The Marketing of Agricultural Products in the Bako Area Western Shewa and Welega Regions

Legesse Dadi
Asfaw Negassa

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THE MARKETING OF AGRICULTURAL PRODUCTS IN THE BAKO AREA
WESTERN SHEWA AND WELEGA REGIONS

LEGESSE DADI
ASFAW NEGASSA

Agricultural Economists
Bako Research Center

RESEARCH REPORT NO. 7
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This publication is the seventh of the Research Report Series of the Institute of Agricultural Research. Research reports are designed to present findings of the different research activities conducted by the IAR staff. These reports also help to demonstrate to users the application of different methods used to tackle a particular problem. Empirical evidence to substantiate the conclusions is presented.

This research report examines the marketing of agricultural products in the Bako area of Western Shewa and Welega Regions. The report is based on surveys of farmers and traders. It is hoped that the report will prove useful to policy makers, planners and researchers concerned with agricultural marketing and increasing the productivity of Ethiopian agriculture.

The institute would welcome any comments and suggestions on the report; and they should be directed to the authors.

Seme Debela
General Manager
ACKNOWLEDGEMENT

Our very special thanks go to Dr. Steven Franzel (Agricultural Economist), Farming Systems Research Adviser of IAR for his technical advice in developing the survey questionnaire, analysis and interpretation of survey results, and reviewing and commenting on the draft papers. We also thank Dr. George Ruigu, Economist, International Labor Organization, for his valuable comments on the final draft.

The authors also thank Ato Tesema Tesso and Ato Bekele Gemechu, Bako Agricultural Economics Division Staff, who showed great dedication to the survey work.

Finally our thanks go to W/t Meskerem H/Mariam for typing the drafts and Ato Tadelle Mollalign for editing the report.
SUMMARY

A survey of the marketing of agricultural products was conducted around Bako in 1988. The objectives of this study were: to examine the marketing channels, organization, infrastructure, institutions and find out their functions and linkages; to assess the price of major agricultural products over seasons and space; and to identify marketing problems and provide suggestions for improvement.

In this study, four weredas around Bako Research Center were included. The most important enterprises - maize, tef, noug, pepper and cattle - were considered. Informal and formal surveys, observations and available secondary information were used to obtain the information needed. Enumerators were assigned at each local market to collect prices of major agricultural products on a weekly basis.

In the area, there are three important market participants in the grain trade: 1) the Agricultural Marketing Corporation (AMC) purchasing major grains and oil seed; 2) service cooperatives serving as an agent of AMC, and 3) private traders handling all grains, oil and horticultural crops, livestock and their products. Farmers sell their produce to retailers and consumers in the local markets and to service cooperatives.

The dominant means of transportation in taking the agricultural produce to the local markets and bringing farm inputs to the farm are pack animals and human beings. Although most of the farmers have exercised traditional storage systems, variations were observed in the methods used for different market participants. Maize faces serious storage pest problems, especially from weevils and rodents. Some farmers reported losses of 25% - 33% for maize. In the area, nearly all grains are sold in unprocessed forms. It has been observed that the traditional way of processing food grains is time consuming and it is one of the burdens of rural women.

Farmers have weak bargaining power due, in part, to their lack of information about markets. The only source of information used by the farmers is the informal communication among themselves in the market or elsewhere.

There are two price systems in operation: official fixed prices and open market prices. The AMC uses official prices fixed by government to purchase grains. These prices do not differ from place to place and over seasons. In the open markets, price formation depends mainly on demand and supply relationships. Price correlation analysis indicated that most of the markets under investigation had a medium level of integration for maize and tef. Furthermore, the analysis depicted that the closer the markets the more they are integrated because of easy...
In the study, farmers' marketing problems were identified and suggestions to overcome these problems were forwarded.

The major problems were:

1. Underdeveloped marketing infrastructure: there are three all-weather roads connecting Bako to other areas. However, the feeder roads branching out from the main roads operate only during the dry season. Construction and maintenance of the main and feeder roads either by government or by farmers is essential. The on-farm storage system practiced by the farmers is inefficient as it is prone to storage pests. Concerned institutions have to make effective pesticides available. Research should also focus on the rate, time and method of pesticide application under farmers' condition and improvement of traditional storage system and development of new ones. As the existing processing facilities (grain mills) are concentrated in towns and farmers do not have easy access for immediate use, the establishment of grain mills at central places should be encouraged.

2. Weak institutional support: the establishment of AMC and service cooperatives was an attempt to overcome the problem of weak institutional support; however, the prices they offer are very low and do not encourage the farmers to sell their produce to the service cooperatives. Farmers are not informed about the quota they should deliver until just before harvest. To overcome these problems, the AMC price should serve at least as the minimum price that farmers could receive. Producers should be informed, in advance, about planting time and the quota to be delivered; in addition a contractual agreement should be made between producers and marketing agencies.

3. Low demand at local markets and lack of market outlet for major farm produce: these problems are true for maize and pepper especially in years of excess production. To overcome these problems, expansion of the market for the crops by transferring surplus produce to areas where there is shortage of produce is essential.

4. Farmers' weak position in negotiating price in local markets: this was mainly because farmers do not have up-to-date market information. Besides, different expenses and fee obligations come just after harvest and force farmers to sell at low price. So, to improve the farmers' position as price
negotiators, it is necessary to find ways which provide farmers with market information. In addition to this, government and public marketing agencies should provide reasonable prices during the period of harvesting.

5. Lack of standard local measuring units: In the local markets, the majority of the farmers sell their produce on volume basis and their knowledge about the weight of the volume is limited as opposed to traders. So it is important to develop standardized measuring units to reduce the risk to farmers of losing income.
THE MARKETING OF AGRICULTURAL PRODUCTS IN THE BAKO AREA

1. INTRODUCTION

Many recent investigations advocate the crucial role marketing plays in improving the productivity of agriculture. An efficient marketing system on the one hand improves productivity by providing incentives to producers and this induces farmers to use new technologies which in turn improve productivity. In addition, access to efficient markets serves as an incentive for farmers to specialize in production of certain crops which are comparatively the most advantageous for the area.

On the other hand, an inefficient marketing system greatly hinders the production and productivity of agriculture. Among the marketing bottlenecks which limit production are: poorly developed infrastructure, weak input distribution system and low and unpredictable prices.

In order to reap the advantages of efficient marketing data generated at micro level are very important. The data can assist policy makers in preparing guidelines for the formulation of rational and realistic marketing policy at micro and macro levels. Thus, this study was initiated:

- to examine marketing channels, organization, infrastructure, and institutions in the Bako area including their functions and linkages;
- to assess the prices of major agricultural products over time and space; and
- to identify marketing problems and suggest possible solutions for improvement.

The paper presents the result of a marketing study conducted in 1987. First, an overview of Bako area is presented. The scope and methodology used in the study, as well as marketing organization channels and infrastructure are discussed. Price analysis and marketing efficiency are outlined. At the end, important marketing problems are pointed out, possible solutions are forwarded, and concluding remarks are made.

2. SCOPE OF THE STUDY AND METHODOLOGY

The main interest in this study was to have a general understanding of the agricultural marketing system in the four woredas around Bako Research Center: Bako, Gobuseyo, Sibusire and
Wayutoka (Figure 2.1). In this area, six local markets were selected: Tibe, Sheboka, Bako, Sire, Ehudgebeya and Arbgebeya. Of the crops grown in the area, only the four most important — maize, tef, noug and pepper — were considered. Cattle and butter were also included. It was not possible to deal with all existing enterprises due to resource limitations. The study mainly focused on the important markets located in the Bako area. Marketing activities in the consumer markets, which are located outside the study area, were not thoroughly studied due to resource constraints; more emphasis was given to the production market. Quantitative as well as qualitative information were collected to get a view as to how the marketing system operates in the area.

Different techniques, informal and formal surveys, and researchers' observations were used to get the information needed for the study. Enumerators were assigned at each local market to collect prices of major agricultural products on a weekly basis. Researchers conducted informal surveys in which more than 30 farmers and 30 traders were interviewed. In addition, some consumers, transporters, and key informants (people who have knowledge of the market in the area) were interviewed using guidelines developed for this purpose.

A formal survey was carried out to substantiate and verify results of the informal survey. For the formal survey, a structured questionnaire was developed by the researchers. Then 55 randomly selected farmers were interviewed by enumerators under the supervision of the researchers.

The information gathering technique did not only focus on primary data but also included available secondary data. Thus, information on grain prices for consumer markets was obtained from the Relief and Rehabilitation Commission (RRC). Secondary data were also gathered from Ministry of Agriculture (MOA), Agricultural Marketing Corporation (AMC), wereda offices and service cooperative record books.

The rainfall condition was good in the survey year (1987) and in the preceding year as well. The annual rainfall in the study area was 1064 mm in 1986 and 1258 mm in 1987. The starting time and distribution of rainfall was normal. As a result, there was good harvest of crops in both years.

