AN ECONOMIC ANALYSIS OF LIVESTOCK MARKETING: THE CASE OF CATTLE MARKETING ALONG THE TRADE ROUTE FROM BELE (ARSSI) TO ADDIS ABABA

BY

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ABSTRACT

A livestock market study to identify the typology of livestock markets, to estimate marketing margins and market participants' share in the distribution of income from livestock trade and to identify factors determining cattle prices was made using a case study method. Seven livestock markets, located along the trade route from Bele (Arssi) to Addis Ababa, were selected. Data on cattle prices, factors identified to determine cattle prices, market costs and factors specified to characterize market types were collected. Cattle prices were deseasonalized using price indices in order to remove the seasonal component. A semi-log general model was fitted to both adjusted and unadjusted price data in order to see the relationship between cattle prices and factors determining cattle prices. The Chow test was conducted to see whether or not the same type of factors which determine cattle prices are to be found in all types of livestock markets.

The results indicate that the livestock markets of the country can be classified as primary, secondary and terminal on the basis of such classificatory criteria as type of market participants, reseasons for purchase, type of cattle marketed, mode of transaction and location of the market place. The share of producers in the final price of cattle was found to be affected by the distance of the location of the producers with respect to the terminal market. Those producers located relatively nearer to the terminal market received higher share than those located far from the terminal market. In the regression analysis, the coefficients of the variables

identified to determine cattle prices were found to be different among market types. It was further noted that the cattle marketing system of the country is inefficient due to lack of market information, poor trekking arrangements and inadequate market facilities. The study, therefore, concluded by pointing out policy measures to be pursued in order to promote the efficiency of the domestic cattle marketing system of the country.

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CHAPTER ONE

I BACKGROUND TO THE STUDY

1.1. Position of the Livestock Sub-Sector in the National Economy

The livestock subsector represents a considerable part of the national wealth of Ethiopia. In 1982/83, the most recent period for which data are available, the country's livestock population numbered 27 million cattle, 42 million goats and sheep, 7 million horses and 1 million camels.[1]

The production of this stock takes place in two distinct regions- the highland region, lying above 1500 meters elevation and the lowland region, lying below 1500 meters elevation. T he highland region accounts for the majority of the production of the stock. For instance, of the total estimated livestock population of 1982/83, about 65 percent was found in the highland region.[2]

Livestock has been the second most important subsector within the agricultural sector accounting for about 20 percent of the GDP of the country. For instance, the livestock subsector contributed around 20 percent of the total 1978/80 GDP of 7,624.7 million birr.[3]

Statistics show that in previous years the value of exports from the livestock subsector has exceded the value of imports of livestock products and of inputs which have been used in livestock production . Table 1

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shows the import and export values of livestock and livestock products for the years 1978 to 1983.

Table 1. Import and Export Values of Livestock and Livestock products (in 1000 ,$) 1978/1983

Year	Import	Export	Net Export
1978	59522	280750	221228
1979	68643	387033	318390
1980	89284	365490	276260
1981	90729	320177	229448
1982	77910	334761	256851
1983	13817	676393	562576

Source: FAO Trade year book Vol. 38, 1984
Note: The import and export values included live animals, meat & meat preparation, dairy products, animal fats and hides and skins.

The above table shows that the country had been a net exporter of livestock and livestock products. Therefore, livestock subsector has made a noticeable contribution to the Balance of Payments of the country.

Another way of describing the subsector's contribution to the national economy is to examine the extent to which it provides employment. The role of the subsector as a source of employment cannot be easily determined because

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of the absence of a monetary economy in most of the nation's rural areas. However, it is apparent that the nomadic population of the country, which is estimated at about 10 percent of the total population, is fully engaged in handling livestock.[4] Moreover, as mixed farming is practiced on most agricultural holdings of the country the portion of the rural population that is involved in agricultural work which includes herding and feeding livestock must be considerable.

Further employment is also found in other components of the livestock economy. In the livestock trade a number of people are engaged permanently as traders, brokers and drovers. More importantly, many people have been hired in government institutions that are concerned with management of livestock and livestock products.

In a subsistence economy like Ethiopia, the contribution of livestock subsector can also be examined from another angle, namely as a source of food and draught power. A considerable quantity of meat is consumed by the majority of the population during holidays and ceremonies. Pastorialists also regularly depend on livestock for large proportion of their diet. In the farming system of the country animal draught power represents a major output from the livestock sector. A recent study indicated that a typical farmer in this country uses a pair of oxen for 450 hours per year for cultivation and threshing.[5]

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Apart from their economic value, livestock also have socio-cultural importance. In some traditional societies of Ethiopia cattle serve as a measure of a person's status in the community. They are regarded as a store of wealth which confirm, among other things, the security, prestige and status of the owner. They are used as a source of income, by which the owner supports his current consumption. They are given away in the form of bride-wealth payments. Cattle are also butchered for ceremonies or home consumption. Therefore, livestock are a vital component not only of the economic but also of the social and cultural structure of the societies of Ethiopia.

1.2. Cattle Marketing and Prices

Cattle owners dispose of their cattle in various ways and for different purposes. One of these is that cattle are sold in order to meet specific cash requirements of the family. The cash is used to purchase other necessities like grain products, clothes and household utensils. It is also used to settle government obligations (taxes) or to pay contributions that are made to local authorities.

There are various marketing outlets for live cattle in Ethiopia. The most important is the domestic marketing system which serves as a link between production areas and consumption centers. Cattle purchased by cattle traders from primary (collection) markets are trekked to major

consumption centers (terminal markets), where most of them are sold and slaughtered for local consumption.

In Ethiopia, unlike agricultural grain products, live cattle are freely traded without government intervention. Prices of cattle are fixed on the basis of open bargaining, governed by the supply and demand conditions. However, the open market balancing of supply and demand overtime may involve a series of drastic changes in prices, which can entail hardships for producers or consumers. While a drastic and prolonged fall in livestock prices can harm the majority of peasants, a shortage and the consequent soaring prices might put livestock products beyond the reach of the majority of the poor people in the cities or towns and impair their diets.[6]

Recent report indicate that cattle prices have been rising in this country. Furthermore with increased population, the pressure on demand for livestock and livestock products will increase. If other things remain constant, this condition will widen the gap between market supply and demand and the effect will be to increase livestock prices. Such a tendency would be against the welfare of the consumers. There is a need, therefore, to investigate the features of the Ethiopian livestok marketing system in general and cattle marketing system in particular.

There are several issues in the area of cattle marketing which need research. The main issues center on the identification of market participants, marketing margins and marketing costs, as well as the factors determining prices in the cattle marketing system of the country. It is against this background that the researcher has attempted to analyse the cattle marketing system of the country, using the case study method.

1.3. Objectives of the Study

The study has the following main objectives

1. To describe the typology of livestock markets of the country, where the government's marketing policy could be directed.
2. To estimate marketing margins and the share of each market participant in the distribution of income in the livestock trade.
3. To examine factors that determine cattle prices in the livestock markets.

1.4. Significance of the Study

i) Analysing the functions of participants in the livestock marketing system of this country is particularly helpful in evaluating marketing costs and enable the government to take appropriate policy action in order to avoid undesirable marketing costs.

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ii) The recognition of the main characteristics of the livestock marketing system can be a useful tool in analysing marketing problems. Specifically such analysis has the advantage of preventing the personal aspects of livestock marketing from being ignored.

iii) The breakdown and analysis of livestock marketing into its functional components can also aid efforts to improve the performance of the livestock marketing system.

IV) As prices are determining factors for production and consumption plans of producers and consumers respectively, analysis of the factors affecting the price of cattle is an essential condition for making plans and formulating policies in order to promote the efficiency of the livestock subsector in particular and the total economic system in general.

1.5. Scope and Limitations of the Study

The scope of this study is limited both in space and time. All livestock markets found in the country were not covered by the survey. A sample of livestock markets considered to be fairly representative of the livestock markets of the country as a whole was selected from two administrative regions, Arssi and Shoä . The price data, which form the basis of the analytic part of the study were not collected

continously over a long period of time, but were collected for selected months on an interval basis. However, the price data have been adjusted, using price indices computed on the basis of historical price data.

It was noted by the researcher that, it was often very difficult to get the full cooperation of some market participants to give accurate and full information, while they were busily engaged in buying and selling. For example, some traders were too suspicious to tell the actual price that they paid while buying or that they received, while selling cattle. This problem was anticipated before starting data collection and in order to obtain reliable data by avoiding the suspicion of market participants, representatives of Peasant Associations, staff members of the Ministry of Agriculture and Government tax collectors were briefed by the researcher to help convince the market participants that the study was for purely acadamic purposes.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

Research on agricultural marketing as a whole has been predominantly concerned with a trade in food and cash crops. Livestock marketing, in spite of its importance in countries like Ethiopia, has been a neglected area of research. Nevertheless, this study has been based on the points of view contained in the available literature, the main features of which are presented below.

2.2. Description of Types of Markets

The general structure of the agricultural marketing system common, to the majority of countries in the world, is characterized by many producers, relatively few middlemen and many consumers. The structure has funnel-shape, as shown in the following figure.

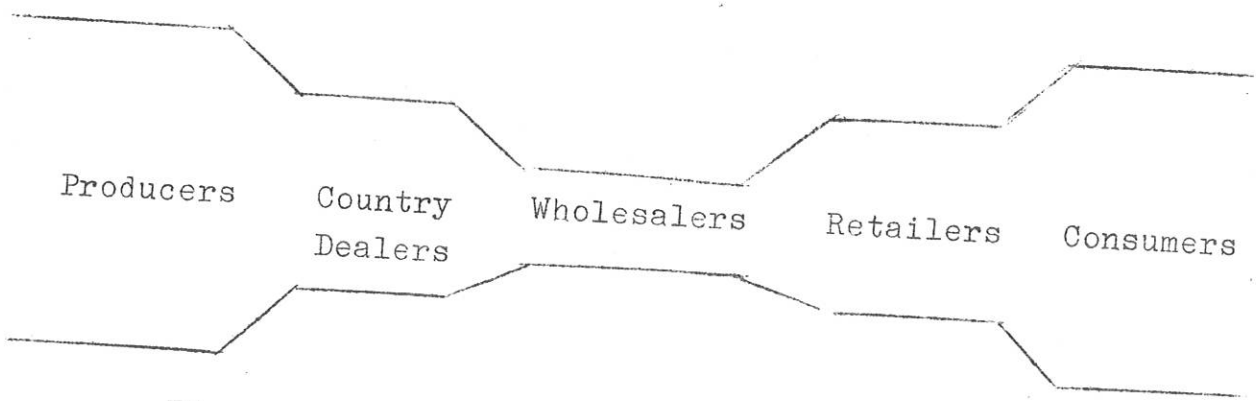

Figure 1. Distribution "funnel" of live animals in the marketing process.

Between the funnel-shaped producing and consuming ends we find different types of livestock markets where the interaction of supply and demand and the formation, agreement and execution of transactions by sellers and buyers take place.

In general livestock markets have been categorized as primary collection, redistribution and terminal, on the basis of either their functions (type of main actors, reasons for purchase etc) or of their geographical locations (or both). For instance, Solomon Bekure and Negussie Tilahun proposed a market system classification consisting of primary collection, secondary redistribution and terminal markets, on the basis of the type of main sellers and buyers as well as the purpose of purchase.[7] (see Table 2).

Herman categorized cattle markets in Upper Volta as collection, redistribution and terminal based on geographical and functional aspects.[8] His study suggests that collection markets in Upper Volata are located in the Northern, where cattle first enter the marketing system. In these markets the main sellers and buyers were primary herders and the role of local butchers was found to be small. Redistribution markets were located mainly in the South and the main sellers and buyers were traders. There were more sales for local consumption in these markets than in the collection markets. Terminal markets were located in urban

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Table 2. Type of Markets as identified by main participants and purpose for purchase

Type of Market	Main Sellers	Main buyers	Purpose of Purchase
1. Primary Collection Markets	Producers	-Other producers	For stock replacement or fattending
		-Local butchers	-Slaughter
		-Traders	-Collection for resale in larger regional markets.
2. Secondary Redistribution Markets	Traders	-Local butchers	-Slaughter
		-Traders	-For resale in terminal market
3. Terminal Markets	Traders	-Local Slaughter Houses	-Slaughter
		-Traders	-Export

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areas and most sales in the terminal markets were for local slaughter and consumption. It was also noted that cattle traders and butchers acted as the main sellers and buyers respectively in the terminal markets of Upper Volta.

