

Towards Improving Livestock Export Marketing Support Services in the Somali Context: Survey Findings and Implications



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Funded by the EC and Danish Government

Improvement and Diversification of Somali Livestock Trade and Marketing Project

Discussion Paper No. 13
Improving Market Opportunities

INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

April 2008



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Improvement and Diversification of Somali Livestock Trade and Marketing Project

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Cover picture: The business environment in a typical Somali livestock market
(Photo by Terra Nuova)

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Executive Summary

This study was conducted with the main objective of providing empirical information that informs the debate and decision making process towards improving livestock trade and marketing in Somalia by enabling the development of effective and efficient marketing support services through accountable and competent rural institutions. The data were collected first through rapid appraisal which was then used as a basis for designing and implementing formal surveys among livestock traders and other market agents along three market value chains using structured questionnaires. Statistical and econometric methods are used in the data analysis. Some of the key findings of the study are highlighted here.

In order to understand how the market satisfy requirements of the importing countries in terms of product attributes and quality and how the trading business perform in terms of costs and margins, several questions were formulated. Based on the survey results, answers to those questions were examined and are highlighted here.

1: Are exporters aware of the importers needs and preferences about product attributes, quality and tastes?

The surveys show that majority of the exporters are aware of the importers' preferences for product attributes, quality and tastes and they target certain livestock traits to meet these preferences and tastes. However, there are significant proportions of agents of exporters and small traders who are not adequately aware of the importers requirements and preferences for certain attributes related to health and breed type, so they do not specifically target those traits in livestock quality though they in general procure animals of good or average quality that they are normally able to sell to buyers higher up in the market chains. There is a need to investigate in more detail the nature of consumer demand for live animals and meat in the importing countries, especially in order to understand if there are recent changes, and transmit that information through the market value chain to allow producers and traders fully exploit the market potential of Somali livestock.

2: Is there an informal grading and standard system practiced throughout the Somali livestock export marketing system?

This question was asked as there are no formal official grades and standards for live animals in the country. From the survey, it is observed that there are informal grades of cattle and shoats practiced throughout the Somali livestock export market value chain. The informal

grades are based on the age, sex, nutritional status, breed type, weight and health status of an animal. In general, the awareness of specification of grade and quality requirements is not uniform across different levels of market value chains and among all livestock traders. There are significant proportions of agents and small traders at the primary market level who are not fully aware of the various informal grades. Thus, there is information asymmetry along the market value chains. However, rather than fully differentiating different grades of animals, exporters try to maximise returns by constituting a batch of average grade of animals by taking specific proportions from different grades. So exporters may transmit grade information to the lower end of the value chain in a disaggregated or partial form rather than the composite grade, which the agents and small traders use in their purchase decisions and practices. This may partly explain the information asymmetry which may not hamper trade flow but it may result in the rejection of some animals or in lower average price at the higher end of the value chain, thus decreasing the profitability of livestock export markets. Alleviation of this problem requires the availability of uniform market information and practice of uniform grades throughout the market chain.

The development of a formal grading system that captures all the product attributes being demanded by importers and consumers has not occurred for a number of reasons. Firstly, the number of attributes demanded by consumers in the Middle Eastern market has not been clearly investigated. Empirical information indicates that these attributes are not only numerous but also vary between the importing countries and from consumer to consumer, overwhelming the ability of the traditional marketing system to identify all the important attributes. Secondly, the ability to accurately monitor the presence or absence of specific characteristics such as production processes, welfare practices, health and safety attributes have been limited by absence of supporting infrastructure, institutions and costs. Finally, exporters who are aware of such information use them to their own advantage rather than sharing with others as information asymmetry related to grades and quality requirements give them an advantage over their competitors in the market (see below). Thus, clearly there is a need to characterize the import markets for Somalia livestock.

3: Is there an autonomous flow of information on supplies, qualities and prices along the market value chains?

From the survey results, it is observed that in the absence of formal public sector market information dissemination system, there is a limited flow of information on the supplies, qualities and prices of livestock along the market value chains. This is because some traders, especially exporters, are aware of the specifications of quality requirements and prices in the importing countries while others are not and voluntary sharing of information may

not take place where information may be a source of market power. Field observations of livestock trade in Somalia indicate that traders use information asymmetry in order to exploit the market to their advantage. However, there is a possibility that knowledgeable exporters transfer their knowledge to their purchase agents and small traders down the value chain in a different form to suit locally used terms and descriptions to get what they need. In that case the information flows but in a transformed state, hence specific responses by market agents about product attribute requirements in the importing countries may differ. On its own it may not be harmful for existing market chains but in the long run, development of uniform terminology for similar grades and quality standards out of currently practiced informal quality and grades will be required for accessing wider export markets and for reducing transaction costs.

4: Is there a correlation between the grading system and prices?

The results of hedonic price analyses show that cattle and shoats available on the market are not strictly homogenous, and there are quality variations. The results show that there is an informal grading system and there is a correlation between the informal grades and prices. The hedonic price regression model indicates that the current cattle and shoats marketing system or pricing in Somalia reflect the relevant quality information. Thus, formal grades and standards can be developed along these lines.

5: Are different livestock populations within species similar genetically and therefore do not determine market value?

It is observed that some traders target breed type of the livestock they are purchasing depending on the target market as there are preferences for specific breed(s) in different markets. This practice is more prevalent in cattle. Consistent with breed preferences, there are also differences in prices. However, local breed names are used in the absence of scientifically based breed classification and breed type is the least important among the live animal quality attributes considered for grading. Also there is much more uniformity in terms of size among individual animals within a breed type or even among different breed types produced in Somalia hence this may not be a very key variable for quality or grade determination. In general, the assessment of traders' knowledge of live animal quality requirements in the import market provides insight for the development of formal grades and standards.

6: *Are the final prices, transaction cost and margins a function of product characteristics, intermediary type and characteristics, distance, transport mode, volume of business, destination market, size of operation and access to information?*

The components of cattle marketing costs varied across the market value chains which suggest different strategies to be adopted in order to reduce marketing and transaction costs. Focus must be given to improve the provision of market information services in order to reduce broker fees as this is one of the significant cost components across all the chains. The efficiency of trekking and transporting live animals also need to be improved along with reduction and harmonization of taxes and fees charged at different stages of livestock marketing in order to reduce risks and uncertainty and overall cost. Reducing the waiting period for the delivery of live animals to the final buyers in the importing countries will reduce the costs of feed and water thereby reducing the marketing costs of exporters in the importing countries and improving their competitiveness.

Traders identified several key constraints that adversely affect the livestock export business. In the domestic markets, these constraints include: lack of market infrastructure, fluctuations in livestock prices, high costs of animals, unauthorized multiple road taxes and poor market support services. The problems in the destination markets (importing countries) include: delayed payments, low selling prices, lack of recognized certification, seasonal fluctuation of import demand, low preferences for Somali animals and import bans. Solutions to some of these problems will require institution building and large public investments on infrastructure which may be beyond the scope of this project. Some of the recommended actions to alleviate the identified constraints (not necessarily in order of importance) are given as below.

- *Provision of market information services:* including use of web-based instruments and promotional videos in order to collect and disseminate information on export and domestic markets.
- *Development of a system of certification for health and quality assurance:* a system acceptable by all stakeholders including ministries, local authorities, market agents and international partners. Extremely pertinent is the issue of ensuring that it is cost effective and sustainable to end users.
- *Provision of short-term training to traders:* in order to increase traders' awareness about global market situations, international rules and regulations, business practices etc., quality and safety standards of products required that will enhance their competitiveness in the export market.

- *Empowering livestock traders through strengthening trade associations:* existing formal institutions need to be strengthened and complementary role of informal ones enhanced through sharing tasks and responsibilities, for example, in the grading system and in the development of health self-certification system.
- *Organize regular trade missions to Middle East markets:* in order to allow market agents and officials to have more direct interactions with importers and access first hand knowledge about export market opportunities.
- *Harmonize taxes and fees charged:* in order to reduce risks and uncertainty in market and thus allow fair competition among traders.
- *Gender perspectives:* to facilitate gender mainstreaming. Rapid assessment of female traders' perspectives should be made while discussing design of pilot interventions.
- *Breed characterization:* to provide a scientific basis for classification of existing breeds to exploit their full market potential as there are indications of differences in preferences and prices for specific breed types in different markets.

The major weakness of this study is that it is mainly limited to the supply side issues within Somalia. Information on the demand side in the importing countries still need to be collected and analyzed in order to better inform the livestock export interventions in Somalia.

