risk, and facilitates their transition to socialism [Serayev, S. 1984].

On the basis of the above general theoretical arguments agricultural producers' cooperatives emerged and developed in the first socialist country, the U.S.S.R. right after the 1917 Revolution. And this experience of the Russian Cooperatives has been adopted by other countries following the socialist path of development.<sup>1</sup>

In recent years however, new thoughts and practices are being introduced, in one country or another, into the operation of the cooperatives.

#### 2.2.2. CONTEMPORARY VIEWS ON COOPERATIVES

Agricultural producers' cooperatives in most of the socialist countries developed in line with the Soviet Kolkhoz<sup>2</sup> system. This system has its origin in the period of mass collectivisation in the U.S.S.R. of the late 1920's. Until recently, therefore, the practices of this system has been widely adopted and applied in most of them.

Recently<sup>3</sup>, however, various changes are being introduced on previous thoughts and practices of agricultural producers' cooperatives which were developed on the basis of the Kolkhoz system. These changes basically revolve around three broad areas.

- i) Cooperative Democracy, Self management and State Control
- ii) Work Organization in Cooperatives
- iii) The recognition of the right to household plots of individual members including the right to make use of cooperative equipment in the cultivation of individual plots.

Before we go into the discussion of the changes, in terms of the above three points, it becomes necessary to look into previous practices so that the reader may use them as basis in analysing the changes.

The Kolkhoz, according to Nove, is formally a cooperative with an elected committee, headed by an elected chairman. In practice, the party appoints, or 'recommends' who should be elected [NOVE, A. 1980]. The Kolkhoz, in the form in which it was set up during the collectivisation drive, was originally designed as a means of enabling the state to procure farm produce at a minimum cost to itself. Because of this, it operated under constant pressure from national planning agencies to satisfy the growing demand for farm products. In general, planning of output as well as of livestock herd composition was carried not on the farm itself but in the superior administrative agencies [Karcez. J.F., 1979].

With the objective of stimulating larger sales to state agencies the Kolkhoz used to operate under a double price system "quota and "over quota" prices. Under this system, the Kolkhozy were subjected to high compulsory delivery quotas very low prices. Over quota deliveries command much higher prices. This system firstly produced a paradoxical result, that the higher the harvest, the higher the average price paid, since more would be available for sale over the quota. And secondly, the unsuccessful farms are artificially depressed, since they would have nothing left, to sell at the higher prices [Nove. A. 1980].

Tractors and combine harvesters used by Kolkhoz were supplied by the Machine Tractors Stations (MTS) which were used as a means of avoiding duplication, minimizing capital outlays and permitting maximum utilization of capital stock. The MTS were also used as means of increasing the size of the surplus through the extraction of high payments in kind.

Kolkhoz members were assigned work - day units in proportion to the quantity <sup>and</sup> skill of their work which results in the variation <sup>of</sup> the income of the members. But the value of each work - day units depended upon the amount of money and product - . produced by the whole members. Since individual efforts are related to the total output (through the value of each workday unit) this system is widely criticised for its disincentive effects.

As a result of low product prices, the income that farmers received from the common farm has been low. This caused many farmers to rely on supplementary income from the household plot. As a result, the socialized sector and the household plot competed for labour during peak activity period [Karcez, J.F., 1979].

The above being the basic practices followed in the operation of the Kolkhoz, we now pass to the discussion of the recent changes.

8. Producers' cooperatives, are now being looked<sup>at</sup> as having a dual character. On the one hand, they are social organizations operating in socialist form, and on the other, they are economic organizations which are centered on large scale collectively owned enterprises pursuing economic objectives [Ferenc, et al, 1976].

As social organizations, they belong to a wider category involving all cooperatives organized in the fields of marketing, retailing, services, housing, savings and manufacturing. In this respect, there is no difference between cooperatives and other social institutions (for example, trade unions). They all are engaged in protecting the interests of the various social groups which form such associations.

As an economic organization, the large cooperative farm is considered as a special type of business firm owned by those forming the cooperation [Ferenc, et al, 1976]. It is special because members are both co-owners and suppliers of labor. Since, the firm is owned by all its members, it should be characterised by collective management and decision making at the

top level. On the other hand, since owners are also suppliers of labour, the regulation of members' supply of labor is also required. The question which is now involved with respect to the above characterisation of the firm as an economic organization is how to reconcile the co-owner and supplier of labor character of its members so that the large cooperative enterprise can optimally organized .

#### COOPERATIVE DEMOCRACY, SELF MANAGEMENT AND STATE CONTROL.<sup>4</sup>

On the basis of the above general analysis of the cooperative enterprise and the problems that emanated therefrom, a number of reforms have been introduced in Eastern Europe<sup>5</sup> since 1965 which basically focus on cooperative democracy, self management and the degree of state intervention on the operation of the cooperative.

Since cooperatives are owned by all its members, it must be managed by them. And in participating in the management process all members must enjoy the right to take part in the General Assembly in which all have an equal right to vote, to be elected to any office, and to share in the cooperative income according to labour contribution.

The highest management authority in the producers' cooperative should be the General Assembly whose management responsibilities and function include election of the leading bodies, approval of longrun and annual plans determining the allocation of collective resources and distribution of income.

Given the above, democratization of collective farm system through guarantees of secret election and the right to discuss and approve production plans in the General Assemblies have been introduced. Greater farm autonomy in decision making are being practiced. In this respect, indicators of the national or local production plan are no longer binding on farms [Karcez, J.F. 1979].

In the new system, the state is to exercise its control in a specific manner. Besides legal supervision, the state guidance of the cooperative farms is to be of entirely economic policy character, that is, the state should endeavour to achieve economic targets, within the framework of its national economic planning by influencing the cooperative farms using economic means such as, its credit, ration and pricing systems as well as through the use of production and marketing contracts, technical advice and the provision of information.

Even though the above changes have been introduced in the Eastern European countries, it is likely that Russia under Gorbachev will follow suit. In his recent speech at the 4<sup>th</sup> All-union congress of collective Farmers on March 23, 1988 Gorbachev argued that democracy and self-supporting basis of the cooperative organization of production, its autonomy and flexibility open up wide scope for people's creative abilities and initiative. Indeed, he said, openness, the elective system, open book - keeping and the participation of the working people in production management are things without which cooperatives simply cannot exist. As regards cooperatives, administrative methods are against their very nature (because they are collective property owned by their members). According to him, commanding them about

issuing peremptory instructions, and introducing ill - considered bans can only dry them up, ultimately destroying them altogether. Cooperatives however, as any form of economic organisation, must not lie outside the sphere of state influence. There are reliable economic instruments for guararanteeing this - taxation, the credit policy, the system of contracts with cooperatives, and the possibility of influencing their activity through state placed orders [Gorbachev, 1988].

#### WORK ORGANIZATION

The other area in which changes are being introduced is the organization of work which is an important factor in determining the efficiency of the cooperatives and the level of earning of members.

Under the Kolkhoz system, work is organized on the level of the cooperative, which is subdivided into a number of teams. Earnings under this system, as stated earlier is based on the work - day units, determining relative labour incomes of members, and on the total income of the cooperative. This system of work organisation, it is argued, does not fit in with consistent cooperation because it does not make people personally responsible for the use of land and other assets and results in indiscriminate wage levelling [Gorbachev, 1988].

To overcome the above stated short coming work is to be organized on the level of associations of self-supporting contract teams or families operating on the basis of contract with the collective farm boards, which have land as well as fixed and circulating assets at their disposal and

using advanced technological systems and scientific farming techniques. An analysis of the development of contract farming, it is argued, shows that this form of work organization and production is effective in social and economic terms and is morally rewarding. Contract farming demonstrates the advantages of production methods based on financial accountability and self-management,, stimulates initiative and social activity and puts an end to the practice of levelling wages regardless of inputs [Gorbachev, 1988].

This system is widely known as the 'Vietnamese system' or the 'Responsibility system'. Under the responsibility system which was formally endorsed by the Chinese Central Committee, in December 1978, the team contracts with work groups to deliver a fixed amount of products grown according to the production plan for land owned by the team. Output above this amount may be retained by the group. The work group with whom the team contracts, may be groups of producers, individuals or households.

The most widely used contract is the household contract.<sup>6</sup> Under household contracts the teams' productive resources - fields, ponds, orchards, or equipment - are distributed among households that enter into production contracts. Each household is then responsible not only for meeting output quotas assigned by the team leadership, but also for taxes and all other payments to the brigade and the commune<sup>7</sup>. Items such as seed and fertilizers must be financed from the households' own resources and the families decide how the labor is utilized. Under this system,

a household enjoys a considerable latitude and is allowed to retain all production in excess of the assigned quotas and mandatory payments, which provides a very powerful incentive for improving productivity [World Bank, August 1983].

The system probably has its origin in the Vietnamese system of contracting work to provisional work teams which operated in the countrys' producers cooperatives prior to 1980 under this system a certain amount of work points are assigned to the work team for completing a definite quantity of work, like for example, harvesting 20 hectares of wheat. But such a contract system doesnot have a direct relationship to output. This resulted into change of the system into one which contract final products (which assigns a certain amount of work points to producing a given quantity of output) to group of producers.

COOPERATIVE ENTERPRISE AND SMALL HOUSEHOLD PLOTS

Under socialism some of the means of production remain as the personal property of both collective farmers and factory and office workers, with which they work subsidiary small holdings and carry out individual house building on plots of land allotted to them by the state and collective farms - personal small holdings fall in this category.

These subsidiary small holdings are of ancilliary character and are kept, in the main, for purposes of consumption. Members of collective farms meet their needs for livestock products, fruits and vegetables, which are still in short supply in the social economy, from cultivation of their small holdings and allotments. The subsidiary small holding of collective

farmers is inseparably bound up with and is dependent on the social economy of the collective farm [Kozlov, G.A., 1977]. Indeed, unlike previous thoughts which considered household farms as representative of private sector, it is now argued that the small household farm is "a socialist economic organizational form which is more detached and more disintegrated than the other sectors of the socialist economy" [Ferenc, et al, 1976]. Because of this, Gorbachev argues, conditions promoting production on personal small holdings should be created by all means and it is important that people be helped to cultivate their kitchen-gardens and buy livestock and poultry. In fact joint production and integration of personal small holdings of the population **with** social production has to be experienced [Gorbachev, H. 1988] and the small household farms should be based on the partial use of modern large scale forces of production of the cooperative property.

These household farms will obviously lose their economic importance at some stage in the future. The main preconditions are, on the one hand, a considerable increase in the technical level and the performance of large scale production; and on the other hand, the substantial increase in the cooperative member personal income derived from the large cooperative enterprise.

NOTES TO CHAPTER 2

1. Except probably Poland, all socialist countries have developed producers' cooperatives.
2. Kolkhoz is also called agricultural artel. Agricultural artel presupposes collectivised land use, and socialised basic means of production, viz, draught cattle, machines, equipment, and farming facilities. Artel members retain as personal property their dwellings and husbandries (productive livestock inclusive) the latter's size being limited in accordance with the artel's regulations. All incomes are distributed according to the amount and quality of work done, i.e., by work points.
3. Mainly in 1953 and after 1965.
4. Except where indicated, most of the changes are summarised from, Ference et al, The Economics of Cooperative Farming, [Akademiai Kiado, Budapest. 1976].
5. These changes are introduced notably in Hungary, Czechoslovakia, and Bulgaria, Yougoslavia started it in the late 1950's. For details see Karcaz, J.F., The Economics of Communist Agriculture, Selected Papers, [International Development Institute, Bloomington, Indiana, 1979].
6. Contracts for specialized tasks and output contract with an individual or a group are two other forms of contract system experienced in Chinese communes.

In contracts for specialized tasks the team management continues to direct production, and accounting is on a unified basis, but the team contracts with a group of its members, a household or a single individual to accomplish a particular task in areas such as grain production, livestock breeding or affor. . . . The contract requires that the party involved produce an agreed level of output for which a certain number of work points are assigned. Bonus work points are awarded if the targets are exceeded, and there is a penalty for any shortfall.

In output contracts with an individual or a group the team subdivides and contracts land to individuals or group producers, who promise to meet output goals in return for work points. Rewards and penalties similar to those linked to specialized contracts are used.

7. The communes are constituted of production Brigade and production team. At the lowest level in the commune structure is the production team made up of 20-50 families. Production Brigade is the middle ties in the commune structure coming between the team at the base and the commune administrative centre the Brigade on the average is composed of 7 to 8 teams. The commune on the average serves 12-13 production Brigades.

## CHAPTER 3

### HISTORICAL DEVELOPMENT OF AGRICULTURAL PRODUCERS' COOPERATIVES IN ETHIOPIA

Cooperatives as instruments for the mobilization of rural resources in Ethiopia were for the first time proposed for use during the First Five Year Development plan period with the promulgation of Decree 44/1960. In subsequent years of the Imperial Regime the use of such institutions was anticipated to continue with an increased scope.

With the introduction of socialism, the need to use these institutions in consonance with the requirements of the socio-economic system was further felt and various policy grounds were provided for their development.

Regardless of the various legal grounds provided by the Governments in the pre - and post - 1974 periods, one sees a considerable variation in their development in the two periods. This part of the paper is thus devoted to outlining the development of producers' cooperatives to the present. In order to facilitate the discussion, we will treat the topic in the two socio-economic systems - namely the periods before and after the revolution.

#### 3.1. THE DEVELOPMENT OF AGRICULTURAL PRODUCERS' COOPERATIVES IN PRE - REVOLUTION ETHIOPIA

##### 3.1.1. THE POLICY FRAMEWORK

Decree 44 of 1960 and proclamation 241 of 1966 provide the legal ground for the development of cooperatives in Ethiopia in the pre revolution period. While the spirit and provisions of the Decree had envisaged the creation of collectives or production cooperatives, the proclamation

provided a legal ground for the establishment of different types of cooperatives of which the producers' cooperative was one.

According to the preamble, the Decree was necessitated by the creation of proper framework for the establishment of cooperative enterprises which contribute measurably towards the acceleration of the development of the agricultural sector. The cooperatives which were anticipated to be organized in accordance with the provisions of the Decree were in general anticipated to have, as their principal purpose and objective, the promotion of the economic interests of the country and of their members through **efficient** cultivation and development of land made available to them and the profitable sale of their products. Such cooperatives were to be organized through the sale of shares to members and they were to obtain land by the transfer of Rist Land<sup>1</sup> by the then Ministry of National Community Development which was made responsible for their organisation.

The Decree also had various provisions on rights, duties, **privileges** and responsibilities of members. According to these provisions, members were to be divided into two - working and non-working members. Membership in general was to entitle everyman to a proportionate share in the net profit of the cooperative, to attend the General Meeting, to elect administrative bodies and to vote on all questions. In addition to the above, working members were entitled to obtain a parcel of land on which to build their houses and use as kitchen - garden, to receive a monthly sum which was to be allotted to them by the cooperative as working members' allowance and the right to be elected to serve on the administrative bodies of the

cooperatives. According to a plan document of the Ministry of Community Development prepared for manpower training of the Social Welfare Development and Cooperative Department, the Cooperatives which were anticipated to be established according to the provisions of the Decree were initially to absorb the unemployed and former soldiers who for various reasons; were unable to render their services in the military [MNCD, Five Year Plan for Manpower training for National Community Development, Social Welfare and Cooperatives, 1961]. Such cooperatives, however, were anticipated to gradually cover the farmers.

The Farm Workers' Cooperative Decree of 1960 was officially repealed in Article 2 of Proclamation 134 of 1966 which replaced it. Societies which were to be organised under this proclamation were to have as their principal purpose and objective the promotion of better living, better business and methods of production by such means as:

- (1) reducing the cost of credit
- (2) reducing the cost of goods and services for production and consumption
- (3) minimizing and reducing impact of risks and uncertainties on the individual
- (4) spreading knowledge of practical, technical improvements; or
- (5) otherwise contributing to the achievement of the above mentioned purposes and objective.

Various types of cooperatives were to be established according to the law. These were provided in a separate document by Ministry of National Community Development. According to this document five different types of cooperatives were to be established. These include:

- i) Multi-purpose Agricultural cooperatives
- ii) Thrift and credit cooperatives
- iii) Consumers' cooperatives
- iv) Artisans' cooperatives
- v) Farm workers' cooperatives or a cooperative established by pooling privately owned land together.

According to that document, farmers who then own small plots of land may organize large farms by pooling their small plots of land and form a Farm workers cooperative. Members were to enter into an agreement with the association not to claim back their lands before a lapse of a certain predetermined period of time. They were to work as employees of their association in return to a sum of money payments. It seems that the Farm workers' cooperatives which was to be established according to the 1966 law differ in organization from the ones which were to be established in accordance with the Decree. While in the previous case, such a cooperative was to be established on the Rist land transferred to it by the Ministry of the National Community Development, the 1966 law requires members to establish such an enterprise on their own lands.

### 3.1.2. PROBLEMS OF IMPLEMENTATION

Even though no actual studies were made about producers' cooperatives which were anticipated to be established according to the various laws outlined above, the indication is that no such cooperative had been successfully established during that period.

Evaluating the situation of the cooperatives in the country between 1957 and 1964, The Ministry of National Community Development indicated that educational and promotional work for the establishment of 6 cooperatives was already under way. About 700 people were reported to be enrolled as members in those societies and contributed about Eth. \$25,000 towards the purchase of shares. Three were reported to have started their operations. The fields of activities of the cooperatives were reported to include marketing of vegetables, fruits, coffee and grain, distribution of goods of daily requirement, irrigation and joint farming [IES, MNCD, Labor, Cooperatives Social Welfare and Community Development in Ethiopia: A Brief Review 1957-1964, November 1964].

Further an evaluation of the Second Five Year Development Plan [1963-1967] provided in the Third Five Year Development plan document reported the establishment of 12 Multi-purpose Agricultural cooperatives - an organization which provided two or more services to its members and thus differed in character from Farm Workers' Cooperatives [MNCD, what is a multi purpose Cooperative ?, Amharic].

While the various annual reports of the then National Community Development Provide data and information on the various types of cooperatives including multi-purpose agricultural service cooperatives, saving and thrift, consumers and artisan cooperatives such data and information for Farm Workers' Cooperatives had never been reported. Thus, it seems that producers' cooperatives, which were anticipated to be established in Ethiopia, and were provided legal grounds have never been operational in pre - 1974 period.<sup>2</sup>

### 3.2. THE DEVELOPMENT OF AGRICULTURAL PRODUCERS' COOPERATIVES IN POST REVOLUTIONARY ETHIOPIA

The development of agricultural producers' cooperatives in the post - 1974 period can be divided into two stages.

3.2.1. The Initial or First Stage - the time representing the period upto the issuance of the 1979 directive.

3.2.2. The Second Stage - the time representing the period after June 1979.

#### 3.2.1. THE INITIAL OR FIRST STAGE

##### 3.2.1.1. THE DEVELOPMENT OF "COLLECTIVE FARMS" [YEMAHBERAT INSHA]

The development of "collective farms" was the result of the Land Reform Proclamation of 1975. The proclamation and its application created two important conditions which gave rise to the emergence and development of collective farms - the nationalization of land and the establishment of Peasant Associations.

The Proclamation nationalized all rural lands and transferred it into the property of all people. In the process, large scale commercial farms were also taken over by the state. The application of the proclamation also resulted in the establishment of rural institutions. Peasant Associations which serve various purposes.

The nationalized commercial farms while partially were changed into state farms, part of them were transferred into the administration of previous farm employees and peasant Associations (PAs). Still a smaller part of the commercial farms were used to settle the landless and the urban unemployed.

The large farms which were transferred to PAs and unoccupied lands which fell within their vicinity<sup>3</sup> were started to be cultivated jointly by members of the association and were labeled as "collective farms" or Yemahber Irsha (in Amharic). Besides those under the PA, "collective farms" also included those which fell under the administration of previous farm employees and farms which were occupied by the landless and urban unemployed.

The 'collective farms' especially those under the PA, were initiated as means of cultivating land which would otherwise have remained uncultivated due to the implementation of the Land Reform Proclamation. In their rudimentary form, these farms appeared in 1975 and their establishment, one may argue, preceded the issuance of any law that may provide a legal ground for their appearance.