Delgado and Staatz also classified cattle markets in Ivery Coast into three types (collection, redistribution and consumption markets) both geographically and functionally.[9] Their findings indicated that collection markets were generally small markets in the producing areas, where animals first entered the marketing chain. In these markets livestock raisers sold cattle to merchants and other livestock raisers. Redistribution markets were larger markets, where animals which were bought farther North were resold and herds were reorganized. Consumption markets were located in major cities, most of them in South, Animals arriving in these markets were slaughtered for local consumption.

Ayele Gebremarim also used similar criteria in identifying four categories of market in Ethiopia, i.e, bush, primary, secondary and terminal.[10] He stated that primary markets were usually held in the farming and pastoral regions. Secondary markets were situated along the stock routes leading to final destination on all weather roads. Terminal markets were located in or around cities, coffee growing areas, meat processing plants and near industrial and mechanized farming areas. In terms of the main actors, Ayele indicated that in the primary

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market sellers were producers or stockowners while the buyers were both non-traders (consumers) and traders. In the secondary and terminal markets the buyers included non-traders (hotel and bar owners) traders, butchers and exporters.

In summary, previous studies indicate that certain dimensions of the market, such as type of actor and location can be used to categorize livestock markets as primary, (collection,) secondary and terminal. Indentifing the type of actors in the livestock markets tells us the type of persons and organizations offering and desiring the item traded (cattle). The location of the market also has a bearing on the function of the market. For example, factors related to location can help us to distinguish producers' markets from consumers' markets. Market location can also help us to differentiate both producers' and consumers' markets from those secondary redistribution markets. which operate between the two.

2.3. Marketing Margin and Efficiency in Marketing

In effect, consumers face two prices for agricultural products that they purchase. The portion of the consumers' price that goes to marketing firms that supply marketing services is called marketing margin. The other portion that goes to the producers and is expressed as a percentage of the consumers' price, is known as farmers' share.[11]

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The marketing margin is the difference between what the consumer pays (retail price) and what the farmer receives (producer's price). It includes all the expenses of performing marketing functions and the marketing firm's profits. The expenses of performing marketing functions, referred to as marketing costs, are made up wages and other running costs, overhead costs and fees paid for services.[12]

Marketing costs are incurred when animals changes hands in the primary markets, in the secondary markets and in the terminal markets. Among these costs are the losses of weight and quality, that are incurred as a result of moving livestock on foot. Studies show that on some very long and ardous routes the loss of live weight can be 20 percent or more, representing a serious shirinkage of fat and tissues.[13] Similarly, in Ethiopia LMB estimated weight loss to be between 1 and 1.5 percent of live weight for every day of trekking due to poor trekking arrangements.[14]

The analysis of marketing margins and the marketing costs involved in moving livestock through the market chain, provide an indication of the efficiency of the marketing system. John Staatz,for instance,used the trading margin approach to evaluate the efficiency of the livestock marketing system of Ivory Coast.[15] He concluded that the traditional cattle marketing system in Ivory Coast was fairly efficient because net margins were found to be modest.

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On the other hand, a study carried out at the Emali cattle market (Kenya) indicated that the gross trading margin (30 percent) was quite high. It concluded that the cattle marketing system could be made more efficient by reducing trading margins so that producers could realize more income and consumers could pay less.[16]

Another means of evaluating the efficiency of the marketing system is related to the concept of a "sticky" marketing margin. With a sticky margin, any change in the retail price is immediately transmitted to the farm level, and changes in farm prices are immediately reflected at the retail level.[17] Therefore, the extent to which prices are transmitted from the consumer to the producer and back to the consumer can also be considered as an indicator of efficiency in marketing.[18] In line with this, a case study conducted in the General Highland of Ethiopia pointed out that the marketing system is efficient because changes in consumer prices are transmitted to the producer in the case of goats and to some extent in the case of sheep and cattle.[19]

In general there is a belief that small marketing margins denotes greater marketing efficiency and large marketing margins are associated with marketing inefficiency.

If it is true that small marketing margin indicate marketing efficiency, then a farm roadside market, where the marketing margin is zero and the farmer receives all

of the consumer's dollar, would represent the most efficient method of marketing.[20]

On the other hand, as the size of marketing margin depends upon the number and costs of marketing functions, a marketing system that involves a lot of marketing functions in order to maintain or even improve the quality of farm products to be marketed, has higher marketing margins than farm roadside markets. The former, however, is a more efficient marketing system than the latter.

Marketing efficiency, therefore, cannot be judged solely by the size of the marketing margin. Moreover, additional yardsticks, such as the extent of improvements to the buying, selling and pricing aspects of the marketing; taking care for human health and animal welfare; encouraging innovations; and avoiding unnecessary and avoidable costs should be taken into account, when evaluating the efficiency of the marketing system.

2.4. Factors that Determine Cattle Prices

Case studies in Kenya, India, Ivory Coast and Ethiopia have identified the role of the main factors that influence cattle prices. These factors are related to both supply and demand conditions and may be categorized as factors associated with the characteristics of the markets and with the characteristics of the animals.

The study conducted at Emali market (Kenya) showed an empirical relationship between cattle price and factors affecting cattle price.[21] The authors fitted two linear models, using multiple regression, to show the relationship between price and those factors affecting price. The first model took into consideration variables like breed, sex, age, season, body condition, number of cattle on offer (proxy for supply) and number of buyers in the market (proxy for demand). Breed, body condition and season were identified as the predominant variables determining the price of cattle at Emali market and the coefficient of determination (R^2) was 0.6540.

In the second model weight was introduced to replace age and body condition. This remarkably improved the closeness of fit, as the coefficient of determination (R^2) increased to 0.907. Weight and sex were identified as the major determinants of price at Emali market and the breed effect shown in model (1) disappeared as it was masked by weight.

An Indian study by S.G. Rathod, S. Bisaliah and K.C. Hiremath noted that variables such as age, colour, breed, season, year, weight, height, work efficiency and an index of general health are usually used to account for the variation in the bullock mean prices.[22] However, on the basis of the data available, they considered age, breed, colur and seasons as explanatory variables in

their case study of one of the Indian cattle markets. The analytical technique used was a general linear regression model and the following results were obtained from their case study. In the case of age and price the regression cofficient showed a significant non-linear relationship. This suggests that price of bullock increases upto certain age, at which it reaches its maximum. Thereafter the price starts decreasing.

The coefficient of the breed intercept dummy variable was statistically significant. The breed which was known for its draft work efficiency and endurance power fetched a price premium.

The white bullock obtained average prices, the red and black bullocks obtained below the average prices and mixed colour bullocks obtained premium price. The price discounts for the red and black bullocks were attributed to the fact that red and black bullocks get quickly exhausted in field work because these two colours absorb sunrays (heat) rather quickly. (This in turn would increase the body temprature and pulse rate and thereby make the animals feel uncomfortable and tired).

This study also revealed that when the bullocks were sold during the rainy season they received the average price. The winter season provided a price premium and the summer season resulted in price discounts. Two

reasons were given for the price premium during the winter season. These are (i) the bullocks are generally stall-fed with green fodder during this season, giving rise to their attractive appearance; and (ii) there is a heavy demand for draft cattle during this season. Likewise, two reasons were given for the price discount during summer: (i) the demand for bullock is low in the study area during this season and (ii) the non-availability of green fodder and low feed intake during summer may lead to a weak appearance of bullocks.

John Staatz also used a linear model to establish the relationships between cattle prices and factors determining cattle prices, in his analysis of cattle and meat marketing in Ivory Coast.[23] Variables such as weight, age and sex of the animal, number of cattle purchased and season were incorporated into the model as the main factors determining cattle prices. Almost all the coefficients of the variables were found to be significant at least at .10 level and the coefficient of determination (R^2) was estimated to be 0.87. Among the variables specified as determinants of price, weight was found to be the most important. The coefficient of this variable was very highly significant and the partial correlation coefficient (0.92) was by far the highest of any variable in the model.

Ayele Gebremariam and Miles Hillman conducted a livestock market survey in the centeral highland of Ethiopia

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in 1975.[24] The main part of the survey was concerned with recording the volume and type of trade passing through markets and transit points over the course of the year. The second part attempted to produce a model which could be useful in explaining the variation in prices of animals in terms of the characteristics of the animal e.g. weight, age, sex, color and in terms of the characteristics of the market e.g. the distance of the market (a proxy for transport costs) from the nearest consumption center in which the animal was sold.

The study stated that the peak times of livestock market activity occur at festivals. Cattle are much more expensive during the "high" seasons of Tahsas (December), Ter (January), the begining of Yekatit (February) and during Genbot (May) and Sene (June). These high seasons are interspersed by "low" seasons, during the Lent Fast and throughout the main rains (February, March, July and August).

The weight of an animal was, in all cases, found to be the most important variable in explaining variation in price per head among different animals of the same class of livestock. The relationship between price and weight was always linear, except in two cases where there was slight but not important indication of non-linear returns to weight.

The other animal characteristics, i.e, those associated with individual animals, were of limited importance in explaining variations in price compared to the effect of weight. It was also asserted that, in a given market between 63% and 78% of the variation in the price of cattle, could be explained in terms of their weight, age and sex.

The authors also indicated the existence of other factors, not included in their analysis, which could help explain variations in cattle prices. These factors were the type and condition of the animal (related to the characteristics of the animal) and the relative skills of the buyer and the seller in the bargaining process.

In most of the case studies discussed above, the weight of an animal has been identified as the most important variable in explaining variations in cattle prices. But in countries like Ethiopia, where the markets are not organized, prices are usually determined by buyers and sellers through visual inspection. It is also difficult to determine the weight of an animal since weight scales are not available in most of the markets. Even if it possible to get the weight of an animal, weight does not always reflect the animal's condition(which is an important factor during visual inspection) because an animal with a large frame may have a high body weight but lower fat reserves than another animal with a smaller frame and abundant fat reserves.[25]

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Therefore, in livestock markets where animal sales are based on visual inspection and where prices are fixed on bargaining factors like the type and condition of the animal are expected to have an important influence on prices. Likewise the type of sellers and buyers are expected to be important factors in explaining variations in cattle prices.

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CHAPTER THREE

METHODOLOGY OF THE STUDY

3.1. Location and Description of the Study Areas

The markets selected for this study are located in Arssi and Shoa administrative regions (See Fig 2). These markets are in areas with dense human and cattle populations (Table 3). The names, locations and some of the major characteristics of the selected markets are summarized in Table 4.

Table 3 Human and Livestock Density by Adminstrative Regions (1982/83

Region	Population/Km^2	Livestock/Km^2
Arssi	68.3	141.1
Bale	7.7	7.1
Eritera	27.2	na
Gamogofa	30.1	29.1
Gojam	51.6	73.1
Gonder	35.7	37.8
Harerge	14.9	9.6
Illubabor	20.2	16.4
Keffa	42.1	36.1
Shoa	96.6	145.5
Sidamo	30.8	27.5
Tigrai	36.1	na
Wallega	34.2	38.4
Wello	43.1	65.4

Source: Computed on the basis of data avilable on statistical Abstract (CSO), 1984

na = Data not available.

Note: The livestock figure does not include the nomadic areas.