1 Under the new administrative restructuring, the study area is included in Cherya, Bila Sayo, Wama Boneya and Guto Wayu Awrajas.
Figure 2.1

--- All Weather Road
--- 1800 Altitude in Meters
- --- Administrative Region Boundary
--- Dry Weather Road
□ □ Service Cooperative
- --- Boundary of Survey Area
△ △ Sample Site
Map of survey area.
3. OVERVIEW OF BAKO AREA

Bako is a mixed farming area extending from Jaji (Western Shewa) to Gute (Eastern Welega). The area has an altitude ranging from 1550 m to 2000 m, variable topography, clay-dominated soils, climate characterized by high rainfall and temperature, and mean annual rainfall of 1217 mm. The rain usually starts in March and about 80% falls from May to September.

One all-weather road, which links Addis Abeba with Nekemte, passes through the middle of the study area connecting it with big markets. Part of the highland, north of Bako, is accessible by two all weather roads, one between Bako and Shambu via Fincha-Dam and the other one connects Bako with Shambu via Jare and Jimagenete. Feeder roads are very few and poorly maintained. They can be used by trucks only in the dry season.

The primary objective of farmers in the Bako area is to secure an adequate family food supply throughout the year which is achieved through different crop and livestock enterprises. The second objective is cash earnings for household expenditures, farm inputs, school fees, taxes and different contributions. This is also met through production of cash crops and in a year of crop failure through sale of live animals.

The major crops grown are maize, tef (*Eragrotis tef*), noug (*Guizotia abyssinica*) and pepper (*capsicum frutescens*) (Table 3.1). Maize and tef are the primary food crops while noug and pepper are the major cash crops. Despite the availability of ample land, the area cultivated per household is small (1.5 ha). As shown in the crop calendar (Figure 3.1), the major crops are planted from April to August and harvested from November to January.

<table>
<thead>
<tr>
<th>Crops farmers grow</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>100</td>
</tr>
<tr>
<td>Tef</td>
<td>52</td>
</tr>
<tr>
<td>Noug</td>
<td>45</td>
</tr>
<tr>
<td>Pepper</td>
<td>68</td>
</tr>
</tbody>
</table>

Livestock, especially cattle, are also important in the area. (Table 3.2). About 89% of the farmers own cattle, 2% own sheep and goats, and 13% own pack animals. Farmers keep cattle predominantly as investment assets, draft and security. They sell their cattle to meet their large cash needs. Small cash needs are met by the sale of poultry, small ruminants, and crops.
Figure 3.1. Crop calendar: Land preparation, planting, weeding and harvesting

<table>
<thead>
<tr>
<th>Crops</th>
<th>Tir Yeke</th>
<th>Megabit Mia</th>
<th>Ginbot Sene Hamle Nehase Meskerem Tikimt Hidar Tahisas</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Jan</td>
<td>(Feb)</td>
<td>(March) (April) (May) (June) (July) (Aug.) (Sept.) (Oct.) (Nov.) (Dec.)</td>
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<td>F S</td>
<td>F S</td>
<td>F S F S F S F S F S F S F S F S F S F S</td>
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<tr>
<td>Maize</td>
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<td>LLLLLL...</td>
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<tr>
<td></td>
<td>PPPPPP...</td>
<td>PPPPPP...</td>
<td>PPPPPP...</td>
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<tr>
<td>Tef</td>
<td>LLLLLL...</td>
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<td></td>
<td>PPPPPP...</td>
<td>PPPPPP...</td>
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<td>Noug</td>
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<td>PPPPPP...</td>
<td>PPPPPP...</td>
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<td>Pepper</td>
<td>LLLLLL...</td>
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<td>LLLLLL...</td>
</tr>
<tr>
<td></td>
<td>PPPPPP...</td>
<td>PPPPPP...</td>
<td>PPPPPP...</td>
</tr>
</tbody>
</table>

Labour peak period


"F" = First half of the month
"S" = Second half of the month
"L" = Land preparation
"P" = Planting
"W" = Weeding
"H" = Harvesting

The Ethiopian months are 7-8 days behind the European months.
Some farmers do not produce sufficient food for the year round. About 35% of the farmers reported that there is frequent shortage of food from June to September (Figure 3.2). The major factors limiting the crop production are weed problems, shortage of draft power, shortage of labor at peak periods, dry season feed shortage and low soil fertility. The area cultivated is limited by draft power shortage and weed infestation.

Table 3.2. Percentage of farmers keeping cattle

<table>
<thead>
<tr>
<th>Types of cattle farmers keep</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kind</td>
<td>%</td>
</tr>
<tr>
<td>Oxen</td>
<td>65</td>
</tr>
<tr>
<td>Cow</td>
<td>74</td>
</tr>
<tr>
<td>Heifers</td>
<td>57</td>
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<tr>
<td>Bulls and unweaned</td>
<td></td>
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<tr>
<td>male calves</td>
<td>44</td>
</tr>
<tr>
<td>unweaned male calves</td>
<td>56</td>
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</tbody>
</table>

4. THE MARKETING SYSTEM

4.1. Marketing organization

There are three important market participants in agricultural trade in the area; the Agricultural Marketing Corporation (AMC), the service cooperatives and private traders. All of them have different objectives to fulfil and differ in the management systems they employ, the type and extent of functions and services they provide, and the products they handle. The AMC is a government organization purchasing major grains (cereals, pulses, and oilseeds) grown in the area. Service cooperatives are marketing cooperatives encompassing 3 to 5 peasant associations; they purchase produce from farmers and sell to the AMC. They also supply farm inputs and consumable goods to their members. Private traders with or without license under the government regulated system handle all crops and livestock products. The activity of each group in grain marketing is discussed in the following sections.

The Agricultural Marketing Corporation (AMC)

The AMC was established with the aim of stabilizing grain markets through direct participation of the state (G/Meskeli, 1987). It is mandated to buy and distribute major crops including cereals, pulses and oilseeds. In the Bako area, the major crops purchased by AMC are maize, tef, noug, and sorghum. The AMC purchases these products from individual
**Figure 3.2. Food Calendar**

<table>
<thead>
<tr>
<th>Crops</th>
<th>Tir</th>
<th>Yekatit</th>
<th>Megabit</th>
<th>Miazia</th>
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<th>Hamle</th>
<th>Nehase</th>
<th>Meskerem</th>
<th>Tikist</th>
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<th>Tahisas</th>
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</table>

**Staples**

<table>
<thead>
<tr>
<th>Maize</th>
<th>Tef</th>
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<tr>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Nong</th>
<th>Milk</th>
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<table>
<thead>
<tr>
<th>Bean and pea</th>
<th>Rape</th>
<th>Pepper</th>
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Food scarcity period


| Available period | Uncertain period | Unavailable period |
farmers through service cooperatives and directly from producer cooperatives.

AMC purchases most of its grain on quota basis; each farmer is required to supply a certain quantity of grain to the AMC through the service cooperatives. Before 1985 the quota was determined centrally and passed down to the regions, awrajas, weredas and finally to producers’ level. Information on farmers' production conditions and crop prospects were hardly incorporated into the quota setting process. But after 1985 this system was changed. Production information is collected at the micro level and is sent to the national task force. Quotas are then set based on this information.

The AMC quota is set by grain purchasing task forces (GPTF) at different administrative levels: wereda, awraja, regional and national. At the awraja and wereda levels, the GPTF is composed of representatives from AMC, MOA, the administration office, peasant associations and urban dwellers associations. The wereda level task force studies the condition of crop production in the wereda. While fixing quotas, they consider the area cultivated, types of crops grown, population density, expected production and productivity. The quota is then passed to the awraja level task force for approval. This task force, in turn, considers past quotas and deliveries in addition to the criteria used at the wereda level. The awraja task force approves the quota as it is or makes certain changes and passes them down to the wereda task force for execution.

In the Bako area, the wereda GPTF fixes quotas for service cooperatives in accordance with the crops grown, area cultivated, population density, production and productivity. The executive committee of service cooperatives (SCs) and chairmen of peasant associations distribute the SC’s quota among the PAs. The participation of PA chairman ensures feedback when quotas are set for PAs. The PA executive committee fixes quota for individual farmers on the basis of area cultivated, number of oxen owned, crop performance in the field, wealth and crops grown. Farmers are usually informed about the quota they should deliver just before harvest.

At the PA level, extensive interviews were conducted and record books examined to better understand the quota process. The PA executive committee categorizes farmers into different groups based on set criteria and fixes quotas accordingly. Those farmers who have more oxen and more cultivated area are required to deliver more grain to AMC. For example, in 1988 in Gishetorban PA, Gobuseyo Wereda, farmers owning 2 pairs of oxen were assigned to deliver 300 kg of maize; farmers owning 1 pair of oxen were assigned to deliver 200 kg of maize, and farmers owing one ox, 100 kg of maize. Those farmers whose produce is insufficient even for family subsistence were exempted from quota
Quotas are fixed based on the crop the farmer grows and are passed down to service cooperatives and then to farmers. If a farmer does not grow a particular crop, he is not supposed to deliver that crop to AMC. However, according to the information provided by the farmers and local AMC officers, in past years there were instances where some farmers had to buy crops, which they did not grow or did not produce in surplus, in order to deliver to AMC. These problems arose because of the equal distribution of the quota among members.