1. Introduction

1.1 Background and Justification

The economic and cultural importance of livestock sector in Somalia is very well researched and documented (for example, see: FAO, World Bank and the European Union, 2004; Little, 2005; Little 2003; Little, 1996; Holleman, 2002; Steffen et al., 1998; EU, 1996; EC-FAO, 1995; Stockton, 1987). At the household level, sale of livestock is a source of revenue to the many Somali livestock producers who comprise the majority of Somali population. There are several marketing intermediaries who depend on the revenue from the livestock sale for purchases of food and other necessities. Thus, the livestock sector has huge impact on food security and poverty in Somalia as the livestock sector is an important source of foreign exchange, much of which is used to finance imports of food and basic necessities. For example, in Somaliland, about 80% of foreign exchange earning from livestock export is used to import food staples. In general, it is well recognized that trade in livestock and livestock products in Eastern African countries assume considerable social and economic importance (for details, see: FSAU, 2001; Little, 2006; Little, 2001; Little et al., 2001; Little and Mahmoud, 2005; Mahmoud, 2001; Shank, 1997; Teka and Azeze, 2002; Teka et al., 1999). For example, the share of livestock in the agricultural gross domestic product of Somalia, Ethiopia, and Kenya in 2000 was found to be 88.2%, 32.5%, and 52.4%, respectively (Knips, 2004).

The Somali livestock Sector is principally export oriented. Somali Livestock is mainly exported to the Middle East and neighbouring Kenya. The livestock trade has been continued by traders with support from local authorities and informal institutions even after the collapse of the Somali central government in the early 1990s due to civil war. Actually, it is observed that the stateless Somalia is one of the largest exporters of live animal in the world (Little, 2005). Although the trade mainly involves live animals, export of chilled meat to some Middle East countries has also been gaining importance. It is, however, generally understood that there is high but currently under exploited potential for reaping greater benefits for stakeholders in the Somali livestock sector. The livestock export opportunities to the Middle East countries is very competitive and requires strict food quality and safety requirements. In this regard, the important question is: what improvements can be made in the ongoing informal marketing systems and institutions and how can they be achieved in order to overcome the constraints limiting the potential benefits of livestock sector to different stakeholders?

Terra Nuova has been working to enhance access to livestock export markets by the Somali livestock producers and other marketing intermediaries improving the livelihoods of the many Somali pastoralists. Among the activities being undertaken are efforts to help add values to the livestock and livestock products destined for export markets by supporting Somali pastoralists and traders to improve marketing support services and institutions.

The proposed work on improving the quality of the Somali livestock and livestock products requires a good diagnostic analysis of the livestock export marketing including also identification of key entry points for interventions. For instance, information is required on traders' knowledge of live animal quality requirements for export markets, the elements of demand of the Somali livestock and livestock products, the relationship between quality attributes and prices, marketing costs, margins and the characteristics of economic agents involved in the sector and also on which and how Somali institutions could be empowered to offer the relevant livestock marketing support services.

1.2 Objectives of the Study

The main objective of this study is to provide empirical information that informs the debate and decision making process towards improving livestock trade and marketing in Somalia by enabling the development of effective and efficient marketing support services and accountable and competent rural institutions. The specific objectives are to generate information that could be used to:

- Improve livestock export marketing institutions and support services
- Standardize quality and the criteria used for grading livestock for export
- Identify hazard analysis critical control points (HACCPs) along marketing chains
- Develop and formalize quality control systems
- Link primary, district & regional markets more effectively
- Reduce transactions costs for traders
- Increase competitiveness for producers
- Strengthen the regulatory role of local administrators
- Develop and disseminate relevant market information to stakeholders

1.3 Research Questions

In order to guide the collection of data, the research team discussed and agreed on a broad set of questions that would facilitate identification of data sources, check lists and structured questionnaires as appropriate. The questions formulated were related to the specific aspects of livestock marketing such as grades and standards, traders' awareness of import quality specification requirements, prices, transaction costs and margins, and flow of information. Some of the key research questions are summarized as below:

1. Are exporters aware of the importers' needs i.e., preferences for animal attributes, quality and tastes?
2. In the absence of formal official standards, is there an informal grading and standard system practiced throughout the Somali livestock export marketing chain to meet the needs of importers?
3. Is there an autonomous flow of information on supplies, qualities and prices along the market value chain?
4. Is there a correlation between the grading system and prices?
5. Are different livestock populations within species similar genetically and therefore do not determine market value?
6. Are final prices, transactions costs and margins a function of product characteristics, intermediary characteristics, distance, transport mode, types of intermediaries, volume of business, destination, size of operation and access to information?

The remaining sections of this report are organized as follows. The next section presents the research methodology used for the study. This is followed by the presentation of the formal survey results in section 3. The results of descriptive and econometric analyses related to traders' personal profile and business characteristics, traders' knowledge of live animal quality attributes demanded in the export market, trading practices, prices, marketing costs, marketing margins and profits are discussed in this section. The discussion of the major hypotheses of the study is also made in light of the results of descriptive and econometric analysis of survey data analyses. The livestock marketing constraints are also discussed in this section. Finally, the way forward and recommendations of the study are made.

2. Research Methodology

An earlier literature review by Terra Nuova (Stockbridge, 2004) provided a base line status on where to begin the inquiry and data collection for the purposes of this study. Taking insights from the above documents and other literature cited in the introductory section, a two stage approach was followed. First, a participatory rapid appraisal (PRA) was conducted by Terra Nuova field staff with assistance from locally recruited helpers involving key informant interviews, case studies and group discussions with key stakeholders including traders, brokers, local government authorities, community elders etc., in different parts of Somalia. Information and suggested check list instruments from the Stockbridge (2004) study were used along with new ideas and questions. This allowed developing maps of principal market chains serving different export points or ports, identifying types of market actors at various stages in the chains, roles performed by local authorities and informal institutions like Clan leadership in facilitating livestock trade. The results were synthesised at a planning workshop held in November 2005 and attended by the ILRI and Terra Nuova research team members, Terra Nuova field staff and selected Somali stakeholder representatives (Terra Nuova, 2005). The meeting used the outcome of that synthesis to guide the next steps in the design and implementation of the formal surveys.

2.1 Selection of Market Value Chains and Secondary Markets

Normally any export is supposed to satisfy the market needs of the importing country. Middle East and Kenya markets being the principal destinations for Somali animals, it is important to understand the full range of market demand requirements in the importing countries to exploit full potential of Somali live animal export. However, knowledge about the Middle East and Kenya market requirements is partial and cursory at best, which is a constraint to plan and promote the export trade. It is beyond the scope of this study to undertake a full scale demand assessment study in the importing countries to fill this gap. Given this situation, it was hypothesised that on-going export was an indication that exporters were aware of the importers' requirements, which they used in their procurement decisions from the domestic supply chains. On that basis, it was decided that a value chain approach would be used to analyse the marketing systems and its constraints and opportunities and that the starting point would be the export ports and follow the supply chains supplying those ports. Accordingly Berbera and Bossaso export ports which deal with export of live cattle, goats, sheep and camels to the Middle East market including the Yemen, United Arab Emirates, Oman, , Bahrain, North Africa Egypt and Libya and Garissa serving the Kenya market for cattle were chosen. Small ruminants are rarely exported to Kenya. Garissa itself is located within Kenya and it was chosen as the export point because there is no formal export point

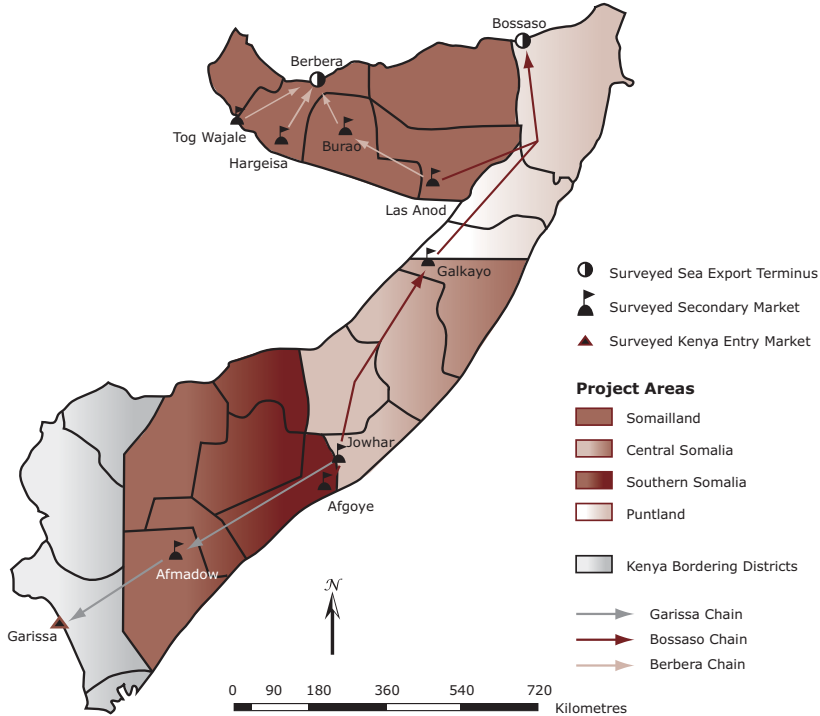
or port on the Somali-Kenya long border serving the Kenya market, rather animals are assembled in Garissa for onward movement to various Kenyan market destinations (Nairobi, Thika, Mombasa, Mwingi, Kitui, Machakos, etc.). The map showing all the market value chains is given in Figure 2.1.