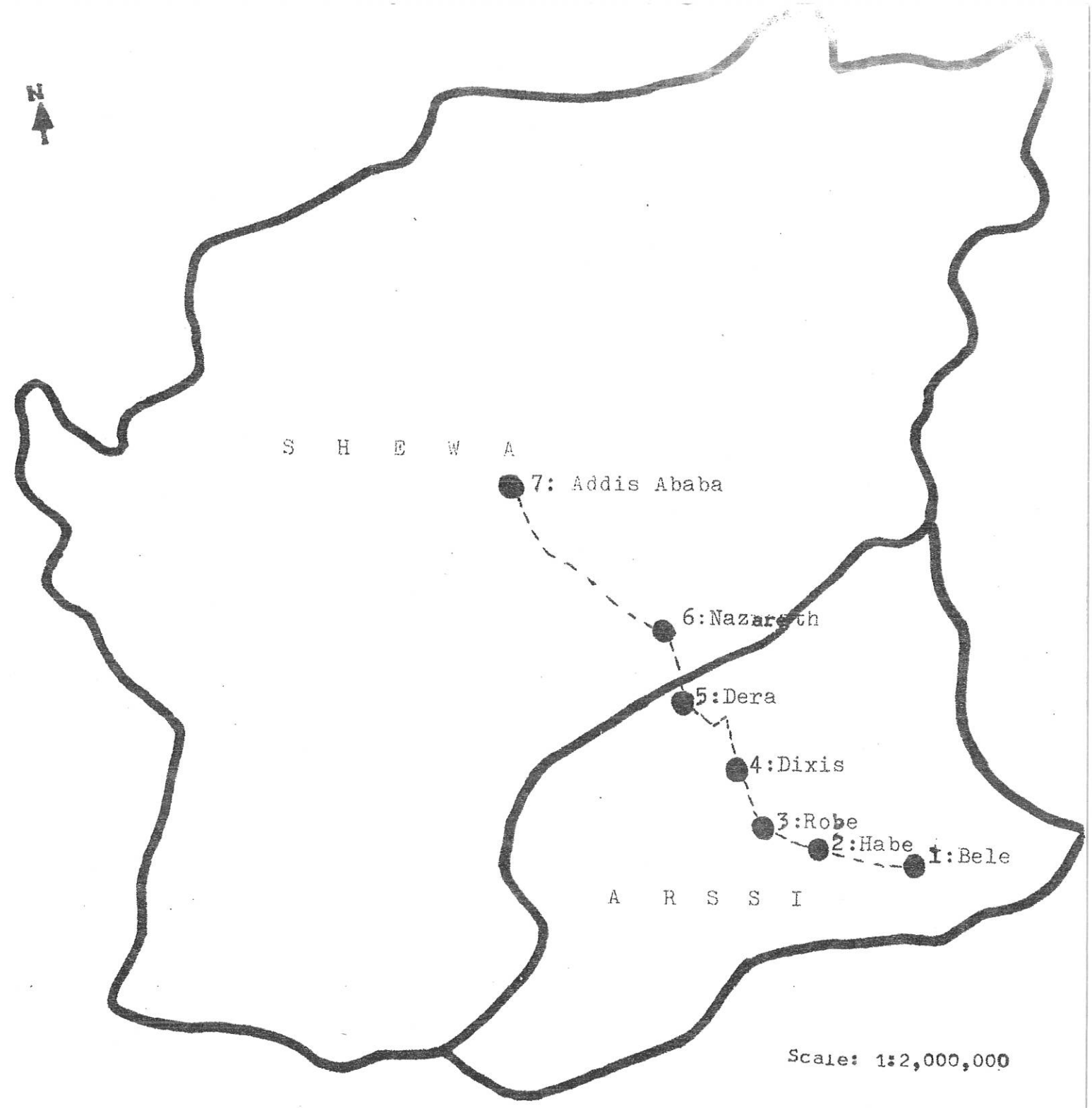

Figure 2: Map Showing the Location of the Livestock Markets Selected.

Table 4 Name, Location and Some Major Characteristics of Livestock Markets Selected

Name	'Awraja (Distict)	Adm. Region	Size	Major Market Day	Distance From A.A(Km)
Bele	Ticho	Arssi	Medium	Thrusday	266
Habe	"	"	Small	Friday	242
Robe	"	"	Small	Saturday	224
Dixis	"	"	Big	Sunday	198
Dera	Chilalo	"	Big	Tuesday	124
Nazareth	Yerer& Kereyo	Shoa	Big	Wednesday	99
Addis Ababa	Menagesha	Shoa	Big	Friday	

Except for the Addis Ababa (Kera) market, in all the other market places livestock markets are held once a week. In Addis Ababa (Kera) livestock are usually traded throughout the week, but Friday is considered to be the major livestock market day.

Besides live animals and livestock products other agricultural products and industrial products like clothes and household materials are also marketed in the local market-towns on the market days. However, the livestock market place is separated from the market place for other items and it is usually located at the periphery of the town.

The livestock markets in Bele, Habe and Dixis are unfenced. They take place in an open space. The Robe livestock market place is fenced with wood. The Dera,

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Nazareth and Addis Ababa (Kera) markets are fenced with stone. The fences were constructed by the respective municpalities, in order to facilitate tax collection. Weighing machines, installed by Ministry of Agriculture for the purpose of data collection, are found in the Dera, Nazareth and Addis Ababa (Kera) markets. Watering places are also found in each of these three markets. While natural pastures are found around the market towns of Bele, Habe, Robe and Dixis; hay is available for sale in Dera, Nazareth and Addis Ababa (Kera) market places.

Commercial cattle are trekked from the collection markets to the major consumption centers on hoof. The Drovers use short cuts, when driving cattle from one market to the other. On the average, cattle are trekked 25 to 30 Kms per day. There are enclosures along the trade route, where the traded cattle are kept during night time. The distances between the selected livestock markets are given in the following table.

Table 5 Distance (in Kms) Between the Selected Market Places

Bele	Bele	Habe	Robe	Dixis	Dera	Nazreth	Addis Ababa
Bele		24	42	68	142	167	266
Habe			18	44	118	123	242
Robe				26	100	125	224
Dixis					74	99	198
Dera						25	124
Nazareth							99
Addis Ababa							

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3.2. Sample Design

Livestock markets in Ethiopia have been categorized as small, medium and large, on the basis of the number of cattle brought for sale on each major market day. Small markets are defined as those with less than 500 head, medium markets have 501 to 1000 and large markets have over 1000 head of cattle per market day. Out of the 120 livestock markets identified by the Ministry of Agriculture, 56 have been identified as small, 39 as medium and 25 as large.[26]

The distribution of these livestock markets by administrative regions shows that twenty (80%) of the large markets and twenty (51%) of the medium markets are located in only four regions, Shewa, Harerge, Wello and Arsi. These markets are located either at the junction of trade routes, as in Harerge and Arsi, or within reach of the main centres of population in Shewa (Addis Ababa), Wello (Dese) and Arsi.[27]

The finance and time available for completion of the study were among the major conditions which made it impossible to collect data from all of the livestock markets found in the country. Therefore, the only way to deal with the objectives of this research was to study a sample of livestock markets.

On the basis of advice obtained from experts in the Ministry of Agriculture and the knowledge of the researcher,

the trade route from Bele (Arssi) to Addis Ababa (Kera) was selected for this study. The main reasons for selecting this trade route are given below.

1. The movement of traded cattle along this trade route shows a general periphery - to - center movement of livestock. This route also reflects the relationships between production and consumption areas and it is within this framework that the problems of marketing livestock can be met and solved.

2. Since the trade route serves the densily populated regions of Arssi and Shoa and the potentially rich region of Bale, it is expected that the information collected pertaining to the operation of the livestock marketing system along this route could be useful to policy makers.

. Once the markets to be taken as a sample was decided, the question of how large a sample to take from each market was decided by the size of the market. The size of the market was defined by the number of cattle that were brought for sale per major market day.

A total of 2331 cattle purchased in all markets were recorded during the survey period. Table 6 shows the size of the sample that was taken from each market.

Table 6 Distribution of Sample Size by Market

Market	Sample size	Percent
Bele	315	13.5
Habe	277	11.9
Robe	235	10.1
Dixis	385	16.5
Dera	354	15.2
Nazareth	390	16.7
Addis Abab(Kera)	375	16.1
Total	2331	100.0

The size of the sample, as already stated, was determined by the size of the market. The sample that was taken from the big markets was larger than that from small markets. In other words, a proportional sampling method was used to decide how large a sample to take from each market.

3.3. Data Collection

The data which form the basis of this study were obtained from a market survey conducted in the seven live-stock markets selected by resercher. The basis of selection has already been discussed under the section d dealing with sample design.

The questionnaire shown in Appendix I was used to obtain the necessary information and to ensure better

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communication an Amharic version of the questionnaire was used.

The market survey was caried out in four phases. The first phase was during the week of the Easter festival when the demand for slaughtered animals was expected to be high. The second phase was in May, just before the main rainy season. The third phase was during the main rainy season when the supply of livestock from local producers was expected to be low. The fourth phase was just after the main rainy season. During this time both the market supply of and the market demand for live cattle were expected to be high.

On the average 12 to 15 enumerators, who were able to speak the local language (Oromigna) and who were educated to the high school levell or above, were employed to collect data at each of the seven livestock markets. Additionally, five staff members from Ministry of Agriculture, who were working in the Livestock Marketing Section, were also employed to assist during the study tour. Sufficient training was given to enumerators before they started data collection.

If proved easier to identify sellers than buyers in the livestock markets. Sellers usually choose a fixed place and stand near-by their cattle waiting for buyers. Buyers, however, roam around the market, taking cognizance of prices and identifying the cattle that they want to

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buy. The sellers and the buyers meet in the market place and negotiate to fix the price of the cattle. Hand shaking is usually a sign of bargaining and hand kissing is a sign of agreement on the price of the cattle. It was during this process that enumerators approached the seller and the buyer and noted the actual selling price of the cattle. After this the enumerators inspected the condition, age, and breed, and measured the weight of the cattle that was sold or purchased.

As weighing machines were not available in all of the markets the weight of the cattle was estimated by measuring the heart girth of the cattle using a measuring tape. The same process was also used in the markets where a weighing machine was available, in order to maintain consistency in measurement.

The condition of the cattle was evaluated, using the method of condition scoring developed by ILCA. Four grades were identified, viz, very good, good, average and poor. Moreover, the method of condition inspection used by the farmers and traders was also used as an additional tool to classify the grade of the cattle. This involved pulling the skin of the cattle either at the back or side of the animal. In the view of the farmers and traders, the skin of cattle with high fat reserves the skin cannot easily be detached from the flesh.

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The age of the cattle was also inspected through the traditional method of gauging. Market participants commonly estimate the age of the cattle by observing teeth.

Breed was determined by visual observation. The dominant breed, specifically in the local markets, was the highland Arssi type. This breed was easily differentiated from other breeds by its size and sometimes colour. While this breed is usually short in size and black or mixed colour, other breeds like Borana are large in size and usually white or brown.

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In the light of the literature survey, factors, such as types of sellers, types of buyers, reason for purchase and the geographical location of the market place, have been adopted as classificatory criteria. Also from the field observation and results of the survey, the researcher has noted that livestock markets can be classified on the basis of additional factors, such as reasons for sale, type of cattle marketed and mode of transaction. Therefore, in this chapter, an attempt has been made to classify the selected livestock markets on the basis of factors discussed in the literature survey and on the basis of factors identified as a result of the researcher's market survey and field observation.

4.2. Classification Markets by the Type of Sellers

In each of the livestock markets, cattle sellers were asked about their main occupation. Three groups of sellers were identified: (farmers, cattle traders and others). The Proportional distribution of each group of sellers in each market are summarized in the following table.

Table 7 Proportional Distribution of Sellers Type by Market

Market	Type of Sellers (Percent)		
	Farmers	Cattle Traders	Others
Bele (n=315)	81.0	6.7	12.3
Habe (n=277)	92.8	1.1	6.1
Robe (n=235)	90.2	3.8	6.0
Dixis (n=384)	80.0	14.3	5.7
Dera (n=354)	53.4	38.1	8.5
Nazreth(n=389)	51.4	33.8	14.8
Addis Ababa(n=375)	18.9	76.5	4.6

Note:- n= number of observations

CHAPTER FOUR

CLASSIFICATION OF LIVESTOCK MARKETS

4.1. Introduction

The main purpose of this chapter is to classify the livestock markets (selected for the purpose of this study) as primary, secondary and terminal. Primary collection markets are located in the production areas. These are the markets, where traded cattle first enter in the marketing system. Secondary livestock markets are located at strategic geographical places, on the routes between the cattle production areas and the major consumption areas centers. Cattle bought from primary collection markets are resold in secondary markets. Terminal markets are located in the major cities. The majority of traded cattle arriving at and sold in these markets are slaughtered for local consumption.

In the researcher's view the classification of the selected livestock markets as primary, secondary and terminal is needed for two reasons. First, it gives a hint about the flow of commercial cattle along the trade route. This facilitates the computation of marketing margins, which is one of the main objectives of the study. Second, the classification also helps to identify factors that determine cattle prices, which is another objective of the study.

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The results recorded in Table 7 indicate that it is possible to group the markets into three types, based on the magnitude of the proportion of type of sellers. The first group consists of those markets where farmers predominate as sellers. This group includes the markets of Bele, Habe, Robe and Dixis. The second group consists of those markets where farmers account for about 50 percent of the total sellers and where the share of cattle traders, as sellers, is also considerable. In this group, we find Dera and Nazareth markets. The third group consists of the Addis Ababa market, where cattle traders predominate. In the light of the literature survey, the markets in the first group exhibit the features of primary collection markets. In the second, the features of secondary markets predominate and in third group the features of terminal market are found.

Cattle sellers were also asked the reasons for selling cattle. Many reasons were given. But all the reasons have been grouped into five categories and the results are summarized in Table 8.