### 3.2.1.2. THE POLICY FRAMEWORK

The legal ground for the establishment and development of Agricultural Producers' Cooperatives in the post - 1974 period was first provided by Proclamation 71/1975 - Peasant Associations organization and Consolidation Proclamation.

That Proclamation defined an Agricultural Producers' Cooperative as a society that is established voluntarily by PAs. The law defined the objectives powers and duties of such societies as follows.

- 1) to put the main instruments of production under the control of , and when necessary to gradually transfer their ownership to, the society;
- 2) to divide members into working groups to enable them to work collectively for the society especially by organizing members with special abilities in order to obtain mutual benefits;
- 3) to give priority to the interests of the poor and middle peasants and to ensure that the leadership of the association is drawn from such peasants;
- 4) to raise production and to gradually improve the instruments of production;
- 5) to pay members according to the quality and quantity of their work;
- 6) to assign a special fund for the welfare and security of the members;
- 7) to struggle for continuous improvement, democratic rights and unity;

- 8) to struggle for the gradual abolition of exploitation from the rural areas and to refrain from any kind of exploitation;
- 9) to engage in continuous political movement in order to enhance the political consciousness of **its** members;
- 10) to sue and be sued; and
- 11) to draw up its internal regulations;

But the law did not give any provisions for the organisation and administration of Cooperatives. Rather, Article 9 of that law anticipated such provisions to be made in Proclamation of cooperative societies [Negarit Gazeta, 35th year, No. 15].

Before the issuance of the Proclamation of the Cooperative societies in 1978, however, the participants in the Development Through cooperation campaign began to apply their own directives in organizing producers' cooperatives based on the guidelines provided to them by means of a seminar.

The proceedings of the seminar (part I, undated, Amharic) recognized and noted the situations prevailing in the country then and cautioned against pushing the peasants into the formation of such enterprises. Thus, the proceeding argued that the farmer had developed an individualistic mentality since he had never been given a chance to cooperate in the previous social system. Under this condition, it was likely that the majority of the peasants needed to possess their own piece of land. Because of this, if the farmer were told to put his land, farm implements

and other resources under the control of one administrative body, to work collectively and distribute products he would not be willing to accept it since the idea would be **strange** to him and he could not see its advantages. Further, the proceeding argued, it was impossible to force farmers to form such an organisation through administrative means for **that** may result in adverse effects. Thus, the proceeding concluded that a transition period was required to relieve farmers from the individualistic mentality that they had developed. During this period of transition, one may be able to educate, to raise the political consciousness and to change the overall views of farmers by establishing service co-operatives from which they could learn about the ideas and uses of co-operatives.

The proceedings of the seminar which was supposed to serve as a directive for organizing producers' cooperatives by Development Through Cooperation campaign participants also recognized the existence of exceptions and the possibility (then) of organizing cooperatives where the political consciousness and the economic situations of farmers would allow it. Where the exception did not exist, however, the development of cooperatives was anticipated to proceed in four stages, including.

1. Service Cooperatives/Credit and Marketing/
2. First Stage Producers' Cooperatives.
3. Advanced Producers' Cooperatives
4. Commune.

These stages of development are much similar to the service cooperatives and the present Maiba, Wolba and Welland respectively, which will be discussed in the second part of this chapter.

In 1978, it was argued that the stage reached by the revolution then necessitated the establishment of different types of cooperative societies of which producers' cooperative was one. Various reasons were provided to establish the argument. This include:

- i) Combating the remnants of feudalistic and capitalistic means of exploitation by enabling peasant, artisans and workers to secure necessary services and retain the fruits of their labor;
- ii) Protecting the economic, political and social rights of the peasants and enabling them to obtain goods and services essential for production and consumption;
- iii) giving a wider spectrum for central planning and ensuring the participation of the broad masses.

In general, the objectives of cooperative societies established according to Proclamation 138 of 1978 include [Negarit Gazeta, 37th year, No. 7]:

- 1) to develop self reliance and to promote the interest of their members;
- 2) to put the means of production under the control of the cooperatives and to transform them gradually to collective property as may be necessary;
- 3) to increase production;
- 4) to expand industries;

- 5) to conduct political agitation;
- 6) to eliminate reactionary culture and customs;
- 7) to participate in the building up of a socialist economy; and
- 8) to accumulate capital and to mobilize human resources to sustain economic development.

While the above provide the socio-economic and political objective, the types of cooperatives to be established in accordance with the law include:

- 1) Producers' Cooperative Societies;
- 2) Service Cooperative Societies;
- 3) Thrift and Credit Cooperative Societies; and
- 4) Housing Cooperative Societies.

Of the various types of cooperatives included in the first group, Agricultural Producers' Cooperative is one. It is a Cooperative established by farmers in a PA. The law retains the powers and duties provided to it by Proclamation 71/1975. Still this law, like the previous law does not have any provision on the organisation and administration of such a society.

### 3.2.1.3. COLLECTIVE FARMS' THE POLICIES AND THE DEVELOPMENT OF COOPERATIVES IN THE INITIAL STAGE

In our discussions above, we have shown the way the 'Collective farms' appeared and have introduced the various policies which were directed at providing a legal ground for the emergence of Agricultural Producers' Cooperatives. As we have argued earlier, the 'collective farms' were

established before any of the two laws provided in Proclamations 71/1975 and 138/1978 and the 'directive', which ought to be used by Development Through Cooperation Campaign participants, were issued. Thus, the 'collective farms' which were established initially needed to be reorganised in some way to bring them in line with the directive (not that the laws donot have any provisions on the organization and administration of cooperatives). But it seems that Development Through cooperation campaign ended before such a reorganization had taken place.

For a certain period of time after the campaign, there had been no single institution that had fully taken over the task of organising Agricultural Producers Cooperatives in the country. The task belonged to two institutions - the then ministry of Land Reform and Administration and Ministry of Agriculture and Forestry Development. Since these two institutions were not following any unique way in organizing cooperatives, their activities seemed to have left the collective farms without any significant change.

In 1977, the above two institutions were combined and formed Ministry of Agriculture and Land Settlement. This Ministry had a cooperative development department within it. Even though this department tried to overcome the institutional problems and made an effort to coordinate the activities of the cooperatives, it had not been successful since the power of organizing such cooperatives was not relegated to it by any law. Thus, the 'collective farms' persisted as they were established initially (without having uniformity in organisation and operation) until 1979. During this period, no single policy was practically applied.

The persistence of the 'collective farms' and the absence of any directive and/or law which was successfully applied in the organization and administration of cooperatives have had various effects and negative consequences on the rural life, on the collective farms and the subsequent development of such societies. In most cases, especially in highly populated areas the existence of 'collective farms' has acted as deterrent to the distribution of land. This was so because in densely populated areas, the shortage of land required their redistribution. but their inclusion into land distribution was considered anti-socialist for they were assumed to be "socialist property". Moreover, the likelihood of the existence of various influences in the distribution of production which was not made in accordance with distribution according to work, might have created a negative impression of farmers influencing the subsequent development of cooperatives. The effect of such influences is partly reflected in Table 3.1 and 3.2. The Tables indicate that the development of the collective farms did not show a steadily increasing tendency in number, membership and operation. Moreover, the increase in the number of 'collective farms' was matched by a decline in the number of members for 1979/80.

Table 3.1. Distribution of "Collective Farms" Yehioret Irsha  
Between 1976/77 and 1979/80

Administrative Region	Number of Collective farms				Membership			
	76/77	77/78	78/79	79/80	76/77	77/78	78/79	79/80
Arsi	4	1	1	5	NG	463	463	332
Bale	-	1	1	1	-	630	630	630
Eritrea	-	-	-	-	-	-	-	-
Gamo Goffa	2	3	3	2	1396	2295	2295	654
Gojjam	1	3	2	20	130	570	25	786
Gondar	-	3	2	14	-	400	464	NG
hararge	5	24	8	4	621	4396	534	696
Illubabor	-	5	5	7	NG	NG	NG	911
Kefa	-	1	1	3	-	60	60	214
Shewa	16	23	23	25	3053	8365	8365	2745
Sidamo	-	6	6	5	-	1407	14071	1009
Tigray	-	-	-	12	-	-	-	627
Wellega	2	5	5	10	321	678	612	1403
wello	5	4	4	12	570	1666	1666	1626
<b>Total</b>	<b>37</b>	<b>64</b>	<b>66</b>	<b>123</b>	<b>6091</b>	<b>21467</b>	<b>17221</b>	<b>12296</b>

\* NG- Data not available.

Source: Ministry of Agriculture, Peasant Association and  
and Cooperative Development Department, Farmers'  
Cooperative Movement in Ethiopia (Amharic), June 1983.

Table 3.2. Collective Farm Holdings - Estimates of Area and Production for Major Crops - Area in thousand of hectares and Production in thousands of quintals

Type of Crop	1975/76		1976/77		1977/78		1978/79		1979/80	
	Area	Prod	Area	Prod	Area	Prod	Area	Prod	Area	Prod
Cereals	46.0	380.8	34.3	237.6	52.7	287.6	36.0	290.7	5.0	41.0
Pulses	5.5	41.2	2.9	22.6	2.7	20.1	2.8	17.9	1.1	6.6
Others	10.1	21.7	8.2	16.9	7.3	24.1	7.2	21.6	1.8	149.8
Total	61.1	443.7	45.4	277.0	42.7	311.8	46.0	330.2	7.7	197.4

Source: NBE, Annual Report 1983

### 3.2.2. THE SECOND PHASE - THE PERIOD AFTER 1979

#### 3.2.2.1. THE DIRECTIVE FOR THE ESTABLISHMENT OF

##### AGRICULTURAL PRODUCERS' COOPERATIVES - A REVIEW

In June 1979, the Ethiopian Government issued a directive on the establishment of producers' cooperatives. The directive was based on Lenin's plan for building cooperatives.

The basic tenet of the plan is to alleviate the masses of the poor peasants from the yoke of poverty by pooling their small private farms together and by forming large scale collective farms. In order to realize the above objectives, the state would need to provide material, educational, cultural, technical and financial assistance.

The directive defines an Agricultural Producers' Cooperative as an economic organization of farmers which is established through gradual transformation of individually owned means of production into common ownership based on the will and common interest of farmers. Farmers will carry any kind of work in cooperation and distribute their products in accordance with their common plan.

The objectives of Agricultural Producers' Cooperative include:

- i) to abolish capitalist exploitation and to <sup>9.</sup> protect the emergence of any ground upon which such exploitation may crop up;
- ii) to increase agricultural production by utilizing modern technologies and by transforming small individual farms into large - scale ones;
- iii) to protect the political, economic and social rights of farmers by establishing and developing a socialist system in rural areas; and
- iv) to create all favourable conditions for planned direction of the economies of farmers.

The above objectives are to be realized by transforming private ownership of the means of production into social ownership.

According to the directive while a single Agricultural producers' Cooperative is to be established in one PA, it may be initiated by a number of farmers or by all members of the PA. It may also be established by farmers participating in settlement programmes or on previous collective farms.

Members of a given PA, or members of households of the members of PA who are above 18 years of age and unemployed people of working age are eligible for membership in cooperatives.

A member of producers' cooperative enjoys various rights: to participate in the activities of the cooperative and to receive income according to his work, to participate in the administration of the cooperatives and in its General Assemblies, to elect and to be elected and to utilize the services provided by the cooperative. But members must also fulfil the following duties: to obey the rules of the cooperatives and to execute resolutions passed by the General Assembly and the executive committee, to abide by work disciplines and to fulfil their assignments, to accept constructive criticisms and to protect public properties such as forests and animal resources from damage. When a member leaves the cooperative either by his own will or when he is dismissed by committing a repeated act of misconduct his land and other farm implements that he transferred to the common administration will not be returned to him.

According to the directive, the purpose of Agricultural producers' cooperatives is to increase agricultural production by abolishing small holdings which can be achieved by:

- i) utilizing fertilizers, improved seeds, pesticides, improved agricultural implements and other appropriate agricultural technologies;
- ii) employing part of its land for animal grazing, by preparing various types of animal fodder and by keeping livestock in a healthy condition; and
- iii) employing irrigation.

Besides the above, agricultural activities, producers' cooperatives are also expected to extend their activities into marketing. In this respect, producers' cooperatives will make consumer goods available for purchase to their members at a relatively lower prices. Moreover, they will also be engaged in the construction and provision of socio-economic infrastructures.

Politically, the task of a cooperative includes fighting against anti revolutionary and anti development elements, reactionary culture and customs as well as arousing the political consciousness of its members.

The level of development of producers' cooperatives, according to the directive, is measured by the degree of pooling of instruments of production into the cooperatives for common use. In other words, it is the proportion of the means of production that is available under common ownership which actually measured the level of development of producers' cooperatives. In this respect, Agricultural Producers' Cooperatives develop in two stages:<sup>4</sup> Malba and Wolba

A Malba allows 2000 sq. mts of land for each family for private use and keeps the remaining land under its control and has the right to use farm animals and other production tools which are under private ownership. Since agricultural implements are under private ownership, the cooperative pays rent to owners for using farm implements. Because of this, at this stage of development, the socialist motto "from each according to his ability, to each according to his work" is not fully realized. The principal aim of Malba is thus, to transfer production tools from private to collective ownership.

At the stage of wolba, on the other hand, private ownership of farm animals and other production tools will be abolished and all means of production that is under the control of the cooperative are collectively owned. Payments that the cooperative makes will totally be based on the amount of labor contributed by each member. Hence, a cooperative can be called wolba when it reaches such a level that it transforms all land which was used by individual farmers under one collective body, when all farm animals and production tools come under its control, and members are all paid according to their labour contributed to production. One who works more is paid more, and one who works less will be paid less. The cooperative motivates everyone to work more and get more so that he may improve his standard of living. But this does not mean that a member of a wolba will remain without land for his own private use. Each member of wolba, will have land of up to 1000 sq. mts. which he may use as a garden plot.

Producers' Cooperatives, as discussed above, will develop in two stages. However, when each producers' cooperative at the wolba stage reaches a higher technological level, when its productive capacity increases and when specialization on various production activities become possible, a number of producers' cooperatives may form unity to create what is known as welland. Before forming the unity, each producers' cooperative at wolba stage will be registered by the Ministry of Agriculture and will be offered a legal personality. Once it entered in to the formation of Welland with unity with others, however, the legal personality of each of the cooperatives forming the unity will be cancelled and a legal personality will be bestowed to the new amalgamated body to the Welland. Each producers' cooperative that formed

the unity will then become a **Brigade** of the Welland. On the average, while a **Brigade** will have 500 members and hold 800 hectares of land, welland will have 2500 members and hold 4000 hectares of land.

Agricultural producers' cooperatives, at all stages of their development will be **direct<sup>ed</sup>** by different bodies including the General Assembly, the Executive Committee, Development Committee and peoples control committee. Agricultural Producers' Cooperatives in their operation and management follow the principle of Democratic Centralism and they operate according to a work plan.

As far as the distribution of income is concerned, the cooperative after distributing its income among its members according to their work, will allocate the remaining for various activities in the following proportions: 60 percent of productive investment for the coming crop season, i.e., for working capital and fixed capital, 25 percent for reserve fund, 13 percent for social activities and 2 percent for material incentive.

#### 2.2.2. THE INCENTIVE GROUND - TAX, CREDIT AND MARKETING POLICIES.<sup>8</sup>

Various incentive grounds have been provided by the Ethiopian Government by means of its policies in order to encourage the development of Agricultural Producers' Cooperatives.

## TAX POLICIES

The incentive that the state provides to the development of producers' cooperatives through its tax policies can be seen in proclamation 155 of 1978 - The Income Tax Amendment proclamation - add proclamation 152 of 1978 Rural Land Use Fee and Agricultural Activities Income Tax Amendment Proclamation.

According to the Income Tax Amendment Proclamation, while individuals who obtain their income from any business pay income tax according to the rates set by the law add business organisations pay 50 percent of their taxable income as income tax, cooperatives as business undertakings do not pay any tax. Further, members of such cooperatives also enjoy a tax free limit of 500 Birr on their annual income.

The Rural Land Use Fee and Agricultural Income Tax Amendment proclamation requires all farmers to pay the Government for using the land given to them - a land tax. But the amount that is paid by members of producers' cooperatives is only 5 Birr per annum, while the amount that is paid by non-members is 10 Birr.

## CREDIT POLICIES

In present day Ethiopia, where banks are under the monopoly of the state, their credit activities are regulated and coordinated in accordance with the state policies. Since the National Bank of Ethiopia is empowered to coordinate and regulate credit activities, it has issued the credit policy by which all bank credits are governed.

Two principles underlie the credit policy of the Bank:

- i) The principle which states that in socialist economies the role of banks is basically to mobilize all idle financial resources from all sectors and provide credit to those priority sectors according to the state plan.
- ii) The principle which states that banks and financial institutions are responsible to provide all the credit required by the various sectors of the economy as long as the money lent out is matched by the value of goods and services produced or to be produced.

Based on the above two principles, priority sectors are identified on the basis of the socialisation criterion and the development criterion. According to the socialization criterion, banks will accord preferential treatment to the socialized sectors, i.e., state enterprises and cooperatives. The development criterion, on the other hand, takes into account the interrelationship of the different sectors to enhance development and the extent of contribution of each to the welfare of the broad masses. Based on this criterion, among the various sectors of the economy, the highest priority was given to agriculture.

Given the above policy of the Bank, Agricultural Producers' Cooperatives receive credit priority next to state farms. Moreover, producers' cooperatives also enjoy preferential treatment in payment of interest rates on loans obtained from Banks. Thus according to the interest rate policy of the Bank, which became effective as of July 1, 1986, while Agricultural Producers' Co-operatives pay 5 percent on their loans, government owned undertakings and

individuals pay 6 and 7 percent respectively on their loans. In fact, as far as interest payment is concerned, cooperatives obtain the highest priority.

Producers' cooperatives also obtain credit from service cooperatives free of any interest payments.<sup>6</sup>

#### PRICING AND MARKETING POLICIES

To enhance the development of already established producers' cooperatives and to attract farmers to form cooperatives, it is argued that a system which combines attractive prices and better supply services of the inputs (that are utilised by such enterprises) and of the pricing and marketing of their outputs must be set.

On the input side, starting from 1980, the price and marketing system has favoured the cooperative sector relative to the individual peasant sector in the sale of fertilisers. In general, starting from 1930, cooperatives have been enjoying a price differential of 10 Birr per quintal in the purchase of fertilizer. They also receive priority in the purchase of other inputs - improved seeds and insecticides and herbicides.

On the output side, in delivering their products to the Agricultural Marketing Corporation at fixed prices, cooperatives also enjoy higher prices<sup>7</sup> for their products than individual farmers. Accordingly starting from 1980/81 while cooperatives have been enjoying a price differential of 5 Birr per quintal in the sale of Teff, wheat, pulses and oilseeds, the corresponding price differential for barley, sorghum and maize have been 4 birr per quintal.

## THE TEN YEARS PERSPECTIVE PLAN AND COOPERATIVES DEVELOPMENT

So far we have endeavoured to show the legal ground provided by the Revolutionary Government to enable the emergence of Agricultural Producers' Cooperatives and the incentive ground extended for peasants to attract them to form such enterprises. Besides the legal and the incentive grounds which we stated above, the Ten Year Perspective Plan gives a strong emphasis to their development and draws strategies which will enable the formation of additional 14,197 agricultural producers' cooperatives in the ten years for which it was drawn (1983/84 to 1992/93). When that number of cooperatives is established as anticipated by the plan, the proportion of households which all the Agricultural Producers' cooperatives contain will reach 52.1 percent of the total agricultural households.

To achieve the stated objective, the Ten Year Plan,<sup>8</sup> anticipates to guide the development of producers' cooperatives by the strategy of integrated rural development by selecting localities suitable for the expansion of producers' cooperatives and by consolidating those which will concentrate, as appropriate on specific products. And this strategy of integrated rural development is a strategy which ensures the coordinated provision of technological, economic and social services necessary for raising the productivity of producers' cooperatives.