Sometimes service cooperatives are unable to meet their quotas because the crop requested is either not produced in sufficient supply or limited by environmental factors (drought, diseases, insect incidence, etc). The problem arises because of the committee's lack of accurate information in the area. In this case SCs either substitute other crops or are exempted provided that information is passed to the wereda task force in advance.

Generally, the AMC is playing a leading role as compared to other marketing channels in the area. The participation of AMC in crop marketing in the Bako area substantially increased in 1987, in which its market share reached roughly 40% of the total value of the major crops (maize, tef, noug, and pepper) marketed. AMC has transportation facilities (owned or hired) to collect grain from SCs stores and to export to other areas. The corporation also built two big stores in the area which provide storage functions.

**Service cooperatives**

Service cooperatives serve AMC as grain collecting agents and receive commissions for the service they render (Table 4.1). They were designed to help alleviate major distribution problems in the smallholder sector. Small farmers produce a wide range of products in small amounts and sell in small quantities. As a result, collection is very difficult. At the same time, distribution of farm inputs and consumer goods to small farmers also poses a serious problem.

Service cooperatives around Bako purchase agricultural products such as maize, noug and tef from smallholders, at fixed prices and they deliver to the AMC on quota basis. The service cooperatives may deliver above or below their quota depending on 1) crop harvest condition of a given area. When there is good harvest, service cooperatives deliver above their quota. This is specifically true for maize. 2) proximity to big consumer markets. Service cooperatives nearer to big markets do not always meet their quota. This is because farmers prefer to sell in the big markets where they receive a higher price rather than
to SCs at a fixed price. Service cooperatives also distribute consumer goods like salt, soap, and clothes to the farmers at lower prices than at the local markets.

Table 4.1. Farmers' and service cooperatives' share of AMC purchasing price (per 100 kg)

<table>
<thead>
<tr>
<th>Crops</th>
<th>AMC purchase price from service cooperatives (birr)</th>
<th>Farmers' share of AMC price (birr)</th>
<th>Service cooperatives margin (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>26</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>Tef - white</td>
<td>53</td>
<td>48</td>
<td>5</td>
</tr>
<tr>
<td>- mixed</td>
<td>46</td>
<td>41</td>
<td>5</td>
</tr>
<tr>
<td>- red</td>
<td>42</td>
<td>37</td>
<td>5</td>
</tr>
<tr>
<td>Noug</td>
<td>53</td>
<td>48</td>
<td>5</td>
</tr>
</tbody>
</table>

Extracted from AMC price data

Private trade

Marketing studies conducted in the Bako area in the early 1970s indicated that the major agricultural products are sold to private traders and consumers (Manig 1973); government organizations played a minor role. The crops were marketed mainly on the weekly open market days and sold to a rural wholesaler or to agents of wholesalers. The rural wholesalers sell the commodities after certain storage time to wholesalers in one of the consumer markets: Addis Ababa, Gimbi or at local markets. The local retailers sell the produce immediately in small quantities to the consumer on open market days. About 30% of the marketed maize was sold to consumers and retailers and 70% to rural wholesalers (Manig, 1973). However, in the past seven years the situation has changed. The role of rural wholesalers in the grain trade has dramatically decreased, being displaced by AMC.

In recent years, the transactions carried out between farmers and consumers have become the dominant part of private grain trade in the area. The activities of licensed grain traders in the area has been greatly affected by the establishment of AMC and service cooperatives. In 1987, there were no licenced traders who participated in the marketing of major crops like
maize, tef and noug. Licensed traders instead concentrated on items which AMC does not purchase such as pepper, livestock and livestock products (butter, hides and skins).

To participate in trade, traders should have government-issued permits (licenses). They pay taxes based on their assessed level of operating capital and income. In addition, taxes are also paid to town councils. Unlicensed trading is considered illegal; traders of this kind are trading without the permission of government and do not pay taxes.

Unlicensed small traders are involved in marketing of all crops and they do not specialize on any one crop. In most cases, they are part-time traders and shift from one crop to another based on profitability. They use public transportation (buses) or hire space in private trucks to export their crops to Ambo, Nekemte, or sometimes Gimbi and Addis Abeba. The quantity handled is small and often not more than 100-200 kg per market visit for maize, tef and noug. The degree of control of unlicensed trading is uneven. At the time when AMC quotas are being collected, unlicensed traders may be requested to sell their produce at AMC prices.

Farmers in the area also provide important marketing functions. They transport their produce by using locally available means to AMC collection units (service cooperatives) and to the nearby local markets, making it available for consumers and traders.

4.2. Marketing channels

Agricultural market channels connect farmers and consumers over time (through storage) and space. Along these channels, agricultural products are transformed into consumable products.

There are crop and livestock flows between the study area and neighboring highland areas. From the highlands wheat, barley, pulses, potato, sheep and goats are taken to the study area. In turn, maize, pepper, sorghum and noug are exported to the highlands. Products shipped to the study area are either consumed or shifted to other areas by traders, farmers and consumers from other areas. Spices, onion, garlic, pulses, and specifically lentil are imported to the study area (Figure 4.1).

In the Bako area, farmers sell their agricultural produce to retailers and consumers in the local markets. On-farm sale of crops is not common. The local markets are located in towns and villages. The big markets are concentrated in towns along the

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1 As of January 1988 traders were permitted to participate in grain trade and some started purchasing grain.
Figure 4.1. Crop and livestock trade flows between the study area, neighboring highlands, and other areas.
main road. Thus, the farmers have to walk a distance of 5-15 km to visit the big markets in order to sell their produce. Service cooperatives are also one of the important channels for crops disposal in the area. They collect, bulk, and store grain and ultimately deliver it to AMC. In Figures 4.2-4.6 the major marketing channels are outlined for the area’s most important commodities: maize, tef, noug, pepper, and livestock.

In 1986, about 47% of farmers made bulk sales (more than 15 kg of maize) to service cooperatives (Table 4.2). About 24% sold maize in bulk in the local markets to consumers. Small but continuous sales of maize were made at local markets to consumers and traders. The flow of maize through different channels is shown in figure 4.2.

Tef is also channeled to service cooperatives, consumers and traders (Figure 4.3). However, a larger proportion of marketed tef is directed to consumers and traders because these groups offer higher prices than service cooperatives. Traders prefer to buy and sell tef more than other crops because tef has a high demand and fetches more profit for them.

Table 4.2. Bulk and small sale of crops by type of buyers (% of farmers who responded)*

<table>
<thead>
<tr>
<th>Crop</th>
<th>Service Cooperative</th>
<th>Consumer</th>
<th>Traders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bulk sales</td>
<td>Small sales</td>
<td>Bulk sales</td>
</tr>
<tr>
<td>Maize</td>
<td>47</td>
<td>1</td>
<td>24</td>
</tr>
<tr>
<td>Tef</td>
<td>N.A.</td>
<td>4</td>
<td>26</td>
</tr>
<tr>
<td>Noug</td>
<td>38</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Pepper</td>
<td>0</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

*Percentages refer to % of farmers selling to a particular buyer.

N.A. = Not available

Bulk sale is for quantities greater than 15 kg
Small sale is for quantities less than 15 kg
Figure 4.2. Flows of maize through different channels.

Figure 4.3. Flows of tef through different channels.
Figure 4.4. Flows of noug through different channels.

Figure 4.5. Flows of pepper through different channels.
Figure 4.6. Livestock marketing channels around Bako.
The bulk of noug goes to service cooperatives since private traders are restricted from handling the crop and consumers need only small quantities for consumption and thus purchase in small amounts. The quantity consumed per household per year was estimated to be 40-50 kg. In 1987, about 58% of the surveyed farmers made bulk sales of noug to service cooperatives whereas 13% made bulk sale to traders or to the only private oil mill operating in the area (Table 4.2). Table 4.2 and Figure 4.4 show that some farmers make small sales to consumers, traders and to small processors.

Pepper is the only major crop in the area that is not marketed through service cooperatives. Rather farmers sell to traders (assemblers, wholesalers or retailers) and consumers in the local markets. In most cases traders assemble pepper in bulk for export outside of the area. Consumers also buy in smaller amounts (Table 4.2). The flow of pepper is shown in figure 4.5. The types of pepper grown in the area are different in pod color and pungency. The need for these different pepper types depends on their end use. For example, dark red colored pepper type (Marekofana) is preferred by the spice extraction company for its oilerocine content. Dark red colored pepper types have more demand and fetch higher price than light red pepper in the area. Some consumers need pungent types such as Bako Local.