It can be observed that among the reasons given for for sale, urgent need of cash is paramount in those markets where farmers predominate as sellers. This shows that producers tend to rely on sales of cattle to meet their cash needs. This finding is related to the idea developed by other authors, which argues that many African producers

Table 8 Proportional Distribution of Reasons for Sale by Market

Markets	Reasons for sale (percent)				
	1	2	3	4	5
Bele (n=314)	4.5	79.3	4.1	8.9	3.2
Habe (n=276)	4.4	67.0	1.8	23.6	3.3
Robe (n=232)	4.7	65.5	1.7	23.7	4.3
Dixis(n=382)	15.5	50.1	4.5	27.2	2.8
Dera (n=343)	42.6	41.4	1.2	12.2	2.6
Nazareth(n=381)	36.8	47.8	2.9	10.5	2.1
Addis Ababa(n=374)	83.2	14.7	-	2.1	-

Notes:- n = number of observations

1-5 are reasons for sale and these reasons are given as follows

1.= Commerical purposes
2 = Urgent need of cash
3 = Problem of Grazing Land
4 = To purchase other stock
5 = Others.

regard cattle as a store of wealth or as a savings account, from which withdrawals are made only for special social or ceremonial occasions or for emergency needs. This implies that factors that increase the market value of cattle will enable the owner to meet his cash needs by selling fewer animals. The supply curve of such a producer would not slope upward to the right (as is the usual case) but downward to the right as shown by the following figure.[28]

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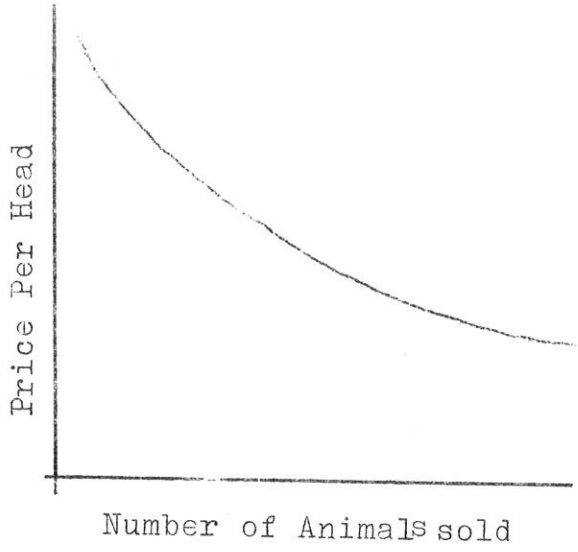

Figure 3: Backward Sloping Supply Curve for Livestock

Figure 3 suggests that the producer may sell only to the extent necessary to obtain fairly fixed cash requirements and if the market price of livestock rises he may supply fewer rather than more cattle to the market.

An additional observation made by the researcher during the market survey was that most of the farmers selling cattle in the primary collection markets brought only one or two cattle for sale. Therefore, the hall-mark of these markets is that there are many sellers, each of whom contributed one or two cattle to the market. This type of market structure is characterized by what is called atomistic competion.[29]

On the other hand it was observed that a single cattle trader brought on the average 15 to 20 cattle for sale to the secondary and terminal markets. This figure is probably an underestimate, since many cattle traders were too suspicious

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to tell the actual number of cattle they brought and sold. Thus, the secondary and terminal markets, where there are relatively few sellers each of whom contributed many cattle to the market, are characterized by an oligopolistic market structure.

4.3. Classification of Markets by Type of Buyers

Cattle buyers were also interviewed concerning their main occupation. Four categories of buyers were identified. These are farmers, cattle traders, butchers and others. The others group includes buyers such as hotel or bar owners, wage-earners, organizations and other final users of live cattle. The proportional distribution of the four types of buyer in each market is given in the following table.

Table 9 Proportional Distribution of Type of Buyers by Market

Markets	Type of Buyers (Percent)			
	Farmers	Traders	Butchers	Others
Bele (n=307)	62.5	27.8	3.3	9.4
Habe (n=274)	68.3	22.3	4.0	5.5
Robe (n=232)	62.5	26.7	4.3	6.5
Dixis (n=383)	44.4	48.6	3.1	3.9
Dera (n=354)	21.5	44.6	8.5	25.4
Nazareth (n=389)	22.6	35.5	15.2	26.7
Addis Ababa(n=373)	1.3	8.0	52.8	37.8

Note:n= number of observations.

Table 9 shows that the Bele, Habe and Robe markets have similar characteristics in terms of the distribution of types of cattle buyers. The majority of the buyers were farmers. On the basis of the literature survey, these markets show the character of primary collection markets. In the Dera and Nazareth markets most of the buyers were cattle traders, followed by the others group. This is a feature of secondary markets. The Dixis livestock market resembles primary collection markets in some of its aspects and secondary markets in other aspects. However, as in most of its aspects it seems to be a primary than a secondary market, it was classified as a primary collection market. In the Addis Ababa livestock market most of the cattle buyers were found to be butchers and other consumers like hotel owners, public organizations and wage earners. This is a typical character of a terminal market.

In relation to the classification of livestock markets by the type of buyers, the relative significance of reasons for purchase given by cattle buyers also differed from one type of market to the other. In Bele, Habe and Robe cattle were purchased mainly for stock replacement (Table 10). In Dixis, Dera and Nazareth markets purchase for commercial purposes (buying in order to sell) was the most important reason given by cattle buyers. The classification of markets according to reasons for purchase showed that Bele, Habe and Robe markets had the features of primary collection markets, Dera and Nazareth had the

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features of secondary markets and the Dixis market again manifested the character of both primary collection and secondary markets. The distinct feature of the Addis Ababa livestock market was that most of the cattle (85 percent) were purchased for slaughter and this is again a typical characteristic of a terminal market.

Table 10 Proportional Distribution of Reasons for Purchase by Market

Markets	Reasons for Purchase (Percent)				
	1	2	3	4	5
Bele (n=307)	30.3	6.2	56.7	6.8	-
Habe (n=273)	23.8	2.2	66.7	7.3	-
Robe (n=232)	27.3	2.2	61.2	8.6	0.9
Dixis (n=383)	48.6	2.4	41.5	7.6	-
Dera (n=354)	43.5	7.9	27.1	19.8	11.7
Nazareth (n=389)	33.7	8.5	29.3	25.9	2.6
Addis Ababa(n=373)	12.3	0.5	0.5	85.0	1.6

Note:- n= number of Observations

1-5 are reasons for purchase specified as follows:-

1. = Commercial Purposes
2 = Fattening
3 = Stock Replacement
4 = Slaughter - commercial & home consumption
5 = Others

4.4. Classification of Markets by the Type of Cattle Marketed

The classification of livestock markets by the future use of the cattle purchased (reason for purchase discussed

under section 4.3) leads to the conclusion that the type of cattle desired and hence offered in each market can differ from one type of market to the other. This, then indicates the possibility of classifying livestock markets according to the type of cattle marketed. Table 11 below summarises the proportional distribution of type of cattle marketed in each of the markets studied by the researcher. It can be observed that in the Bele, Habe, Robe and Dixis livestock markets working oxen and steers were traded in a larger numbers than the other types of cattle. This suggests that in primary collection markets, draft animals are in higher demand than other types of cattle

Table 11 Proportional Distribution of Type of Cattle Marketed by Market

Markets	Type of Cattle Marketed (Percent)						
	1	2	3	4	5	6	7
Bele (n=315)	3.8	7.0	24.8	17.5	12.1	26.0	8.9
Habe (n=255)	5.1	1.6	36.5	15.3	12.9	22.0	6.7
Robe (n=222)	5.0	1.8	34.2	18.5	14.4	17.1	9.0
Dixis (n=381)	17.1	2.1	35.7	19.2	11.3	10.0	4.7
Dera (n=348)	23.0	5.7	29.6	24.4	3.7	7.5	6.0
Nazareth(n=385)	22.2	5.2	34.8	15.1	6.8	8.8	7.0
Addis Ababa(n=335)	69.9	5.2	16.4	7.5	0.9	1.2	-

Note:- n= number of Observations.

1-7 = Type of cattle marketed which are defined as follows:-

1. = Bullock
2 = Bull
3 = Working Ox
4 = Cow
5 = Heifer
6 = Steer
7 = Calf

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The proportion of adult cattle that could be used for slaughter purposes was high in the Dixis, Dera, Nazareth and Addis Ababa markets. By contrast, the proportion of immatures marketed in Bele, Habe and Robe was high, compared with the other livestock markets. This suggests that producers sell immatures to meet their basic cash requirements in those primary collection markets.

4.5. Mode of Transaction

So far an attempt has been made to classify livestockmarkets by the type of market participants, by the reasons for sale and purchase, and by the type of cattle marketed (object of transaction). The study also discovered that it was possible to classify markets according to the methods used to conclude cattle sales. It was observed that in the livestock markets of Bele, Habe, Robe and Dixis there was usually a formal arrangement, when the sale of big ruminants (cattle, horses, donkeys) was concluded between producers. Transfer of title of ownership is specified by a legally binding instrument, such as a written document known as a Wul. In this process three witnesses are needed and the seller is requested to bring another person as a guarantor, known as a chiramedin, who can bear responsibility in the absence of the cattle seller. There were no such kind of formal arrangements, when small ruminants (sheep and goats) were sold. This indicates that the higher the value involved in

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the transaction, the more formal the arrangement is needed by the market participants.

In the Dera, Nazareth and Addis Ababa markets, where exchange is between cattle traders themselves and between cattle traders and other consumers, transfer of title of ownership was based on informal rules, largely influenced by custom and interpersonal relations. Moreover, there were more brokers, who mediated between the cattle sellers and buyers in these markets, than in the primary collection markets. Cattle traders left the business of finding market outlets to brokers. This shows the presence of a relatively elaborate division of labour in the secondary and terminal livestock markets, compared to primary collection markets.

4.6. Conclusions

On the basis of the classificatory criteria obtained from the literature survey the market survey results and field observations, the livestock markets considered in this study have been classified as primary collection, secondary and terminal markets. The livestock markets of Bele, Robe and Dixis have been classified as primary collection markets, where cattle first enter into the marketing system from the surrounding farm areas. Dera and Nazareth have been categorized as secondary markets, where cattle bought in the primary collection markets are

resold. The Addis Ababa market has been identified as a terminal market, where most of the cattle, originating in the primary markets and secondary markets are delivered and sold for slaughter purposes.

CHAPTER FIVE

THE SHARE OF MARKET PARTICIPANTS IN THE DISTRIBUTION OF INCOME FROM THE LIVESTOCK TRADE

5.1. Methodology

In the preceding chapter an attempt was made to classify the livestock markets as primary, secondary and terminal. We assume that commercial cattle flow in one direction only, that is, from primary to the secondary and finally to the terminal market. Given the classification and the assumption, then the flow of commercial cattle along the trade route can be represented diagrammatically as follows:-

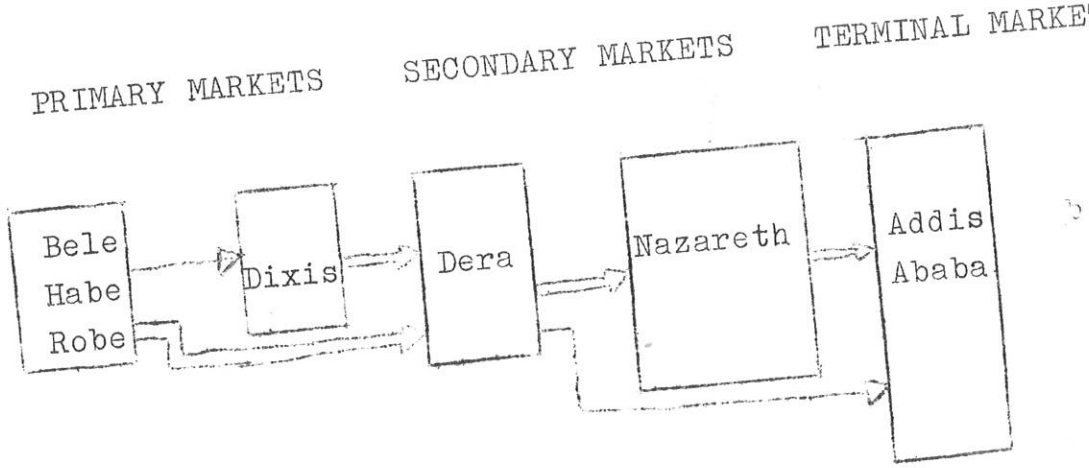

Figure 4. Diagramatical Representation of the Flow of Commercial Cattle Along the Trade Route.

NB: Double line indicates the major flow of commericial cattle.

There are various agents involved in the livestock market. The private farmers participate both as suppliers and as final demanders. The cattle traders group consists of different types of participants. There are farmer-traders, who buy from small markets and sell at big markets. Their job is seasonal. They are engaged in cattle trading during the slack agricultural season. There are itinerant traders, who assemble livestock from farmgate or small markets and sell at big markets. These differ from farmer-traders, because they support themselves permanently by trading. There are also traders who remain in the same market. They buy early in the morning and sell at noon or in the afternoon. Finally we find licensed cattle traders, who collect cattle from small primary markets and sell at either in the secondary or terminal markets. There are also other buyers, such as butchers, hotel owners, state owned institutions, and wage-earners at each stage of the livestock marketing system.