The strategy of the plan anticipates to take all necessary measures to provide cooperatives with the required improved instruments of production such as tractors and combines on credit purchase arrangements for those that can afford it, or on a rental basis for those that have not attained

such levels of development, and to extend repair and maintenance services in the rural areas.

The plan also anticipates to take all measures that will raise the productivity of producers' cooperatives significantly, to extend the supply of improved seeds and pesticides as well as similar services to introduce improved farming and management methods on the basis of research findings and also to make an extensive use of irrigation schemes in order to free the peasantry from the vagaries of nature.

What then is the practical effect of all the above?

### 3.2.2.3. THE DEVELOPMENT OF PRODUCERS' COOPERATIVES IN THE SECOND PHASE.

The directive issued in June 1979 officially puts an end to the activities of the previous collective farms [Yemahiber Irsha]. These farms should cease their operation in the old ways because, the directive argues, they did not follow the basic <sup>principles</sup> of Agricultural Producers' cooperatives in their organisation [PMAC, 1979, p. 18].

On the other hand, the directive looks at these farms as a possible basis for establishing Agricultural Producers' Cooperatives in accordance with its own provisions. Thus, the directive states that an Agricultural producers' cooperative may be established on previous "collective farms" by organizing poor farmers who are selected from PAs which previously used to cultivate that collective farm.

In November 1981, 18 months after the directive was issued, 544 cooperatives (139 in Wolba stage) were reported to have been organised in the country in line with the provisions of the directive. This is provided in Table 3.3.

Table 3.3. Agricultural Producers' Cooperatives as of  
November 1981

Administrative Region	Number of Coops		Total Number of Members	Land Holding (Hectare)	Drought Animals
	Malba	Wolba			
Arsi	46	1	2205	6530	339
Bale	49	15	4445	4475	3531
Gamo Goffa	2	5	2871	3249	1286
Gojjam	11	22	1067	3847	1102
Gondar	28	2	1870	5574	2701
Hararge	45	18	4135	4751	2467
Illubabor	45	9	2449	7665	1333
Kefa	21	1	1175	2455	589
Shewa	54	25	6068	14509	3482
Sidamo	22	-	4806	8441	355
Tigray	7	-	332	391	150
Wellega	64	12	6081	18209	6479
Wello	11	29	4082	5685	2114
<b>Total</b>	<b>405</b>	<b>139</b>	<b>41627</b>	<b>85781</b>	<b>25928</b>

Source: Ministry of Agriculture, Peasant Association and Cooperative Development Department, Farmers' Cooperative Movement in Ethiopia (Amharic), June 1983.

Even though most of the cooperatives were established during the stated period of time, it is likely that some of these cooperatives which appeared initially, came into existence as a result of the re-organization of previous "collective farms" which were run by PAs and settlers. From the beginning, cooperatives have been increasing over-time. This increase in their number, membership and their holdings can be seen from Table 3.4.

Table 3.4. The Development of Agricultural Producers' Cooperatives [1980/81 - 1986/87]

Year	Number of <sup>2</sup> Cooperatives		Number of <sup>2</sup> Coops Registered	Resources <sup>1</sup>				
	Malba	Wolba		Membership (Households)	Land (Ha)	Oxen	Tractor	Capital (Million Birr)
1980/81	405	139	32	34,533	36,387	89,041	29	-
1981/82	744	262	67	60,058	151,759	42,643	47	-
1982/83	799	397	129	79,835	139,261	61,176	66	30.5
1983/84	992	497	179	94,368	165,407	82,166	76	45.8
1984/85	1255	601	191	132,872	201,280	120,372	86	59.1
1985/86	1497	826	225	190,372	292,247	191,447	137	83.5
1986/87	1953	969	317	239,450	397,271	230,997	262	115.8

Source: <sup>1</sup> Ministry of Agriculture, Statistical Book of Agriculture (Amharic), Addis Ababa, 1987.

2. Ministry of Agriculture, Peasant Association and Cooperative Development Department, Annual Report, Various issues.

NOTES TO CHAPTER 3

1. The transfer of Rist Land will provide a right of holding-over the land so transferred. The land transferred as Rist Land however, may not be sold or otherwise alienated by the cooperative without the prior consent of the Ministry.
2. Two other studies, one by Kebebew Daka and another by the Ministry of Agriculture, have reached at the same conclusions. For details see, Kebebew Daka, Cooperative Movement in Ethiopia, [ Addis Ababa University, College of Social Sciences, 1978] p.41 and Ministry of Agriculture, Peasant Association and Cooperative Development Department, Farmers Cooperative Movement in Ethiopia, [ Amharic, June 1983].
3. Peasant Association is established on an area of 800 hectares of Land.
4. See page 37 of Provisional Military Administration Council, Directive for Establishing Agricultural Producers Cooperatives, [ Artistic, Printing Press, Addis Ababa, June 1979].
5. Field observations indicate that incentives provided through government policies, except those on sale of outputs, are available only for registered cooperatives.
6. Producers' Cooperatives, which are not registered, however, pay on interest rate of 7 percent on loan that they obtained from registered service cooperatives. This is because service cooperative provide loans to producers cooperatives from credit that it obtained from banks. Under this condition, the producers' cooperative not only pays the 5 percent interest rate, but also additional 2 percent to cover costs incurred by the service cooperative.

7. Higher AMC price for the products of the cooperatives may not necessarily imply that cooperatives are better off than individual farmers since the latter may sale their products produced above quota on the open-market. For details see Chapter 6.
8. The ten year prespective plan draws all its strategies from the Programme of the Workers party of Ethiopia. See Workers party of Ethiopia, Programme, Endorsed by the Founding Congress of the Workers Party of Ethiopia [ Addis Ababa, September 1984] pp. 61-66.

## CHAPTER 4

### PERFORMANCE EVALUATION: A MACRO LEVEL ANALYSIS

In our discussion of the historical development of Agricultural Producers' Cooperatives (APCs) in Ethiopia (Chapter 3), we concluded that irrespective of the various legal grounds provided for their development APCs did not develop in the country during the pre-revolution period. They have been, however, developing in the country as a whole in the post-1974 period. This has been true particularly for the period after 1979. In general, the theoretical and ideological considerations provided in Section 2.2.1, seem to form the basis for the development of cooperatives in Ethiopia-considerations which have found 'objective expression' in the June 1979 Directives. How much has the Ethiopian Government been successful in that line? Are the cooperatives (so far established) really in the direction of fulfilling the basic economic tasks for which they are created; that of meeting the food requirements of the people and supplying industry with agricultural raw materials which can only be achieved by increasing production and productivity? This part of the paper is thus directed at the performance evaluation of the cooperatives at a macro level since 1979.

#### 4.1 TEMPORAL ANALYSIS.

From the very beginning APCs grew steadily but slowly in number, membership and other material resources. This can be observed in Tables 3.4 and 4.1. The average growth indicators have, however, shown variations in those seven years. While the average number of members varied between 60 in 1981/82 and

82 in 1985/86, the average size of farms ranged from 67 hectares in 1983/81 to 151 hectares in 1981/82. The availability of ox-power/farm has also shown avairation. It has varied from a minimum of 42 oxens per farm in 1981/82 to 82 per farm in 1985/86. The average number of members, hectarage and oxen per farm for all years was 70,116 and 61 respectively.

In general, the growth of APCs was slow. Table 4.1 shows the growth rates of different indicators.

Table 4.1. The Development of APCs in Number, Membership and Resources.

Year	Number	Membership	Land	Oxen	Tractor
1981/82	84.6	73.3	317.1	46.8	62.1
1982/83	18.9	32.9	-8.2	43.5	40.4
1983/84	24.5	18.9	18.8	34.3	15.1
1984/85	24.6	40.8	21.7	46.5	13.1
1985/86	25.1	45.5	45.2	59.0	39.3
1986/87	25.7	25.8	35.9	20.7	91.2

Source: Calculated from data on Table 3.4.

Table 4.1 shows a number of important results. The tendency of making farms very large, relative to other resources, which was seen in 1981/82, was reversed in the four years that followed during which the rates of growth of both manpower and animal resources exceeded that of hectarage- a situation which steadily reduced the land-man and land-oxen ratios or

has increased the intensity of the use of both manpower and bullock power in these farms.

With the exception of 1982/83 and until 1985/86, the tendency in the cooperative farms has been one of decreasing the intensity of machine power. That is, in those years the rate of increase in hectareage has exceeded that of the increase in machines. In 1985/86 and 1986/87, however, cooperative farms have been relatively more machine intensive. In fact in 1986/87, there seem to have been a substitution between the utilization of tractors on the one hand, and manpower and bullock power on the other. In that year, both the land-man and land-oxen ratios increased while the land tractor ratio decreased. Refer to Table 4.2

Table 4.2. Resource Intensity in Cooperative Farms

Year	R A T I O S		
	Land/Membership	Land/Oxen	Land/Tractor
1981/82	2.52	3.50	3228.9
1982/83	1.74	2.30	2110.0
1983/84	1.74	2.00	2176.4
1984/85	1.51	1.67	2340.5
1985/86	1.51	1.52	2132.8
1986/87	1.65	1.72	1516.3

Source: Calculated from data on Table 3.4.

Production

Unlike the input side, whose growth has been relatively steady, the production side is marked by fluctuations. This is indicated in Table 4.3. The very sharp decline in total production experienced in 1980/81 did not reach its 1979/80 level until 1983/84. That again was followed by the 1984/85 drought year during which production showed a decline. As a result, production grew at an annual average rate of only 2.18 percent.

Table 4.3. National Estimates of Production of Major Crops  
in Ethiopia For Cooperatives .  
1979/80 - 1985/86

Thousand Quintals.

Year	C R O P			Total
	Cereals	Pulses	Others	
1979/80	1034.45	103.02	13.56	1151.00
1980/81	614.77	49.50	9.81	674.08
1981/82	689.48	87.11	17.82	794.41
1982/83	799.32	127.62	21.97	998.91
1983/84	1086.82	133.00	23.09	1242.91
1984/85	946.87	89.42	29.54	1065.83
1985/86	1462.18	139.81	35.39	1637.38

Source: Central Statistics Authority, Time Series Data on Area, Production and Yield of Major Crops 1979/80-1985/86, Addis Ababa, Oct. 1987.

Given the steady increase in resource use, and fluctuations in production, it is not difficult to observe the decline in the overall productivity of resources. The productivity of land (Quintal/hectare) between 1979/80 and 1985/86 is given in Table 4.4.

Between 1979/80 and 1985/86, yield<sup>on</sup> cooperative farms has declined by about 4.5 percent, making an annual average rate of change of -0.65 percent. Obviously, part of the decline in production and yield is explained by the climatic situations (drought condition) of the country. Whether part of the decline is attributed to other factors is a matter which we will try to explore in the next section of this chapter.

Table 4.4. National Estimate of Yield of Major Crops in Ethiopia for Cooperatives- 1979/80 - 1985/86

Year	Quintals Per Hectare			
	Cereals	Pulses	Others	Total
1979/80	8.82	5.58	4.36	8.29
1980/81	8.98	4.88	2.41	8.15
1981/82	7.29	4.58	3.64	6.70
1982/83	8.62	9.43	2.89	8.33
1983/84	6.69	5.86	1.13	6.04
1984/85	7.09	3.87	2.29	6.29
1985/86	8.13	5.24	2.84	7.47

Source: CSA, Time Series Data on Area, Production and Yield of Major Crops 1979/80 -1985/86, Addis Ababa, Oct.1987.

The situation of productivity of labour appears to be more serious than that of land. On the basis of the data in Table 3.4, labour force in the cooperative sector, between 1980/81 and 1985/86, was growing at an annual average rate of 12.35 percent. During this period, however, production of the main crops was increasing at a rate of 6.42 percent per year. Assuming that no family labour and transfer labour is used in production, it means that productivity of labour during those years was declining at an annual rate of 5.93 percent.

#### 4.2. COMPARATIVE ANALYSIS.

In Ethiopia today, aside from the cooperatives farm sector, crop production is also taking place in both the individual farms sector and the state sector. In 1985/86, while the individual farm sector accounted for 91.6 percent of the total crop production, the state sector accounted for 5.12 percent of the total. How did the cooperative farms sector performed relative to these two other sectors?

Moreover, judgement about its performance also requires an evaluation relative to the performance of the same sector developed in other countries. This section is thus devoted for that purpose.

Table 4.5 provides yield figures for the three different sub-sectors. As one may clearly see from that table, in all the seven years, for which data is available, while state farms operated best, the cooperatives operated worst. The yield on peasant farms, in all the given years have been

less than those in the state farms and greater than those in the cooperative farms sector.

Table 4.5. Estimates of Yield at Major Crops in Ethiopia For Private Holdings, Cooperatives and State Farms.

Year	Cooperatives	Private Holdings	State Farms
1979/80	8.29	12.46	15.66
1980/81	8.15	11.61	13.77
1981/82	6.70	11.20	14.76
1982/83	8.33	12.96	14.78
1983/84	6.04	11.15	14.84
1984/85	6.29	8.23	16.32
1985/86	7.47	8.86	18.02

Source: CSA, Time Series Data on Area, Production and yield of Major Crops, 1979/80 - 1985/86, (Addis Ababa, Oct. 1987) pp. 14, 20 and 23.

Further, if we take the averages of the seven years, which are 7.32, 10.92 and 15.45 for the cooperatives, individual peasant farmers and state farms respectively, we see that while yield in the APCs is less than the state farms by 52.6 percent, the comparative figure for private holdings was 29.3 percent. Moreover, a comparison of the APCs and Private holdings indicate a yield for the cooperatives which is less by 33 percent than the individual

peasant sector. Evaluated in terms of yield, therefore, the relative performance of the cooperative sector lags behind both the state farm and the private sectors.

In his "Comparative study of Transformation of Agriculture in Centrally Planned Economies: The Soviet Union, Eastern Europe and Mainland China", Karcez argues that the transformation of agriculture in all the three areas has (so far) passed through three separate stages; the precollectivisation stage,<sup>1</sup> the stage of command farming<sup>2</sup> and the decompression stage each of which may be legitimately viewed as a transformation of its own (Karcez, J.F, 1979).

The first stage includes changes in land tenure and some institutional arrangements. The second stage is the stage associated with the implementation of initial industrialization drive and the corresponding strategy of surplus collection. In this stage agriculture becomes a direct, rather than an indirect supplier of marketable surplus, of forced savings and labor. To implement the strategy of surplus collection, sets of institutions emerge and widespread- the most important of which is the collective farms. The third stage is related to efforts that are directed at mitigating- the environment of command farming.<sup>3</sup>

The socialist transformation of agriculture emerged first in the U.S.S.R and the duration of each of the first two stages was considerably longer,

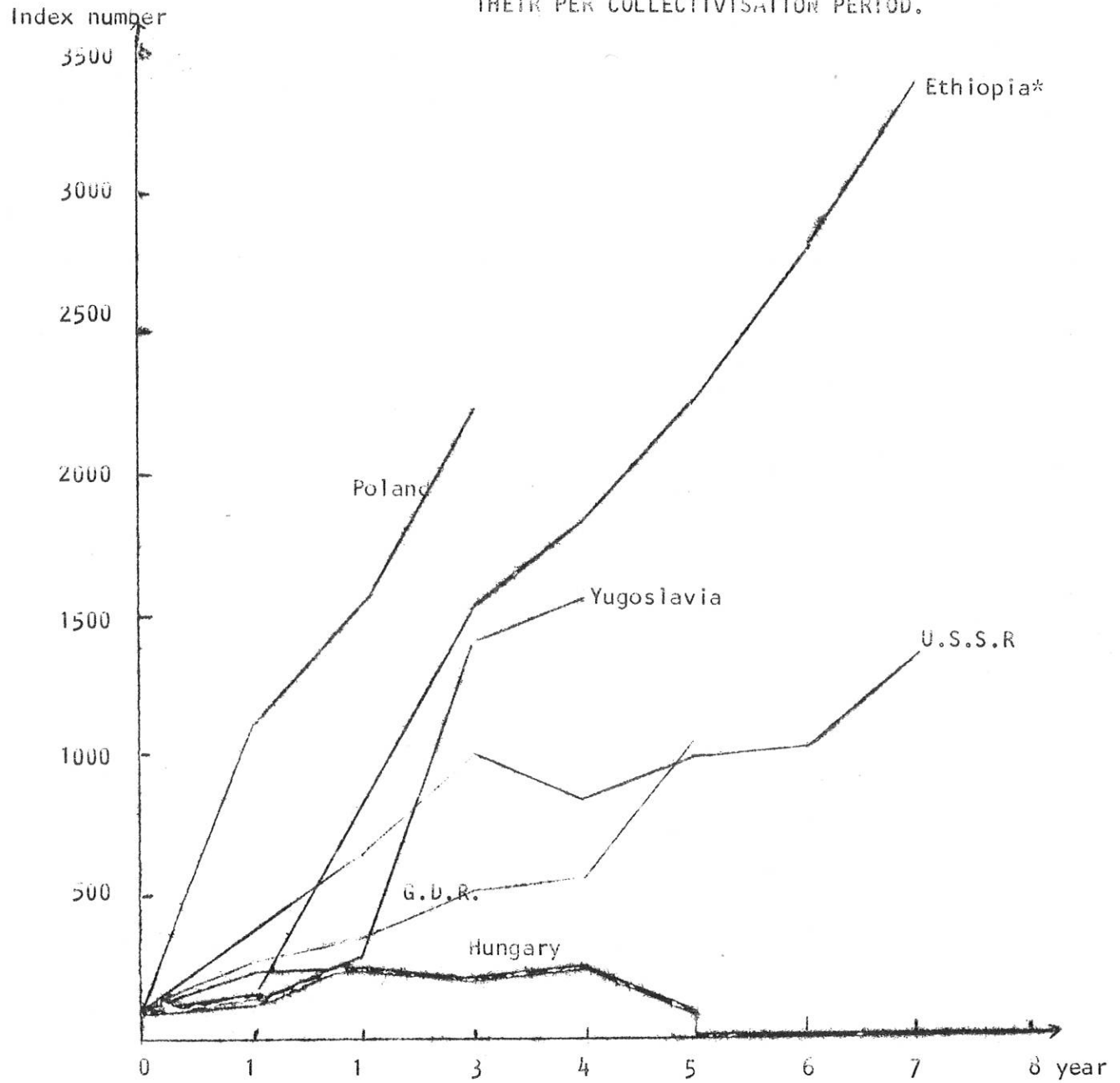
there than in any other area. The precollectivisation stage of peasant farming is said to have ended there in 1929. The second stage have come to a close in 1953. Decompression is still in progress. In Eastern Europe the duration of both the first and second stages were relatively shorter. The campaigns to collectivize in all the East European Countries begun in 1948/49. This marks the beginning of stage two. As in the U.S.S.R the third stage, in Eastern Europe started in 1953.

Given the above, we may see that any reasonable and meaningful inter-country comparison which includes Ethiopia must be confined to the precollectivisation stage. Charts 4.1 and 4.2 show the situation of cooperative development in different countries.

Chart 4.1 indicates that, in terms of growth of number of cooperatives, Ethiopia in her present, precollectivisation stage, has performed better than any other country in their comparative stages, except Poland who has returned to peasant type agriculture in 1956. Chart 4.2, however, indicate that in terms of members of cooperatives, growth in Ethiopia at the present, precollectivisation stage has in general been slower than other countries, in their comparative stage except Hungary.

Growth is not only slow interms of members of the cooperatives in pre collectivisation stage, but it is also slow in time relative to any other country, that is, the pre collectivisation period, has now taken

CHART - 4.1. THE DEVELOPMENT OF AGRICULTURAL PRODUCERS' COOPERATIVES, IN DIFFERENT COUNTRIES, IN THEIR PER COLLECTIVISATION PERIOD.