Each of the market participants perform a specific function in the channel. AMC purchases, stores and distributes grains to public organizations and consumers. Service cooperatives purchase grains from farmers, store for a period of 1-6 months, and deliver to AMC depending on the type of crop and availability of transportation. The margin service cooperatives receive is fixed and they are not compensated for storage costs. Small traders buy grain in local markets and sell to consumers in the other markets. They usually handle small quantities of 100-200 kg per market visit and store for only a few weeks. The role small traders play in bulking and storage is minor. However, they play an active role in transporting grains and making them available to consumers.

Livestock marketing channels are shown in figure 4.6. Diversity of sellers and buyers exist for livestock depending on places where livestock are sold and purpose of buying. Of the total number of livestock sales reported in 1987, 47% took place in the local market and 23% on the farm (Table 4.3). At the farm farmers sell their livestock to other farmers, farmer-traders, traders; and consumers. Farmers buy livestock for breeding and draft power. Farmer-traders usually perform a function of assembling livestock for licenced traders who take them to regional markets. Farmer-traders also sell livestock in local markets to the farmers, traders and consumers. Oxen, cows, sheep, goats and poultry are sold mostly at the local market and their main buyers are traders. The proportion of bulls and
heifers sold at both market and farm are similar and their main buyers are farmers (Table 4.3).

At the local market the sellers are producers and farmer-traders and the buyers are farmers, traders, butchers and consumers. Licenced traders buy in the local market and then trek the animals to regional markets. They handle on the average 10-15 head of cattle per week.

4.3. Quantities of crops marketed and timing and reasons for sale

In 1985 following the drought of the previous year there was a grain supply shortage and prices were high. In 1986 the climate condition was favorable and good harvest was obtained. As a result the grain supply increased and prices started declining. A good harvest was also obtained in 1987. In this

Table 4.3. Livestock sales at farm gate and local market (% of farmers reporting sales)

<table>
<thead>
<tr>
<th>Classes of livestock</th>
<th>Sold at Farm gate (%)</th>
<th>Sold at Local market (%)</th>
<th>Not sold</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle: oxen</td>
<td>27</td>
<td>45</td>
<td>28</td>
<td>100</td>
</tr>
<tr>
<td>cows</td>
<td>31</td>
<td>40</td>
<td>29</td>
<td>100</td>
</tr>
<tr>
<td>heifers</td>
<td>36</td>
<td>38</td>
<td>26</td>
<td>100</td>
</tr>
<tr>
<td>bulls</td>
<td>36</td>
<td>36</td>
<td>28</td>
<td>100</td>
</tr>
<tr>
<td>Sheep and goats</td>
<td>5</td>
<td>53</td>
<td>42</td>
<td>100</td>
</tr>
<tr>
<td>Poultry</td>
<td>2</td>
<td>67</td>
<td>31</td>
<td>100</td>
</tr>
<tr>
<td>Average (unweighted)</td>
<td>23</td>
<td>47</td>
<td>30</td>
<td>_</td>
</tr>
</tbody>
</table>

year compared to the previous years, farmers sold larger quantities of maize and noug to AMC through service cooperatives. AMC’s share reached about 38% of the total value of maize marketed and more than 90% of the total value of noug marketed (Table 4.4). Information from AMC offices in the area indicate that only a small quantity of tef was supplied to AMC and the tef quota was not attained in 1987. This is because farmers sold a larger quantity of their tef in the local market for the price of tef in the local market was higher than the official fixed price (Table 4.5). In addition the tef quota per farmer was small relative to that of maize the average being 50 kg because of its low production level.
Table 4.4. Value of grains produced and marketed per household, 1987.

<table>
<thead>
<tr>
<th></th>
<th>Value sold</th>
<th></th>
<th>Value produced</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AMC</td>
<td>Other</td>
<td>Total</td>
</tr>
<tr>
<td>Maize</td>
<td>38 (38%)</td>
<td>63 (52%)</td>
<td>101 (100%)</td>
</tr>
<tr>
<td>Tef</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Noug</td>
<td>57 (91%)</td>
<td>5 (7%)</td>
<td>62 (100%)</td>
</tr>
<tr>
<td>Pepper</td>
<td>0</td>
<td>141 (100%)</td>
<td>141 (100%) &amp; 141 (98%)</td>
</tr>
</tbody>
</table>

Source: estimates based on survey data

Table 4.5. Producers' price in Bako area (1986 and 1987)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>20</td>
<td>22*</td>
<td>32.9</td>
<td>19.7</td>
</tr>
<tr>
<td>Tef - white</td>
<td>45</td>
<td>48</td>
<td>67.0</td>
<td>53.4</td>
</tr>
<tr>
<td>- mixed</td>
<td>38</td>
<td>41</td>
<td>66.1</td>
<td>47.8</td>
</tr>
<tr>
<td>- red</td>
<td>34</td>
<td>37</td>
<td>63.9</td>
<td>47.8</td>
</tr>
<tr>
<td>Noug</td>
<td>45</td>
<td>48</td>
<td>67.8</td>
<td>65.2</td>
</tr>
</tbody>
</table>

Farmers market much of their produce in bulk usually after harvest, because of the large cash requirement for taxes, contribution fees, and other payments due within a short period after harvest. Besides, the farmers need the cash for purchasing necessary consumer goods, and for medical and other household expenses. Later on, farmers take their produce to the market in small amounts based on their periodic cash requirements.

Farmers retain more maize than any other crop, for it is the main staple food in the area. Nevertheless, because of its relatively high production in 1987, 40% to 50% of the total maize produced was marketed. About 67% of the farmers claimed to have made most of their sales immediately after harvest. After harvest, the maize price decreased and reached its lowest level for the local markets were over supplied. This was also true for noug and pepper; their price also reached the lowest level just after harvest. Later in the season, the prices increased to their highest level because of short supply. During this period farmers repurchased maize mainly for consumption; about 45% of the farmers claimed to have bought maize before the new harvest for food. Only 25% of the farmers were able to take price advantages by selling most of their produce later in the year before crops were harvested.
Storage losses of maize are substantial and are one of the reasons why farmers sell maize soon after harvest. Farmers reported that their storage losses because of weevils were as high as 25% to 33% of the total maize stored for over six months storage period. The price for moderately attacked maize was reduced by 25% in the markets studied and resulted in large income losses.

Major emphasis on tef, noug and pepper production is given to supply the family with cash income. Only a small quantity of tef is retained for consumption, most of which is for holidays and ceremonies. Even though tef can be stored for a longer period of time and could be kept for later sale at high price, most of the farmers sold it after harvest to pay taxes. About 47% and 42% of the farmers responded growing noug and pepper respectively as cash crops. A small amount of these crops is retained for consumption; most is marketed. The average production of noug per farmer rarely exceeds 200 kg. Some farmers selling these three cash crops just after harvest have to repurchase them at higher prices later in the season. About 20% of the farmers repurchased tef for seed and six out of twelve farmers bought back noug during planting time for seed.

5. MARKETING INFRASTRUCTURE AROUND BAKO

The essential components of marketing infrastructure include transportation and communication facilities, storage, processing, information services and financial institutions to provide credit. These components are important for the improvement and development of the marketing system.

5.1. Transportation facilities

Transportation facilities are poorly developed in the study area. The dominant means of transportation in taking agricultural produce to local markets and bringing farm inputs to the farm are pack animals and human beings. The quantities delivered to the market using these means are very small, probably not greater than 100 kg at a time. Furthermore, handling large quantities requires a lot of time. The pack animals used for transportation are usually donkeys and mules. They are owned, hired or borrowed from relatives and friends. The survey indicated that about 13% of the farmers own pack animals, 29% hire, 13% borrow and the others use the three methods in combination. The rate of hiring per day on the average was 1.20 birr regardless of the quantity loaded.

Trucks and private buses are used by traders between local, regional and terminal markets. However, most of the traders complained that the existing transportation facilities are inadequate and costs are high relative to the tariffs fixed by
the Road Transport Authority (Table 5.1). To cope with this problem, some big traders form a group and make a contract arrangement with transporters through the Road Transport Authority; this is especially true for pepper and butter traders. Other traders use passing trucks and buses. Quantities transported by buses are small and the tariff paid is high as compared to the tariff set by government (Table 5.1).

Table 5.1. Transportation cost per 100 kg of grain between different markets, 1987

<table>
<thead>
<tr>
<th>Markets</th>
<th>Distance (km)</th>
<th>fixed tariff (ETB)*</th>
<th>Actual cost per km (ETB)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bako-Nekemte</td>
<td>81</td>
<td>1.66</td>
<td>6-10</td>
</tr>
<tr>
<td>Bako-Ambc</td>
<td>125</td>
<td>2.56</td>
<td>10</td>
</tr>
<tr>
<td>Sheboka-Ambo</td>
<td>115</td>
<td>2.36</td>
<td>8-9</td>
</tr>
</tbody>
</table>

* Fixed by Road Transport Authority
** Lower end of range is price by trucks, higher end is by buses.