Apart from sellers and buyers, there are other participants in the cattle marketing system. Government tax collectors are found in every market to collect taxes. Drovers drive commercial cattle from one market to the other. Brokers mediate between sellers and buyers specially in secondary and terminal markets. All these participants take their share from the distribution of income in the livestock trade. Thus, the main aim of this chapter is to show the quantitative magnitude of the share of the main participants.

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Since the majority of cattle sellers in primary markets have been identified as farmers (Table 7), the prices received by cattle sellers in every primary market have been taken as the producers' price. To estimate the producers' price a sample of cattle purchased from the primary markets by cattle traders for commercial purposes has been selected and their average purchase price has been computed. This average price, disiginated (P_1), is considered as the average producers' price.

The same type of commercial cattle, that originated from primary markets, were followed through the whole marketing system up to the terminal market. The prices received by the cattle traders were noted and their average prices were computed. These average trader prices have been designated (P_2), (P_3) and (P_4) and they represent the average prices computed for Dera, Nazareth and Addis Ababa markets respectively. It should be noted that (P_4) is greater than (P_3), (P_3) is greater than (P_2) and (P_2) is greater than (P_1).

The ratio of the average producers' price (P_1) and average price at the terminal market (P_4), expressed in percentage, ($P_1/P_4 X100$), is defined as the gross producers' share of final price. It is termed as 'gross' because the 'net' is obtained by deducting the cost of production of cattle from the price of cattle received by producers at primary markets. The computation of the cost of

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production requires the extension of the survey up to farm level. But the scope of this survey has been confined to the market level and we have used the "gross" concept to serve the purpose of the study.

The differences between the successive average prices, (P_2-P_1), (P_3-P_2), (P_4-P_3) have been estimated and labeled (M_1),(M_2) and (M_3) respectively. These values are called marketing margins. The sum of marketing margins ($\sum M_i = P_4-P_1$) is referred to as total (overall) marketing margin.

Marketing margins are composed of marketing costs and traders' margin. If we desiginate marketing costs (C_i), then (C_1), (C_2) and (C_3) will be the marketing costs between the primary markets and Dera market; between Dera and Nazareth markets; and between Nazareth and Addis Ababa markets.

The livestock marketing costs included market taxes (C_{00}); trekking fees (C_{01}); brokers' fees (C_{02}); enclosures' fees (C_{03}); fees paid for feed (C_{04}); transport expenses and food and lodging (C_{05}). The shares of some participants are reflected in the components of the marketing costs. For instance, the share of government taxation appears in the form of market taxes.

Traders' margins (T_i) are the residual amount of marketing margins, after marketing costs are taken out

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($T_i = M_i - C_i$). Therefore, (T_1), (T_2) and (T_3) refer to, respectively, traders' margin between the primary markets and Dera; between Dera and Nazareth markets; and between Nazareth and Addis Ababa markets. The share of the traders' margin (given as $\frac{T_i}{P+C}$ X100) reflects the return to the traders' capital, labour and managment and has been used as a measure of efficiency of the marketing system.

5.2. Findings and Discussions

One the basis of the foregoing discussion average prices ($P_1, \ldots P_4$) and marketing margins ($M_1 \ldots, M_3$) have been computed. The results are given in the following table.

Table 12 Average Cattle Prices (Birr) and Marketing Margin (Birr)

Average Price and Margin	Price Per Head (Birr)	Marketing Margin (Birr)	Percentage of Final Price
P_1	295.70	69.05	53.0
M_1			12.4
P_2	364.75	37.97	65.4
M_2			6.8
P_3	402.72	154.72	72.2
M_3			27.8
P_4	557.44		100.0

The results indicate that average prices increase as we move from primary collection markets to the terminal market. Producers' who were selling at primary markets received about 53 percent of the final price. This share has been computed by taking all the primary markets together. When we look at each primary market, the share of producers has been found to be different from one primary market to the other. In the most distant primary market (Bele) the average producers' price was birr 255.88. This is about 46 percent of final price. In the nearest primary market to Addis Ababa (Dixis), the average producers' price was found to be birr 340.90. This is equivalent to 61 percent of the final price. Thus, the analysis of the producers' share of final price whows that producers located relatively near the terminal market receive a larger share than those located far from the terminal market. Therefore, the difference in the share of livestock producers in the final price of cattle reflects the comparative locational advantage of the producers.

The marketing margin included marketing costs and traders' margin. Average marketing costs were estimated at each stage of the marketing system. The following table gives the breakdown of the marketing costs along the trade route.

Table 13 Marketing Costs

	Costs/ Cattle (Birr)						
	C_{00}	C_{01}	C_{02}	C_{03}	C_{04}	C_{05}	Total
C_1	2.00	1.50	1.00	0.35	0.50	3.50	8.85
C_2	2.20	0.50	1.00	-	0.50	2.00	6.00
C_3	13.20	2.00	2.00	-	1.00	2.50	20.90
Total	17.40	4.00	4.00	0.35	2.00	8.00	35.75

Note: C_{00} = Market taxes
C_{01} = Drovers' fee
C_{02} = Brokers' fee
C_{03} = Enclosures' fee
C_{04} = Feed costs
C_{05} = Trader's Expenses

C_1 = Total marketing costs between primary and Dera markets

C_2 = Total marketing costs between Dera and Nazareth market

C_3 = Total marketing costs between Nazareth and Addis Ababa markets.

The share of government taxation formed the major part of the total marketing costs. Market taxes in each market were paid on the basis of each cattle brought for sale. The tax rate was the same for every type of cattle in each market, but the rate differed as between markets, where the tax was collected by agents of manicipalities and those markets where taxes were collected by agents of

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Ministry of Finance. In Bele, Habe and Bixis, market taxes were collected by agents of the Ministry of finance. The tax rate was uniform (birr 1:00 per cattle) in all these markets. On the other hand in Robe, Dera, Nazareth and Addis Ababa, market taxes were collected by the respective municipalities and tax rates differed from market to market, that is, birr 1.50, birr 2.20 birr 3.00 and birr 7.20 per cattle in Robe, Dera, Nazareth and Addis Ababa markets respectively. It was also observed that, apart from the livestock markets considered, market taxes were collected by the municipalities of the towns that are located on the trade route leading to the terminal market.

Trekking fees were paid on the basis of each cattle trekked and the rate was determined by the distance covered. For instance, drovers who trekked commercial cattle from Bele to Dera were paid birr 2.50 per cattle and those who trekked from Dera to Nazareth and from Nazareth to Addis Ababa were paid birr 0.50 and birr 2.00 per cattle respectively.

Brokers' fee were paid mainly in the Dera, Nazareth and Addis Ababa markets. The rate was not uniform. But it was recognized that brokers received, on the average, from birr 2.00 to birr 3.00 per cattle sold. Finally, the researcher identified other marketing costs such as enclosures' fees and grazing fees. The magnitude of these costs, however, was found to be relatively small.

On the basis of the estimated marketing margins and marketing costs, absolute traders' margin and the size of the traders' margin are estimated below.

Table 14 Average prices, Marketing Margins, Marketing Costs and Traders' Margin (Birr/Cattle)

Trade Route	P_i	M_i	C_i	T_i	$(T_i/P_i+C_i)X100$
Primary-Dera	259.70	69.05	8.85	60.20	19.8
Dera-Nazareth	364.75	37.97	6.00	31.97	8.6
Nazareth-A.A.	402.72	154.72	20.90	133.82	31.6

Note: P_i = Average Purchase Price
M_i = Marketing Margin
C_i = Marketing Cost
T_i = Traders' Margin

The traders' margin reflects the return to capital, labor and management. Thus, Table 14 shows that traders operating between primary markets and Dera obtained about 20 percent, between Dera and Nazareth about 9 percent and between Nazareth and Addis Ababa about 32 percent as a return to their capital labour and management.

An overall average of traders' margin has been estimated using the weighted arithmetic mean method. This has been found to be about 21 percent as a return to their capital, labour and management.

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As stated in the literature part of this study the traders' margin approach has been used to evaluate the efficiency of the marketing system. A traders' gross margin of about 30 percent was estimated for the Emali market (Kenya) and was considered to be too high and hence taken as a sign of an inefficient marketing system. As compared with the Emali market the 21 percent average traders' margin estimated for our case may lead to the conclusion that the livestock marketing system in this part of Ethiopia is relatively more efficient than the livestock marketing system in Emali. But this conclusion may not be true because the environment under which the livestock marketing system operates in Kenya is not the same as that of Ethiopia. Due to the presence of many factors that can cause differences in marketing margins, a simple statement of the size of margins and hence of the share of the final price passed back to the farmers does not in itself show whether a marketing system is efficient or inefficicient.

Thus, the investigations of efficiency of the livestock marketing system should focus attention on points where improvements can be introduced. Some of the indicators of inefficiency observed during the market survey are given below:

1. Livestock producers were not given access to any kind of market information. They were not informed about the price conditions

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in major consumption centers. The market reporting system that was conducted in some markets like Dera was found to be more beneficial to cattle traders than to producers.

2.2. Livestock purchased for commercial purposes were trekked without feed for many days. This was the main cause of the significant loss of weight and quality. Furthermore, cattle were trekked along main road, where the chance of traffic accidents was high.

3. There was no inspection of the health of the cattle from the beginning (in the primary collection markets) and the attention to the cattle's welfare during trekking was observed to be unsatisfactory.

5.3. Summary

In the foregoing discussion an attempt has been made to show the results of the survey of marketing margins. Thus, given the average prices, marketing costs and traders' margins, the share of each participant in the final sales price of cattle has been estimated as follows:-

Table 15 The Share of Market Participants in the Final Sales Price of Cattle

Participant	Share(Percentage of Final Price)	(ric.)
producer	53.05	
Marketing Costs	6.41	
Government Taxation	3.12	
Drovers' fee	0.72	
Brokers' fee	0.72	
Enclosures' fee	0.06	
Feed Cots	0.36	
Traders' Expenses	1.44	
Trader's Margin	40.54	
Total	100.00	

Table 15 indicates that the share of the trader's margin of the final price was around 41 percent. Given the high turnover of trade along the trade route, this share is considered to be high. In order to raise their profit margin traders usually attempt to reduce marketing costs. Some of the methods that they use to reduce marketing costs are to minimaize trekking time by travelling longer distance each day and to reduce feeding costs. That is why, for instance, the share of feed cost was insignificant as it can be observed from the above table. This action was one of the main cause of the loss in body weight and deterioration in condition of cattle trekked to consumption centers.

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CHAPTER SIX

FACTORS DETERMINING CATTLE PRICES

6.1. Introduction

Livestock markets, like any other markets, consists primarily of sellers and buyers. Prices are usually fixed on the basis of open bargaining or independent bargaining in each deal. After the seller and the buyer arrive at an agreement, transfer of the title of ownership takes place. The buyer receives the cattle and, the seller receives the price of the cattle, expressed in terms of monetary units (in birr in our case). This price (the price received by seller or paid by the buyer) reflects what the cattle are worth. Therefore, in this chapter an attempt has been made to evaluate quantitatively the degree and direction of factors that are expected to affect the market price of cattle.

Information on factors that affect cattle prices has been obtained both from literature and field observations. These factors are classified into two major groups, viz, characteristics of the market and characteristics of the cattle.

Previous studies also indicate that cattle prices show seasonal variation. However, as price data were collected by the researcher for a relatively short period of time, the influence of seasonal factors on prices are

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not included in the model. To compensate for this, the price data collected for the study have been deseasonalized using indices of seasonal variation of cattle prices (Table 16), in order to eliminate the seasonal component.

Thus, the price data collected during the first round have been adjusted by the index of Maizia (April), the second round by the index of Genbot (May), the third round by the index of Nehassie (August) and the fourth round by the index of Tikimt (October).

Table 16 Index of Seasonal Variation Based on the Average of Actual Monthly Data. (Price of Cattle/K.g Live Weight in Ethiopia 1972 to 1979 E.C.)

Months	Average	Index of Seasonal Varation
Meskerem	1.07	103.38
Tekemt	1.06	102.42
Hidar	0.98	94.69
Tahsas	1.02	98.55
Tir	0.96	92.75
Yekatit	1.00	96.62
Megabit	1.02	98.55
Miazia	0.99	95.65
Genbot	1.10	106.28
Sene	1.10	106.28
Hamle	1.05	101.45
Nehassie	1.07	103.38

Source: Computed on the basis of average cattle prices and average live weight data shown in appendix II

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Both the unadjusted and adjusted price data have been used to estimate the relationship between cattle prices and factors thought to affect cattle prices.