The next step was to choose market value chains and secondary markets serving each of the three export ports. Each export port is served by a set of domestic market value chains connecting a number of secondary markets, staging points further linking several primary markets. At the primary market level, there may be overlap between different market value chains as animals from the same geographical area may serve different value chains. Also nomadic nature of production requiring seasonal movement according to rainfall and weather changes and pasture availability means that a given area may supply slightly different market chains in different seasons.

Based on PRA results on market locations, supply hinterlands and supply volumes of different species, for Bossaso market value chain, five secondary cattle markets and their hinterlands were considered: Jowhar, Beled Weyne, Afgooye, Wanle Weyne, and Las Anod. Of these secondary markets, Jowhar and Afgooye were selected. There are about 10 primary markets supplying live animals to Jowhar market and 6 of these markets were located within a distance of 40 km from Jowhar market. In the case of small ruminants Las Anod and Galkayo were selected. There are about 13 primary markets supplying live animals to Las Anod market and 8 of these markets are located within a distance of 120 km from Las Anod. For Galkayo there are 11 secondary markets and most of them are located more than 180 km from it. The selection of the survey markets was done based on the relative importance of volumes and animals traded, and state of security in the areas where these markets are located, and also accessibility.

In the case of Berbera market value chain, only Tog Wajaale secondary market was selected for cattle and Hargeisa and Burao secondary markets were selected to draw sample respondents for small ruminants. The Tog Wajaale market has about 9 primary markets and all are located within 28 km radius of the market. In the case of Hargeisa, there are about 15 primary markets which are located within 100 km radius from the main market. In the case of Burao there are 11 primary markets and almost half are located within the radius of 100 km from the main market.

Figure 2.1: Somali Livestock and Livestock Product Marketing Chains



In the case of Garissa market value chain, seven secondary cattle markets were considered: Jowhar, Afgoye, Baydhoba, Wanle Weyne, Afmadow, Dinsor, and Salegle. Two of the secondary markets, Jowhar and Afmadow, were selected for cattle. Thus Jowhar was chosen both for Garissa and Bossaso market chains because of its overlapping hinterland for both chains. There are about 10 primary markets for Jowhar and 8 primary markets for Afmadow market. There is no secondary market selected for small ruminants from the Garissa market value chain since the chain to Kenya addressed export of cattle alone.

2.2 Selection of Types of Respondents and Samples

Based on the PRA results, it was observed that four types of traders were mainly involved in the value chains being considered: export traders, agents of exporters and small-scale (petty) traders (*Gaadley*¹, *Gedisley*², and *Jeeble*³) and brokers (*Dallaal*⁴). Therefore, it was decided that samples from each of these categories would be surveyed plus some guarantors (*Daamin*) be interviewed.

The determination of the appropriate number of livestock traders and brokers (*Dallaal*) and guarantors (*Daamin*) to be surveyed was guided by the principle that the sample size needed to be representative of the type, sufficient for some statistical analyses and also that could be surveyed within the appropriate time and fund available. A minimum of 50 traders, agents, brokers and petty traders guarantors, collectively, was thought to be sufficient in each marketing chain for each of the two most popular types of livestock traded, that is, shoats (sheep and goats, collectively) and cattle.

It was, however, found that in some markets both small ruminants and cattle were traded, rather than just one of the two animal species. In such a case, the required total number of trading agents to be surveyed in the market value chain was raised to 60. The required number of marketing agents to be surveyed was then distributed proportionately across the selected markets in the chain according to their size for the particular species of animal being considered. The size of a market was judged on the basis of the volume of supply of animals of the relevant species. After the required total number of trading agents in a particular market was determined, the next step was to determine the required number of survey agents of different types, that is, exporters, agents of exporters, small traders (*Gaadley*, *Gedisley*) and brokers. This was achieved by distributing the total required numbers of survey agents in the market across these different types of market agents on the basis of their numbers/concentration in the market. When the calculated number of survey agents

¹ A *Gaadley* is a small-scale livestock trader who buys animals at low cost in a market and then sells them later at a profit in the same market, usually a district market. A *Gaadley* may also try to add value to the purchased animals through supplementary grazing and feeding, or by offering treatment for health problems.

² A *Gedisley* is a small-scale livestock trader who buys animals at low cost in one place/market and then sells them later in a different market(s) so as to exploit price differences between the two.

³ A *Jeeble* is a petty trader operating at a village level. He/she gathers animals from local villages and sells them later at a profit in satellite markets. The terminology is commonly used in Somaliland and the areas of Puntland bordering it.

⁴ Brokers (*Dillaal*) are central features of livestock trade throughout the country. They play a role in virtually all transactions that are concluded in markets, as well as outside markets. They help sellers find buyers and also play an active role in negotiating the price. There is always a broker involved in a transaction. If buyer and seller have each engaged a broker, then two brokers are involved. Brokers are paid a fee for their services, which is usually a fixed amount for each livestock in the transaction. The fee in any market place appear to be uniform and differ only according to species.

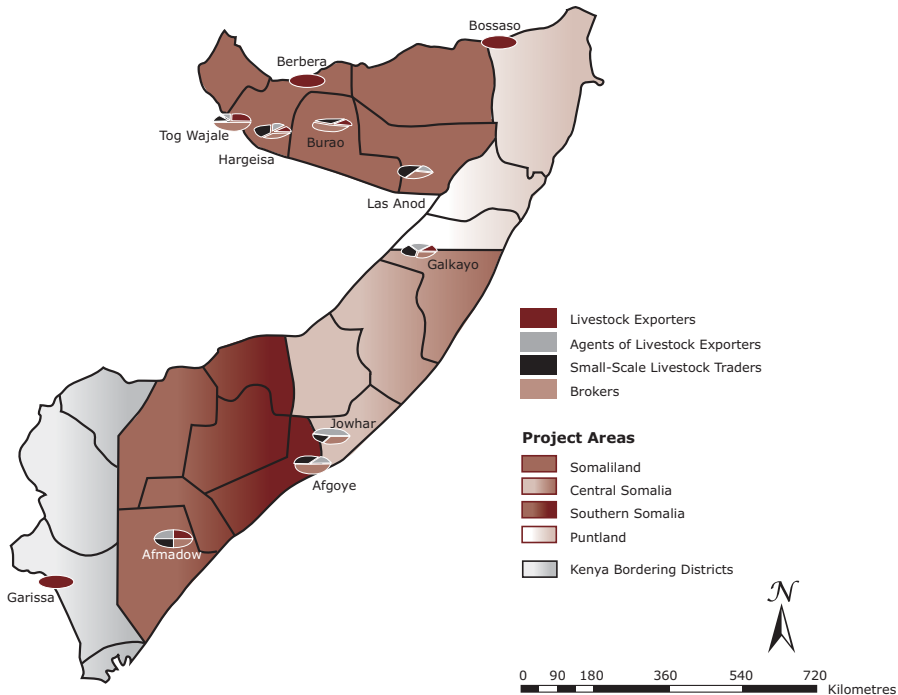
of a particular type in a market was too small, a slightly higher number was supposed to be taken. Once the numbers were decided for a specific market, selection would be random from traders present on a selected market day.

Following this approach, a total of 170 livestock traders (40 exporters, 54 agents of exporters and 76 small scale traders) and 94 brokers were interviewed between December 2005 and January 2006. A total of 11, 17 and 12 livestock exporters were surveyed in the Bossaso, Berbera and Garissa marketing chains, respectively. A total of 54 agents of exporters were surveyed including 35 in the Bossaso chain, 10 in the Berbera chain and 9 in the Garissa chain. A total of 76 small-scale traders were interviewed including 13 Gaadley, 18 Gedisley and 45 Jeeble. Thirty six of the small-scale traders operated in the Bossaso chain, 25 in the Berbera chain, 7 in the Garissa chain and 8 in both the Bossaso and Garissa chains (Figure 2.2). The distribution of the sample of traders across different categories of market agents is done on the basis of their numbers/concentration in the market. However, though the sampling was to be done randomly, one serious deficiency was observed in the final sample in that none of the samples for exporters, agents of exporters and brokers were females. Only 4 of the 76 small scale trader samples were females. A lot more females are observed to engage in domestic livestock trade compared to export. During the implementation of this study fewer females were accessible as respondents due to their socio-cultural sensitivity.

2.3 Development of Survey Instruments and Conducting the Surveys

Structured survey instruments were developed each of the target categories containing information on personal and business characteristics, their knowledge about specifications of quality requirements and their applications in purchase/transaction decisions, trading practices, costs and margins, and problems faced in conducting business. The instruments were extensively discussed with local stakeholders and pre-tested to see if the type of questions asked matched the type of data requirements and the perceptions of the potential respondents so that they would be able to answer. Based on feedback received from those discussions and pre-tests, the instruments were revised.

Figure 2.2: Distribution of the Survey Respondents along Selected Market Chains



Data collectors were recruited from local market chains with adequate knowledge about the market chains, their hinterlands and local institutions. Special consideration was given to language and communication skills. During administration of questionnaires for data collection, Terra Nuova field staff supervised the enumerators giving regular feedback on questions of clarification and any issues arising during the interview process. This ensured that relevant data were collected and possibilities of error and differences in interpretation of the same topic by different enumerators were eliminated or at least minimised.