There are three all weather roads connecting the area with other regions. One connects Addis Abeba and Nekemte and the other two connect Bako area with Horo Guduru Awraja. Most of the markets included in the study area are along these roads and have good contact with other areas. However, off-road markets in the area have little interaction with other areas and regions.

5.2. Storage facilities

Storage methods vary among the different market participants. Although large quantities of grains are sold after harvest, the farmers don’t sell all their surplus produce during this period. In addition farmers have to retain a certain amount of their produce for consumption and seed. The periodic cash requirement forces the farmers to sell their produce portion by portion. These factors necessitate storing of the farm produce for a given period of time.

Most of the farmers in the Bako area use traditional storage systems. They store unshelled maize outside their house in a gorb, a store made of interwoven sticks with a grass roof. This type of storage is not sealed to allow ventilation and to minimize weevil problems. Shelled maize and tef are stored in the house either in gumbia, a local store made of a mixture of soil and tef straw or in gotera made of bamboo reinforced with a mixture of mud, tef straw and cow dung. These local stores are set above the ground on either a wooden or stone platform. Their storage capacity ranges from 100 kg to 1000 kg. Big broken pots are also used for storing and are kept inside the house.
Service cooperatives are in a better position than individual farmers in minimizing weevil and rodent damage for they have built cement-floored warehouses with a dry and cool environment. They also store grain for shorter periods of time than farmers. Most of the small traders involved in food grain trading do not have permanent storage facilities. They store temporarily in sacks until sale is effected. However many pepper wholesalers have their own warehouses.

Maize faces serious storage pest problems, especially from weevils and rodents. As mentioned above, some farmers reported losses of 25% to 33% for maize. In 1987, the use of pesticide (usually Lindane) to control storage weevils was practiced by 68% of the farmers. However, the farmers complained about the ineffectiveness of the pesticides in controlling weevils. There might be two reasons for this: (1) farmers’ application rate is low compared to the recommended rate and (2) the chemical might be ineffective because of long shelf-life. In addition to the use of pesticides, farmers have also followed certain techniques to overcome the damage caused by weevils: selling immediately after harvest at lower price, using the attacked maize for immediate consumption, and winnowing. Maize which is to be used for seed is fumigated by hanging on the roof of the house or is stored outside the house cobs by hanging cobs on the trees.

5.3. **Processing**

In the area, nearly all grains are sold on the market in unprocessed form. It has been observed that the traditional way of processing food grains is time consuming and it is one of the burden of rural women limiting their participation in agricultural production.

In the Bako area, the grinding of grains can be carried out by (1) wooden pestle and mortar, (2) using two flat stones of different size specially cut for grinding, or (3) using flour mills. The method of processing is different for different crops.

For maize, the processing also varies depending on the stage at and the form in which the crop is consumed. Maize, when it is harvested at the green cob stage, requires little processing for consumption and can be eaten as roasted or boiled maize. These processes are not time consuming (groups of farmers estimated about 15 minutes for roasting and 90 minutes for boiling). Green maize can also be processed to prepare bread (*maro*), or *injera* using pestle and mortar and local grinding stones. *Maro* from green maize *maro* is made by enclosing flour soaked in water with *ensat* (false banana) or sorghum leaves. Then it is cooked.

For preparing dried maize flour, the farmers use local grinding materials or flour mills. To process maize at home, the
shelled maize is soaked in boiled water and is kept for one night. In the morning, the soaked maize is ground using pestle and mortar and is sundried. The fine flour is separated from the semi-fine flour. The semi-fine is again ground using pestle and mortar and this process continues until fine flour is obtained. The fine flour is again soaked in a mixture of hot water and fermented dough called *Absit*. The dough is then ground using local grinding stones. At this stage, it is ready for preparing *injera*. The women claimed that the process of making *injera* from dry maize using local processing material is time consuming. To prepare maize to be milled at flour mills, farmers first clean the maize, removing foreign materials. Then they pack the maize in containers and carry them to flour mills on pack animals or by human beings. The flour mills process maize into either fine or semi-fine flour depending on the request of the user. The fine flour can be used for *injera* or porridge without further processing at home. The semi-fine flour is sieved, winnowed, soaked with water, and ground using local grinding stones to obtain fine flour. Then the fine flour is made into *injera* or porridge. Processing maize into fine flour is more expensive than into semi-fine flour.

In the case of *tef*, the flour can be prepared by using local grinding stones or by taking the grain to flour mills. After milling, *tef* flour is baked and is kept for sometime for fermentation. Women feel that two or three days are needed for good fermentation to prepare high quality *tef* *injera*.

Sorghum can be processed separately or in combination with maize and *tef*. Noug and pepper are ground for home consumption using pestle and mortar.

There is an uneven distribution of flour mills in the area. They are concentrated in the towns; very few with insufficient capacity to serve all people are found in rural areas where most people live (Table 5.2). As a result of this, the farmers have to travel long distances to the towns or nearby flour mills to get their food grains processed. So a lot of working hours are lost by the farmers which might have been otherwise used in agricultural production.

As far as other processing facilities are concerned, there are also a number of butcheries and four bakeries, all located in the towns. Generally, in terms of quality and quantity, they are not able to meet the local demand. For example, it is not possible to meet the demand for bread in Bako.
Table 5.2. Flour mill distribution in towns and countryside in two weredas around Bako

<table>
<thead>
<tr>
<th>Locations</th>
<th>Gobuseyo</th>
<th>Sibu Sire</th>
<th>Wayutuka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town</td>
<td>3</td>
<td>12</td>
<td>-</td>
</tr>
<tr>
<td>Countryside</td>
<td>3</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>21</td>
<td>8</td>
</tr>
</tbody>
</table>

- Data not available

There is one oil mill located in Bako town that makes edible oil out of noug. However, the production from the mill is not sufficient to meet the local demand and therefore edible oil is imported from other areas.

5.4. Information services

Farmers in the study area have weak bargaining power due, in part, to their lack of information about markets. Thus, they are exposed to the exploitation of middlemen because the majority of them have no up-to-date information on prevailing market prices, supply and demand situations and other information which is used for decision making. The only source of information used by the farmers is the informal communication among themselves in the market or elsewhere. The majority of the farmers become aware of the prices only upon arrival in the marketplace thereby observing and asking the marketers. Others get information about previous market days and other marketplaces by asking their neighbors who had been there. On the other hand, traders were found to have good marketing information because they visit consumer and producer markets.

5.5. Cooperative marketing activities

Service cooperatives are composed of two or more peasant associations (PAs) and play a vital role in marketing agricultural products. There are about 26 service cooperatives in the area (Table 5.3). They provide collecting, bulking, storing and processing (flour mills) services and supply farm inputs and consumer goods to the farmers. They have fairly well developed infrastructures, e.g., weighing and storage facilities, and have working capital for financing important marketing activities.
Table 5.3. Distribution of service cooperatives in weredas around Bako

<table>
<thead>
<tr>
<th>Wereda</th>
<th>No of service cooperatives</th>
<th>No. PA. organized under S.cooperatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakotibe</td>
<td>9</td>
<td>59</td>
</tr>
<tr>
<td>Gobuseyo</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Sibusire</td>
<td>6</td>
<td>45</td>
</tr>
<tr>
<td>Wayutuka</td>
<td>6</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>152</td>
</tr>
</tbody>
</table>

6. PRICE OF AGRICULTURAL PRODUCTS

6.1. Price formation

In the area, agricultural products are sold to AMC through service cooperatives and in the markets. There are two price systems in operation: official fixed prices and open market prices. The AMC uses official prices fixed by the government to purchase grains. These prices do not change from place to place or over seasons nor is there any variation in price according to the quality of the grain. In most cases, the fixed prices are below market prices, favoring consumers (Table 4.5).

In the open markets, price formation depends mainly on demand and supply. Prices are also influenced by information and crop flows within and outside the area. The grain prices in consumer markets (Nekemte, Ambo and Addis Abeba) greatly affect price formation and most of the prices in local markets move with the prices in the consumer markets (Figure 6.1 and 6.2).

The farmers in the area are price takers. Farmers get current price information after they arrive at market places. They also receive information about past prices in the local markets from neighbors who visited those markets recently. Because of the lack of transportation facilities, farmers sell their produce at nearby local markets; they cannot visit distant markets where there are price advantages. Moreover, farmers are usually unable to store their produce and sell later when prices are relatively better because taxes and other debt payments are due shortly after harvest. In other words, farmers cannot influence the prices in the local markets. Small traders move from market to market. They have better market information concerning both production and consumer markets. This helps them to influence prices in the local markets.

6.2. Seasonal price movement

Maize, tef, pepper and noug are normally harvested in November/December. After this period, in January/February, the
supply reaches its peak and prices drop to their lowest level (Figures 6.1-6.3). In March/April, after taxes are paid, the supplies start declining and the prices start increasing. The price level reaches its peak in June/July. At the time when the maize green cob harvest starts, the prices of the crops again start to decline and the prices drop further as the main harvest starts.