6.2. The Model and Variables

Both linear and semi-log models, using multiple regression, were fitted to see the relationship between cattle prices and the factors thought to affect cattle prices. The semi-log model has been selected for analysis purposes for two reasons. Firstly the closeness of fit of the semi-log model was found to be better than the linear model, since the coefficient of determination (R^2) of the former is greater than the latter. Secondly the semi-log model has special merit for analytic purposes, since it shows the proportionate rate of change in price per unit change of each factor thought to affect price. For reference purposes the regression results of the linear model are given in Appendix III.

The semi-log model is given as:-

$$\text{Log } P = a_0 + \sum b_i X_i + U$$

Where P is cattle price; X_i are continuous and dummy regressors; U is a random disturbance term, with the usual assumption of Zero mean and constant variance; a_0 and b_i are regression parameters. The definition and measurement of the variables used in this model are given in the following table.

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Table 17 Definition and Measurement of Variables

Variable	Variable Label	Definition and Measurement
Cattle	P	Dependent and Continous variable in Ethiopian birr per cattle.
Market	M1, ...,M3	Dummies with values of 0,1 for each type of market 1 to 3. Those markets are 1 = primary 2 = Secondary and 3 = Terminal.
Seller	S1,...,S3	Dummies with values 0,1 for seller type 1 to 3. The seller types are 1 = Farmer 2 = Trader and 3 = Others
Buyer	B1,...B4	Dummies with values 0,1 for each buyer type 1 to 4. These buyer types are 1 = Farmer 2 = cattle trader 3 = Butcher 4 = Other
Cattle Type	CT1,...,CT7	Dummies with values 0,1 for each cattle type 1 to 7. These type of cattle are: 1 = Bullock 2 = Bull 3 = working ox 4 = Cow 5 = Heifer 6 = Steer and 7 = Calf
Age	A1,...A6	Dummies with values 0,1 for each age category 1 to 6. The categories are 1 = upto 18 months 2 = Two teeth 3 = Four teeth 4 = Six teeth 5 = Full mouth. 6 = Broken mouth
Condition	G1,...G4	Dummies with values 0,1 for each condition category 1 to 4. These categories of condition are 1= VereGGood, 2 = Good, 3 = Average 4 = Poor

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Table 17 (Cont.)

Variable	Variable Label	Definition and Masurement
Breed	CB1,...,CB4	Dummies with values 0,1 for each breed type 1 to 4. The categories of breed are: 1= Highland Zebu, 2= Boran 3= Horro, 4=Kereyou
Offer No	CO	Continuous variable given in number of cattle brought for sale per seller
Purchase No	CP	Continuous variable given in number of cattle purchased per buyer
Weight	W	Continuous variable in Kilogram per cattle sold.
Time	T	Continuous variable in hours

6.3. Empirical Regression Results of the Overall Regression

The semi log linear model was fitted separately to adjusted and unadjusted price data. The results are summarized and are given in the following table.

Table 18 Estimated Regression Coefficients for the Semi-Log Model $\text{Log } P_0 = a_0 + \sum b_i X_i + U$

Variables	Unadjusted Price		Adjusted Price	
	Coefficients	t-Value	Coefficients	t-value
M1	-0.1453	-13.71*	-0.1501	-13.93*
M2	-0.0963	-9.39*	-0.0983	-9.42*
M3	L		L	

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Table 18 (Cont.)

S1	0.0049	0.62	0.0027	0.34
S2	0.0233	2.35**	0.0236	2.34**
S3	L		L	
B1	-0.0115	-1.53	-0.0124	-1.61
B2	0.0228	2.93*	0.0235	2.97**
B3	-0.0031	-0.37	-0.0026	-0.30
B4	L		L	
CT1	0.1978	11149*	0.1992	11.37*
CT2	0.1941	10.80*	0.1946	10.65*
CT3	0.1833	12.06*	0.1848	11.96*
CT4	0.1057	6.99*	0.1065	6.93*
CT5	0.0893	6.32*	0.0905	6.29*
CT6	0.0701	5.09*	0.0712	5.10*
CT7	L		L	
A1	-0.0744	-4.77*	-0.0729	-4.59*
A2	-0.0294	-2.29**	-0.0286	-2.18**
A3	0.0161	1.34	0.0205	1.67***
A4	0.0322	2.45**	0.0403	3.01*
A5	0.0366	3.56*	0.0412	3.94*
A6	L		L	
G1	0.1444	12.28*	0.1414	11.82*
G2	0.1320	15.52*	0.1326	15.32*
G3	0.0831	12.63*	0.0857	12.80*
G4	L		L	
CB1	-0.0403	-3.02*	-0.0474	-3.49*
CB2	-0.0405	-2.66*	-0.0428	-2.76*
CB3	-0.0729	-1.80***	-0.0805	-1.95***
CB4	L		L	
CO	0.0005	0.93	0.0003	0.67
CP	0.0006	0.97	0.0010	1.47***
W	0.0013	30.90*	0.0012	29.54*
T	-0.0036	-1.80***	-0.0017	-0.81

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Table 18 (Cont.)

Intercept	1.9983	2.0112
F-Value	468.5400	450.9100
R^2	0.8672	0.8627
Sample Size	(2038)	(2038)

** indicates significance at 1 percent level

** Indicates significance at 5 percent level

*** Indicates significance at 10 percent level

L = Left out.

Table 18 shows that the values of the coefficient of determination (R^2), obtained for unadjusted and adjusted data are almost equal. This implies that no improvement is observed by adjusting the price data for seasonal variation. The insignificant effect of seasonal influences on price variation can also be seen from the indices of seasonal variation shown in Table 16. The differences between the monthly indices are small. Therefore, the conclusion that can be drawn from these results is that the effect of seasons on cattle price variations is insignificant.

Another important conclusion to be derived from the overall regression results is that the type of market has a significant effect on cattle prices. In other words, cattle prices vary from one type of market to another. This result then leads us to examine whether or not the same variables influence cattle prices in the same way in each type of market.

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6.4. Chow Test

The same semi-log linear model (shown in Table 18) has been fitted separately to each of market (primary, secondary and terminal). The results of the unadjusted & adjusted price data are given in Tables 20,21 & 22. The main aim here is to find out whether the same variables determine cattle prices in all three types of livestock market. These findings are summarized in the following table.

Table 19 Test of Equality Between Coefficients obtained from Different Types of Livestock Markets

Test	Computed F-Value	Degrees of Freedom Numerator	Denomerator
Common Regression Slope	3.00*	54	1954
Common Intercept	603167.00*	2	2008
Overall Homogenity of the Regression	21544.57*	56	1954

*Indicates significance at 0.01 level.

The conclusion derived from the above analysis is that the coefficients of the variables in the model are unstable, as between types of livestock markets. The coefficients of the variables determining cattle price in the primary markets are different from those obtained for secondary or terminal markets and the coefficients

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of the variables in secondary markets are different from those obtained for primary and terminal markets. Therefore, the degree and the directions of the variables which determine cattle prices should be identified for each type of market.

6.5. Empirical Regression Results of Market by Market Analysis

The regression results of the factors determining cattle prices in primary, secondry and terminal markets are given in Tables 20, 21 and 22 respectively.

Table 20 Estmates of Regression Coefficients for Semi-Log Model; $\log P = a_0 + \sum b_i X_i + U$ (Primary Market)

Variables	Unadjusted Price: Coefficients	t-Value	Adjusted Price Coefficients	t-Value
S1	0.0017	0.15	0.0015	0.13
S2	0.0397	2.26**	0.0460	2.54**
S3	L		L	
B1	0.0086	0.68	0.0089	0.68
B2	0.0349	2.53**	0.0397	2.78*
B3	0.0017	0.08	0.0020	0.10
B4	L		L	
CT1	0.1934	8.16*	0.2005	8.20*
CT2	0.1662	7.09*	0.1697	7.02*
CT3	0.1765	9.58*	0.1850	9.73*
CT4	0.1136	6.11*	0.1187	6.18*
CT5	0.1127	6.90*	0.1178	6.99*
CT6	0.0821	5.10*	0.0862	5.20*
CT7	L		L	

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Table Table 20 (Cont.)

A1	-0.0339	-1.70***	-0.0337	-1.64***
A2	-0.0182	-0.98	-0.0177	-0.92
A3	0.0390	2.32**	0.0415	2.39**
A4	0.0790	4.41*	0.0878	4.75*
A5	0.0828	5.77*	0.0844	5.70*
A6	L		L	
G1	0.1145	6.03*	0.1156	5.90*
G2	0.1097	9.79*	0.1141	9.81*
G3	0.0801	9.88*	0.0850	10.15*
G4	L		L	
CB1	-0.0428	-1.14	-0.0531	-1.37
CB2	-0.0813	-1.17***	-0.0926	-1.88***
CB3	-0.0096	-0.09	-0.0223	-1.37
CB4	L		L	
CO	-0.0034	-1.54	-0.0037	-1.64
CP	0.0030	2.25**	0.0033	2.38**
W	0.0015	25.09*	0.0015	23.56*
T	0.0032	1.05	0.0042	1.35
Intercept	1.7024		1.7154	
F-Value	233.3300		220.1700	
R^2	0.8527		0.8453	
Sample Size	(1075)		(1075)	

Table 21 Estimates of Regression Coefficients for Semi-Log Model; Log $P = a_0 + \sum b_i X_i + U$ (Secondary Market).

Variable	Unadjusted Price Coefficient	Unadjusted Price t-Value	Adjusted Price Coefficient	Adjusted Price t-value
S1	0.0050	0.42	0.0001	0.01
S2	0.0353	2.39**	0.0305	2.07**
S3	L		L	
B1				

Table 21 (Cont.)

B1	0.0090	0.78	0.0126	1.03
B2	0.0251	2.30**	0.0232	2.13**
B3	0.0139	1.01	0.0167	1.21
B4	L		L	
CT1	0.1815	5.35*	0.1734	5.13*
CT2	0.1725	5.16*	0.1686	5.05*
CT3	0.1487	4.83*	0.1385	4.51*
CT4	0.0630	2.09**	0.0549	1.83***
CT5	0.0427	1.39	0.0393	1.28
CT6	0.0604	2.13**	0.0612	2.16**
CT7	L		L	
A1	-0.1112	-3.25*	-0.1098	-3.22*
A2	-0.0335	-1.40	-0.0394	-1.65***
A3	-0.0048	-0.21	-0.0014	-0.06
A4	-0.0232	-0.92	-0.0171	-0.68
A5	-0.0112	-0.57	-0.0030	-0.15
A6	L		L	
G1	0.1544	7.08*	0.1434	6.59*
G2	0.1463	7.85*	0.1390	8.44*
G3	0.0931	7.45*	0.0899	7.22*
G4	L		L	
CB1	-0.0401	-2.70*	-0.0455	-3.08*
CB2	-0.0420	-2.43*	-0.0396	-2.29**
CB3	NA		NA	
CB4	L		L	
CO	0.0003	0.48	0.0002	0.34
CP	0.0005	0.80	0.0012	1.70**
W	0.0012	16.14*	0.0012	15.84*
T	-0.0128	-3.60*	-0.0113	-3.19*
Intercept	2.0198		2.0428	
F-Value	114.2500		111.2400	
R^2	0.8146		0.8105	
Sample Size	(676)		(676)	

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Table 22 Estmates of Regression Coefficients for Semi-Log Model $\text{Log } P = a_0 + \sum b_i X_i + U$ (Terminal Market).

Variable	Unadjusted Price Coefficient	Unadjusted Price t-Value	Adjusted Price Coefficient	Adjusted Price t-Value
S1	0.0628	2.09**	0.0690	2.29**
S2	0.0309	1.13	0.0387	1.41
S3	L		L	
B1	-0.0051	-0.08	-0.0209	-0.32
B2	-0.9589	-2.34**	-0.0616	-2.44**
B3	-0.0126	-1.04	-0.0086	-0.71
B4	L		L	
CT11	0.2306	3.58*	0.2304	3.57*
CT2	0.2558	3.56*	0.2521	3.50*
CT3	0.2086	3.19*	0.2017	3.07*
CT4	0.1311	1.95***	0.1327	1.97***
CT5	0.1766	1.98**	0.1671	1.86***
CT6	L		L	
CT7	NA		NA	
A1	0.0334	0.30	0.0353	0.31
A2	-0.0408	-1.59	-0.0277	-1.07
A3	-0.0101	-0.40	-0.0034	-0.13
A4	-0.0166	-0.57	-0.0163	-0.56
A5	-0.0079	-0.37	-0.0053	-0.25
A6	L		L	
G1	0.1457	5.72*	0.1390	5.44*
G2	0.1223	5.29*	0.1163	5.02*
G3	0.0549	2.42**	0.0562	2.47**
G4	L		L	
CB1	-0.0453	-0.87	-0.0464	-0.89
CB2	-0.0290	-0.55	-0.0318	-0.59
CB3	-0.0654	-1.01	-0.0616	-0.94
CB4	L		L	

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Table 22 (Cont.)