Collected data were computerised which was facilitated by pre-coding most closed ended questions. Where qualitative answers and open ended questions were involved, post-coding was done before entry into computer.

2.4 Method of Data Analyses

Both descriptive statistics and statistical and econometric analyses of the data were made. The descriptive statistics such as means, standard deviations and frequencies were used. The

univariate and multivariate analysis of variance statistical methods of analyses were used to assess the relative importance of live animal quality attributes. The econometric analysis is used to analyze the determinants of traders' relative importance ranking of quality attributes, the relationship between quality and prices and the determinants of marketing margins. The determinants of relative importance rankings of live animal quality attributes are analyzed using ordered probit regression model. The effects of various live animal quality attributes on the cattle and shoats buying and selling prices are analyzed using hedonic regression model. In the hedonic price regression model, prices are assumed to be a function of quality attributes demanded in the market. The effects of various variables affecting marketing margins are analyzed using ordinary least square regression. The methods are discussed in more detail in appropriate sections where the analysis and results are presented.

3 Survey Results and Discussions

3.1 Marketing Activities and Requirements along the Market Chains

The marketing activities, procedural arrangements and regulatory or informal requirements along the Somalia Marketing Chains were comprehensively reported in previous studies (Stockbridge, 2004, Little, 2005, 2006). The present study confirmed the existing arrangements and went further in reducing the information into a pictorial frame of flow maps showing those activities, arrangements and requirements (Appendix 1). Further more, in order to describe more effectively the seven (7) secondary markets surveyed; geo-referencing of their catchments areas (production areas/satellite markets) was done and developed into maps (Appendix 2). These will be helpful to interpret the survey findings and relate them to specific market chains in a visual manner.

3.2 Personal and Business Profiles of Livestock Traders

Information on personal profiles and business characteristics of traders is useful in identifying, designing, and implementing effective and efficient market support services to improve the livestock trade and marketing in Somalia. The personal and business profile data for different categories of livestock traders in Somalia is collected through sample survey of livestock traders and is summarized in Table 3.1. In this section we explore if there are differences in the personal profiles and business characteristics of different types of traders operating in different market chains.

Age of Livestock Traders

It is observed that there is a clear age difference among the different livestock traders. More than 97% of the exporters are found to be greater or equal to 30 years old while in the case of agents of exporters and small scale traders about half of the traders are under 30 years of age, the other half are older than 30 years. In general, the older age of livestock exporters may indicate that livestock exporting business requires more financial resources and experience which come through time. Brokers are also observed to be relatively older as compared to other livestock traders.

Level of Formal Education

In terms of the levels of formal education, five categories of (or levels) education were formed: no formal education, elementary schooling, intermediate schooling, secondary, and

others. There is clear variation in the levels of formal education among the different types of livestock traders. About 68% of exporters have at least intermediate level of education compared to 58% for agents of exporters. On the other hand, 51% of small scale traders do not have any formal education. The brokers have similar level of education to the small scale traders whereby about 55% of them do not have any formal education.

Number of Languages Spoken

The number of languages spoken by livestock traders has implications for the traders' capacity to expand their business outside their own locality or social network and to take advantage of export market opportunities. There are several different languages spoken by livestock traders in Somalia: Somali, Arabic, English, Swahili, and others. All of the livestock traders were found to speak Somali. However, the proportions of English and Arabic speaking traders are larger for the exporters. About 38% of the exporters speak English language as compared to the overall 9% in the case of small scale traders and 4% in the case of agents of exporters. Smaller traders and agents of exporters spoke fewer languages than the exporter traders. All brokers spoke Somali and only very few spoke other languages like Arabic and English.

Previous Business Experience

Before their current job, livestock traders in each category were involved in other activities in the livestock trading business or outside. For example, an exporter might have been an agent or petty trader before graduating to become an exporter. The results show that more than 20% of the livestock exporters were either *Gaadley* or *Gedisley* before becoming the livestock exporter. In other words, the livestock exporters were small-scale (petty) traders before becoming exporter or they were small-scale traders who evolved over time in to large scale livestock traders or as exporters. Similarly, more than 25% of the agents of exporter were also either *Gaadley* or *Gedisley* before they become the agents of the exporters. Thus, there is very important occupational dynamics among the livestock traders. That is, the small-scale traders who gained experience and built wealth over time evolved in to large scale livestock traders either as an agent of exporters or exporters. Then, one may hypothesize that the current small-scale traders might become either the agents of the livestock exporters or livestock exporters themselves in the future. This is especially so if they operate in areas either close to overseas port terminuses or cross-border regions such as for the Kenyan chain. However such a possibility may not exist in the hinterland (P. Little 2005).

On the other hand, the small-scale traders were mainly brokers or livestock producers before becoming livestock traders (Table 3.1). It is also interesting to note that about 8% of the

small-scale traders had been exporters before indicating that they might not have succeeded in the export business. The normal expected pattern for the small-scale traders is to grow and evolve into exporters or other big businesses over time. The effect of repetitive livestock bans especially by KSA grossly impacted on trade opportunities and therefore many had to change business or just scale down. Such eventualities may continue or emerge under similar circumstances in the future with considerable impact on the lives and livelihoods of people engaged in the risky livestock trading business. Many brokers were observed to have a petty trader background.

Years of Experience in Current Business

In terms of years of experience as a livestock trader, there is a wide variation among traders in each trader type. Among exporters and agents of exporters, it is observed that about 25% of exporters, 20% of agents of exporters and 34% of petty traders have more than 15 years of experience in one or other type livestock trading business. Brokers generally have shorter experiences indicating that perhaps after a period of brokering experience they move into proper trading business. As compared to livestock traders, fewer brokers have less than 5 years of experience.

Business Start-Up

The livestock traders either self started or purchased the livestock trade business. Similar pattern is observed in terms of how livestock traders business had been started among different classes of livestock traders in that in more than 80% of the cases the livestock trade business was self-started. There is no significant variation across the different market chains in the way small-scale livestock traders initiated their business.

Forms of Business Ownership

There are different forms of business ownership among the Somali livestock traders. These include: sole ownership, two partners, several partners, and other forms. Overall the sole ownership is the dominant form of business ownership among Somali livestock traders, across all the livestock trader groups accounting for more than 50% of traders. However, sole-ownership is less important among the exporters and agents of exporters as compared to small-scale traders as the whole. The sole ownership accounts for more than 50% among the exporters and agents of exporters while for the small-scale traders group sole-ownership accounts for more than 80%. The variation in terms of business ownership among the different classes of livestock traders might be due to differences in the resources required for livestock trade at different levels. The livestock exporters and agents of exporters require

more financial resources and network (social capital) which can be partly achieved by resource pooling and partnering.

Ownership of Business Offices

The livestock traders were also asked whether they own offices to run their business. Owning of business offices decreases the transaction costs of doing trade as it is easier to find and communicate with traders with established business offices. It is observed that about 80% of exporters own business offices and only about half of the agents of exporters own business offices and none of the small scale livestock traders own an office. This indicates, given poor communication facilities, the difficulty in establishing contacts with small scale traders.

Business Diversification

Whether livestock trading is a specialised business or traders are involved in a diversity of activities may determine their volume of business and business practices, strategies and performance. Diversification may be used as a vehicle to reduce risk of business losses from livestock trade such as drought and livestock trade ban due to disease outbreaks. The degree to which livestock traders diversify away from livestock trade was also examined in the survey. Some of the other activities in which livestock traders are engaged include: crop farming, livestock production and trade in other commodities such as food, clothes etc.. It is observed that more than 55% of the traders across all groups and about 78% of brokers are engaged only in livestock trade indicating the critical importance of livestock trade to the livelihood of livestock traders. Some of the observed useful diversification patterns include: (1) small-scale traders are less diversified than the exporters and the agents of exporters, (2) the small-scale traders diversify into crop farming and livestock production, trading may be a seasonal activity, and (3) the exporters and agents of exporters, when diversify, do so by engaging in other types of trade rather than livestock rearing or crop farming as they are mostly urban based. Lack of diversification makes small scale traders more vulnerable than exporters and agents of exporters for their livelihood in case of export bans or other kinds of uncertainties affecting the livestock trading business.

Association and Group Affiliations

Membership of formal or informal associations or groups creates social capital which can help reduce transaction costs of trade (Fafchamps and Gabre-Madhin, 2001; Fafchamps and Minten, 1999; Gabre-Madhin, 2001). It also serves as a mechanism to ensure the concerns of livestock traders are addressed jointly, which otherwise would be difficult if traders acted individually. In terms of membership of institutions by the livestock traders in Somalia, it is observed that traders could either be members of trade associations or of informal group(s).