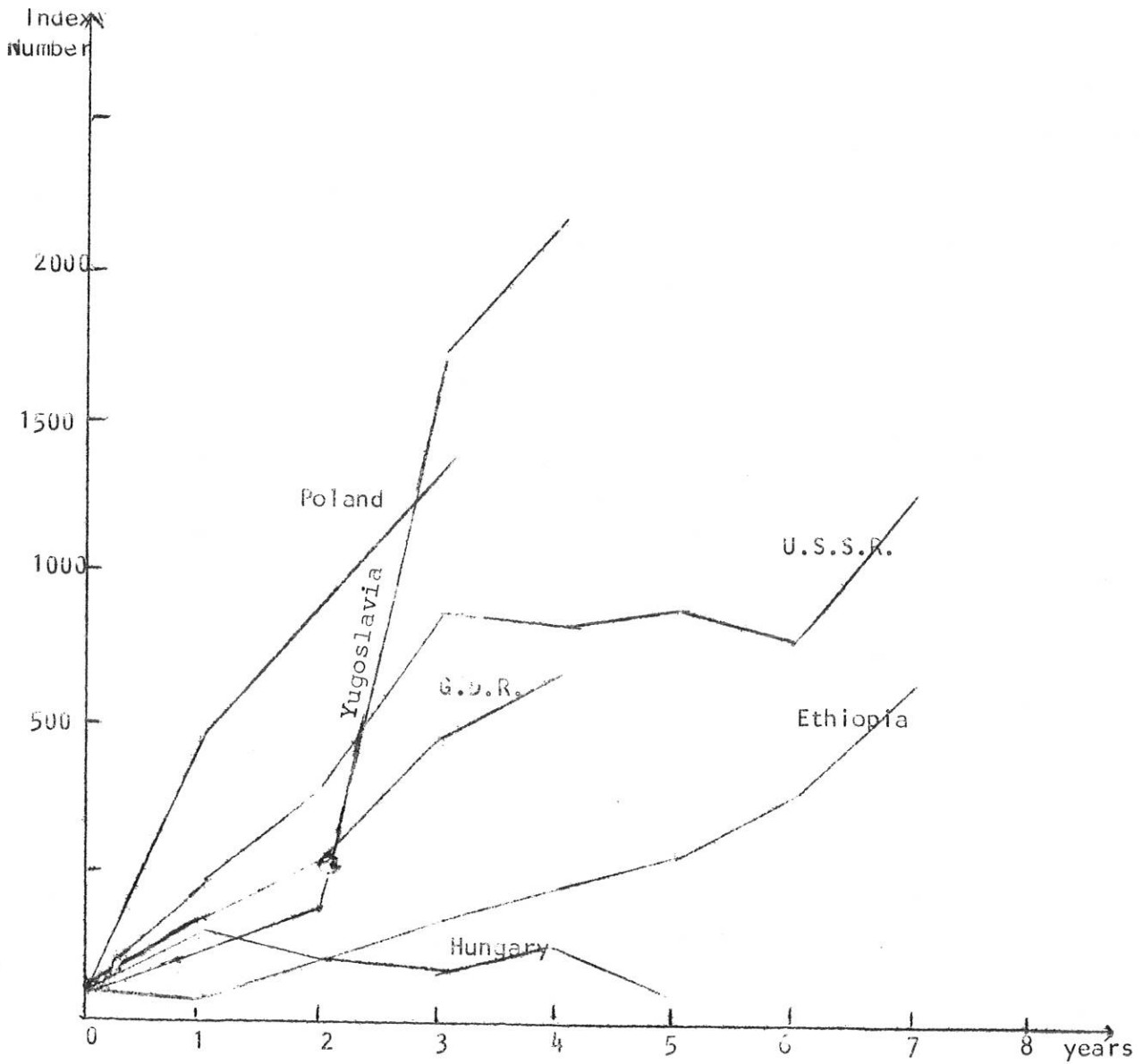


Data Source:

\* Table 3.4.

All the rest, Dunman, J. Agriculture: Capitalist and Socialist. Camelot Press Ltd. London, 1975

CHART 4.2. THE GROWTH OF MEMBERS OF AGRICULTURAL PRODUCERS' COOPERATIVES, IN DIFFERENT COUNTRIES, IN THEIR PER COLLECTIVE SATION PERIOD.



a longer period than any other country. Should we then grieve for that and rush into the mass collectivisation stage ? Before we decide for that we should:

- i) see into what the forerunners think about their past:
- ii) think in terms of ourselves - Our objective conditions.

Even though the second point is that we will reserve for discussion in Chapter 6, the first needs to be commented. In that respect, Gorbacher in his speech at the 4th All Union Congress of collective farmers has expressed his views than.<sup>3</sup>

Numerous Campaigns initiated from above did serious harm to the economic position of the collective farms. The mania for everything huge in production, all sorts of reorganization and limitations and bans on personal plots and on the development of cottage industries caused a lot of damage.

The consequences of this kind of attitude to collective farms, and to cooperatives in general are well known. We still feel them. We should include among them the slow progress in the solution of the food problem, the shortages in and narrow choice of many consumer goods, and the limited range of daily services. As a result of these things, we have untapped labour reserves and losses in material resources. Finally, they have led to a serious weakening of the major social factors of development.

We must admit today that this policy as regards the cooperatives has been erroneous. As a result of departing from the Leninist Principles of the cooperative movement, the country and its economy have suffered substantial setbacks in political, moral and social terms.

But this does not mean that we should totally give up co-operation. It, however, means that the cooperatives must be established by the initiative and creative power of the people themselves. This according to Gorbachev, is of fundamental importance, for no cooperative can successfully be established from above. Only initiative and creative work from below can produce living and full blooded cooperatives and give them a truly mass character.

Notes to Chapter 4.

1. Precollectivisation period refers to the period which preceded the beginning of mass collectivisation. In the precollectivisation period collective farms have already started to appear in all countries.
2. In terms of the development of collective farms, this stage is also called the period of mass collectivisation.
3. For a detailed characterisation of the three stages see J.F. Karcz, The Economics of Communist Agriculture. Selected papers, edited by Arthur Wright. (International Development Institute, Bloomington, Indiana, 1979)
4. Gorbachev, N., Using the potential of Cooperatives For Furthering Perestroika, Speech by General Secretary of the CPSU Central Committee Mikhail Gorbachev at the 4 th All-Union Congress of Collective Farmers, (Novosti Press Agency Publishing House, Moscow, March 23, 1988)-pp 12-13.

## CHAPTER 5

### PERFORMANCE EVALUATION: A MICRO LEVEL ANALYSIS

The micro level analysis which was provided in the preceding chapter was directed at a very general evaluation of the cooperative sub-sector. It was an attempt at shading light, rather than providing accurate figures, on the performance of that sub-sector relative to the two other sub sectors, i.e., state farms and private individual holdings. This chapter is thus directed at overcoming some of the shortcomings of the macro-level evaluation and is specifically directed at evaluating the allocative efficiency of the cooperatives at micro level.

#### 5.1. THE STUDY REGION

##### 5.1.1. GENERAL

Arsi, the study region, is mostly a hilly highland plateau demarcated from the surrounding regions by rivers and lakes. Its border with Shoa Region is partly the Awash River and the Lakes of zwai and Lanjano. The southern and south-eastern boundary is the Labe River, and the eastern and north-eastern border is the Shenan River.

Before the establishment of the Republic, in 1987, the region<sup>1</sup> was divided into 3 Awrajas and 21 Meredas. Chilalo, the largest Awraja of the three, covers about 47.5 percent of the 23, 647.7 square kilometers of the region. Ticho covers about 30 percent of the area of the region while Arbagugu, the remotest of the three Awrajas, covers about 5, 387.5 square kilometers.

Most of the region is situated on the lava plateau whose altitude ranges from 2000 to 2500 meters above sea level. The central and eastern highland plateau of the region, however, lies between 2500 and 3000 meters above sea level with peaks of more than 4000 meters. Westward in the low land zone of the region is the rift valley.

The mean annual temperature registered in 4 meteorological stations for the last 16 years varied from 13<sup>0</sup> and 14<sup>0</sup> Centigrades in the central and eastern highland plateau at Bokji and Tena respectively to 15<sup>0</sup> and 17<sup>0</sup> centigrades at Assasa and Kulunsa respectively. The average total rainfall in the region, over the last 16 years, has varied from 683.5 and 783 mms at Assasa and kulunsa to 1124 mms, <sup>and 1240 mms</sup> at Tena and Bokji respectively. The main rainfall season extends from June to September.

According to the census of 1984- the total population of the region was 1,562,232 of which only 6.5 percent lived in the urban areas<sup>2</sup>. The average density of the population in that year making 70.3 persons per square kilometer. The average family size is 4.7 persons<sup>3</sup> (Central Statistical Office, 1986). The female population in the region is approximately equal to the male population. The working age population is about 38 percent (Ministry of Agriculture, 1986).

About 93 percent of the population live in rural areas and are engaged in agriculture. Of the total farming population, 90.7 percent are mixed farmers, 8.3 percent are crop producers and the remaining 1 percent are livestock breeders.

Crop cultivation, the most important agricultural activity of the region, is carried on about 453.5 thousand hectares<sup>4</sup> of land in 1984. Most of the land under cultivation is devoted for annual crops. Of the annual crops, cereals are widely grown in the region covering more than 67 percent of the total area under cultivation. These are followed by pulses and oilseeds which together are grown on about 13 percent of the cultivated area.

Farming is largely carried using oxen and simple farm implements like 'Maresha', 'Doma' and 'Denjora'. Of the total farming families in the region, in 1983, about 58.2 percent owned 2 or more oxens, 24 percent owned only 1 and the rest, i.e., 17.8 percent owned none. Largely influenced by the activities of development agencies, CADU and ARDU, farmers in the region are fair utilizers of technological inputs, such as, fertilizer, improved seeds, pesticides and herbicides, while 48 percent of the farmers, in 1983, used fertilizer about 21 percent used improved seeds. Fertilizer is largely used in the production of cereals, namely teff, barley and wheat.

The region which covers less than two percent of the total area of the country contains about 7 percent of the area under major crops and produces more than 8 percent of the major crops. Because of its favourable agricultural resources base and the utilization of yield increasing inputs, yield per hectare in the region has, for all crops and in all years, been greater than the national average. In fact, in most of the years, in most crops, the yield in the region has been the highest in the country. As a result, Arsi is designated as surplus producing region in the country<sup>5</sup>.

The region, in 1983, marketed 40 percent of its wheat, 20 percent of its barley, 3.4 percent of its 'teff' and about 6.4 percent of its maize production.<sup>6</sup> Of the total crops marketed in that year, 79.1 percent came from Chilalo Awraja and 11.6 and 9.3 percent from Ticho and Arbagugu respectively.

The average income of an agricultural household in the region, in 1983, was 333 Birr, varying from 933 in Chilalo to 832 in Ticho, farmers in Arbagugu receiving about the average.

#### 5.1.2. COOPERATIVES DEVELOPMENT IN THE REGION

The history of the emergence of APCs in Arsi Region goes back to 1976/77, when 4 collective farms, referred to as 'Yehibret Irsha' then, were reported to have been established. In 1981, when the Directives for Establishing APCs was issued 47 cooperatives were reported to exist in the region, 46 in Walba and 1 in Wolba stage. These cooperatives in the region constituted about 8.6 percent of the total cooperatives in the country then. Since that time, cooperatives in the region were growing in number and stage of socialization Table 5.1 together with Table 3.3 give the development of the cooperatives in the region.

Between 1980/81 and 1986/87 the number of cooperatives, their members, total cultivated land, number of oxen and tractors owned by the cooperatives in the region have grown at annual average rates of 30.4, 41.2, 36.1, 72.6 and 52.3 percent, respectively.

Table 5.1. Agricultural Producers' Cooperatives  
in Ethiopia - 1986/87

Region	Number of Cooperatives		Number of Members	Total Cultivated Land (Hectare)	Number of Oxen
	Malba	Wolba			
Arsi	76	319	39471	81575	54683
Bale	53	63	5593	11892	7183
Eritrea	6	3	250	225	77
Gamogofa	13	7	2941	4043	2069
Gojjam	440	37	54012	101230	56127
Gonder	123	5	8361	15557	6113
Harrarghe	63	192	23366	22664	11402
Illubabour	102	6	5247	5497	3127
Kefa	145	12	7026	8655	5912
Shoa	483	147	31867	61831	42789
Tigray	5	1	370	551	250
Wellega	121	114	13353	18630	11941
Wello	197	62	34083	36124	27686
<b>Total</b>	<b>1953</b>	<b>969</b>	<b>239450</b>	<b>397271</b>	<b>230997</b>

Source: Ministry of Agriculture, Peasant Association and Cooperative Development Department, Annual Report. 1979 E.C.

The above figures give important implications about the development of APCs in the region. A comparison of rates of growth of the number of cooperatives and their members shows an increase in the average number of members of the cooperatives. On the other hand, a comparison of the rates of growth of members of the cooperatives and their cultivated land indicate a decline in the average land size per member between the given years. Since the rate of growth in the average land holding has been less than the growth rates in members, oxen and tractors, the cooperative farms in the region, have been more and more resource intensive, that is, the man-land, oxen-land and tractor-land ratios have shown an increase. This however may well vary significantly among cooperatives.

The growth of cooperatives in the region, in all the variables given above between the years specified has exceeded that of the whole country. The national growth rates in number, membership, land holding, ownership of oxen and tractors were 24, 25, 21, 31 and 36 percent respectively.

The cooperatives in the region employed 46 percent of the total fertilizer, 72 percent of the total improved seeds and 34 percent of the total bank credit directed to the cooperative sector in the country in 1985/86. In all cases it was that region which received the top priority.

As far as production is concerned, we find that while the production of major crops by the cooperatives in the region increased at an annual average rate of 14 percent between 1977/80 and 1985/86, the total area under these major crops rose by 12 percent. The comparative figure for the cooperative sector in the country as a whole between those two years were 5.3 and

6.5 percent respectively. Given these figures, we see that while yield in the major crops in the region, in between the specified period of time, was increasing at an annual rate of 2 percent, yield in the country was declining at a rate of 1.2 percent.

A comparison of agricultural development in terms of area under major crops and production of major crops in the region as a whole and that of the cooperatives in that region produces similar results. In between the above given two years while the area under major crops in the region was increasing at an annual average rate of 3.9 percent, production was increasing by about 2 percent. The very high rate of growth of hectarage and production achieved by the cooperative sub sector on the one hand and smaller rate of growth recorded by the agricultural sector in the region on the other, resulted in the growth of the share of APCs - while the regional share of the cooperatives of area under major crops increased from about 3.8 percent in 1979/80 to 6.7 percent in 1985/86, their share in production increased from 2.7 percent to 6.3 percent during the same period.

Even though the development of APCs in the region has in general been faster than in other regions the pace of development of the two socialisation levels has not been the same.

Unlike all the other regions of the country, in Arsi the development of Wolba (the second stage in the development of APCs) has in general been faster than halba (the first stage). Thus, between 1980/81 and 1986/87,

while the cooperatives in the first stage of development, grew at an annual rate of 7.17 percent, those in the second stage grew at an annual average rate of 82.3 percent.

Malbas and Wolbas in the region do have a clear distinction in one respect - in terms of the average number of their members. In general, malbas have a smaller number of members than Wolbas. In this respect, while the average number of members in Wolbas in 1985/86 was 112, the comparative figure for malbas was only 50.

As far as their distribution across Awrajas is concerned most of the cooperatives are concentrated in Chilalo. Of the 378 APCs in the region in 1985/86, 66.7 percent were found in that Awraja, 22 percent in Ticho and 11.3 percent in Arbagugu.

## 5.2. THE METHODOLOGY

In order to evaluate the allocative efficiency of APCs in the region, a sample of cooperatives was considered.

### 5.2.1. SAMPLING PROCEDURE

APCs in the region, in both stages of development, were arranged into different strata on the basis of input **factors**.<sup>7</sup> A list of cooperatives in the region in 1986/87, containing data on inputs and other social indicators, obtained from the Ministry of Agriculture were used for this purpose. The stratification made on the basis of those data is provided in Table 5.2. Two important ratios, namely ox/man and land/man ratios were used in forming the strata.

Table 5.2. Classification of Agricultural Producers' Cooperatives in Arsi Region Based on Input Factors - 1986/87

Malba

Ox Per man \ Land Per man	3	1 - 3	1
2	4	5	0
15 - 2	1	21	0
1 - 1.49	0	15	1
1	0	10	3
0	0	1	2

(A)

Wolba

Ox Per man \ Land Per man (Ha)	3	1 - 3	1
2	3	15	0
15 - 2	9	116	2
1 - 1.49	0	96	3
1	0	37	5
0	0	1	0

(B)

Wolba

Ox Per Man \ Land Per man	3	1 - 3
1.5 - 2	0	1
1 - 1.49	2	9
1	1	9

(C)

Source: Summarised from list of cooperatives obtained from the Ministry of Agriculture, Peasant Association and Cooperative Development Department.

Panel C shows the number of cooperatives, who in addition to the specified ox/man and land/man ratios also own tractors.

In moving in the direction of determining the sample size in each stratum, we first set the upper limit of the total sample size that was expected to be covered. The determination of the total sample size was influenced by its representativeness of the various strata and the statistical requirements of the methodology that were intended to be applied in the methodology<sup>8</sup>. Given these two important factors 10 percent of the total number of cooperatives seemed to provide the optimum size and were included in our sample. The total sample was then allocated to the two socialization levels (Malba and Wolba) and the different strata contained in each one of them in proportion to the total number of cooperatives contained in them. Once the allocation into the two socialisation levels and the different strata was made, simple random sampling was applied to select the 39 cooperatives, 31 in Wolba and 8 in Malba stage, which were to be covered by our study. In addition to the 31 cooperatives in wolba stage given in Table 5.3, Gonesa Meja, Shire Aragesa, Lower Abo Ali, Sigalo 02, Siltana Limda, Tereta Chole, Tebo Chacha and Golo were selected from the Malba stage and were included in our sample. It was however later discovered that only lower Abo Ali and Golo<sup>9</sup> were found at that level of development the rest having been transformed into the higher stage - Wolba. Substitution was attempted, but no authority was certain, whether those at Malba stage (known to them) were still at that stage or have been transformed to the next stage. This situation thus forced us to restrict our sample to the 31 cooperatives selected from the higher stage.

### 5.2.2. DATA COLLECTION

Data collection was carried using three sets of questionnaires. The basic questionnaire, questionnaire 1, was prepared to collect data on production-inputs and outputs -data required in the analysis of the allocative efficiency of the cooperatives and available in the documents of the cooperative farms. This questionnaire, in all the cooperatives, was filled either by Wereda development agents or accountants of the cooperatives who have direct access to the documents. To check the reliability of the data so obtained, others (on the main variables) were collected from the offices of the Ministry of Agriculture at different levels. Except in one case, that of Igedena, the two sets of data recorded by two different institutions were found to be the same.

The other two questionnaires, were prepared to fill any information gaps and to collect qualitative & quantitative data required for the analysis of the problems faced by cooperatives (chapter 6). While questionnaire 2 was prepared for response by the officials of the cooperatives, questionnaire 3 was directed to the individual members of the cooperatives. The chair<sup>men</sup> of each of the sampled cooperatives together with the secretaries responded to the various questions provided in questionnaire 2, the purpose of which was the extraction of information on the process of the establishment of the cooperatives, the effectiveness of management and organization, the decision making process, system of remuneration of labour, and problems of input supply.

The purpose of Questionnaire 3, directed to members of the cooperatives was to collect information on how they became members (voluntary or otherwise), the process of resource transfer and resource allocation, their pattern of income and expenditure, the degree of participation and democracy in management and decision making, as well as other information regarding their condition of living as members of cooperatives in comparison to their conditions before. 3.5 percent of all members of the sampled cooperatives were covered by the interview. The respondents were selected using stratified random sampling.

First members of each of the cooperatives were stratified into high, medium and low income earners on the basis of the data of the cooperatives. 3 to 5 percent of the total members were then taken from each of the sampled cooperatives in such a way that the sampled total are equally distributed between the three income strata. Enumerators for the purpose of interviews were carefully selected from the surrounding towns. Those people who don't have any relation with the organisation of peasants into cooperatives and those who have completed twelfth grade were selected as enumerators.