The years 1986-87 provide a good example for seasonal price fluctuations. Over the two years, maize and tef prices tended downward due to good harvests. In 1986 seasonal maize price variation was high both in production areas and consumer markets. In Bako market, the 1986 pre-harvest maize price (June/July) reached ETB 45 per 100 kg because of the influence of the poor harvest in 1985. Because of the good harvest in 1986, the price dropped to only 50% of the pre-harvest price. In 1987 the price variation was not high; the seasonal price spread was 0.70 (Figure 6.1).

The reason is that there was a good harvest, the supply was in surplus throughout the year, and the demand was inelastic. However, in the consumer markets in Nekemte there was more price variation between seasons in the year; the seasonal price spread was 0.4. This might be attributed to inefficiencies of marketing systems.

Seasonal price fluctuations were also important for tef. In 1986 the lowest price of tef (December) accounted for 60% of the highest price (June). In 1987 when there was good harvest, the seasonal price variations in the production area and consumer markets were also low. The production and consumption markets are well coordinated because tef is a highly demanded crop; any change in its supply has a pronounced impact on its price in a short period of time. The 1987 highest tef prices before harvest were lower than that of 1986 by 33% and 27% in the production area and consumer markets respectively. Prices declined in 1987 because of the good harvest. The 1986 harvest was also good but prices during that year were still affected by the 1985 drought.

The seasonal price variation for noug between different local markets was not as pronounced as for other crops. This might be so because (1) most of the noug produced is channeled to AMC at a fixed price; this price might influence price formation, and because (2) only a small quantity is demanded.

For pepper the seasonal price variation was high because of the seasonality of production, its perishability, and year round constant demand. Generally there was good harvest in 1987. This resulted in high supply of pepper to markets. Consequently, the

*The seasonal price spread is the ratio between the lowest average monthly price and the highest average monthly price.*
pepper price was depressed during harvest time. The average pepper price at Bako market was ETB 0.75/kg in 1987 and ETB 2.50/kg in 1986.

Generally in the area the extent of grain price variability differs from year to year depending on the conditions of crop harvest. More variation was observed in consumer markets than producer markets. For instance, in Bako the standard deviation (SD) for the maize price was ETB 8.77/100 kg in 1986 and ETB 2.35/100 kg in 1987. In Nekemte the SD was ETB 13.67/100 kg in 1986, and ETB 10.60/100 kg in 1987. Even greater variation was observed for tef. SDs in Bako in 1986 and 1987 were 10 and 3.46 ETB/100 kg respectively. In Nekemte market, the 1986 and 1987 tef standard deviations were 17.34 and ETB 9/100 kg respectively.

Seasonal price movements in livestock and livestock products are influenced by consumption patterns, time of crop harvest, drought conditions and livestock feed availability.

1. Consumption patterns: During festivals and cultural ceremonies there is high demand for small ruminants and livestock products. Consumption increases and as a result prices increase. During fasting periods the demand for animal products drops, resulting in price reduction.

2. Time of harvest: As discussed earlier most of the farmers run short of food before the new harvest (June-September) and at this time the major source of cash for purchasing food is the sale of livestock and livestock products. So the supply of livestock in the market increases and this reduces their prices. But after harvest the farmers repurchase livestock for breeding and draft power by selling crops, and thus the prices of livestock and livestock products increase. Oxen prices reach their peak during plowing of the land.

3. Drought conditions: Drought also has an impact on livestock prices. Following a drought there is food shortage and the farmers sell their livestock in the local market to purchase food grains. This increases the number of livestock in the market and consequently prices decrease. Many farmers claimed that out of the last 10 years the highest number of livestock were sold during the 1984 drought season.

4. Feed availability: In the dry season the price of butter reaches its peak. The reason is that butter production decreases because of shortage of feed. As a consequence butter supply to the market declines and prices increase. The opposite is true during the wet season.
6.3. **Spatial price variation and cross price correlations**

In the markets studied the price differences are large even within short distances. For example, there was 28-30 ETB difference per 100 kg of tef between Bako and Nekemte in both 1986 and 1987. The maize price difference for the same markets during the same years ranges from 22 to 31 ETB per 100 kg. The distance between the two markets is 80 km and transportation costs range from 6 to 10 ETB per 100 kg. The big difference between prices could be because of the effect of market restrictions on the number of traders. Proximity to large consumer markets is more advantageous for farmers because they receive higher prices. For instance, at Arbgebeya, near Nekemte (15 km), the tef price from June to August, 1986 is 23% greater than at Tibe which is 95 km from Nekemte (Table 6.1).

For the two most important crops, maize and tef, cross-price correlation coefficients were calculated for different markets. At Nekemte market prices for these crops were positively correlated \( r = 0.7 \) and the correlation was significant at 1% probability level. This shows, that when the price of tef increases, the price of maize also increases. At Bako and Arbgebeya markets maize and tef prices were also positively correlated at 5% probability level. The significant cross-price correlations in these markets indicated that the two food crops are substitutes for each other. For example, since low income urban dwellers are unable to afford high tef price, they shift their consumption to maize when prices of tef increase. A shift in consumption from tef to maize means a decrease in demand of tef and an increase in demand of maize. This increases the maize price.

**Table 6.1. Average Price of tef and maize in different seasons and markets (1986 and 1987)**

<table>
<thead>
<tr>
<th>Market</th>
<th>Tef</th>
<th>Maize</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bako</td>
<td>76</td>
<td>50</td>
</tr>
<tr>
<td>Tibe</td>
<td>80</td>
<td>46</td>
</tr>
<tr>
<td>Sire</td>
<td>82</td>
<td>50</td>
</tr>
<tr>
<td>Arbgebeya</td>
<td>98</td>
<td>59</td>
</tr>
<tr>
<td>Ehudgebeya</td>
<td>97</td>
<td>66</td>
</tr>
<tr>
<td>Nekemte</td>
<td>106</td>
<td>78</td>
</tr>
</tbody>
</table>

Tef and maize price correlations are significant in 8 of the 11 cases. So tef and maize prices increase together. For maize and tef, price correlations were also calculated taking two
markets at a time and taking into account direction of crop and information flows (Table 6.2). The price correlation indicated that the price in one market has an impact on the price in another market. For example, the high and significant maize price correlation \( r = .70 \) between Bako and Nekemte markets indicated that 49\% \( (.70^2) \) of the variation in one market is associated with the other market. The correlation results showed that the local markets for maize and tef are somewhat integrated. Figure 6.4 shows the spatial price connections between markets. In most of the markets, the squared correlation coefficients fall between 20\% and 60\% indicating medium integration (Goetz and Weber 1986). However, the big difference between gross margins and transport costs indicates marketing inefficiency.

<table>
<thead>
<tr>
<th>Markets</th>
<th>Distance (km)</th>
<th>Maize</th>
<th>Tef</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ehudgebeya and Arbgebeya</td>
<td>6</td>
<td>.9075**</td>
<td>.8925**</td>
</tr>
<tr>
<td>Bako and Shoboka</td>
<td>10</td>
<td>.9081**</td>
<td>.1850</td>
</tr>
<tr>
<td>Bako and Tibe</td>
<td>20</td>
<td>.8360**</td>
<td>.1993</td>
</tr>
<tr>
<td>Nekemte and Arbgebeya</td>
<td>20</td>
<td>.3167</td>
<td>.7603**</td>
</tr>
<tr>
<td>Sire and Ehudgebeya</td>
<td>25</td>
<td>.3417</td>
<td>.6507*</td>
</tr>
<tr>
<td>Nekemte and Ehudgebeya</td>
<td>26</td>
<td>.0172</td>
<td>.5314*</td>
</tr>
<tr>
<td>Bako and Sire</td>
<td>30</td>
<td>.6216*</td>
<td>.6446*</td>
</tr>
<tr>
<td>Sire and Arbgebeya</td>
<td>30</td>
<td>.5902*</td>
<td>.7692**</td>
</tr>
<tr>
<td>Bako and Arbgebeya</td>
<td>50</td>
<td>.7064**</td>
<td>.6616**</td>
</tr>
<tr>
<td>Nekemte and Sire</td>
<td>51</td>
<td>.5901*</td>
<td>.5454*</td>
</tr>
<tr>
<td>Bako and Nekemte</td>
<td>81</td>
<td>.7011**</td>
<td>.2912</td>
</tr>
<tr>
<td>Bako and Ambo</td>
<td>112</td>
<td>-.2479</td>
<td>-.4384</td>
</tr>
</tbody>
</table>

* significant at 0.05 probability
** significant at 0.01 probability

7. MARKETING OF LIVESTOCK AND LIVESTOCK PRODUCTS

Cattle play a very important role in providing draft power, manure, food (milk and meat) and cash income. Livestock are also considered as investment assets and reliable sources of security since they could easily be converted into cash in the case of drought or crop failure. Farmers in the area do not rear cattle with the objective for sale. Cattle sales are not preplanned; cattle are sold when there is high financial need (Table 7.1). Small ruminants and poultry are mainly reared for sale.
% of variation in prices associated with the other markets.