Some of the associational organizations cited by the exporters included the Livestock Traders Association that is the umbrella organisation for livestock traders within the Puntland chamber of Commerce, Industry and Agriculture and the Somaliland Chamber of Commerce. None of the small-scale traders are found to be a member of trader associations while it is observed that 33% of exporters and 6% of agents of exporters are members of trader associations. However, small proportions of small-scale livestock traders are found to be a member of a group. Membership to associations appears to be more common at the upper end of the chain where more knowledgeable traders operate, especially among exporters who have to establish contacts with the importing countries, and have access to institutions like Chamber of Commerce that can reduce transaction costs. Lower down the chain the clan formed the main basis for homogeneity and was often sufficient to solve any issues that would arise in the business transaction. However, it is argued that livestock business activities based on clanship and clientele can also be as manipulative as they can also be beneficial to traders (Little, 1992).

Business Contacts

Having well-established business contacts reduces transaction costs related to the search for business partners and making business deals on a basis of mutual knowledge and trust. In terms of business contacts in the importing countries, the exporters had either a contact office (15%) or a contact person (80%). Surprisingly, about 5% of the exporters do not have any contacts in the country to which they export and undertake export to sell at the spot market or make temporary contact on arrival. None of the exporters in the Garissa market chain had a contact office in Kenya where they export animals while about 36% and 12% of the exporters in Bossaso and Berbera, respectively, had contact offices. More than 80% of the exporters in either Bossaso or Berbera had a contact person while the corresponding figure for Garissa is about 58%. The Kenya based Somalis provide a useful contact for traders operating in Garissa market chain.

Table 3.1 Personal and Business Profile of Livestock Traders in Somalia

Personal Characteristics		Exporters (%)	Agents of Exporters (%)	Small Scale Traders (%)	Brokers (%)
Age	<30 Years	2.5	46.3	40.8	11.1
	30-45 Years	67.5	14.8	7.9	42.6
	>45 Years	30.0	38.9	51.3	53.2
Level of Formal Education	None	15.0	22.2	52.6	55.3
	Elementary	10.0	18.5	13.2	10.6
	Intermediate	35.0	37.0	13.2	22.3
	Secondary	30.0	3.7	13.2	4.3
	Others	10.0	18.5	13.2	7.5
Language Spoken	Somali	100.0	100.0	100.0	100.0
	Arabic	52.5	35.2	19.7	17.0
	English	37.5	3.7	9.2	8.5
	Swahili	12.5	3.7	0.0	--
	Others	12.5	5.6	3.9	--
Previous Occupation	Agents of Exporter	17.5	5.6	7.9	2.1
	<i>Gaasley</i>	20.0	25.9	--	26.6
	<i>Gedisley</i>	22.5	38.9	--	21.3
	Brokers	15.0	24.1	30.3	--
	Livestock Producers	17.5	24.1	10.5	57.5
	Drovers	7.5	5.6	--	--
	Guarantors	0.0	0.0	2.6	--
	Butchers	0.0	0.0	4.0	3.2
Years of Experience	<5 Years	17.5	29.6	21.1	9.6
	6-10 Years	22.5	27.8	21.1	20.2
	11-15 Years	35.0	22.2	23.7	31.9
	>15 Years	25.0	20.4	34.2	31.9
Business Start-up	Self-Started	85.0	79.6	92.1	--
	Purchased	7.5	5.6	1.3	--
	Others	7.5	9.3	6.6	--
Form of Business Ownership	Sole Ownership	57.5	55.6	88.2	--
	Two Partners	27.5	16.7	7.9	--
	Several Partners	12.5	27.7	4.0	--
	Others	2.5	0.0	0	--
<i>Own Business Office in Somalia</i>	80.0	46.3	--	--	--
Contacts in Importing Country	A Contact Office	15.0	--	--	--
	A Contact Person	80.0	--	--	--
Type of Customer in Importing Country	One Regular	32.5	--	--	--
	Several Regular	30.0	--	--	--
	Any Willing Buyer	37.5	--	--	--
Engagement in Other Activities	None	65.0	53.7	76.3	77.7
	Crop Farming	0.0	11.1	10.5	12.8
	Livestock Production	7.5	13.0	11.8	18.1
	Other Trade	27.5	22.2	7.9	2.1
Membership in Associations	Trade Associations	33.0	5.6	0.0	--
	Groups	5.0	7.4	7.9	56.4
	Sub-clan member	--	0.0	--	35.1
	Friends	--	0.0	--	28.7
N		40	54	76	94

Note: -- Indicates information is not available. Percentages may not add up to 100 due to rounding or due to multiple answers.

3.3 Livestock Trading Practices

The understanding of livestock trading practices is important for designing, developing, and implementing effective and efficient livestock market support services. In this survey detailed data on trading practices of livestock traders is collected. First, all sample traders were asked whether they use regular supply agents to procure animals. Then, for those who use regular supply agents, several follow-up questions were asked. How the commitment to meet delivery date is achieved by the supply agents? What are the means of financing and paying the supply agents? Are the agents paid on commission? What is the timing of the full payment? What is the frequency of exporters buying animals from petty traders? What is the frequency of exporters buying animals from producers? What are the frequencies of exporters facing different problems during procurement? What are the implications of current trading practices for the efficiency of livestock marketing system? The following sections address these questions for livestock exporters, agents of livestock exporters, and small scale traders.

The trading practices of livestock exporters and agents of exporters for all market chains are summarized in Table 3.2. About 40% of exporters use regular supply agents while only about 26% of agents of exporters use regular supply agents. Other exporters procure animals from spot markets, so face risk and uncertainty in meeting the demand in the importing countries in a timely manner and in desired volume. It also increases the transaction costs of livestock marketing as the exporters have to search for new supply sources frequently.

Some of the exporters and agents of exporters who use supply agents specify maximum delivery date and in case the delivery date is not met they take different measures to enforce the delivery date. Some of these measures include: cautioning the agent, discuss and agree on new delivery date, just wait, reject delivery, or buy elsewhere. The most common measures taken by the exporters in case the supply agents fail to meet the delivery date requirement is to caution, or just to wait. In the case of agents of exporters, they discuss and agree on new delivery date or buy elsewhere. Thus there are no formal institutions to enforce delivery dates even when there are regular suppliers. This indicates that exporters and agents of exporters may face a lot of risk and uncertainty in delivering the required number of live animals in the importing countries in a timely manner.

There are different ways exporters and supply agents finance their regular suppliers. The supply agents either partially or entirely depend on exporters' money or entirely use own money to finance the purchase of livestock to supply to the exporters. Among the 40% exporters who use regulars, the majority (33%) indicated that supply agents entirely depend

on the money supplied by the exporters. In the case of agents of exporters, the means of financing used are entirely own, partly own and partly exporters and advances from exporters.

The other important question related to the use of supply agents is how the exporters and agents of exporters pay the supply agents for their services? There are several ways in which the livestock exporters and agents of exporters pay the services of supply agents: flat rate commission, commission based on the quality of service provided, allowing the supply agents to earn profit from the transaction, and paying fixed prices. The majority of the exporters and agents of exporters paid the supply agents a flat rate commission. The commission is also part of the price paid for about 28% and 11% of exporters and agents of exporters, respectively.

The supply agents are variously paid the full amount for their services at different times, either: all money is paid in advance, half is paid in advance and half is paid at delivery, half is paid in advance and half is paid after selling, all money is paid on delivery, or all money is paid after animals are sold. For all exporters, about 38% of the exporters paid the supply agents on delivery of animals. The payments to the supply agents are made through different mechanisms such as cash on spot, money transfer, or payment in kind, e.g. a bag of food items or other items may be exchanged for an animal. However, the use of payment in kind is very limited.

The exporters and agents of exporters faced various problems during the procurement of animals which increases the transaction costs of livestock trade. These problems include: purchased animal is stolen; dispute on price of animals, delivering improper quality or quality not agreed upon, lack of delivery. The largest proportion of exporters mentioned the problem of dispute on the price of animals and this is consistently the most important problem observed across the market chains. Thus, there are problems in enforcing the informal delivery contracts.

The brokers in Somalia operate as *dallaal* or *damiin* and they provide two types of services: brokerage only or both brokerage and guaranteeing service. Most of the brokers in Bossaso and Garissa market chains often provide both brokerage and guaranteeing services in contrast with some of their counterparts in the Berbera chain who only provide brokerage services. In general, the brokers service include: negotiation of the price and finalize the transaction between the buyer and seller; looking after the animals handed over by the sellers at the market so that no animal is lost; collecting money from the buyer and making payments to the seller (the broker is compelled to refund the seller in case the buyer does not fulfil his/her financial commitment) and guaranteeing the origin of the animals on sale

(in case the animal is stolen the broker is compelled to reimburse the buyer). There are key characteristics which each broker has to possess as reported by more than 85% of the brokers. These include: good bargaining skills, community trust, honesty, livestock grading skills and trading experience and social network.

The brokers work in groups and the business made by the group is pooled and shared equally in more than 40% of the cases. The group formations frequently comprise of up to 6 brokers who often tend to be sub-clan members or friends. It is observed that in such volatile, risky environments, Somali traders rely on their extensive ties and members of their clans and sub-clans (Little, 2005). Further more, it is also observed that trust and fair practices are critical in the current Somali economy where there is no legal enforcement.