### 5.2.3. DATA ANALYSIS

#### 5.2.3.1. CHANGES IN RESOURCE AVAILABILITY OF THE COOPERATIVES AND THE NEED FOR RESTRATIFICATION

As we have indicated above, a stratified proportionate sampling was applied in selecting the cooperatives included in our sample. The stratification was made on the basis of two input ratios, land - man and ox - man ratios, formed on the basis of 1986/87 data. These ratios, however,

TABLE 5.3. PARTICULARS OF THE SAMPLED COOPERATIVES - 1987/88 DATA

	NAME OF THE COOPERATIVE	YEAR OF ESTABLISHMENT	NUMBER OF MEMBERS	NUMBER OF OXEN	TOTAL CULTIVATED LAND (HA)	INPUT RATIOS		TOTAL OUTPUT (QUINTALS)	INPUT-OUTPUT COEFFICIENTS	
						LAND-MAN RATIO	OX-MAN RATIO		OUTPUT PER MAN	OUTPUT PER HECTARE
01	UPPER ABOAW	1972	79	146	265	3.35	1.84	3194.24	40.43	12.05
02	BULAD	1978	69	119	97	1.40	1.72	1329.15	19.26	13.70
03	KEMELE	1977	61	74	120	1.96	1.21	1099.79	18.03	9.16
04	SIRBO	1977	63	108	112	1.77	1.71	851.16	13.51	7.60
05	BOKOJJI CHEFA	1975	176	272	337	1.90	1.54	5172.61	29.39	15.35
06	ABOSERA ALKO	1973	100	113	208.5	2.00	1.13	2037.82	20.38	9.95
07	HABIE CHORA	1975	115	142	230.	2.00	1.23	3072.22	26.71	13.36
08	JIDA HALILA	1974	310	458	648	2.09	1.48	10424. -	35.60	16.11
09	FEJE FEJE	1976	140	262	338	2.41	1.87	4092.16	29.23	12.10
10	KERENSA 02	1976	76	134	214	2.82	1.76	2131.5	28.05	9.96
11	BORE 02	1976	67	119	212	3.16	1.78	2498.2	27.30	11.78
12	BUCHO 02	1974	250	268	758.8	3.03	1.07	6971. -	27.88	12.76
13	EAWA 01	1974	222	244	714.34	3.22	1.09	3660. -	16.49	5.12
14	WAJJI	1976	125	183	260	2.08	1.45	5303.61	42.43	20.40
15	WENJI GORA	1976	62	65	92.5	1.49	1.05	1296.34	20.91	14.01
16	KAWA 02	1974	252	256	729.38	2.89	1.07	3398.10	13.48	4.66
17	LODIE SHARBIE	1975	69	87	168	2.43	1.26	643.9	9.91	3.83
18	HURUTA FERDEBUSA	1975	120	81	264.1	2.20	0.675	5544.67	46.21	20.99
19	GULELE ODAJILA	1977	59	110	142	2.41	1.86	2708.45	45.90	19.07
20	JIDA ASKELTU	1974	160	260	358. -	2.24	1.63	6216.-	38.85	17.36
21	BUCHO 01	1974	201	252	774.12	3.85	1.25	6405.36	31.87	8.27
22	WELKITE 01	1974	188	187	631.-	3.26	0.99	3593.51	19.11	5.86
23	LIMU MIRT	1973	194	144	243.-	1.25	0.74	3835.30	19.76	15.78
24	LIMU AREA	1973	178	174	256.5	1.44	0.97	3676.93	20.66	14.33
25	LIMU CHEFRIE	1972	315	174	590.81	1.87	0.55	10031.05	31.84	17.00
26	HURUTA HITOSSA	1972	227	180	439.75	1.93	0.79	8334.40	36.70	18.95
27	LEGE DENA	1978	67	105	173.-	2.58	1.57	2362.-	35.25	13.65
28	ALELTU MOLE	1971	116	200	174	1.50	1.72	2555.01	22.02	14.68
29	BOSHA BURKITU	NG	34	40	39	1.14	1.18	227.13	6.68	5.82
30	HEROTA	1975	332	537	535.25	1.61	1.61	8126.78	24.48	15.18
31	BURKITU 01	1977	42	78	167. -	3.98	1.86	2627. -	62.54	15.73
AVERAGES			144	180	331	2.29	1.25	3981.2	27.61	12.0

will be stable over time if the land the cooperatives hold, the draft animals they own and the number of their members remain constant or change proportionately. But this has not been the case in our study area and there has been a significant variation in resource availability of each of the cooperatives included in our sample in the three years for which data were collected. This variation has necessitated the re-stratification of the sampled cooperatives on the basis of 1987/88 data.

The basic rationale behind the stratification of the sampled cooperatives is to select a representative or a typical farm which may serve as a basis for Linear Programming Modelling. The representative farm approach involves classifying the total sample into a number of groups showing homogeneity in some respect and constructing a model for the representative farm in each group. The results obtained from the model will then indicate averages for each group which may serve as a basis for making generalization for a group of similar farms.

Since the LP approach involves the use of inputs and outputs, it would be meaningful if the classification is based on the Criteria of technical homogeneity; i.e., on the basis of similarity in input ratios and input - output coefficients. Taking the above into consideration we have employed five criteria in classifying the sampled cooperatives into six different groups. The criteria include land-man ratio, ox-man ratio, output per hectare, output per man (Productivity of labor) and the physical conditions<sup>10</sup> of the cooperatives. The specific characteristics of each of the six groups classified according to the above criteria are provided in Table 5.3.

Table 5.4. Classification of the Sampled Cooperatives

Group	Land Man Ratio	Ox - Man Ratio	Average Yield (Quintals) Per hectar	Output Per Man (Quintals)	No. of Coopts' In the Group
1	3	1-2	11	38	4
2	2.8	1-2	5.21	16.4	3
3	1.6-2.6	1-2	16.	33.8	8
4	1.6-2.6	1-2	8.90	17.3	3
5	1 - 1.5	1-2	14	21.-	3
6	1 - 2	0-1	18	31.-	5

In accordance with the classification given in Table 5.3. the following cooperatives constitute each group.<sup>11</sup>

Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
Upper Abo Ali	Kawa 01	Bokojji Chefa	Kemle	Bulad	Limu Mirt
Bore 02	Kawa 02	Habie Chora	Sirbo	Wenji Gora	Limu Area
Bucho 01	Welkite	Jiba Halila	Abosera-	Aleltu Mole	Limu Chemerie
Bucho 02	01	Feje Feje	Alko		Huruta Hitossa
		Wajji			Huruta Gerdebusa
		Gulele Odajila			
		Jida Askeltu			
		Herota			

As regards the derivation of representative farms from each group, collinson (1963) notes two alternative methods, selection of a particular farm to represent a group or the synthesis of group averages into a representative farm unit. Since the number of cooperatives in each group is small and cannot provide adequate information to select a particular farm with representative characteristics, we have opted for the derivation of the representative farm as the arithmetic mean farm calculated from the group.

#### 5.2.3.2. THE LINEAR PROGRAMMING MODEL

The Linear programming is a mathematical method used in determining the optimal value of a linear function subject to linear constraints.

Symbolically the model is given as:

$$\begin{aligned} \text{Optimize } Z &= CX \dots \dots \dots (5.1) \\ \text{Subject to: } AX &\leq b \\ X &> 0 \end{aligned}$$

- Where: C= Vector of coefficients of objective function
- X= Vector of optimal level of activities
- A= a matrix of input-output coefficients
- b= input availability vector.

The LP models have had as their main purpose an analysis of the allocation of resources to different crops. In employing the LP models for the purpose of analysis, first of all one defines the ideal output. Then, with these optimal outputs one compares the actual output to estimate and evaluate the efficiency in the allocation of resources.

In estimating the allocative efficiency of our cooperatives, therefore, an LP model is constructed for the representative farm derived from each group. Our Linear Programming model may be specified in terms of its objective function, its activities and its constraints.

A) The Objective Function

The cooperative enterprises are assumed to maximize the total values of their net revenues defined as the values of their outputs minus their non-labor and land costs.

b) Activities

Five broad types of activities are considered in the model, relating to production, consumption, marketing, use (hiring) of machinery and credit.

(1) Production Activities

All in all, this activity includes the production to ten crops, namely, wheat, barley, maize, millet, Teff, field peas, horse beans, Linseed, fenugreek and vegetables and root crops.

(2) Consumption Activities

The total product produced by the cooperatives is utilised for three purposes; members' consumption, for sale and for seed. Since the major part of production goes to consumption, it may be argued that consumption plays an important role in their activities. This food requirement for meeting domestic subsistence needs is included in the model.

(3) Marketing Activities

Except vegetables and root crops which are sold in a free market, these activities consist of the sale of agricultural products to the Agricultural Marketing Corporation.

(4) Use or Hiring Activities

These activities involve the utilisation of own farm machinery or the hiring of farm machinery, i.e., tractors and combines from Agricultural Mechanisation Services Corporation.

(5) Credit Activities

Credit activity provides the cooperatives with the option of borrowing capital to cover their working capital requirements. These are obtained at a rate of five percent from banks.

C) Constraints

The model is subject to the following constraints.

1. Land

Total cultivated land and wheat land were specified in the model except for Group 4 which is not involved in the hiring of machinery.

2. Labor Constraint

The availability of labor in cooperatives is determined by their total members. The entire labor force contributes a certain maximum labour hour per crop season which should be divided into the requirements of the various crops. To take seasonal peaks and troughs into account labor constraint is further divided into four operational periods, ploughing and sowing, weeding, harvesting and threshing.

### 3. Ox-power Constraint

Ox power in the study area is basically used for plowing and threshing. Ox-power constraints are therefore set to balance the ox-power requirements, with the available capacity in those two periods.

### 4. Machine Power Constraint

Some cooperatives own tractors and combines (Group 6) for use on their farm. Tractors are used during plowing season while combines are used for harvesting. Machine power constraints are therefore set to balance requirements with available capacity.

### 5. Hiring-machine Power Constraint

Each cooperative is provided with the option of hiring as much machine power as it wishes (usually determined by the area of wheat and barley land) at a rate of 160 birr per hectare for plowing, discing and seed covering and 98 birr per hectare for harvesting and threshing.

### 6. Operating Capital and Credit Constraints:

Operating Capital requirements comprise that amount of cash which is consumed to cover variable and other costs. All cooperatives have some capital obtained from past year production activity for this purpose. Once that operating capital is depleted, they have the option of borrowing capital at an interest rate of 5 percent.

### 7. Subsistence Requirements

Cooperatives maximize their cash income after fulfilling their minimum consumption requirements. This imposes a constraint on the maximization problem. This consumption requirement is determined by the minimum calorie requirements of members household.

### 8. Crop Production Equilibrium

The production equilibrium condition, balances production, consumption and selling activities.

## 5.3. EXISTING PATTERN OF RESOURCE ALLOCATION AND CROP PRODUCTION OF THE SAMPLED COOPERATIVES

In this section, we will provide a brief description and analysis of the patterns of actual resource use and crop production of the sampled cooperatives. The data provided in this section, will be compared with the optimal resource allocation and cropping patterns obtained from computer analysis .

### 5.3.1. RESOURCE AVAILABILITY AND RESOURCE ALLOCATION

#### LAND

The total land under the cooperative holdings in 1979/80 varied from a minimum of 130 hectares in Boshu Burkitu to 1550 hectares<sup>9</sup> in Bucho 01, the average total land holding being 586 hectares per cooperative farm. Between 1985/86 and 1987/88, the total land holding of the cooperatives was growing at an average annual rate of 10 percent.

The total land holding of the cooperatives in general is divided into cultivated land, pasture land and other (forests swamps, etc.). Of the total 17580.5 hectares which was held by the sampled cooperatives in 1987/88, 57.6 percent was under crops, 38 percent was left for pasture, the rest being covered with forest or remaining unused either because it was swampy or for other reason.

Most of the cultivated land of the sampled cooperatives is used for the production of cereals, even though pulses and oilseeds are also grown. Of the total area cultivated in 1987/88, 87.9 percent was used for cereal production, 6.8 percent for pulses and about 3 percent for oilseeds, the rest being used for vegetables, root and other crops.

LABOR

Basically, members of the cooperatives provide labor to the cooperative farms. Most members of the cooperatives are male and fall between the ages of 19 and 55. Few members are female - 10 percent in 1987/88. People above the ages of 55 can also be members of the cooperatives. The age -sex distribution of members of the sampled cooperatives is provided in Table 5.5

Table 5.5 Percentages of Age - sex Distribution of Members of Cooperative Farms - 1987/88

SEX	A G E						Total of Ages Exceeding 56	Total
	13-25	26-35	36-45	46-55	56-65	66+		
Male	18	18	23.4	15	9.6	5.5	15.1	89.4
Female	1.2	2.1	2.5	2.7	1.4	0.7	2.1	10.6
Total	19.2	20.1	25.9	17.7	11	6.2	17.2	100

Source: Field Survey.

Even though cooperatives may also use their family labor in production, the utilisation of such labor in the sampled cooperatives is negligible which leaves a considerable amount of labor unutilised. The percentage of age - sex distribution of members families of cooperative members is provided in Table 5. The average family size of the sampled cooperatives in 1987/88 was 5.95 of which 1.98 was in the working age category. i.e., between the ages of 15 and 60.

Table 5. Percentage of AGE-Sex Distribution of Members of Family of the Cooperatives - 1987/88

SEX	A G E				Total of Ages Between 15 and 60	Total
	< 14	15-17	18 - 60	61+		
Male	27.8	5.6	5.4	1.2	11.0	40
Female	28.2	7.6	22.9	1.4	30.5	60
Total	56.0	13.2	28.3	2.6	41.5	100

Members of the cooperatives are therefore the main sources of labor. They work on a full-time regular basis and provide a constant supply of effort throughout the production year. In 1986/87 and 1987/88 a member, on the average, worked for about 1530.8 hours (=191.4 days per year) varying from a minimum of 602 hours in kerensa 01 in 1987/88 to 2289 in Abosera Alko in the same year. The per hectare utilisation of labor resource on the representative farm basis is provided in Table 5.7

### OX POWER

Even though some cooperatives own machine power and others may use such an input through hiring, most of the agricultural land in the region and in the sampled cooperatives is cultivated using-ox power. On the average, the sampled cooperatives had 180 oxen in 1987/88, varying from 40 in Bosha Burkitu to 537 in Herota.

In 1987/88 the average cultivated land by a pair of oxen was found to be 3.7 hectares. The ox-man ratio was found to be 1.25.

### MACHINE POWER

As far as machine power is concerned, while a number of cooperatives own tractors and combines, other obtain their services through hiring from Agricultural Mechanization Service Corporation established by Proclamation 337 of 1987 (Negarit Gazeta, 40th Year, No. 30) or from service cooperatives. While the rates charged by service cooperatives vary from place to place, the rates charged by Agricultural mechanization are the same throughout their operation areas, differing only by the type of the soil they cultivate. In the latter case, while the cooperatives pay 167.94 birr per hectare, for plowing, discing and seed covering for heavy soil, the rate paid for the same operations for medium soil is 159.64 Birr. On the other hand, cooperatives pay 97.73 Birr per hectare for the use of combines in harvesting and threshing.

The utilisation of agricultural mechanisation services in the region was actually started in 1986/87 crop year and was widespread in 1987/88 crop year. Most of the cooperatives hire machinery services in the

plowing of wheat and/or barley fields and in the harvesting and threshing of the same crops. The payment made by the cooperatives for the use of such services, on the representative farm basis, is provided in Table 5.7.

### OPERATING CAPITAL

APCs derive their operating capital from their farm income. After subtracting the annual costs from the gross farm income, the remainder is divided into two parts - farmers' income, (which is paid in kind to members) and the net farm income of the cooperative - The net income of the cooperative enterprise, in turn is divided in varying ratios for various purposes. While 60 percent of the total is assigned for fixed and operating capital (30 percent each) for the subsequent crop year, 25 percent is maintained as a reserve fund. The rest is used for material and moral incentive (2 percent) and for social development (13 percent).

The size of operating capital is thus dependent upon the total income and the ratio in which the total income (net of costs) is divided between farmers' income and the net income of the enterprise. Since both the total income and the ratio vary from year to year the amount of operating capital available to the farm also varies. The utilisation of operating capital per hectare in the six representative farms is given in Table 5.7.

### 5.3.2. CROP PRODUCTION IN THE COOPERATIVE FARMS

Production, income and costs of production of the sampled cooperatives are provided below. Monetary values were derived on the basis of total non-labor resource costs incurred by the APCs and the cash equivalents of their total output.

## OUTPUT

The total quantity of output produced by the sampled APCs in 1987/88 varied from 227 quintals in Bosha Burkitu to 10424 quintals in Jida Halila - the average per APC being 3981 quintals. Wheat and barley constituted more than 85 percent of the total output. The total yield in the cooperatives has also shown a considerable variation. It varied from 21 quintals per hectare in Huruta Gerdebussa to 3.8 quintals in Lodie Sharbil - the average for all the APCs being 12 quintals.

Most of the output of the APCs is distributed in kind among its members in accordance with their annual labor inputs. In 1987/88 about 54.83 percent of the total output of the sampled cooperatives was so distributed. Only about 34.35 percent of the total output of these cooperatives was marketed, the amount reserved by them for seed being 10.82 percent.

The total income of the sampled cooperatives from crop production activity was 4,458,877.51 Birr in 1987/88, ranging from 7057.75 in Bosha Burkitu to 364,697.95 Birr in Limu - chemerie. The average for all farms in the same year was 148,629.25 Birr. Aside from the incomes that cooperatives derive from crop production, they also obtain marginal income (3.2 percent of the total in 1987/88) from other activities such as livestock production, handicrafts and the provision of various services. The income so obtained by 13 cooperatives in 1987/88 was 149,899.54 Birr. Hence the total income derived from crop production and other activities by the cooperatives in 1987/88 was 4.6 million Birr.

### COSTS

The total cost of the cooperatives is divided into variable costs (expenditure on seeds, fertilizer, pesticides and herbicides) and overhead costs (taxes paid to PA, per diem, administrative costs, etc). The variable and overhead costs absorb a considerable amount of the income of the cooperatives. In totality, they constituted about 46.7 percent, of the total farm income of the cooperatives in 1987/88 of the total costs, the variable costs are the main ones accounting for more than 80 percent of the total cost incurred by the cooperatives in the same year.

### LABOR INCOME

After allowance is made for costs, more than 85 percent of the income of the cooperatives is distributed among its members as labour income. The average per capita labor income so distributed in 1987/88 varied from zero in Kawa 02 and Welkite 01 (because their costs and debts exceeded their production) to 1184.45 Birr in Huruta Hitossa - the average for all being 480.67 Birr. Members of cooperatives in Kawa 02 and Welkite 01 survived by meeting their food requirements through borrowing.

For the purpose of comparison with the optimal values, the analysis provided above, on individual farm level, is summarized for each of the representative farms in Table 5.7.

Table 5.7 Summary Data On Production of Representative Farms

	R E P R E S E N T A T I V E F A R M S					
	1	2	3	4	5	6
<b>Cropping Pattern:</b>						
<b>Area Under</b>						
1.1.Wheat	184.32	325.10	181.66	49.7	20.17	129.1
1.2.Barley	291.24	294.8	104.56	70.7	70.8	143.5
1.3.Maize	-	-	19.84	1.67	-	10.5
1.4.Millet	-	-	0.875	3.3	1.3	-
1.5.Teff	-	-	8.0	-	-	16.2
1.6.Field peas	5.5	20.07	28.38	4.0	14.53	21.8
1.7.Horse Beans	5.75	-	8.75	6.0	5.3	18.1
1.8.Linseeds	14.92	42.0	1.0	5.0	1.0	0.5
1.9.Fenugreek	0.75	3.58	2.56	3.3	0.67	10.3
1.10.vegetables	-	-	-	-	-	16.14
<b>Resource Use:</b>						
2.1.Area Cropped (Ha)	502.48	685.55	355.62	143.67	120.77	366.18
2.2.Annual labor used(hours/farm)	267555.0	378631.0	228411.00	145492.0	148846.0	313257.0
2.3.Machinery costs (Birr/farm)	35794.0	54893.0	14464.0	-	3697.0	18035.0
2.4.Operating funds (variable costs/ha)	122.21	137.32	110.90	65.39	124.21	172.0
<b>Returns</b>						
1. Total farm returns	150621.0	129889.0	195645.00	48723.0	59377.0	252761.0
2. Returns per hectare	300.0	189.0	550.0	339.0	492.0	690.0
3. Returns per hour	0.56	0.34	0.85	0.33	0.40	0.8
4. Returns per unit of operating capital	1.55	0.86	3.62	5.18	3.17	3.1

## 5.4. EMPIRICAL ANALYSIS

### 5.4.1. THE DATA BASE

The data used in the LP model, in most cases, are those obtained from field survey. In some cases, however, results of experimental stations and previous established standards are also used.