CO	0.0025	2.98*	0.0027	3.14*
CP	-0.0016	-0.74	-0.0013	-0.63
W	0.0009	10.78*	0.0009	10.73*
T	-0.0067	-1.68***	-0.0001	-0.79
Intercept	2.1512		2.1318	
F-Value	20.9100		19.9500	
R^2	0.6670		0.6564	
Sample Size	(287)		(287)	

*Indicates Significance at 1 percent Level

**Indicates Significance at 5 percent Level

***Indicates Significance at 10 percent Level

L = Left out

NA = Not Available

6.6. Interpretation of Findings

Sellers Type (S1,...,S3)

The others group (S3) has been used as a base in the dummy variable set up. The coefficient of the cattle trader dummy variable is statistically significant and has a positive sign, both in primary and secondary markets. This implies that the price of cattle sold by cattle traders in primary and secondary markets was higher by about 4 percent and 3.5 percent respectively than the average price. One possible reason for this is that cattle traders have more information about the market conditions than any other

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type of sellers and hence can sell their cattle at a better prices than other sellers.

In the terminal market the coefficient of the farmers dummy variable is positive and statistically significant. This implies that when cattle sold by other sellers (S3) fetched an average price, the cattle sold by farmers received 7 percent more than average price.

Buyers Type (B1,...,B4)

The coefficient of the cattle trader dummy variable (B2) is statistically significant in all three types of market. The coefficient has a positive sign in the primary and secondary markets, but a negative sign in the terminal market. Since the others group (B4) has been used as a base in the dummy variable set-up the results indicate that cattle that were purchased by traders in primary and secondary markets received 3.5 and 2.5 percent more than the average price respectively. This seems true, because traders usually purchase healthy cattle in relatively good condition, that can be trekked long distances.

In the terminal market cattle that were purchased by cattle traders fetched about 6 percent less than the average price. This suggests that cattle in relatively good condition were purchased by final users such as public organizations, hotel owners and others.

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Cattle Type (CT1,...,CT7)

In primary and secondary markets the calf (CT7) dummy variable has been assigned an average price. The regression results obtained for the primary markets indicate that the coefficients of all the cattle type dummy variables (CT1,...,CT6) are statistically significant and have positive signs. Moreover, the results for the secondary markets (except for the heifer dummy variable (CT5)) reveal that the coefficients of all the other dummy variables are significant and have positive signs. Bullocks received 19 and 18 percent more than the average price in primary and secondary markets respectively. This suggests that cattle used for slaughter purposes are highly demanded in both primary and secondary markets. The results also show that cattle that can be used as draft animals (CT3) fetched a high price (about 18 percent more than average price) in primary markets, where cattle were mainly purchased by farmers.

In the terminal market six types of cattle (CT1,...,CT6) were identified. An average price has been assigned to steers (CT6) in the regression equation. All the coefficients of the cattle type dummy variables (CT1,...,CT5) are positive and statistically significant. Bullocks (CT1), bulls (CT2) and working oxs (CT3) received 23, 26 and 21 percent more than the average price respectively. This implies that cattle, with high

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amounts of carcass meat are in high demand in the terminal market, where the main reason for purchase is slaughter for local consumption.

Age (A1,...,A6)

In primary markets the regression coefficients of the dummy variables of age, except A2 (two teeth), are statistically significant. All coefficients of the significant variables are positive,except for A1 (upto 18 months). Since cattle with broken mouth (old cattle) have been used as a base, the negative coefficient of A1 (up to 18 months) shows that immature cattle fetch lower prices (about 3.4 percent) than average prices. The dummy variables with positive coefficients reveal that adult cattle receive higher than average prices. In secondary markets the A1 (up to 18 months) dummy variable was found to be statistically significant with negative value. No coefficient of the age group dummy variable was statistically significant in the regression results for the terminal market. This indicates that, in terminal market, where the major portion of cattle are purchased for slaughter the age of the cattle has no impact on price. By contrast, the age variable is important in primary collection markets, where cattle are needed for various purposes. This finding was further supported by field observation. We noted that cattle buyers were more interested in the age of cattle when buying cattle in primary markets than in terminal markets.

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Condition (G1,...G4)

The other important result of regression analysis pertains to the net effect of the different conditions of the cattle on price. The cattle in a poor condition were been used as a base. The regression coefficients for cattle in very good (G1), good (G2) and average (G3) condition were found to be statstically significant and have positive signs in all of the three types of market. In all cases cattle with very good condition obtained the highest prices followed by cattle in good and average condition. Thus, the demand for cattle with high fat reserves is high in every type of market.

Breed (CB1,...,CB4)

The Kereyou breed has been used as a base in the breed dummy variable group. The coefficient for the boran breed is statistically significant and has negative sign in the primary markets. The coefficients of the highland zebu and boran breeds are statistically significant and have negative signs in the scondary markets. This means that the boran breed in the primary markets and the boran and the highland zebu breed in secondary markets obtained below average prices. The researcher can think of no obvious reason to explain why the Kereyou breed received higher prices than other breeds both in primary and secondary markets.

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Number of Cattle Purchased per Buyer (CP)

This variable is used in the regression model as a proxy for demand per buyer. The results indicated that the coefficient of the variable is statistically significant (with positive sign) in primary markets only. This implies that, when the number of cattle purchased increased by one unit, the price per animal increased by 0.30 cents. This suggests that the cattle buyers, who intended to buy many cattle in the primary markets, were offering price incentives to attract cattle sellers. This reflects the presence of price competition in the primary markets.

Number of Cattle Offered per Seller (CO)

This is one of the continous variables included in the model. The coefficient of this variable is significant only at the terminal market. It suggests that when the number of cattle offered per seller incereased by one, the price per animal increased by 0.25 cents. This finding was contrary to our expectation. We intially assumed that sellers who brought many cattle for sale could give higher price discounts for the cattle they sold than those sellers brought only a few cattle to the terminal market. However, this finding, together with the above finding (number of cattle purchased per buyer), shows some sort of consistency. Those cattle traders, who paid high prices in the primary markets, received higher prices when selling in the terminal market.

Live Weight (W)

The coefficient of this variable is highly significant in all types of market. The results indicate that cattle price and the live weight of the cattle are directly related.

Time (T)

This refers to the hour during which the cattle was sold in a given market day, The coefficient of this variable is negative and statstically significant only in secondary and terminal markets. The negative value implies that cattle prices decrease as time elapses in a given market day. Cattle sellers usually ask for high prices in the morning and make discounts in the afternoon, in order to avoid the costs associated with keeping cattle for many days.

6.7. Summary

Conclusions about the variables which are important in determining cattle prices in each type of market, can be answered by examiming the relative effect of each independent variable on the dependent variable. The SAS/ STAT programme(used by the researcher)output contains a summary table which gives the contributions to change in R^2 made by each independent variable in the multiple regression. These estimates are good measures of the relative effects of variables on cattle prices. The results are given in Table 23.

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Table 23 Net Contribution to R^2 by Each of the Variables Specified to Affect Catle Prices

Variable	PRIMARY		SECONDARY		TERMINAL	
	Contribution	F-Value	Contribution	F-Value	Contribution	F-Value
Seller	0.0668	3.51**	0.0726	3.75**	0.0457	2.95***
Buyer	0.1021	3.57*	0.0516	1.78	0.0442	1.90
Type	1.2387	21.67*	0.9476	16.33*	0.2224	5.74*
Age	1.0852	22.78*	0.1568	3.24*	0.0312	0.81
Cond.	1.1577	40.51*	0.8141	28.06*	0.3989	17.17*
Breed	0.0297	1.04	0.7283	3.77**	0.0161	0.69
Offer	0.0226	2.38	0.0022	0.23	0.0687	8.87*
Purch.	0.0480	5.04**	0.0062	0.64	0.0042	0.54
Weight	5.9974	629.58*	2.5193	260.48*	0.9002	116.24*
Time	0.0104	1.10	0.1256	12.99*	0.0220	2.84***

*Indicates significance at 0.01 level.

**Indicates significance at 0.05 level .

***Indicates significance at 0.10 level.

The results indicate that live weight, condition and type of cattle are the most important variables in determining the prices of cattle in every type of the market. Age of the cattle was also found to have a significant influence on cattle prices particularly in primary and secondary livestock markets. Thus, the major findings of this study are that characteristics of the cattle are the most important factors determining cattle prices.

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CHAPTER SEVEN

SUMMARY, CONCLUSION & RECOMMENDATIONS

7.0 This thesis has been an attempt to analyse some important aspects of cattle markets in Ethiopia. It is based on a case study of seven selected markets in the two (Arssi and Shewa) adminstrative regions of the country. A survey of each of these seven markets was carried out in four phases. In conducting these surveys it was felt that the usual classification, by size, of markets into small, medium and big ones failed to capture socio -economic differences of participants across the different stages of cattle marketing. Markets differ with respect to type of main participants, buyers' reason for purchase, quality of cattle marketed and mode of transaction. The functions of markets, that is, the decision variables of participants, the response of demand and supply to exogenous changes in prices and incomes and the determination of prices should differ accordingly. The classification of the country's livestock markets into primary (collection), secondary (redistribution) and terminal (final) is clearly superior to size classification in bringing all such differences and was consequently used in the market surveys conducted.

Primary markets are located in and around agricultural production areas. The main sellers are producers. The main buyers are producers and cattle traders. Secondary markets are located at strategic geographical places on the routes

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between the cattle production areas and the major consumption centers. These are big size market mainly characterized by a wholesale trade. The main sellers and buyers are cattle traders. The source of supply include the surrounding of the market place as well as primary markets located at relatively distant places. As a result breed of cattle is more varied in secondary than in primary markets.

Terminal markets are found in and around major consumption centers, that is, cities, meat processing plant, etc. The main sellers here are cattle traders while the main buyers include butchers, hotel owners, public organizations and other final demanders of live cattle. Most of the cattle sold in the terminal markets are slaughtered either for commercial purposes or home consumption. Home consumption is more important during festivals than other times.

7.1. The survey results indicate that a large proportion of the cash need of the majority of the participant producers is met from the sale of livestock. Producers rely more on the sales of livestock to meet their basic living expenses during seasons of low crop production (June, July and August) than during seasons of high crop production (January, February, March and April). This seems to explain another finding, namely, that few producers reported higher prices as the reason for selling more

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livestock. It appears that producers are insensitive to price changes or, if they are, they possibly respond to higher price with lower supplies. In any case, the finding suggests that the response to price changes of supply at primary markets is not easily predictable.

7.2. Cattle prices increase as we move from primary to secondary and then to terminal markets. Due to high turnover of trade along the trade route studied, the total marketing margins, that is, the difference between purchase prices at the primary market and prices received by cattle traders on resale at the terminal market is large. A significant part of the marketing margin appears to constitute the traders' profit margins over the total marketing costs the traders incur in the course of trekking from primary to terminal markets.

7.3. Prices also vary within the same market type. Different factors are responsible for cattle price variation. These factors can be classified into two major groups, Viz, characteristics of the cattle traded and characteristics of the market. In an attempt to identify the more important factors determining cattle prices a semi-log general linear model was fitted to market survey data. Relevant statistical test showed that the parameters of the price determination model was different across market types. Therefore, in attempting to identify factors determining cattle prices, market by market analysis is preferable to analysing all of the markets taken together.

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However, it was found that beef cattle with large carcass and abundant fat reserves fetched the highest price in each type of market. The variable type of seller was also proved to be significant in determining cattle prices in all market types. This is an indication that the relative skills of sellers in bargaining is an important factor in price determination. Other factors explaining cattle price varations include age of the cattle in primary and secondary markets, time of sale in secondary and terminal markets, type of buyer and number of cattle purchased by each buyer in primary market only, breed of cattle in secondary market only and number of cattle brought for sell by each seller in terminal market only.

7.4. Finally, it emerges from our conclusion that policy makers can and should manipulate various policy instruments in order to promote the efficiency of the domestic livestock marketing system of the country. The following are particular points where government attention should be focused.

7.4.1. Livestock are sources of income for the majority of the producers in this country. To raise the share of producers from the sale of final price of livestock the government should establish an accurate and timely market information system that can place the producer in a better bargaining position vis-a-vis the cattle trader.