Although in the long-term, formal institutions will have an interest in regulating and ensuring contract-enforcement mechanism and property rights protection, they may not be able to reach the same degree of acceptance within the society through impersonal transactions as the brokers. It would therefore be difficult in the short-term for the public service to replace brokers' functions and effectively provide such services in the strong clan-based Somali society. Moreover, in a country without much alternative employment opportunities, and without resources to start own business, brokers may continue to crowd the market as a means of earning a living. Brokers may therefore continue playing a role even in the presence of a public service. However, it is hoped that their services will be better regulated after training, codification of a grading system, establishment of a market information system, and use of an appropriate transaction approach (individual brokerage versus auction system). These processes may in the long-term considerably reduce the power of brokers as a group or institution at the local market, shorten the transaction chain yet allow brokers to play a complementary role in the livestock trading. In addition, given the limited amount of both financial and human resources in the public sector and the continued mistrust of formal institutions by Somalis, the process of rebuilding state institutions will need exceptionally good, accountable and transparent processes capable of making governance more responsive to the needs of the population.

Table 3.2 Trading Practices of Livestock Traders in Somalia

Trading Practices	Exporters (%)	Agents of Exporters (%)
Use Regular Supply Agents	40.0	25.9
If Use Regular Supply Agents		
• Specify Maximum Delivery Date	30.0	24.1
• Measures Taken if Deadline is not Met		
o Caution Agent	15.0	1.9
o Complain/Discuss	2.5	9.3
o Just Wait	12.5	3.7
o Reject Delivery	--	3.7
o Buy Elsewhere	2.5	9.3
• Means of Financing Regulars		
o Entirely Agents	7.5	
o Partly Agents and Partly Exporters	2.5	
o Entirely Exporters	32.5	
o Entirely Supplier	--	1.9
o Partly Supplier and Partly Agents	--	3.7
o Advances from Exporter	--	1.9
• Methods of Payments of Regulars		
o Flat Rate Commission	37.5	22.2
o Based on Quality of Services	2.5	--
o Profit Sharing	2.5	1.8
o Fixed Price	--	1.8
• Commission Paid as a Part of Price of Regulars	27.5	11.1
• Timing of Agents Payments of Regulars		
o All in Advance	12.5	16.7
o Half in Advance and Half on Delivery	5.0	5.6
o Half in Advance and Half after Selling	10.0	--
o All on Delivery	15.0	3.7
o All after Animals are Sold	7.5	--
• Methods of Payments of Regulars		
o Cash	22.5	13.0
o Money Transfer	15.0	14.8
o In Kind	2.5	5.6
Buy Animals from Petty Traders	80.0	--
Buy Animals from Producers	77.5	--
Buy from Regular Petty Traders	--	37.0
Buy from Any Petty Trader	--	77.8
Problem in Procuring Animals		
• Theft	5.0	11.1
• Price Disputes	25.0	14.8
• Quality Disputes	7.5	14.8
• No Delivery/Partial Delivery	27.5	5.6
• None	35.0	53.7
N	40	54

Note: percentages may not add up to 100 either due to rounding or multiple answers

3.4 Sources of Market Information on Supply, Demand and prices

Sources for exporters

Exporters obtain information about the supply and demand conditions and prices in their purchase markets (i.e. local markets) from a variety of sources including livestock brokers and/or agents of exporters, own observation, other exporters, regular customers and suppliers in these markets and also electronic media (Table 3.3). The popularity of the different sources of information varied across the marketing chains. Brokers and/or agents of exporters were cited as sources of information by over 70% of the exporters in the Bossaso chain compared to about 30% and 25 % in the Berbera and Garissa chains respectively. A large proportion of the exporters in the Garissa chain (42%), compared to 18% in the Bossaso chain and none in the Berbera chain cited other exporters as their source of information about the conditions in their livestock source markets. By contrast, a large proportion of the exporters in the Bossaso chain (45%) relied on personal observation compared to about 30% in the Berbera chain and 25% in the Garissa chain. All of the surveyed exporters in the Bossaso and Berbera chains and 75% in the Garissa chain said that they were satisfied with the information they obtained about the conditions of supply, demand and prices in their livestock source markets. In general, the results of the exporter's sources of information about conditions in their livestock procurement markets in Somalia confirms the importance of other livestock marketing agents higher up in the marketing chain in passing information about market conditions there to the livestock exporters.

The sources of information to exporters about the conditions of supply, demand and prices in the export markets included personal observation, contact persons and/or agents in the export countries, the internet, other exporters and partners in the livestock export business (Table 3.3). The most frequently cited sources of information about market conditions in the export countries varied across the three marketing chains. The most frequently cited sources in the Bossaso chain included agents and/or contact persons in the export countries (45%), partners in the livestock export business (45%) and internet. In comparison, the largest proportions of exporters in the Berbera chain obtained their information about market conditions in their export countries from personal observation (88%), agents and/or contact persons in the export countries (about 60%) and internet (35%). In the Garissa chain, other exporters was the most frequently cited sources of information about conditions livestock supply, demand and prices in Kenya (50%).

Table 3.3 Frequency of Exporters Reporting their Sources of Information on Prices, Supply and Demand Conditions in their Purchase Markets in Somalia and Export Markets Abroad

Market			Bossaso	Berbera	Garissa	Overall
Livestock purchase markets	Sources of information on price, supply and demand	Personal Observation	5 (45)	5 (29)	3 (25)	13 (33)
		Other exporters	2 (18)	0	5 (42)	7 (18)
		Brokers and agents	8 (72)	5(29)	3 (25)	16 (40)
		Regular customers and suppliers in the markets	1(9)	2 (12)	1 (8)	4 (10)
		Radio/Television	1(9)	0	2 (16)	3 (8)
	% of exporters satisfied with information gotten		100	100	75	93
	Desired improvement in how information is received	Availability and quality improvement of telecommunication services	27	76	25	48
		Cheap telecommunication services	0	17	0	8
		Setting up of a market information system and/mobile sms service	9	0	8	5
		Radio broadcast	0	0	8	3
		Dissemination to producers	0	6	0	3
Markets in Export countries	Sources of information on price, supply and demand	Personal Observation	3 (27)	15 (88)	3 (25)	21 (53)
		Internet	4 (36)	6 (35)	0	10 (25)
		Other exporters	2 (18)	1 (6)	6 (50)	9 (23)
		Partners	5 (45)	0	3 (25)	8 (20)
		Contact person and/or agents in export countries	5 (45)	10(59)	3(25)	18(45)
		Radio/ Television	1 (9)	0	1 (8)	2 (5)
		Whether satisfied with information gotten		91	100	83
Desired improvement in how information is received	Improved telecommunication services		0	18	25	15
	Operate contact office or agent abroad		27	24	0	18
	Radio		0	0	17	5

NB: Numbers in parenthesis are percentages

All the livestock exporters in the Berbera chain, over 90% in the Bossaso chain and 83% in the Garissa chain said that they were satisfied with the information they obtained about the market conditions in the livestock export markets. The results on the sources of information about market conditions in the export countries to exporters confirm a follow back of information to exporters from their contacts in the export market. The exporters also have the opportunity of validating this information or obtaining additional information from personal observation, internet and other exporters.

Availability and improvement in quality of telecommunication services was the most frequently desired improvement by exporters in how they received information about the conditions in their purchase markets. Conversely, having a contact person or offices was the most desired improvement in the export countries.

Sources for agents of exporters

The main sources of information to the agents of exporters about market conditions in the markets where they purchase livestock included: personal observation, brokers and other agents, and also regular customers and suppliers in these markets (Table 3.4). Personal observation was cited by the largest proportion of the agents of exporters across the marketing chains including 100% in the Berbera chain, 78% in the Garissa chain and 74% in the Bossaso chain. Many of the agents of exporters in the Berbera and Bossaso chains (80% and 54%, respectively) also indicated that they obtained information on conditions in their source markets from brokers and/or in the purchase markets.

Majority of the agents of exporters across the marketing chains (97% in the Bossaso chain and about 90% in the Berbera and also Garissa chains) said that they were satisfied with the information obtained.

The traders were asked to state what improvements they wished to see in the way they received information about livestock supply, demand and prices in their purchase markets. About a half of the surveyed agents in the Berbera chain wished for some improvements in telephone services while a similar proportion in the same chain wished for relatively cheaper mobile phone services. Over 35% and 30%, respectively of the agents in the Bossaso chain wished for some improvements in telephone and radio services.

The main sources of information about the conditions of supply, demand and prices in livestock markets in the export countries to the agents of exporters included livestock exporters, personal observation by the agents themselves, and business partners (Table 3.4).