#### LABOR

In their statutes, all cooperatives have set an eight hour working day and 6 working days per week. Hence, a member of a cooperative is expected to work not less than 264 days in a year. But not all members of the producers' cooperative abide by this policy. There is absenteeism and off-farm commitments which prevent members from working on the large cooperative enterprise. Thus one cannot take as much as 264 days as a basis for assessing labor supply in cooperatives. What was done here was to estimate the labor supply as an average of the total workdays worked by each member of the sampled cooperatives for three years. According to this estimate a member, on the average, has worked for about 195 working days in a year. Taking this as a basis, labor supply was derived by multiplying 195 days by 8 hours and their product by the total members of each of the representative farms.

#### LAND

In all cases the area of total cultivated land available to the cooperatives was taken in the model. To assimilate the costs of hiring machinery into the model and to gauge the effects of using machinery on

the utilisation of resources (labor ox-power and operating capital) a minimum land limit for wheat was specified whose size was determined by the total machinery cost for all the representative farms except for Group 6 which <sup>has</sup> its own machinery and Group 4 which was not involved in such an activity. In addition, for Group 6 which is involved in the production of root crops and vegetables, a constraint which restricts the land under these crops to a maximum hectarage of 15 hectares was supecified to relate the production pattern of the optimal solution to the existing real condition.

#### OX- POWER SUPPLY

Ox - power supply was estimated taking the plowing and the threshing seasons into consideration. On the average, in the three years (1985/86 - 1987/88), while the sampled cooperatives have worked for eighty days during the plowing season, the number of days worked during the threshing season was only thirty six. Taking this as a basis, while ox-power supply during the plowing season was derived by taking eigty ox pair days of eight hours of each of their total ox pairs, ox power supply during the threshing season was derived by taking thirty six ox pair days of eight hours of their total ox pairs.

#### MACHINE POWER SUPPLY

According to the information obtained from the Agricultural Mechanisation Service Corporation, the total machine power hours available for hire is estimated by taking 70 percent of the total machine hours (over the six plowing months for tractors and two harvesting and threshing

months for combines). This information was taken as a basis for determining the total available machine power hours. To distribute the total to the different cooperatives, we divided the total machine power hours by their 1987/88 sale, i.e., the total land plowed and harvested and threshed by those machines in that crop year. Accordingly while there were 15.16 hours for each hectare of cultivated land for plowing, the corresponding figure for combines was 2.3 hours. This was then taken as a basis for estimating the supply of machine hours for each of the hiring representative farms.

The total machine hours available for use by those who own tractors and combines for use was estimated by taking 70 percent of their total machine hours.

#### Operating Capital

The available working capital was arrived at by taking 55 percent of the net farm income. Net farm income is defined as gross income minus costs and consumption allowances made in kind for members of the cooperatives. In addition to 30 percent of the net farm income assigned for that purpose cooperatives may also employ their reserve fund which is equal to 25 percent of their net farm income to cover their variable costs. Because of this, the reserve fund was also specified in the model as part of the working capital.

### Credit

The level of short term credit available for the cooperatives was determined by the costs of fertilizer, improved seeds, and an amount equal to 50 percent of the cost of hiring machinery. These were calculated by taking the average fertilizer and improved seed application rates and 1/2 of their actual payments for the corporation.

### Consumption

Consumption requirements were calculated on the basis of calorie intake recommendations made by the Office of National Committee for Central Planning. The Office recommends a per capita calorie intake of 2000 per day for a working member, 1500 for woman and 780 for children. The average daily per capita calory requirement is then taken as 1600.

### Prices, Yields, Variable Costs and Input Coefficients

For each crop, prices, yields and variable costs were obtained from the sampled cooperatives. Prices are calculated as weighted averages of their sales prices. Yields and variable costs, however, were calculated as averages of the data obtained from the field. In order to take differences in local conditions into account, the yield used for Groups 1 and 2, Groups 3,4 and 5 and Group 6 were estimated separately on the bss's of figures obtained from the cooperatives in those specific groups.

TABLE 5.9. A SUMMARY DATA USED IN THE LP MODEL

	REPRESENTATIVE FORMS					
	1	2	3	4	5	6
<b>LAND (HACTARES)</b>						
<b>1.1. Cultivated Land</b>						
A. Total	2009.92	2056.75	2848.25	440.50	363.50	1845.26
B. Representative	502.48	685.58	356.03	146.80	121.17	369.05
<b>1.2. Wheat Land</b>						
	139.00	213.00	56.00	-	21.00	123.00
<b>LABOR</b>						
<b>2.1. Members</b>						
A. Total	597.00	662.00	1417.00	224.00	247.00	1034.00
B. Representative	149.00	221.00	177.00	74.00	82.00	207.00
<b>2.2. Available Labor Hours</b>						
A. Total of Representative	232440.00	344760.00	276120.00	115440.00	127920.00	322920.00
B.1. February-June Labor	95360.00	141440.00	113280.00	47360.00	52480.00	132480.00
B.2. July-September Labor	51256.00	76024.00	60888.00	25,456.00	28208.00	71208.00
B.3. October-November Labor	42912.00	63648.00	50976.00	21312.00	23616.00	59616.00
B.4. December-January Labor	42912.00	63648.00	50976.00	21312.00	23616.00	59616.00
<b>OX-POWER</b>						
<b>3.1. Number of oxen</b>						
A. Total	785.00	687.00	2224.00	295.00	384.00	753.00
B. Representative	196.00	229.00	278.00	98.00	128.00	150.00
<b>3.2. Available ox-pair Hours</b>						
A. Representative Total	90944.00	105792.00	128992.00	45472.00	59392.00	69600.00
B.1. February-June ox-pair hrs.	62720.00	72960.00	88960.00	31360.00	40960.00	48000.00
B.2. December-January ox-pair hrs.	28224.00	32832.00	40032.00	14112.00	18432.00	21600.00
<b>OPERATING CAPITAL (BIRR)</b>						
A. Total	23495.00	27910.00	65670.00	9654.00	7418.00	92800.00
B. Representative	5874.00	9303.00	8209.00	3218.00	2473.00	18560.00
<b>CREDIT (BIRR)</b>						
A. Total	191692.00	229581.00	166468.30	19503.92	21947.95	115130.00
B. Representative	47923.00	76527.00	20808.54	6501.31	7315.31	23026.00
<b>CONSUMPTION (MILLION CALORIE)</b>						
A. Representative Total	515.00	763.00	611.00	256.00	283.00	715.00
A.1. Wheat consumption	247.00	366.00	256.00	107.00	118.00	300.00
A.2. Barley consumption	226.00	335.00	244.00	102.00	113.00	286.00
A.3. Consumption of other cereals	-	-	61.00	26.00	28.00	72.00
A.4. Consumption of Pulses	42.00	62.00	50.00	21.00	24.00	57.00

Source: Cultulated on the basis of data obtained from field survey.

TABLE 5.9 - DATA OF COEFFICIENTS USED IN THE LP MODEL

	WHEAT	BARLEY	MAIZE	MILLET	PEFF	FIELD PEA	HORSE BEANS	LIN . SEED.	FENU GREEK	VEGETABLE AND ROOT CROPS
<b>PRICES</b>										
Birr/Quintal	36.50	36.20	24.	27.	44	36.	30.	46.	46.	38.
<b>VARIABLE COST</b>										
Birr/Hectar	122.	117.	41.	40.	77.	121.	99.	19.	40.	281.
<b>YIELD (QUINTALS/HECTARE)</b>										
1. Groups 1 and 2	11.	9	-	-	-	6	2	2.70	5.0	-
2. Groups 3,4 and 5	17	16	26	9	9	9	13	6.	7.	-
3. Group 6	18	18	19	9	16	16	16	4.	5.	69.
<b>LABOR REQUIREMENTS (HOURS/HECTARE)</b>										
1. February-June	100.	100.	160	100	100.	68.	68.	100.	100.	236
2. July-September	128.	128.	288	128	192.	64.	64.	64.	64.	576
3. October-November	160	160.	240	160	160	64	48	24	24	240
4. December-January	160	160	200	160	192	32	32	64	64	-
<b>OX-POWER REQUIREMENTS</b>										
1. February-June (Ox-Pair Hours/Hectare)	96	96	96	96	96	64	64	64	64	96
2. December-January (Oxen Hours/Hectare)	240	240	240	240	240	128	128	-	-	-
<b>OPERATING CAPITAL (REQUIREMENTS(BIRR))</b>										
	63	63	31	31	49	52	46	-	30	281
<b>MACHINE HOURS</b>										
1. Tractor Hours	6	-	-	-	-	-	-	-	-	-
2. Combine Hours	1	-	-	-	-	-	-	-	-	-
<b>INTEREST</b>										
1. Hiring rate for tractor					160 birr/Hectare					27 birr/Hour
2. Hiring rate for combines					98 birr/Hectare					98 birr/Hour
3. Cost of utilisation of tractor					132 birr/Hectare					22 birr/Hour
4. Cost of utilisation of combines					45.52/Hectare					45.52 birr/Hour
5. Rate of interest					5 Percent					

Labor and ox-power requirements were basically averaged out from data obtained from our survey. The data so obtained were then checked against the coefficients which were established on experimental basis by the Ministry of Agriculture in that region and are now being used in the planning of the cooperative sector in the whole region. The averages fairly approximate the coefficients and were used in our model.

A summary of the data used in our modelling are provided in Tables 5.8 and 5.9

#### 5.4.2. EMPIRICAL RESULTS

The basic objective of this chapter as we stated earlier, has been one of evaluating the allocative efficiency of the cooperatives at the micro-level. Towards the achievement of that objective an LP run was made. The result which we have obtained from the computer analysis is provided in Table 5.10. What do the results depict? Is the resource allocation generated using the LP run in line with the actual practice? This section tries to answer such questions by comparing data provided in Tables 5.7 and 5.10

##### 5.4.2.1. PRODUCTION PATTERN AND RESOURCE USE

Given the existing technological situation in which the cooperatives operate, there is no unused cultivated land in the optimal solution and land was found to be a limiting factor whose marginal value product varies inversely with the land - man ratios across the various groups of farms. This is provided in Table 5.11. Even though land is

TABLE 5.10 A SUMMARY OF RESULTS OF THE LINEAR PROGRAMMING ANALYSIS

	REPRESENTATIVE RARRS					
	1	2	3	4	5	6
1. MAXIMUM VALUE	16009.67	11972.67	94018.20	41435.36	29764.97	125470
2. ACTIVITY LEVELS						
2.1. PRODUCTION (HACTARS)						
2.1.1. Wheat	139.000	213.000	56.000	70.332	21.000	134.00
2.1.2. Barley	159.875	257.000	137.054	18.750	20.772	46.732
2.1.3. Maize	-	-	114.949	25.647	73.074	10.576
2.1.4. Teff	-	-	-	-	-	77.077
2.1.5. Field Pea	20.000	29.529	-	-	-	95.714
2.1.6. Horse Beans	-	-	12.821	5.385	6.154	-
2.1.7. Fenu Greek	183.125	185.622	35.177	26.887	-	-
2.1.8. Vegetable and Root Crops	-	-	-	-	-	15.000
2.2. CONSUMPTION (QUINTALS)						
2.2.1. Wheat	726.471	1076.471	752.941	314.705	347.059	882.353
2.2.2. Barley	664.706	985.294	717.647	300.000	312.253	841.176
2.2.3. Maize	-	-	169.444	72.222	77.778	200.000
2.2.4. Field Pea	170.000	177.143	-	-	-	162.857
2.2.5. Broad Beans	-	-	166.667	70.000	80.000	-
2.3. MARKETING (QUINTALS)						
2.3.1. Wheat	802.529	1266.529	199.059	880.930	9.941	1529.647
2.3.2. Barley	774.169	1335.392	1475.218	-	-	-
2.3.3. Maize	-	-	2819.225	594.582	1822.149	-
2.3.4. Teff	-	-	-	-	-	1232.437
2.3.5. Field Pea	-	-	-	-	-	1208.572
2.3.6. Broad Beans	-	-	-	-	-	-
2.3.7. Fenu Greek	-	-	-	-	-	-
2.3.8. Vegetable and Root Crops	915.625	928.111	246.236	138.210	-	-
2.4. HIRING (USE) ACTIVITY (HOURS)						
2.4.1. Tractor	834.000	1278.000	336.000	-	126.000	804.000
2.4.2. Combine	139.000	213.000	56.000	-	21.000	134.000
2.5. CREDIT ACTIVITY (BARR)						
2.5.1. Borrowing Fund	37568.874	55154.711	16441.863	4243.489	5437.015	17503.479
3. RESOURCES USED (HOURS)						
3.1. LABOR						
3.1.1. Plowing Labor	35.699.992	46.355.250	36,486.672	16,066.489	14,187.571	24,928.72
3.1.2. Weeding Labor	51,246.000	74,038.65	60,887.998	20,854.073	26,786.005	55,080.24
3.1.3. Harvesting Labor	31,255.002	47,601,090	50,976.002	21,312.000	21,156.694	31,413.525
3.2. OX PAIRS						
3.2.1. Plowing	28347.999	38523.326	27264.088	16966.489	9403.073	19817.137
3.2.2. Threshing	20465.003	32832.000	31060.862	14112.000	11655.385	21600.000
3.3. Machine Power						
3.3.1. Tractor Hours	834.000	1278.000	336.000	-	126.000	804.000
3.3.2. Combine Hours	139.000	213.000	56.000	-	21.000	134.000

## REPRESENTATIVE FARMS

	1	2	3	4	5	6
4. MARGINAL VALUE PRODUCTION OF RESOURCES AT LIMIT						
4.1. Cultivated Land	171.350	188.500	241.508	254.670	581.450	255.657
4.2. Vegetable and Root Crops Land	-	-	-	-	-	2071.293
4.3. Weeding Labor	0.268	-	0.142	-	-	-
4.4. Harvesting Labor	-	-	1.246	1.076	-	-
4.5. Threshing Bullock Labor	-	0.071	-	0.285	-	1.537
4.6. Combine Hours	-	-	-	-	-	22.629
4.7. Operating Capital	0.050	0.050	0.050	0.050	0.050	0.050
5. GROSS VALUE OF PRODUCTION (BIRR)	154339.525	218598.577	202185.03	81262.498	73059.87	266216.6992
6. UNIT GROSS RETURNS						
6.1. Land (per hectare)	307.15	318.86	567.94	552.80	603.79	721.45
6.2. Labor (per hour)	0.57	0.58	0.88	0.55	0.49	0.84
6.3. Operating Capital	1.59	1.47	3.74	8.45	3.90	3.26
7. OPERATING COSTS						
7.1. Variable cost	83426.28	125289.94	45638.676	13646.546	14329.45	67427.54
7.2. Machinery Cost	45408.38	67152.20	30256.586	13434.376	8597.604	42764.683
7.3. Interest	36140.-	55380.00	14560.-	-	5460.000	23787.680
8. SUBSISTENCE CONSUMPTION	1877.90	2757.74	822.09	212.17	271.85	875.1734
9. TOTAL NET REVENUE	54898.54	81335.98	62527.83	26180.097	28965.50	73319.3077
10. OVERHEAD COSTS <sup>1</sup>	16009.67	11972.67	94018.20	41435.85	29764.91	125469.85
11. NET INCOME OF THE COOPERATIVES	10667.77	13741.24	3403.90	3080.61	4928.33	16001.32
12. UNIT NET RETURNS	5341.89	-1768.57	90614.28	38355.24	24836.58	109468.53
12.1. Land	10.64	-	254.53	326.-	205.26	296.67
12.2. Labor	0.02	-	0.32	0.33	0.19	0.34
12.3. Operating Capital	0.05	-	1.68	4.98	1.32	1.34
13. NET LABOR INCOME (0.85x11)	4540.60	-1768.57	77022.138	32601.95	21111.09	93048.25
14. PER CAPITA LABOR INCOME	30.47	- 8.00	435.15	440.56	257.45	449.51

<sup>1</sup> Actual

Table 5.11 The Relation Between Land-Labor Ratio and the Marginal Value Product of Land of the Representative Farms

	R E P R E S E N T A T I V E F A R M S					
	1	2	3	4	5	6
Land Labor Ratio	3.36	3.09	2.01	1.98	1.47	1.78
Marginal Value						
Product of Land	171.35	188.50	241.508	254.67	581.45	255.657

In general a scarce resource, it is not optimally allocated among the different products and the pattern of production suggested by the optimal solution has been markedly different from the actual production pattern. This is provided in Table 5.12.

In all cases, millet and linseeds should not be produced under the optimal allocation of farm resources at the current AMC prices. Optimality also requires smaller allocation of land to wheat and barley than is actually the case. In the actual cropping pattern, the percentage of the total hectareage allocated to wheat and barley has varied from 74.45 percent in Group 6 to 94.7 percent in Group 1. In the optimal solution, however, the percentage area allocated to these crops varied between 34.53 percent in Group 5 to 68.6 percent in Group 2. The reduction in the area allocated to wheat and barley in our optimal solution was suggested to be shifted to fenugreek and/or maize in all cases except Group 6 in which case a large area was suggested to be assigned to the production of teff and field pea.

The above reallocation of land suggested by our optimal solution is the result of a number of important factors contained in our model and are given in Table 5.9. These include:

- i) the very high machinery hiring costs that are attached to the plowing and harvesting and threshing of wheat as the result of which, that crop was unable to compete with the others.
- ii) the relatively low level of land productivity in wheat and barley in Groups 1 and 2, the low labor and ox power requirement of fenugreek and the relatively high price that the latter commands on the AMC cooperative market.
- iii) the high productivity of land in maize.

In case of Group 6, however, land is highly productive in field peas and Teff. They also have high prices (relative to the others, of course) in the AMC market. Thus, our optimal solution for that specific group suggested a shift in the allocation of land in favour of these two crops.

#### LABOR USE

As one might expect, the utilisation of farm machinery under the condition of relative labor abundance would result in ineffective utilisation of labor resource. Our optimum solution testifies to this fact. The relation between land man ratio, land man ratio cultivated by non tractor inputs and the percentage of unutilised labor is provided in Table 5.13

Table 5.12. A Summary of Cropping Pattern of The Representative Farms  
Percentage Area Under Each Crop.