--- 20-60% medium connection.

( 20% weak connection.

The correlation coefficients in Table 6.2 were squared to obtain these results. This methodology is adopted from Goetz & Weber, 1986.

Figure 6.4. Spatial price connections in four markets around Bako.
Table 7.1. Reasons for livestock sale

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Farmers responded (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing</td>
<td>35</td>
</tr>
<tr>
<td>Food shortage</td>
<td>20</td>
</tr>
<tr>
<td>Contribution fee</td>
<td>15</td>
</tr>
<tr>
<td>Medication</td>
<td>15</td>
</tr>
<tr>
<td>Old age</td>
<td>15</td>
</tr>
<tr>
<td>Tax</td>
<td>15</td>
</tr>
<tr>
<td>Disease</td>
<td>10</td>
</tr>
</tbody>
</table>

Farmers do not have easy access to market information regarding livestock prices. On the other hand, traders move from market to market and have access to market information. This puts traders and farmer-traders in a better position over the farmers. In the area there are two livestock markets and few traders. At the time when cash is badly needed the farmers cannot bargain and have to accept the price offered by traders since they do not have other alternatives.

Livestock products such as butter, hides, and skins, are sources of cash in the area. Hides and skins are sold during certain holidays and festivals. Butter provides a continuous flow of cash to the farmers’ family and its price varies over seasons because of (1) production levels which are mainly determined by feed availability and (2) consumption patterns, as mentioned earlier. About 85% of the farmers reported that butter prices decrease from June to November because of the large supply of butter in the market. During this period farmers are in need of money to purchase food crops and butter production is higher than other periods of the year because of feed availability.

Many unlicensed and licensed traders are involved in the butter trade. Some of the traders do not have their own capital and are financed by others. The major functions of such traders are assembling and bulking. The two parties make an arrangement in such a way that the trader receives a fixed amount of money and agrees to deliver 20 kg of butter to the financier. The profit margin that the trader makes is then the difference between the agreed delivery price and the amount of money needed to buy 20 kg of butter. The magnitude of the gross margin of the non-capital owner traders is determined by the cash required to buy 20 kg of butter below or above the negotiated price. It was estimated to be 3-5 ETB per 20 kg, costing between 150 and 200 ETB depending on the season.
8. MARKETING EFFICIENCY

To assess the efficiency of the marketing system in the area various methodologies were employed. First, price correlation coefficients were calculated to test whether prices in nearby markets move together, reflecting the extent of market integration. Second, price differentials between markets in production area and consumer markets were assessed in comparison with transportation cost and distance. Third, marketing coordination in matching demand and supply were considered to see whether the grains were made available to consumers throughout the year. The marketing system is assumed to be efficient if (1) price correlation coefficients are high and significant and (2) price differentials between two markets are slightly greater than transportation costs, thus giving traders a fair profit, and (3) demand and supply are matched, that is products are available where demanded and can be sold when produced.

8.1. Price correlation

Table 6.2 shows price correlation coefficients for maize and tef between different markets. The coefficients were calculated based on crop and marketing information flows within and outside the study area. The prices of maize and tef at local markets were correlated with their corresponding prices in consumer markets in Nekemte, Ambo, and nearby local markets and in most of the cases the correlations were significant. The price in one market influences the price in the other markets and they move together because crops and information flows from one market to another cause the changes in price, dictating the direction and levels of price in other markets. For example the correlation coefficient of 0.70 for maize prices in Nekemte and Bako markets indicates that 49% of the variation of maize prices in one market is associated with that in the other market.

Goetz and Weber developed a system for measuring market integration; $r > .77$ denotes strong integration, $.44 - .77$ is medium degree of integration and $< .44$ is weak degree of integration. On the basis of this system it can be concluded that most of the markets studied were medium or strongly integrated for maize and tef. For example concerning maize prices in twelve paired comparison of markets, three are strongly correlated and five are of medium correlation. All eight are significant at 5% probability. Furthermore, the analysis depicted that the closer the markets are the more they are integrated. Arbgebeya and Ehudgebeya are 6 km apart from each other and price correlation coefficient is strong (0.9075 for maize and 0.8925 for tef). This is because of easy access to information flow and ease of communication. For instance, Bako market is more integrated with Nekemte market than Ambo reflecting the clear differences in distances which resulted in
differences in information flows. In addition, distant markets are influenced by other markets e.g. prices in Ambo market are influenced by prices in Addis Abeba.

Crop and information flows influence prices in the area. The quantity moving from production area to consumer market depends on the number of middlemen involved and the volume traded; these have an impact on price movements as well. In the area unlicenced traders handle small quantities of grain (100-200 kg per market day). These add to the supply of grain channeled to consumer markets which induces changes in the prices of grains.

8.2. Price differential

Table 8.1 shows price differentials, or gross margins for crops, livestock and butter. The gross margins for maize and tef were estimated based on the differences between prices in producer markets and prices in consumer markets. For pepper and butter wholesale prices in Addis Abeba were quoted. Considering Bako and Nekemte markets, the average gross margin for 100 kg of tef was 20 ETB. This accounts for 30% of the consumer price. On the other hand, transportation cost from Bako to Nekemte for 100 kg of tef range from 6 ETB (when trucks are used) to 10 ETB (when public transport is used) (Table 8.1).

Few traders store grain for more than a few weeks indicating minimal storage costs. Thus they get a high proportion of the gross margin. The high profit they obtain compensates the risk associated with grain trade; sometimes restriction on grain trade is enforced, sometimes not. Within the area there is high variability in gross margin (Table 8.1). This might be due to the fluctuations in the availability of the grain during the different periods of the year. During harvest time, supply to consumer markets from surrounding farmers is relatively high. The supply gradually declines as traders buy and prices increase. Traders also shift from one crop to another depending on the demand for a given crop and profit.

8.3. Market coordination

The market dependent population in the area gets their grain supply from farmers and traders. In Nekemte some consumers and government and public organizations are supplied with grain by AMC at lower prices than market prices.

A scarcity of food grains (maize and tef) was not reported by consumers during the study period (1987). The existing marketing system was able to feed the market dependent population in the area and to export maize, tef and pepper to other consumer markets.
Table 5.1. Gross margins and transportation costs per 100 kg crop or per item (1987)

<table>
<thead>
<tr>
<th>Markets</th>
<th>Distance (km)</th>
<th>Transport (ETB/100 kg)</th>
<th>Livestock</th>
<th>Butter</th>
<th>Tef</th>
<th>Maize</th>
<th>Pepper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sire/Nekeste</td>
<td>50</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>19(8-26)*</td>
<td>(2-21)</td>
<td>-</td>
</tr>
<tr>
<td>Bako/Nekeste</td>
<td>80</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>20(6-37)</td>
<td>15(6-31)</td>
<td>-</td>
</tr>
<tr>
<td>Sheboka/Arbo</td>
<td>115</td>
<td>9</td>
<td>27</td>
<td>-</td>
<td>23(7-42)</td>
<td>(21-36)</td>
<td>-</td>
</tr>
<tr>
<td>Bako/Ambo</td>
<td>125</td>
<td>10</td>
<td>-</td>
<td>-</td>
<td>(7-40)</td>
<td>(5-45)</td>
<td>-</td>
</tr>
<tr>
<td>Bako/Addis Ababa</td>
<td>250</td>
<td>16</td>
<td>-</td>
<td>35</td>
<td>-</td>
<td>-</td>
<td>39</td>
</tr>
</tbody>
</table>

- Data not collected
* Figures in parenthesis indicate ranges of gross margins

In early 1988 there was a surplus supply of maize and pepper in local markets; consequently, the prices were continually depressed. The marketing system was not in a position to move the excess production of maize and pepper to other areas where there were scarcities. AMC was unable to move the produce and private traders were not permitted to do so. This situation could discourage production and the adoption of new and existing technologies. Unless farmers get a remunerative price for their produce they could reduce the rate of input use and production will decline.

The market seems to be inefficient in the supply and distribution of consumer goods. Out of the farmers interviewed, 80% of them complained that they do not get consumer goods at the service cooperatives in quantity and 63% of them complained that they do not get consumer goods when needed. Thus there was insufficient supply and fluctuations in the availability of consumer goods at the service cooperatives. This forces the farmers to visit the local markets frequently. Mostly farmers purchase consumer goods four times in a week in local markets but only one time per week from service cooperatives. At the local markets the quantity purchased per market visit is small because of higher unit price at local markets and small amount of cash available in the hands of the farmers at a time.