Table 3.4: Frequency of Agents of Exporters Reporting Sources of Information on Supply, Demand and Prices of Livestock in Purchase Markets and Export Countries

			<i>Bossaso</i>	<i>Berbera</i>	<i>Garissa</i>	<i>Overall</i>
Livestock purchase markets	Sources of information on price, supply and demand	Personal Observation	26 (74)	10 (100)	7 (78)	43 (80)
		Regular customers and suppliers in the market	3 (9)	4 (40)	0	7 (13)
		Brokers and other agents	19 (54)	8 (80)	1 (11)	28 (52)
		Exporters	3 (9)	0	2 (22)	5 (9)
		Radio/TV	1 (3)	0	1 (11)	2 (4)
	% agents satisfied with information gotten		97	90	89	94
	Desired improvements in how information is received	Improved telephone services	13 (37)	5 (50)	0	18 (33)
		Improved radio services	11 (31)	0	0	11 (20)
		Cheap mobile phone service	0	5 (50)	0	5 (9)
		Good roads transport	3 (9)	1 (10)	0	4 (7)
Livestock Export countries	Sources of information on price, supply and demand	Personal Observation	3 (9)	10 (100)	1 (11)	14 (26)
		Exporters	24 (69)	9 (90)	4 (44)	37 (69)
		Business Partners	18 (51)	1 (10)	1 (11)	20 (37)
		Other agents of exporters	2 (6)	0	0	2 (4)
% agents satisfied with information gotten		80	70	78	77	
Desired improvements in how information is received	Dissemination through radio	23	0	0	15	
	Contact person and/or agents in export countries	3	40	0	9	

NB: Numbers in parenthesis are percentages

Exporters were collectively the most frequently cited sources of information on conditions in the export markets by the agents of exporters and this included about 70% in the Bossaso chain, 90% in the Berbera chain and 44% in the Garissa chain. The relative importance of the sources of the different sources of information varied across the marketing chains. All of the agents of exporters in the Berbera chain said that they also relied on personal observation for information about market conditions in the export countries compared to only about 10% of their counterparts in the Bossaso and also Garissa chains. Likewise, a higher proportion of the agents of exporters in the Bossaso chain (51%) than in Berbera and

Garissa chains (about 10% in each case) said that they also obtained the information about the market conditions in the export countries from their business partners. Majority of the agents of exporters in all the three marketing chains (about 80% in the Bossaso and Garissa chains and 70% in the Berbera chain) said that they were satisfied with the information they got on conditions of the livestock markets in the countries where the animals they dealt with were exported. From the results on sources of information about market conditions in the source and export market by agents of exporters, it is evident that there is flow of information about market conditions to marketing agents at different points in the livestock marketing chains in Somalia.

The most frequently cited desired improvement in the way information about market conditions in export countries varied across marketing chains. Dissemination through radio was the most frequently cited desired improvement in the Bossaso chain while having a contact person and/or agents in export countries was the most frequently mentioned in the Berbera chain.

Sources for small scale traders

Personal observation was the most frequently cited source of information about the conditions of supply, demand and prices in the source markets by the small-scale livestock traders. This source accounted for 100% in the Berbera chain, and 87 and 84 percent in the Garissa and Bossaso chains, respectively (Table 3.5). The high percentages of small-scale traders relying on personal observation in the source markets probably reflects their high degree of involvement of these markets or, alternatively to lack of alternative sources of information in the public domain. A significant proportion of small-scale livestock traders in the Berbera and Bossaso chains (64% and 41%, respectively), also said that they rely on brokers for the required information on supply, demand and prices in their source markets. A large majority of the small-scale traders across the three marketing chains expressed satisfaction with the information they obtained about the conditions of supply, demand and prices in their purchase markets. Desired improvement in the way information about conditions in the purchase markets was received varied across the marketing chains. Improved telecommunication services was the most frequently mentioned in the Bossaso and Berbera chains compared to radio communication in the Garissa chain. Its worth noting that Kenyan authorities prohibits unlicensed use of VHF radios.

Export traders were the most frequently cited source of information about the conditions of supply, demand and prices in the livestock export markets by the small-scale traders and this included over 90% of the traders in the Berbera chain, and about 60% in the Berbera and Garissa chains (Table 3.5). Nevertheless, 95% of the small-scale livestock traders said that they also relied on personal observation obtaining such information .. All of the small-scale

traders in the Berbera chain and over 90% in the Bossaso and Garissa chains expressed satisfaction with the information they obtained about the export market conditions. Again just as with the case of exporters and also agents of exporters, the results on sources of information about market conditions in the source and export market by small-scale traders, indicate that there is flow of information to marketing agents at different points in the livestock marketing chains in Somalia. Better flow of information from exporters and their agents was the most frequently cited desired improvement in the way information about market conditions in export countries was received.

Table 3.5 Frequency of Small-Scale Traders Reporting Sources of Information on Supply, Demand and Prices of Livestock in Purchase Markets and Export Countries

			<i>Bossaso</i>	<i>Berbera</i>	<i>Garissa</i>	<i>Overall</i>
Livestock purchase markets	Sources of information on price, supply and demand in the markets	Personal Observation	37 (84)	25 (100)	13(87)	68 (89)
		Regular customers and suppliers in the market	5 (11)	10 (40)	1 (7)	16 (21)
		Brokers	18 (41)	16 (64)	3 (20)	36 (47)
		Relatives	3 (7)	1 (4)	0	4 (5)
		Friends	4 (9)	5 (20)	0	9 (12)
		Radio	4 (9)	0	1 (7)	5 (6)
	% small scale traders satisfied with information gotten	Yes	93	100	93	95
	Desired improvements in how information is received	Improved telecommunication services	38	76	20	47
		Improved radio service	18	0	40	10
		Cheap telecommunication services	0	16	0	5
Livestock Export countries	Sources of information on price, supply and demand	Personal Observation	9 (20)	22 (95)	6 (40)	35 (46)
		Export traders	26 (59)	21 (91)	9 (60)	53 (70)
		Business partners	5 (11)	0	2 (13)	6 (8)
		Friends	7 (16)	7 (30)	1 (7)	15 (20)
		Agents of exporters	5 (11)	0	1 (7)	6 (8)
		Radio	2 (5)	0	2 (13)	4 (5)
	Whether satisfied with information gotten		95	100	93	96
	Desired improvements in how information is received	Improved telecommunication services	2	4	0	3
		Better flow of information from exporters and their agents	5	52	0	20
		Dissemination of information through media	2	4	0	3

NB: Numbers in parenthesis are percentages

Sources for brokers

Livestock brokers mainly rely on personal observation and also other brokers for information on conditions of supply, demand and prices in their local livestock markets (Table 3.6). Most of the brokers expressed satisfaction with the information they obtained about the conditions of supply, demand and prices in the livestock markets.

Table 3.6: Frequency of Livestock Brokers Reporting their Sources of Information on Supply, Demand and Prices of Livestock in the Local Livestock Markets

		<i>Bossaso</i>	<i>Berbera</i>	<i>Garissa</i>	<i>Overall</i>
Sources of information on price, supply and demand in the markets in Somalia	Personal Observation	36 (90)	43 (93)	19 (95)	86 (91)
	Suppliers customers	8 (20)	23 (50)	0	31 (33)
	Other Brokers	36 (90)	43 (93)	19 (95)	86 (91)
	Radio	5 (13)	15 (32)	2 (10)	20 (21)
% satisfied with market information gotten	Yes	98	93	95	95

NB: Numbers in parenthesis are percentages

3.5 Traders' Knowledge of Live Animal Quality Requirements for Export Markets and Grading Systems Practiced in the Market Chains

Two key hypotheses postulated in the study are that exporters are aware of quality attributes of animals required by importing countries, and that this knowledge and information flows in an autonomous manner throughout the market chains through which animals for export are procured. Another hypothesis is that there is an informal grading and standard system practiced throughout the Somali livestock export market chains to satisfy the importers' requirements. In order to test these hypotheses, data on traders' knowledge of live animal quality requirements at different market levels was collected. The traders reported a combination of different live animal quality attributes required by importers such as nutritional status, age, weight, size, shape, strength, health, and skin colour. Also a rapid appraisal was conducted in selected markets to assess how animals are graded in actual practice. The following sections present the results of descriptive analyses related to traders' knowledge of live animal quality requirements for export markets and grading system practiced.

3.5.1 Traders' knowledge of live animal quality requirements for export markets

Sex of Animals

It is observed that about 90% of livestock exporters and agents of exporters and all of small scale traders are aware of the preference for the sex of cattle in the export market (Table 3.7). This indicates a smooth flow of sex related quality information among the different traders involved. However, some variations across the market chains are observed. For example, about 28% of the exporters in Bossaso market chain are not aware of any preference for the sex of cattle in the importing countries as compared to about 15% of the agents of exporters in the same market chain. However, all of the small scale traders in Bossaso market chain are aware of the preference for the sex of cattle. All exporters and agents of exporters operating in Berbera market chain are aware of the sex preference for cattle. On the other hand, about 10% exporters and agents of exporters operating in Garissa market chain are unaware of the sex preference for cattle.

All the exporters are aware of the sex of shoats demanded in the export markets while only about 83% and 93% of agents of exporters and small scale traders, respectively are aware of the sex preference for shoats. In other words, while all of the exporters are aware of sex preference for shoats, there are few of the agents of exporters and small scale traders who are unaware of the sex preference for shoats. In terms of market chains, all of the exporters and small scale traders in Bossaso chain are aware of sex requirements in the export market while 25% of agents of exporters are unaware. All of the exporters and agents of exporters in Berbera market chain are aware of sex specifications for quality requirements. However, about 25% of the agents of exporters in Bossaso market chain are unaware of sex preferences for shoats. Thus, to some extent, there is some asymmetry in the knowledge about sex of shoats required in the market.