Types of Crops	A C T U A L Cropping Pattern of The Representative F a r m s						O P T I M A L Cropping Pattern of the Representative F a r m s					
	1	2	3	4	5	6	1	2	3	4	5	6
	Wheat	36.7	47.42	51.08	34.59	16.70	35.25	27.69	31.09	15.73	47.84	17.36
Barley	58.0	43.0	29.40	49.21	64.42	39.18	31.85	37.51	38.50	12.76	17.17	12.66
Maize	-	-	5.58	1.16	-	2.89	-	-	32.29	17.47	60.39	28.53
Millet	-	-	0.25	2.30	1.07	-	-	-	-	-	-	-
Teff	-	-	2.25	-	-	4.43	-	-	-	-	-	-
Field peas	1.09	2.93	7.98	2.78	12.04	5.96	3.98	4.31	-	-	-	20.87
Horse beans	1.14	-	2.46	4.18	4.39	4.94	-	-	3.60	3.66	5.09	-
Linseeds	2.97	6.13	0.61	3.48	1.38	0.14	-	-	-	-	-	-
Fenugreek	0.15	0.52	0.39	2.30	-	2.81	36.48	27.09	9.88	18.29	-	-
Vegetable and Root Crops	-	-	-	-	-	4.40	-	-	-	-	-	4.06

Table 5.13 The Relation Between Land- Man Ratio and Utilisation of Labor in the Optimal Solution

	REPRESENTATIVE FARMS					
	1	2	3	4	5	6
1. Land-Man Ratio	3.36	3.09	2.01	1.98	1.47	1.78
2. Land-Man Ratio Cultivated by Non-Tractor Inputs	1.85	2.06	1.69	1.98	1.35	1.14
3. Percentage of Unused Plowing Labor	62.6	67.22	67.8	66.0	72.9	81
4. Percentage of Unused Weeding Labor	2.6	FU*	FU	18.1	5.04	21
5. Percentage of Unused Harvesting Labor	25.12	27.16	FU	FU	10.41	47
6. Percentage of Unused Threshing Labor	15.0	11.58	6.66	0.17	23.2	54

\*FU - Fully Utilised.

In general, for those cooperatives who in the solution, have similar cropping patterns, the percentage of unutilised plowing labor increases from those groups of cooperatives in which the land - man ratio is high to those groups of cooperatives where the land - man ratio cultivated by non tractor inputs is low. But where the yield differential (expressing the difference between natural conditions) forces a different cropping pattern the above general fact would need to be modified. In general, the percentage of unutilised labor, in the optimal solution increases in those groups of cooperatives where the cropping pattern favours the production of fenugreek. This is so because, the

production of oil seeds, in the existing technological situation, requires a relatively small plowing labor per hectare than the production of other crops.

The LP solution shows that weeding labor, in the optimal solution is fully utilised in two Groups of cooperatives, Groups 2 and 3, is nearly fully utilised (95 percent and above) in Groups 1 and 5 and has been fairly utilised (82 and 79 percent respectively) in Groups 4 and 6. Again it is the land man ratio influenced by the production pattern which resulted in that pattern of the utilisation of labor in that season. The pattern indicates that, if additional labor is not secured from other sources (like the utilisation of family labor) weeding labor would be one of the limiting resources determining the future expansion of production in all the cooperatives except Groups 4 and 6.

The same applies to utilisation of harvesting labor except that in this case in Groups 3 and 4 (which have utilised combine harvester on a limited land or have not used it at all, respectively) the percentages of utilised labor have increased more than in the case of the weeding labor. Still, however, the ratio of the unutilised labor is not as much as the plowing labor.

Except for farms in Group 4 which totally depend on their labor and ox-power resources, threshing labor is also in excess supply. But the percentage of unused labor is much smaller than the plowing labor and in some cases very small (Groups 3 and 4).

OX - POWER USE

The optimal solution also indicates underutilisation of ox-power in the plowing season in all groups of cooperatives. The percentage of unutilised bullock labor increases with the decrease in the land - ox ratio cultivated by bullock labor. The relation between land - ox ratio and the percentage of unutilised bullock labor is provided in Table 5.14.

Table 5.14 The Relation Between Land-Ox ratio and Percentage of unutilised Bullock Labor.

	R E P R E S E N T A T I V E F A R M S					
	1	2	3	4	5	6
1. Land -ox Ratio plowed by non-tractor inputs	1.85	2.06	1.07	1.49	0.78	1.56
2. Percentage of unused plowing Bullock Hours	54.8	47.1	69.3	58.2	77	58
3. Percentage of unused Threshing Bullock Hours	27.5	FU	24.2	FU	36.7	FU

With the exception of Group 1, threshing bullock labor is a limiting factor for those groups of cooperatives whose land ox ratio exceeds 1.49. As in the case of labor, the utilisation of ox power depends upon the cropping pattern. The case in point is that of Groups 1 and 2, in which the optimal solution has favoured the production of fenugreek. Irrespective of large land ox ratio, in these groups of cooperatives, there exists a

considerable excess threshing bullock power (Group 1) or the marginal value product of bullock power of that period is very small (0.071) compared to the others (Group 2) who have a relatively small land ox ratio. Threshing bullock power is not required by this crop.

### OPERATING CAPITAL

In a condition where farmers are exposed to the utilisation of biological inputs and farm machinery in agricultural production, the demand for operating funds is a considerable one. This was reflected in our optimal solution. For all the representative farms, operating capital has been a limiting factor with an opportunity cost of 5 percent - the bank interest rate paid by the cooperatives. Had it not been for the availability of credit, that have filled the gap, operating capital would have been the most important limiting factor which would have determined the pattern of production of the optimal solution.

### MACHINE POWER USE

The five cooperatives constituting Group 6 own 6 tractors and 2 combines together. The representative farm was therefore assumed to have 6/5 tractors and 2/5 combines. It was on the basis of this assumption that available machine power hours were determined. Depreciation costs and machine operating costs (fuel, lubricants and spare parts costs) reported by the cooperatives, over the years of their ownership of tractors and combines were collected and averaged. The costs were then reduced to an hourly basis and were used in our model.

As in the case of the hiring cooperatives we restricted the analysis of utilisation of farm machinery to the wheat land. Unlike the cooperatives which employ hired machinery, wheat in this case was found competitive and its hectarage was limited by the availability of combine hours. Combine hours, in this case, was found to be limiting with a marginal value product of 22.629 Birr. Because of this tractor hours were in surplus in the optimal solution.

#### 5.4.2.2. THE PATTERN OF INCOME OF THE COOPERATIVES

The main objective of our cooperatives contained in our LP model was one of maximizing total net revenue, after providing the minimum level of food requirements to members and their families in accordance with the existing pattern of consumption habits of the region. The last parts of Table 5 : presents the situation of optimum farm income of the representative farms.

Compared with the actual production pattern, the optimal production pattern has an effect of increasing the gross income of the cooperatives. The percentage increases in the 6 representative farms, however, vary from a minimum of 2.46, 3.34 and 5.32 percent in Group 1,3 and 6 respectively to as high as 68.2 percent in Group 2, the increases in Groups 4 and 5 being 67 and 27 percent respectively. Put differently, the results indicate that, measured in terms of gross income, the six representative farms operated with varying degrees of inefficiencies. Defining the level

of efficiency of production pattern as the ratio of the actual farm income to the optimal farm income we see that while cooperatives in Groups 1,3 and 6, operated at 97, 96 and 95 percent of operational efficiencies respectively, cooperatives in Groups 2,4 and 5, on the other hand, operated at 59, 60 and 81 percent of their respective efficiency levels. In general, while the results indicate sub optimality in all cases, the degree of efficiency seem to vary directly with the actual yield and labor productivity levels.

Table 5.15 The Relation Between Yield, Output Per Man and Efficiency Levels of Representative Farms.

	R E P R E S E N T A T I V E F A R M S					
	1	2	3	4	5	6
1. Average Yield (Quintals Hectare)	11	5.21	16	8.90	14	18
2. Labor Productivity (Quintals/man)	38	16.40	33.8	17.3	21	31
3. Efficiency Level (Percentage)	97	59	96	60	81	95

When operating costs, subsistence consumption requirements and overhas costs are subtracted from the gross balue of production we arrive at the net income of the cooperatives. If we allow 15 percent of this to be reserved to cover costs in the next crop year, the result would be the net labor income. The net labor income is an important figure indicating the level of returns to the coowners and suppliers of labor.

As far as this figure is concerned, interesting results emerge which actually tally with the existing technological situation, in the Cooperatives. Results in this respect indicate that, given the existing technological situation, in the optimal solution, while Group 2 farms<sup>13</sup> cannot supply their members and families with a minimum food intake (1600 calories, on an average, per day) Group 1 basically remains at a subsistence level, subsistence in this case defined as the provision of food to members. This implies that, even if these two groups of cooperatives operated with 100 percent of their efficiencies their position would remain at best at the food self - sufficiency level.

For Groups 4 and 5, however, results indicate that optimum allocation of resource would bring a marked improvement in the level of incomes of their members from the existing 112.95 and 108.36 Birr to 440 and 257 Birr respectively.

For Groups 3 and 6, the optimal production pattern brings only a marginal increase in the level of their incomes. Hence one may conclude that, measured in terms of farm returns, these two typical farms have operated more efficiently

Notes to Chapter 5

1. Though it is not yet finalized, according to the division of the Peoples Democratic Republic of Ethiopia, the region is said to have been divided into 12 Awrajas.
2. All in all, 17 localities, in the region, are accorded an urban status by the Ministry of Housing and Urban Development.
3. Another authority, experts of the Ministry of Agriculture, reported the average family size to be 6.23 (MOA, 1984).
4. According to the Time Series Data Provided by the Central Statistics Authority, the area under major crops in that year was 409.13 thousand hectares. In 1984/85, this area increased to 430.40 hectares.
5. Gojjam and Shoa are also surplus producing regions.
6. Varying proportions of pulses and oilseeds were also marketed. Details are given in MOA, 1984.
7. Basing our classification on input factors alone should not imply that it is the only factor determining production. It was the absence of adequate information on their factors affecting production which has restricted us to the use of that factor alone.
8. Initially two alternative methods of analysis, econometric and Linear Programming were proposed for use in this part. The application of econometric method requires more than 30 observation. It is this requirement that influenced the data.

9. Lower Abo Ali and Golo in our previous stratification, come from two different strata. Because of this their inclusion into our study was found unnecessary since a single cooperative will not in any way be compatible with neither of our methods proposed for the study.
10. In the absence of appropriate climatic, altitudinal and soil data it is assumed that the actual production pattern, their proximity to each other together with yield will adequately take the difference in physical conditions into account.
11. Of the sampled cooperatives, Burkitu 01, Kerensa 01, Bosha Burkitu and Lodiè Sharbie have shown a marked difference from others and among themselves in terms of the criteria we have employed and hence were excluded from the grouping.
12. According to the March 1975 Land Reform Proclamation, a Peasant Association which is a basis for APC ought to be limited within a vicinity of 800 hectares.
13. In actuality, in the 1987/88 crop year, the per capita labor income, in the three cooperatives constituting that group, Kawa 01, Kawa 02 and Wekite 01 was zero.

## CHAPTER 6

### PROBLEMS OF COOPERATIVES DEVELOPMENT

In the preceding two chapters, we have tried to give an evaluation of the cooperative sector both at macro and micro levels. In both chapters, we have seen that their performance have been less than satisfactory in relative terms and in terms of allocation of their resources among various production activities. Part of the inefficiencies can be attributed to the various problems faced by the cooperatives. This chapter is devoted to outlining some of the problems of development of the cooperatives observed in our field surveys. The existence of the more general problem, i.e., the development of the non-farm sector of the economy as a basis for the development of Producers' Cooperatives is acknowledged. But since the issue is well treated in a number of literatures<sup>1</sup> both with respect to Ethiopia and other countries we have opted to limit ourselves to the specific issues.

#### 6.1. THE INCENTIVE SYSTEM

##### 6.1.1. THE INPUT - OUTPUT PRICING SYSTEM

As indicated in chapter 3, the Ethiopian Government has provided various incentives to attract farmers to form cooperatives. The input - output pricing system is one such means. On the input side, while cooperatives enjoy a price differential of 10 birr per quintal in the purchase of fertilizers, on the output side they enjoy a price differential of 4 or 5 birr<sup>2</sup> in selling their output to the Agricultural Marketing Corporation relative to the individual peasant sector.

But our field observation also indicated that while cooperatives sell all of their produce to the state purchasing agency individual farmers have a possibility of selling their produce in open markets (after they hand in their quota to the purchasing agency) at a price which in general is higher than the price paid to the cooperatives. Under this condition in which cooperatives are favoured in one respect and are penalized in another, it would be difficult to judge whether the cooperatives are gaining or losing. In attempting to determine the net gain or loss by the cooperatives the following simple mathematical formula was developed and applied.

Let:

$G_s$  = the gain by the cooperatives from the sale of their products at a fixed price to the AMC relative to the individual peasant sector

$L$  = the loss incurred by the cooperatives because they are unable to sell their products in open market.

$NG$  = Net gains or net loss

$X_j$  = the quantity of the  $j$ th product delivered by the cooperative to the purchasing agency

$P_{1j}$  = AMC quota price of the  $j$ th product on the market of the individual peasant farms.

$P_{2j}$  = AMC price of the  $j$ th product on the cooperative market.

$P_{3j}$  = Open market producers' price of the J th product.

$Y_j$  = the per capita delivery by members of the PA of the J th product.

$M$  = total number of members of the cooperative.

The gain, the loss and the net gain of the cooperatives relative to the individual peasant sector can then be given by the following:

$$G_s = \sum_{j=1}^J X_j (P_{2j} - P_{ij}) \dots \dots \dots (6.1)$$

$$L = \sum_{j=1}^J X_j (P_{3j} - P_{2j}) \dots \dots \dots (6.2)$$

$$NG = \sum Y_{im} (P_{2j} - P_{ij}) - \sum (X_j - Y_{im}) (P_{3j} - P_{2j}) \dots \dots \dots (6.3)$$

While equation 6.1 measures the gains that cooperatives obtain from the favourable prices provided to them by the AMC on their sales, 6.2 measures the losses that they incur because they are unable to sell their products in the open market. Equation 6.3, on the other hand, measures the net net gain or loss depending on its sign. In effect, it measures the implicit subsidy or tax that the cooperatives receive or pay on their output.

But cooperatives, as we stated earlier also enjoy favourable prices in the purchase of inputs (i.e., fertilizer)<sup>3</sup>. If we denote the price differential that they enjoy from the purchase of a quintal of fertilizer by  $\Delta P$  and the total fertilizer that the cooperatives purchased by  $Q$  then the gain,  $G_i$ , from the purchase of input is:

$$G_i = Q_{ij} \dots \dots \dots (6.4)$$

Adding 6.4 on 6.3 we obtain:

$$NG = \sum Y_{im} (P_{2j} - P_{ij}) - \sum (X_j - Y_j m) (P_{3j} - P_{2j}) + Q_{ij} \dots \dots (6.5)$$

Applying 6.5 on the data<sup>4</sup> obtained from our study area provide the following result.

- Fertilizer purchase by the sampled cooperatives = 7923 quintals
- Price differential in the purchase of fertilizer = 10 birr/quintal.
- Sale of output by the sampled cooperatives to AMC = 41024 quintals
- Number of members of the cooperatives = 4402
- Delivery to the AMC by PA members = 598 459 quintals
- Number of members of the PAs = 240 258.
- Average quota on PA members = 2.49 quintals

Thus, the difference between the market and the AMC price paid to the cooperatives which breaks even is:

$$2.49(4402) (P_{2j} - P_{ij}) - [41924 - 2.49 (4402)] (P_3 - P_2) + (7923 \times 10) = 0$$

$$10960 (P_{2j} - P_{ij}) - (41024 - 10960) (P_3 - P_2) + 79230 \text{ birr} = 0$$

As stated earlier however  $P_{2j} - P_{ij} = 4$  or  $5$  depending on type of the product. Working on the average we arrive at the following:

$$10960 (4.50) - 300064 (P_3 - P_2) + 79230 \text{ Birr} = 0$$

$$P_{3j} - P_{2j} = \frac{49320 + 79230}{300064}$$

$$= \underline{\underline{4.28}}$$

The result indicates that, if on the average the market prices have differed from the AMC cooperative prices by 4.28 birr per quintal, our thirty cooperatives have neither paid taxes nor have they obtained subsidies from their 1986/87 marketing activities. Had the price differential exceeded that level, which it did, the cooperatives have paid implicit taxes.

Thus, taking the actual situation in the country, it seems that the cooperatives are not favoured in terms of the input-output pricing system. Rather, the indication is that the cooperatives are paying implicit taxes on the sale of their products to the the AMC.

#### 6.1.2. DISTRIBUTION OF INCOME

##### 6.1.2.1 THE SYSTEM OF PAYMENTS

The income which cooperative members derive from their labour activity influences their motivation to work and hence determines the economic result of the common enterprise. This income of the cooperative farmers depend primarily upon the total output produced by the cooperative and the way in which it is divided between farmers' income and other activities. The relative position of each member of the cooperative in the income distribution pattern, however, is a function of his labour input contributed to production-labour input measured by accumulated points. Thus, given the total output, while accumulated points of each member of the cooperative determine his share of the bread, the size of the output, on the other hand, that is available for distribution determines the value of each point.

Given the above, therefore, an important issue in the operation of the cooperatives is the way in which work points are determined in the cooperative farms. From our field surveys we were able to distinguish four types of distribution systems derived from the way in which work points are determined. These include:

- (1) Distribution Based on Working Hours
- (2) Distribution Based on Working Points
- (3) Distribution Based on Working Norms
- (4) The Contract System.

(1) Distribution Based on Working Hours

Under this system of distribution, the working hours rendered by members in their cooperative are recorded and provide the basis for distribution of farmers income. If in their statutes, the working day is to be composed of 8 hours, 8 points will be recorded for all members who participated in any agricultural operation. The time so recorded will be aggregated over the year. The total farmers income will then be divided to the aggregate points to determine the value of each point. Once this is determined, the income of each member of the cooperative will be arrived at by multiplying the value of each point by their respective total points. Absenteeism and lateness are the only factors that bring about a relative difference in the incomes of members. Neither the quantity nor the quality, however, count for the difference in their earnings.

(2) Distribution Based on Working Points.

Under this system of distribution, working points are granted and written down, which reflect more or less also the working hours. Under this system, however, different points are granted for different types of agricultural operations. In nearly all the cooperatives, while 1.2 points are granted for an eight hour work in plowing, weeding and threshing, 1.4 points are granted for an application of herbicides and insecticides. Thus, if all members of a cooperative are engaged in weeding for eight hours, all of them will equally be granted 1.2 points each. Under this system, it is possible that the team leader grant additional working points for busy working members and may subtract working points from a lazy working member.

(3) Distribution Based on Working Norms.

working norm reflects a quantity and quality of work, which can be performed in a definite period of time by one (or more) member(s) who has (have) average skills and abilities and average physical strength and who works (work) efficiently and reliably.

Under this system of distribution, working norms are established for each agricultural operation and the cooperative grants a certain quantity of working points for the fulfilment of each working norm. If a member (team) works more than what is stated by the norm, the working points recorded for him (team) would increase accordingly and vice versa.

By way of an example, suppose that in a repeated experiment, it was established that 2 people who have an average skill and work with an average intensity can complete weeding of one hectare of maize in 20 days. The cooperative grants 40 points together for fulfilling that operation. If two members, in the given period of time worked on 3/4 of the land the points that would be recorded to the members would be determined according to the following.

$$\text{Work points: } \frac{\text{Work accomplished} \times \text{total points granted for the fulfilment of the norm}}{\text{Working norm}}$$

Applying the formula to our example,

$$\begin{aligned} \text{Working points} &= \frac{0.75 \times 40}{1} \\ &= \underline{\underline{30}} \text{ points} \end{aligned}$$

The problems of introducing such a system are the complications involved in the recording and the calculation of working points and the elaboration of working norms.

#### (4) The Contract System

In two of the sampled cooperatives, Limu Chemerie and Huruta Hitossa, a contract system of distribution is being practiced. While in Huruta Hitossa group contract system has already been introduced in Limu Chemerie family contract system is in practice. These cooperatives are taken as experimental cooperatives. Since the system was introduced some two years ago in Limu Chemerie and in the 1987/88 crop year in Huruta Hitossa it would be too early

to comment on it in this study. The contract system however, has proved to be efficient, in terms of providing incentive to members, in other socialist countries (see, Chapter 2).

So far we have described the various distribution systems which are being applied in one or another cooperative in our study area. And the different distribution systems are applied at the different stages in the development of the cooperatives. At the early stage of their development all cooperatives apply a distribution system based on working hours. As they develop, however, that system is changed into distribution based on working points which in turn is replaced by the one which is based on working norms, and finally by the contract system.