9. MARKETING PROBLEMS AND SOLUTIONS

Production and marketing are inseparable activities. As the final aim of production is consumption, products which are produced by the producers should be distributed to the consumers when, where, and in the form they are required. With the adoption of improved technology it is likely that production will increase, increasing the surplus to be marketed. The marketing system in turn has an impact on the adoption of new technology by
affecting input distribution, prices, and market outlets for the surplus produce. Thus one has to realize the importance of marketing research on the identification of farmers' marketing constraints providing micro-level marketing information for making sound marketing policy decisions. In light of these needs, this study emphasizes the identification of problems and constraints that farmers around Bako face in marketing their major agricultural products.

The identified marketing problems may be classified into six major categories: 1) underdeveloped marketing infrastructure 2) weak institutional support 3) low demand at local markets and lack of market outlets for major farm products 4) farmers' weak position in negotiating prices in local markets 5) lack of standard local measuring units and 6) inadequate supply of consumer goods. It is important to note the interactions among these problems.

9.1. Underdeveloped marketing infrastructure

There are three all weather roads; one connecting the area to Addis Abeba and Nekemte and the others to Horo Guduru Awraja. The feeder roads branching out from the main roads operate only during dry season. The use of pack animals as a means of transportation is limited by capacity and availability. Many farmers, specifically women, carry grain on their back. Thus the average quantity handled is very small and the distance over which human beings and pack animals travel is very short. These create difficulty for farmers to take advantages of prices in distant markets and force them to visit local markets frequently.

Small traders use trucks and buses. However, they complain that it is often difficult to get trucks when needed and the quantity they can take by public buses is very small. The transportation problem will be more pronounced as surplus production increases. Thus to alleviate this problem, due consideration should be given to the construction and maintenance of main and feeder roads which penetrate deeper into the production areas. This can be done by the government or by farmers' self-help schemes. Better transportation infrastructure will attract more trucks and buses.

On-farm storage systems practiced by the farmers are ineffective; stocks are prone to storage pests such as weevils and rodents. Weevil-attacked maize is subjected to low price in market places. Specific survey and experiments are needed to assess losses. Improvement in the storage facilities and the use of chemicals to control storage pests are badly needed by the farmers. Concerned institutions have to make effective pesticides available. Research should also focus on the rate, time and method of pesticide application under farmers condition. Research towards improving traditional storage systems and
developing new storage systems should be strengthened.

Grain mills are concentrated in the towns and most of the farmers do not have easy access to them for immediate use. In most cases the capacity of the existing grain mills does not match with the demand of the users. To solve this problem, the establishment of grain mills at central places (preferably near service cooperative shops) should be encouraged.

In the case of livestock there are no well developed transportation facilities. Livestock are trekked on foot to the local and regional markets which in most cases causes weight loss. There are several options available to solve this problem 1) development of livestock trekking routes from local markets to regional and terminal markets with watering and feeding facilities  2) transporting the livestock from local to regional markets by trucks 3) establishment of livestock product processing facilities in the local area and (4) transporting processed products to consumption areas. However, before adopting any of these or other options feasibility studies for each option should be done for assessing their technical and economic viability.

9.2. Weak institutional support

The establishment of AMC and service cooperatives was an attempt to overcome the problem of weak institutional support. But, the prices they offer are very low and do not encourage the farmers to sell their produce to the service cooperatives.

The price cooperatives’ offer is expected to serve as a floor price, that is, the lowest possible price farmers could receive for their grain. However, the service cooperatives occasionally stop buying a particular grain when AMC quotas are fulfilled and storage is overstocked. Then the local market price falls below the fixed price. For example, the service cooperatives stopped buying maize in Bako area in early 1988, following a huge maize harvest and the maize price dropped because of large supply.

Official prices do not change over seasons. But farmers face a great deal of risk concerning marketing. Farmers are not informed about the amount of quota they should deliver until just before harvest. Up-to-date information from the local market regarding price, supply and demand is not available as well. The prices are prone to fluctuations in local markets and farmers cannot predict in advance the income from marketed grain. So the farmers are not in a position to make sound decisions with regard to sale of their produce and planning production. The AMC price should serve as the minimum price farmers receive for grain. This will remove the price risk farmers currently face and will thus encourage investments and production.
AMC prices should vary according to the quality/grade in order to encourage farmers to produce high quality grain. Producers should be informed before planting time about the quotas to be delivered. Contractual agreement concerning the quota should be made between producers and marketing agencies. The price offered by service cooperatives should cover the cost of production and give incentives to the producers to use improved inputs to increase production.

Only service cooperatives receive bank credit, to purchase crops for delivery to AMC. Credits are also required by the private sector to expand transportation, storage and processing facilities in order to improve the marketing of agricultural produce in the area. Emphasis should be given to the improvement of transportation storage facilities which in turn improve the marketing system as a whole. This would stimulate expanded (increased) production.

The extension activities in the area focus on giving technical advice on production technologies to the farmers. Post harvest extension services are neglected. Thus concerned institutions should give due consideration to extension services in the fields of marketing such as sorting, storing, handling and transporting of farm produce.

9.3. Low demand at local markets and lack of market outlets for major farm products

Maize and pepper, which are very important sources of cash, faced a problem of lack of market outlet in 1987. Before 1987 the market price of maize was greater than the AMC price but during 1987 the local market demand was saturated and maize prices fell below the AMC price. Some possible solutions to alleviate this problem are: 1) expansion of the market for the crop by transferring surplus maize to deficit areas, 2) increasing maize consumption by increasing consumers’ appeal to maize. This is possible by making different products of maize (refined oil, starch, syrup, sugar, etc) available to consumers and industrial users, and 3) popularizing maize consumption in the urban area. AMC’s maize price should also be considered as the lowest guaranteed price.

Pepper is grown by many farmers in the area under intensive management. The buyers of this crop in the production area are urban consumers and traders; each group has different preferences. Some consumers prefer pungent types, whereas the spice extraction company prefers dark colored ones. Research programs should consider these criteria in variety development.
9.4 Farmers' weak position in negotiating price

Farmers' weak position in negotiating price is attributed to the underdeveloped marketing infrastructure, weak institutional support, and lack of market outlets. As mentioned above, the farmers do not have up-to-date market information and therefore they cannot bargain with traders over price. On the contrary, traders have good information and manipulate the price in a way that maximizes their profit. This is evidenced by high gross margins. Ways should be found to provide farmers with market information to improve the farmers' position as price negotiators.

In addition farmers' negotiating position is weak because they have to sell produce at harvest time to meet various obligations. Since prices are very low at harvest time, many farmers have to sell most of their produce to cover all their expenses and cash needs. This exhausts the family food supply and some farmers purchase food grains in the local market at peak prices in the same year of crop sale. Public marketing agencies should provide grain to farmers at reasonable price during this period.

In the case of AMC the farmers cannot bargain over the price because for the amount delivered on the quota basis, the price is fixed. This system does not give incentives for the farmers to improve the quality of their produce. In view of this problem, AMC prices should vary according to grade and quality of grain. Farmers should be informed in advance about prices and the size of quotas to help them plan their production in advance.

9.5 Lack of standard local measuring units

In the local markets most farmers sell their produce on volume basis. For example, livestock prices are not determined on the basis of standard weight rather they are determined on the body condition of the animal which is based on visual judgement. Butter is also sold in various containers of unknown weight. Farmers' knowledge about the weight of those volumes is limited. On the other hand, traders buy from the farmers on volume basis and sell to other traders and consumers on weight basis. They have a good knowledge about the volume-weight relationships of different local measuring units. This puts them in a better position to gain income by buying greater quantities per unit of money. The opposite is true for farmers. It is therefore, important to develop standardized measuring units to reduce the risk of farmers' loss of income to traders because of their inadequate knowledge of volume-weight relationships of local measuring units.
9.6. Inadequate supply of consumer goods

Most of the farmers interviewed complained that they do not get consumer goods at the service cooperatives in quantity (80%) and at the time (63%) needed. So to overcome this problem it is important to make consumer goods available at service cooperatives' shops at reasonable prices.

CONCLUSION

In general there should be a coordinated effort in the improvement of production and marketing to break down the vicious cycle of subsistence farming. The farmers should be guaranteed remunerative prices and market outlets; these will provide them incentives for using improved technologies and increasing production. The current situation does not provide sufficient incentives for the adoption of new technologies. This keeps the farmers at the subsistence level as indicated in Figure 9.1. So to assist farmers to progress beyond the subsistence level and help them to contribute to national development, there should be a balanced growth between production and marketing (Figure 9.2).
Subsistence farming
-producing from
hand-to-mouth

use of improved
production technologies

Lower production
—farmers return
to traditional
practices

Surplus production
-supply greater than
demand at local markets
-No market outlet

Farmers curtail
the use of improved
technologies

Price of agricultural
products decrease

Figure 9.1. Schematic presentation of subsistence farming: The case of unbalanced growth between agricultural production and marketing.

use of improved
production technologies
accompanied by an improved
marketing system

adoption of new technologies
-improvement in farm income

surplus production
-increase in farmers' income (the price is high as a market outlet exists)

Figure 9.2. Schematic presentation of breakdown of vicious cycle of subsistence farming: The case of balanced growth between production and marketing.
REFERENCES