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7.4.2. Commercial cattle are trekked on hoof for long distances and many days without feed and water. This is the main cause of loss of weight and decrease of quality of meat which, in turn, results in an inefficient utilization of the livestock resource of the country. Therefore, the government policy should be directed towards improwing the trekking arrangements.

7.4.3. The main sources of supply of the livestock markets of the country are the traditional farms. As expressed in the responses of many livestock producers, cattle production in the country is not mainly for the market. Livestock producers sell cattle if and only if an urgent need for cash arises. This implies that the response of livestock supplies to exogenous price change are unstable. In order to maintain stability of livestock supply government policy should rather focus on encouraging the establishment of large livestock commercial farms. One of the ways of encouraging such farms is to assist individuals involved in cattle fattening programs by providing with credit facilities and other supports.

7.4.4. Although livestock marketing is a significant sector of economic activity in the country, there is inadequacy of data for time series and cross-sectional analysis of its economics. The government should support research aimed at overcoming the problem.

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APPENDIX I

LIVESTOCK MARKET SURVEY QUESTIONNAIRE

Name of the Market _____

Enumerator _____

Date/Month/Year _____

1. Cattle Sellers

1. What is your main Occupation ?

1. Farmer
2. Cattle Trader
3. Butcher
4. Pensioner
5. Wage earner
6. Producers' Cooperative
7. Broker
8. Others _____

2. How do you Promote your sales ?

1. Directly contacting the buyer
2. Through Brokers
3. Others _____

3. What are the type of buyers (their main occupation) that mostly purchase cattle from you?

1. Cattle traders
2. Hotel owners
3. Butchers
4. Government Organization
5. Farmers
6. Others _____

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4. At what time of the day does the sell of cattle reache its peak ?

   1. In the morning
   2. At mid-day (noon)
   3. In the Afternoon

5. What is the average time that you stay in the market to sell cattle ?

   From _____ hour to _____

6. What is the main reason for selling ?

   1. Urgent cash need for
      1.1. Wedding
      1.2. Medical service
      1.3. Payment of contributions
      1.4. Purchasing grain
      1.5. Others _____
   2. Shortage of grazing land
   3. Fear of drought in the futrure
   4. Fear of theft and Predatory animals
   5. To Purchase another cattle
   6. Attractive market prices at the moment
   7. Others _____

7. What is your opinion concerning the marketing fees paid in this market as compared with other markets that you know ?

   1. High
   2. Average

3. Low

4. I do not know

8. Indicate the names and addresses of the livestock markets that you usually attend to sell cattle.

	Address of the Market		
Name of the Market	Adminstrative Region	Awraja	Wereda

9. What type and how many cattle have you brought for sale into this market. ?

Type	Number
Bullock	
Bull	
Working Ox	
Cow	
Heifer	
Steer	
Calf	

10. Which type of cattle do you think that the market demand is high and fetch high price ?

1. Slaughtered Cattle
2. Working Ox
3. Milking cow
4. Steer
5. Heifer
6. Calf

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II. Cattle Buyers

1. What is your main occupation ?

   1. Farmer
   2. Cattle trader
   3. Butcher
   4. Producers' Cooperative
   5. Government Organization
   6. Broker
   7. Others _____

2. What is the main reason that drives you to purchase cattle at this particular time ?

   1. For commercial purpose
   2. To use as a draft animal
   3. For breeding
   4. For slaughter purposes
   5. Others _____

3. What method do you follow while approaching the seller to purchase cattle ?

   1. Directly contactin the seller
   2. Through broker
   3. Others _____

4. What are the type of sellers (their main occupation) from which you mostly purchase cattle ?

   1. Farmers
   2. Cattle traders
   3. Producers' oooperative
   4. Government enterprise
   5. Others _____

5. During what time of the day do you think that purchase of cattle is preferable in terms of price ?

   1. In the morning
   2. At mid-day (noon)
   3. In the afternoon

6. What is your opinion regarding the marketing fees paid in this market as compared with other livestock market ?

   1. High
   2. Average
   3. Low
   4. I do not know

7. Indicate the names and addresses of Livestock markets that you usually attend to purchase cattle.

Name of the Market	Addresse of the Market		
	Adminstrative Region	Awraja	Wereda

8. What are the type and number of cattle that you intend to buy at this particular market day ?

Type	Number
Bullock	
Bull	
Working Ox	
Cow	
Heifer	
Steer	

III. Cattle Sold

(See the code from the attached code sheet)

1. Main occupation of the seller (code) _____

2. Number of cattle that the seller brought for sale in this particular market day _____

3. About each cattle brought for sale and sold

   3.1. Type (code) _____

   3.2. Age (code) _____

   3.3. Condition (code) _____

   3.4. Breed (code) _____

   3.5. Live weight (K.g) _____

   3.6. Reason for selling (code) _____

   3.7. Price asked by the seller _____

   3.8. Maximum price offered by buyer (S) _____

   3.9. Minimum price offered by buyer (S) _____

   3.10. Actual price sold _____

   3.11. Time of sale _____

   3.12. Main occupation of the buyer (code _____

   3.13. Reason for purchase (code) _____

   3.14. Number of cattle actually purchased or planned to be purchased _____

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CODE SHEET

Code Number	Main Occupation (Seller/Buyer)
01	private Farmer
02	Stock Raisers
03	Finisher
04	Cattle Trader
05	Butcher
06	Hotel Owner
07	Broker
08	Wage Earner
09	Pensioner
10	Student
11	Producers' Cooperative
12	Government Organization
13	Public Organization
14	Others _____

Code Number	Reason for Seling
01	Commercial purpose
02	Urgent Cahs Need
03	Problem of Grazing land
04	Fear of Draught in the Future
05	Fear of Theft and Predatory Animals
06	Fear of Wide Spread Animal Diseases
07	Need to purchase Another Cattle
08	Others _____

Code Number	Reason for Purchase
01	Commercial Purpose
02	Fattening
03	Using as a Draft Animal
04	Breeding
05	Slaughter -Commercial
06	Slaughter-Home Consumption

Code Sheet (Cont.)

Code Number	Type	Age	Condition	Breed
01	Bullock	upto 18 Month	Very Good	Highland Zebu
02	Bull	Two Teeth	Good	Boran
03	Working Ox	Four Teeth	Average	Horro
04	Cow	Six Teeth	Poor	Kereyou
05	Heifer	Full Mouth	———	Others
06	Steer	Broken Mouth	———	———
07	Calf	———	———	———

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APPENDIX II

CATTLE PRICES AND INDEXES OF SEASONAL VARIATION

1. Average Cattle Prices (in Birr) and Average Live Weight (in Kilogram) of cattle in Ethiopia, 1972 to 1979 E.C. (1979/80-1986/87 GC)

Months	1972		1973		1974		1975		1976		1977		1978		1979	
	AW	AP	AW	AP	AW	AP	AW	AP	AW	AP	AW	AP	AW	AP	AW	AP
Meskerm	-	-	320	350	345	378	310	362	278	332	259	244	220	231	292	286
Tikemet	-	-	329	349	328	347	310	362	274	314	263	254	312	306	291	280
Hider	-	-	330	365	336	221	248	273	276	300	273	269	325	324	277	248
Tahsas	-	-	-	-	328	349	219	257	303	321	275	263	315	309	280	253
Tir	-	-	336	287	352	369	229	249	-	-	296	246	322	322	272	250
Yekatit	-	-	332	376	344	358	234	249	266	247	286	266	311	307	266	258
Megabit	-	-	354	405	342	356	254	272	-	-	308	306	309	283	250	242
Miazia	-	-	265	220	326	338	198	217	-	-	277	270	311	305	275	286
Genbot	-	-	246	234	315	347	277	333	-	-	284	329	296	339	280	297
Sene	-	-	304	328	330	382	292	351	-	-	295	309	308	329	261	269
Hamle	307	323	316	338	340	365	336	386	295	290	267	261	327	339	-	-
Nehassie	314	330	328	341	292	324	291	354	273	268	239	270	310	301	-	-

Source: Ministry of State Farms - Livestock Development and Marketing Enterprise. (Programming Services Department) Meskerem, 1980 E.C. (Unpublished).

AW = Average Weight. (in K.g)
AP = Average Price. (in Birr)

2. Price of Cattle/K.g Live Weight in Ethiopia, 1972 to 1979 E.C.
(1970/80-1986/87 G.C.)

1972	Meskerem	Tilemet	Hidar	Tahsas	Tir	Yekatit	Megabit	Miazea	Genbot	Sene	Hamle	Nehassie
1972	-	-	-	-	-	-	-	-	-	-	1.05	1.05
1973	1.09	1.06	1.11	-	0.85	1.13	1.14	0.83	0.95	1.08	1.07	1.04
1974	1.10	1.14	0.66	1.06	1.05	1.04	1.04	1.04	1.10	1.16	1.07	1.11
1975	1.17	1.17	1.10	1.17	1.08	1.06	1.07	1.10	1.20	1.20	1.15	1.22
1976	1.19	1.15	1.09	1.06	-	0.93	-	-	-	-	0.98	0.98
1977	0.94	0.97	0.99	0.96	0.83	0.93	0.99	0.97	1.16	1.05	0.98	1.15
1978	1.05	0.19	1.00	0.98	1.00	0.99	0.92	0.98	1.15	1.07	1.04	0.97
1979	0.98	0.96	0.90	0.90	0.92	0.92	0.97	1.04	1.06	1103	-	-
Average	1.07	1.06	0.98	1.02	0.96	1.00	1.02	0.99	1.10	1.10	1.05	1.07

Source: Computed Based on the Above Table

3. Index of Seasonal Variation Based on the Average of Actual Monthly Data. Price of Cattle/K.g. Live weight in Ethiopia, 1972 to 1979 E.C. (1979/80-1986/87 G.C.)

Month	Average	Index of Seasonal Variation
Meskerem	1.07	103.38
Tikemet	1.06	102.42
Hidar	0.98	94.69
Tahsas	1.02	98.55
Tir	0.96	92.75
Yekatit	1.00	96.62
Megabit	1.02	98.55
Miazia	0.99	95.65
Genbot	1.10	106.28
Sene	1.10	106.28
Hamle	1.05	101.45
Nehassie	1.07	103.38
Total	12.42	1200.00

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APPENDIX III

Estimated Regression Coefficients for Linear Model

$$P = a_0 + \sum b_i X_i + U$$

	Unadjusted Price		Adjusted Price	
Variables	Coefficients	t-Value	Coefficients	t-Value
M1	-111.350	-13.15*	-122.369	-13.62*
M2	-98.508	-11.59	-105.128	-12.07*
M3	L		L	
S1	-1.509	-0.23	-4.849	-0.72
S2	5.476	0.67	5.754	0.68
S3	L		L	
B1	-4.459	-0.71	-4.612	-0.72
B2	6.473	1.01	7.503	1.14
B3	-3.270	-0.76	-1.854	-0.26
B4	L		L	
CT1	77.536	5.44*	79.754	5.46*
CT2	37.427	2.51**	38.754	2.52**
CT3	22.715	1.80***	24.279	1.88***
CT4	-18.994	-1.52	-19.238	-1.50
CT5	0.950	0.08	1.287	0.11
CT6	-3.978	-0.35	-3.617	-0.31
CT7	L		L	
A1	-7.392	-0.57	-4.161	-0.31
A2	-15.116	-1.42	-11.985	-1.10
A3	-7.813	-0.78	-3.180	-0.31
A4	-3.582	-0.33	3.542	0.32
A5	7.475	0.88	13.402	1.53
A6	L		L	
G1	114.899	11.80*	110.130	11.04*
G2	74.443	10.57*	75.419	10.45*
G3	27.177	4.99*	28.576	5.12*
G4	L		L	

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(APPENDIX III Cont.)

CB1	-27.760	-2.51**	-36.006	-3.18*
CB2	-25.567	-2.03**	-28.814	-2.23**
CB3	-75.780	-2.25**	-26.953	-2.52**
CB4	L		L	
CO	0.974	2.43**	0.950	2.31*
CP	-0.251	-0.53	0.298	0.62
W	1.038	30.18*	1.039	29.49*
T	-4.142	-2.48**	-2.581	-1.51
Intercept	122.860		128.356	
V-Value	328.250		326.070	
R^2	0.824		0.820	
Sample Size	(2038)		(2038)	

*indicates asignificane at 1 percent level

**indicate significance at 5 percent level

***indicates significance at 10 percent level

L = Left out.

DECLARATION

I, the undersigned, declare that this thesis is my work and that all sources of material used for the thesis have been duly acknowledged.

Name Tewodros Tonge

Signature

Place and date of submission

Addis Ababa, July 6, 1998