But when one sees the line of development of the systems of distribution, as given above, it seems that it has been reversed. In the transition from a dwarf pre-capitalist economy to socialism and to communism we are passing from a condition in which there exists a wide gap in the quantity and quality of labour to one in which that gap successively narrows down; we are passing from a condition in which individuals try to evade labour and work in expectation of commensurable payments to a society in which labour becomes more and more a habit of work; we are moving from a situation in which individualistic mentality predominates to one in which collective mentality survives. A socialist system (a system in which payment is to be made according to abilities) must take into account the difference that exist in between people and arrange distribution systems in such a way that it

motivates people to increase their production. But as we have argued earlier, the payments based on working hours and work points do not take the difference in the quantity and quality of labour into account. Hence, they are payment systems which must be applied when the qualitative and quantitative difference between people are adequately narrowed down. Accordingly, therefore, at the present stage it seems appropriate to begin with the household (family) contractual system which gives a considerable chance for the household to decide on their human and other resources and to go down to group contractual system, to distribution based on working norms, working points, and working hours.

#### 6.1.2.2. INCOME DISTRIBUTION

The income that members of the cooperatives derive from their large organization is not encouraging. The result of our studies indicated that, on the average, a member of a cooperative in 1986/87 obtained 480.67 birr per annum and supported 4.9 people. This then gives a per capita income of 81.47 birr which is 45.7 percent below the 150 birr per capita given for the country as a whole. In fact our study tallies with a much broader study<sup>5</sup> made in Chilalo Awraja in the 1985/86 crop year on 251 APCs. According to that study, the average income of a member of a cooperative in the Awraja was found to be 413.35 birr. Taking an average family size of 4.9, that study also arrived at a per capita annual income level of 84.36 birr.

Not only are the average and per capita income low, but most of the cooperative farmers also experienced a progressive decline in their income. Thus, among 154 members of the APCs covered by our interview, 66.9 percent reported a consistent decline in their income. On the other hand, while 15.5 percent reported a continuous increase, the rest experienced an inconsistent trend in their income. Moreover, a little more than 78 percent of our farmers reported that the income which they derive out of their large enterprise is unable to cover the expenditures required to satisfy their basic needs. Among the people who reported a short fall of their income below their expenditures on basic necessities, about 70 percent reported to cover their additional requirements through the sale of their assets (basically livestock), 21.2 percent reported to cover it through borrowing or by the support of their non-member families and the rest, 8.8 percent report to it as uncovered, indicating a deterioration in their living conditions. More important than the above, indicating the future trend of the cooperative development in the region, is the responses of our respondents on their income vis-a-vis that of the individual producers. Out of the total, while 65.5 percent found their income as members being less than that of the individual farmers, 31.7 percent indicated the opposite and the rest observed equality between their income and that of individual farmers.

Given the above responses of members of the cooperatives, it will not be difficult to observe that farmers do not still have adequate incentive which can motivate them to provide the labour necessary for high productivity. It is also simple to observe that most of them are at any time ready

to go back to individual farming if they obtain the chance to do so. In fact, in 1957/58 crop year alone, about 3000 members of the cooperatives in the region have abandoned their membership and have ascpaed to the neighbouring region, sale or to town.

## 0.2. MANAGEMENT AND THE DECISION MAKING PROCESS

generally, it is argued that, the socio-economic character of the cooperative farms gives the members co-owners' standing of the large-scale enterprise with the right to decide collectively on all the principal questions of cooperative activities (Feket, F. et al, 1976). That is, it provides the right to each cooperative member to participate equally in making collective decisions on resource allocation and income distribution of the large-scale cooperative enterprise. Specifically, the members' most important rights are:

- i) to take part in the general assembly;
- ii) to elect and to be elected to any office in the farmers' cooperative; and
- iii) to share in the cooperative income according to labour performance.

The highest authority in the farmers' cooperative is the General Assembly. The major responsibilities and functions of this General assembly are:

- i) election of the leading bodies;
- ii) approval of the long term and annual farm plans prepared on the farm level determining the allocation of collective resources; and
- iii) determination of the pattern of income distribution of the cooperatives.

In our survey too, every member enjoys his right to participate in the general Assembly of the cooperative. He has also a nominal right "to elect" or "to be elected", nominal because what Alec Nove concluded to the Kolkhozy in Russia also applies here (see Chapter 2). Indeed both the peasants and their organizers (Aderaj in Amharic) indicated the application of the principle of "partisanship" in the election process of the cooperative leadership. In this respect, it is the party who nominates party members for election and who ultimately hold offices.

Neither does the General Assembly have the right to decide on the allocation of resources to various crops and the distribution of income. Invariably in all the cooperatives, distribution of income between farmers' income and other activities is determined by the same people - peasant organizers. As far as the allocation of resources is concerned, it is determined according to the plan which is prepared by the same people. Thus, it seems that the rights of members of the cooperatives as co-owners have not obtained practical application.

### 6.3. OTHER PROBLEMS

#### 6.3.1. THE PRINCIPLE OF VOLUNTARISM: IS LENIN'S PRINCIPLE IN QUESTION?

Of the three most important principles that must be applied in the formation of the cooperatives, the principle of voluntarism forms the core. The application of this principle imply the emergence of such enterprises through the initiative of the farmers themselves. But as it is being practised now, the emergence of cooperatives is far from being initiated by farmers.

Voluntarism, as it is now practised in the country seems to be concomitant to "Persuasion", convincing people towards the formation of the cooperatives.

In our study region, however, the case has been different and about 30 percent of the respondents reported a case of forced membership either by the state or by the neighbouring members of the cooperatives. These respondents are mainly, (but not exclusively) from Assasa and Amingna weredas. Here is the story of cooperative formation in the two weredas.

In Assasa, cooperatives were established as the result of the implementation of what in the region is now known as the 'Wabie' Project. Three state farms, called Goffer, Ardayita and Garadella were to be established by the state in the wereda. To facilitate their establishments farmers were brought together into villages constructed by the project. Once that was done, they were then forced into the formation of APCs - Assasa now comes first in the list of APCs in the country because cooperatives have been established in all the 46 PAs and more than 60 percent of the PA members have been organized in the 46 cooperatives. The case of Amingna is a little bit different. It is force applied by members against non-members, rather than by the state, to pull individual farmers into the already formed cooperatives.

In Amingna, first, the land of individual PA members was fenced and brought into the boundaries of the cooperative land. And then, whenever, livestock passed the boundaries into the land so fenced, the individual peasant would be made to pay a penalty of 5 birr per head of livestock.

Moreover, individual peasant farmers were the ones on whose shoulders orders by the state and the bureaucracy fell for fulfilment. To avoid such pressures created by members, non-members had no other chance than joining the cooperatives.

### 6.3.2. THE REGISTRATION PROBLEM

Cooperatives, in our study region, will be registered and will be provided a legal personality, if they satisfy a number of criteria, including:

- i) an achievement of a continuous increase in production in the three years prior<sup>to</sup> their application for registration;
- ii) successive increase in membership in those same years;
- iii) the existence of a well organized and a well developed documentation system; and
- iv) absence of indebtedness

If cooperatives fail to satisfy any one of the above criteria, they will not obtain the legal personality which they apply for. And this has a number of effects on their development. All the privileges provided for APUs by law will not be enjoyed by them. They will pay the price paid by individual farmers to purchase fertilizer; they will not have the right of borrowing financial resources from banks; members will pay taxes that are paid by individual farmers. The only privilege that they will obtain is the 5 or 4 birr per quintal differential in the sale of their products to the AMC.

Notes to Chapter 6

1. See, Dunning, J. Agriculture Capitalist and Socialist (Camelot Press Ltd., London, 1975); Unose, A.K, "Transforming Feudal Agriculture: Agrarian change in Ethiopia since 1974" The Journal of Development Studies - vol 22, No. 1 1985; World Bank, Ethiopia, Agriculture - A Strategy for Growth - A Sector Review - March 1987.
2. The information was obtained from Agricultural Marketing Corporation, Asela branch -
3. All other inputs, including improved seeds, insecticides and pesticides command the same price in both the cooperative and individual peasant markets.
4. Disaggregated data by type of grains supplied to the Agricultural Marketing Corporation by individual peasant farmers were not obtained. Thus aggregate data was used.
5. Snitaye Demle, et al., The Role of Cooperative in Attaining Food Self Sufficiency between 1985/86 and 1987/88 (Arharic, Asela, February 1988).

## CHAPTER 7

### CONCLUSIONS AND POLICY RECOMMENDATIONS

#### .1. CONCLUSIONS

7.1.1. Our investigation of published and unpublished documents showed that although various policy grounds were provided for their emergence and development, no producers' cooperatives seem to have developed in pre - revolutionary Ethiopia. APCs are therefore a phenomenon specific to the post - 1974 period.

7.1.2. A number of important conclusions came out of our macro-level evaluation:

7.1.2.1. In their post-1974 development, APCs have shown a steady growth in all important respects including membership, land size, number of oxen and agricultural machinery.

It was found that the growth rates in membership and number of draft animals between 1980/81 and 1985/86 exceeded that of the rate of growth of hectarage indicating the consistent increase in the intensity of human and animal power in the collective farms. The trend in recent years, however, is one of increasing the intensity of machine power.

Results also indicate that the growth in inputs has not resulted in a corresponding increase in output as a result of which both yield and labor productivity in these farms declined.

7.1.2.2. The comparative analysis should show that, evaluated in terms of yield, the performance of the cooperative sector has proved to be unsatisfactory relative to both the state farms and the individual peasant sector.

7.1.2.3. As far as the inter-country comparison is concerned, measured in terms of the growth of numbers of the cooperatives established, the development of APCs in Ethiopia in its first stage has been found to be faster than past growth in any other socialist country, except Poland who had reversed into private farms in the middle of 1950s. The growth of membership has however been slower than any other country involved in the comparison except that of Hungary.

Moreover, results also showed that the growth of cooperatives in Ethiopia is moving at a slow pace in time compared to the situations of the other socialist countries.

7.1.3. LP models were built to determine whether or not cooperatives operating within the technical, economic and social constraints imposed on them have allocated their resources among the various crops efficiently. The study was carried in 26 APCs classified into 6 groups in terms of

differences in technological factors, including land - man ratio, ox-man ratio, local conditions, yield and productivity of labor. This micro - level investigation into the allocative efficiency of the APCs using the LP method has provided a number of interesting results.

7.1.3.1. The application of the method showed that, the cropping pattern of the cooperatives has, in all cases, been sub - optimal. In all cases, the optimal solution suggested a shift away from the two basic products of the region, wheat and barley, to other crops, i.e., oil crops (fenugreek) and other cereals depending on the costs of production and on the local conditions. It also showed that under the existing situation in which the cooperatives operate, the use of hired machinery renders the crop for which it is hired to work upon (in our case, wheat) uncompetitive and favours the production of other crops.

7.1.3.2. In all cases, the optimal solution has improved the total value of products of the different groups of the cooperatives in varying amounts - amounts which were lost to the cooperatives because of the inefficiencies involved in allocating land to various crops. Defining the level of operational efficiency of the representative farms by the ratio of the actual to the optimal farm income, our results also showed that the operational efficiency of the cooperatives improves from those cooperatives where average yield and average output per member are small to those where these two indices are high.

7.1.3.3. As far as resource use is concerned, in the optimal solution, cultivated land in all cases, has proved to be a limiting resource whose marginal value product increases with a decrease in land-man ratio. Under the condition in which machine power is used to cultivate land together with animal and manpower, this ought not to be surprising for land would be scarce relative to other resources. Still, however, the decline in its scarcity value with the increase in land - man ratio is an important finding which at least directs one in developing a correct land policy suggested below.

In all the cooperatives the optimum cropping pattern, maximizing total net revenue was arrived at where plowing labor and ox-power hours are in excess supply. The percentage of this excess labor and ox power supply increased from those typical (representative) farms where the land - labor and land-ox ratios are large to those where the two ratios are small. This, however was qualified by the cropping pattern.

In the optimal solution, weeding labor was found to be a limiting factor in two of the cooperatives and is nearly fully utilised in the others. Still, however, results indicate that, for cooperatives which have similar cropping pattern, the percentage unutilised increases with the decline in land/labor ratio.



Harvesting labor is limiting in Group 4 which did not use any hired machinery and in Group 3 which used machinery on a limited land. Otherwise this labor is also underutilised in the optimal solution. The pattern of the utilisation of threshing labor followed the above pattern.

Because the Arsi peasant intensively utilises his bullock labor in the threshing of many of his products, bullock labor has been found to be limiting in two cases and was nearly fully utilized in others.

The optimal solution has also shown the decisive role of working capital in the operation of the cooperatives.

7.1.3.4. Finally, our analysis of the revenue and expenditure pattern of the cooperatives indicated that, cooperatives in Groups 1 and 2, whose physical conditions is relatively unfavourable and where yield per hectare for various crops is low, the income generated by the optimal solution was insufficient to meet the minimum food self - sufficiency requirement or just barely covered it. The revenue situation improved in those cooperatives located in favourable physical conditions.

7.1.4. Our study also indicated a number of problems faced by the cooperatives which hamper their development including:

7.1.4.1. The unfavourable input - output pricing under which the cooperatives operate and the unfavourable distribution systems to which members are subjected, to undertake production both of which create a strong disincentive effect;

7.1.4.2. Low level of the income of members of the cooperatives which according to most of them is declining and is less than the income of the individual farmers.

7.1.4.3. The problem of forced membership, which violates the principle of voluntarism and the absence of democratic participation in the election and decision making process.

## 7.2. POLICY RECOMMENDATIONS

7.2.1.1. Our macro - level investigation showed that while APCs are becoming more and more resource intensive, the productivities of these factor inputs on the other hand is declining. Obviously and important factor contributing to this situation was the drought. An appropriate policy must look into ways of introducing irrigated agriculture. The relative large size and the surplus labor of the cooperatives indicate a possibility of labor investment in the development of irrigation systems.

7.2.1.2. Our comparative investigation also showed that, land, the main agricultural resource, put under the cooperatives is less productive than land placed under the state farms or individual producers. Even though it is too difficult to suggest conclusive recommendation involving all the three sectors without looking into all other factors affecting yield, our findings tend to support the view, under present conditions, of retaining land under private holding than placing it under the cooperatives since the private holders seem to achieve a higher yield under the condition of the scarcity of yield - increasing inputs compared to the cooperatives. This suggests the slow development of the cooperative sub-sector under more appropriate conditions.

7.2.1.3. However, a slow rate of development of that sub-sector may not be politically acceptable since it may imply a delay in the progress of socialism in Ethiopia. This fundamental issue must however be weighed against the economic costs which rapid expansion might entail, cost which Ethiopia can ill - afford to incur at present.

7.2.2.1. In general, a look into the allocative efficiency of the cooperatives indicated the existence of sub-optimality in the production pattern of the cooperatives. The optimal pattern of production suggested by our LP model varied from one group of cooperative to another. This implies the fact that given the existing technological, physical and economic situations in which the cooperatives operate any planning which is directed

at maximizing the benefit of the cooperative members should take the specific position of the cooperative (for which the plan is drawn) into account to decide on the allocation of land to various crops. This indicates a need for appropriate and differentiated land utilisation policy.

7.2.2.2. The variation in the marginal value product of land from one group of cooperatives to another and its inverse relation with land - labor ratio implies a need to establish an appropriate land holding and land allocation for each cooperative which take into account the resource availability of the cooperatives. Such a policy should aim at establishing the optimum land-labor ratio that maximizes the returns of land to the society. Such a policy, by prohibiting the cooperatives from appropriating land held by individual producers will not only reduce the problem of land insecurity but will make the more efficient utilisation of that resource possible.

7.2.2.3. The existence of a disproportionately large amount of labor and ox power during the plowing season on the one hand, and the utilisation of hired tractors which involve a significant cost on the other for the same season is something Paradoxical. Indeed, since our findings indicate the existence of surplus labor even in those cooperatives which did not use hired tractors, the use of machinery during this season should be questioned. The Government would need to evaluate the advantages and disadvantages of the machinery hiring stations now, before it is too late.

7.2.2.4. On the contrary, the existence of shortage of weeding, harvesting, and/or threshing labor on the one hand, and the existence of large unemployed family labor which is untapped because of the creation of cooperatives produces yet another paradox-shortage under a condition of abundance. This situation also implies a need to draw policy which encourages the utilisation of family labor in production. Labor can easily be drawn into production by applying the correct system of distribution of income within the cooperatives. In many countries this problem was resolved by introducing the family contract system. If such system, which allows the flow of family labor is not going to be introduced, our solution suggests the utilisation of combine harvesters in the harvesting and threshing seasons. However, given the fact of relatively bountiful family labor, the alternative is hardly justified.

7.2.3.1. An investigation into the input - output pricing and marketing policy of the government had shown that this policy contains a contradiction which on the one hand favours the cooperatives and on the other penalizes them. If the objective of the government is to encourage their development, a policy must be designed such that cooperatives in the final analysis receive a net flow of resources. Under the existing system, this implies an improvement by reducing the per capita quota placed on the cooperatives below that of the individual peasant farmer & allowing the cooperatives to sell the produce above that amount on the free market.

In this respect, however, the most radical solution is to abandon quota purchases and allow free competition in the purchase and sale of both inputs and outputs.

7.2.3.2. As far as an income policy is concerned, given the present low level of income that is derived from the large collective farms, one should think of a policy which maximizes not only the aggregate income of the farms but also one which prevents wastage of labor tied in unnecessary operations of the cooperatives in pursuit of increasing their total work points - thus untying labor so that it may find an alternative of creating additional revenue. This implies again setting a correct distribution system which allows a free flow of labor. The appropriate distributional system in this case would be the family contract system.

7.2.3.3. Finally we recommend that cooperatives develop voluntarily by themselves, by means of education and by example. This we recommended because the consequences of the application of force have already been made clear by the experience of the cooperatives established in Godeb Assasa. We also recommend that cooperatives permit democratic participation in decisions and indeed serve as examples for excellence of "socialist democracy" in action.

\* PRINTOUT OF Linear Programmig Model - Cooperative Farms\* #

19 Activities

23 Constraints

Appendix 1 - Skeleton Matrix for Groups 2 and 1

* CONSTRAINTS *		XAT	XBY	XFP	XBB	XLS	XFG	FAT	FBY	FFP	FBB	QAT	QBY	QFP	QBB	QLS	QFG	MTR	HCB	BCT	
001 FNC RM		122.00	117.00	121.00	99.00	19.00	40.00	0.00	0.00	0.00	0.00	36.50	36.20	36.00	30.00	46.00	46.00	-27.00	-90.00	-0.05	
CLA	686.00	282.00	1.00	1.00	1.00	1.00	1.00	1.00													
LAT	213.00	189.00	1.00																		
FAL	14140.00	9530.00		100.00	68.00	68.00	100.00	100.00													
JSL	7604.00	5126.00	128.00	128.00	64.00	64.00	64.00	64.00													
QAL	6368.00	4872.00		160.00	64.00	40.00	24.00	24.00													
BL	6368.00	4212.00		160.00	32.00	32.00	64.00	64.00													
FAL	7290.00	6270.00		96.00	64.00	64.00	64.00	64.00													
CBH	6664.00	5048.00		240.00	128.00	128.00															
FJB	0.00	0.00		0.00																	
ΔJB	0.00	0.00	1.00															-1.00			
FIB	4018.00	2782.00																	-1.00		
CBT	748.00	424.00																1.00			
KDC	9303.00	5874.00	63.00	63.00	52.00	46.00	30.00												1.00		
BAC	74527.00	47923.00																13.50	49.00	-1.00	
SOL	-366.00	-247.00																		1.00	
SCB	-235.00	-226.00						-0.24													
SCP	-62.00	-42.00							-0.34												
MTX	0.00	0.00	-11.00					1.00		-0.35	-0.30										
BYX	0.00	0.00		8.00					1.00			1.00									
FBX	0.00	0.00			-6.00					1.00			1.00								
BBX	0.30	0.30				-2.00						1.00									
LSX	0.00	0.00					-2.70								1.00						
FOL	0.00	0.00						-5.00								1.00					
																	1.00				







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