For camels, about 60% of the exporters in Bossaso and Berbera market chains mentioned requirement of males in the importing countries. More than 35% of the exporters through Bossaso and Berbera market chains are unaware of any preference for the sex of camels. About 22% of the agents of exporters in Bossaso market chain are also unaware of preference for camel sex for export market.

In general, male cattle are more demanded than female cattle in the export markets. It is important to note that the traders target male animals mainly due to a restriction on export of female animals in Somalia rather than the demand for the sex of animals in the export market as such. This restriction is well enforced for animals shipped to the Gulf but it is difficult to enforce for the animals exported to Kenya for two reasons. First, female animals

are accepted in Kenyan markets. Second, the Somali community extends to North Eastern Kenya. The boundary is highly porous and livestock is usually moved in and out of both countries in search of pastures and/or trade without major hindrances. For this reason traders in the Garissa market chain are able to export both male and female animals to Kenya. It is also interesting to note that in most of the cases, it was found an equal proportions of exporters, agents of exporters and small scale traders who are aware of sex quality preferences for a given market chain. Thus, in general, there is smooth information flow across market levels in terms of sex of animals preferred for export market.

Age of Animals

The age of animal influences both the quantity and quality of meat that an animal can produce. The quantity of meat produced increases with age up to certain point but as the animal gets very old the palatability of meat decreases, thus becoming of lower quality. According to the exporters, cattle of ages under 3 to over 8 year old are required by importers (Table 3.8). From the group discussion conducted by TN team with brokers in Afmadow and Jowhar markets it is observed that the choice of animals of specific age brackets and therefore suitable body mass/frame (of which age is a reliable proxy) is not only related to the demand for specific carcass weights in the terminal markets of Nairobi and Mombassa. It is also linked to the mode of transport (trucking versus trekking), distance to the terminal market and availability of feed and water along the route. For example, the capacity of withstanding the two week journey to Garissa is a factor to be considered in choosing a given age range. Too young or too old animals can't stand the stressful condition.

All exporters, agents of exporters, and small scale traders are aware of cattle age requirements in the export markets indicating that there is smooth flow of information on age requirement of animals among the traders involved. The preference for cattle older than 8 years is very limited. For example, none of the exporters and agents of exporters in the Garissa market chain indicated requirement of cattle older than 8 years. The proportion of agents of exporters who reported requirement of cattle older than 8 years are 21% and 25% for Bossaso and Berbera market chains, respectively. There is also high proportion of agents of exporters in Bossaso market chain reporting requirement of cattle less than three years old. In general, the cattle aged 4 to 7 years are most commonly required in all market chains.

There are several reasons why traders target cattle of particular age/or age group and the reason varies by marketing chain. More than half of the surveyed agents of exporters across all the market chains indicated that it is due to demand in the market. The reasons given for Bossaso market chains are demand in the market (73%) and order by the exporters (19%). For Berbera marketing chain, the reasons given are demand in the market (50%), order by

the exporters (50%), and availability (50%). In the case of Garissa marketing chain, the reasons given are: demand in the market (56%), best quality (33%), resistance to trekking stress (44%), and has the preferred weight (33%). It is also observed that younger animals of age 4 to 7 years old are also demanded in Kenya for breeding purpose.

The exporters use different ways of assessing the age of cattle. Most of the exporters to Kenya (about 67%) assess the age of cattle based on body size and 25% and 33% of them assess the age of animal by inspecting the teeth and horns of the cattle, respectively. On the other hand, all of the exporters in Bossaso market chain assess the age of cattle by inspecting teeth and body size. In the case of Berbera, more than 65% of the exporters use both teeth and body size inspection to determine the age of the cattle.

For shoats, from under 1 year old to over 5 year old animals are reportedly required by importers. All the age groups are demanded by agents of exporters in all market chains and exporters operating in Bossaso market chain. The exporters in Berbera market chain demanded shoats which are two years or older. All exporters and agents of exporters in Bossaso market chain are aware of the age preferences for shoats. However, about 17% of agents of exporters in Berbera market chain are not aware of age preference for shoats. All of the small scale traders operating through Berbera market chain are aware of the age of shoats required.

Age estimation in shoats is carried out through four methods:

- Visual appraisal of the body size (for both sheep and goats)
- Teeth estimation (for both species)
- Visual appraisal of the wool in sheep
- Horn ring counting in goats.

The appraisal of body size has been reported as the most important method of estimating age. For confirmation in case of doubt teeth and either wool in sheep or horn in goats are considered. The Somali Black head sheep changes coat at around two years of age. Over time the wool fibres become progressively finer and at 5 years of age the skin underneath can be easily felt on palpation. In the Short-eared Somali goat horns erupt at 6 months. They grow developing two rings per year, so age can be estimated from the number of rings from the base to the apex of the horn. However from the age of three years apical rings start wearing out and are no longer very well visible. Over time horns become also ticker. However horn growth is not as well pronounced in castrates.

There are 8 age categories regarding the specifications of quality requirements for camels inferred from the survey data (Table 3.8). About 75% the exporters in all market chains are aware of the age requirements for camels compared to all of the agents of exporters. Age estimation in camels is dependent on dentition, body size and distribution and density of hair.

Breed Types

There is variation among livestock traders in the level of awareness of cattle breed type quality specification requirements for export market. Only about 30% of the exporters are aware of the cattle breed type required in the export market while more than 70% of the agents of exporters and small scale traders are aware of breed type required. There is no comparable level of awareness of cattle breed type required for export across different trader types. The main reason for this peculiar situation is that export traders do not have the option of obtaining more than one single breed at secondary market level e.g. Jowhar exclusively supplies Dauara, Afmadow the Borana and Somaliland the North Somali Zebu. Amongst the secondary markets surveyed only Afgooye has more than one breed (Surco, Gasara and Dauara).

In the case of shoats, there is lower level of awareness of shoats' breed type quality specification requirements for export market. The proportions of exporters, agents of exporters and small scale traders who are aware of shoats' breed type required for export market are less than 20%. However, the level of awareness of shoats breed type required for export market is comparable across different trade types.

The cattle breeds indicated by livestock exporters in the formal survey include: Borana (Lo' Cadde), Surco, Gasara, Dauara (Lo'gudud/Sahiwal) and North Somali Zebu while for sheep the only breed on the market is the black head Somali whereas for goats short-eared Somali is the predominant breed. Detailed study of breed preferences for Kenyan and Gulf markets is also conducted through rapid appraisal (TN, 2006). The Afgooye market which supply cattle both to Kenya and Gulf markets is one of the markets used for this purpose. Some of the findings are highlighted here. It is observed that due to its particular location, Afgooye is at the cross roads of the areas of origin of three different breeds: Dauara, Gasara and Surco. Dauara represents around 80% of cattle traded daily followed by Gasara (15%) and Surco (5%).

The small number of Surco animals traded in this market is mostly linked to the low demand for this breed especially in the Gulf. Export traders for the Gulf markets do not keep the breed in high regard because of a series of constraints such as slow growth and development

probably due to a low feed conversion rate; limited weight gains; problems during transportation because of the big horns; and poor general appearance.

In the case of Bossaso market chain Dauara is rated as the first choice, followed by Gasara and Surco. Gasara bulls are very well appreciated in the Gulf and considered comparable to Dauara for many characteristics. Therefore these are the breeds sent in the highest number to Bossaso. Surco are only selected when the demand cannot be fulfilled with the other two breeds. This justifies the significant difference in price for all the different ages and grades of bulls. Remarkable is in fact the price differential between Dauara and Surco bulls reaching in certain instances cases 1,800,000 Somali Shillings or approximately 125\$ for animals of the same age and grade. For example, the brokers reported that out of 100 bulls sent from Afgooye to Bossaso, Dauara animals constitute usually 65%, Gasara 25% and Surco (possibly short horned) only 10%.

In the case of Garissa market chain, Borana is ranked as the most preferred breed. Dauara is considered second and Surco third. However few Dauara bulls are sent to Kenya due to the stiff competition with the Gulf markets where these animals fetch better prices. Therefore mostly Dauara females are sent to Kenya in reasonable number. Gasara cattle are not sent to Kenya, due to their low resistance to the long distance trekking and the small body frame which makes these animals less appreciated than Borana, Dauara and Surco in the Garissa market. In light of these factors Borana appears the breed mostly used to supply the Kenyan market and almost all bulls sent to Garissa belong to this breed. For Surco breed, Baidoa and Dinsor represent the most important markets supplying Kenya. In terms of pricing Borana fetch the best prices and Dauara cows fetch better prices than Surco in almost all ages and grades (See: Appendix 1)

During the rapid appraisal survey the breed preference amongst the various distribution channels (Nairobi, Mombasa, Thika, Akamba, and Masai markets) is also analyzed. Brokers reported that Borana is the most appreciated breed in Nairobi market followed by Dauara. Surco is reported to be only accepted in case of unavailability of the other breeds. In terms of price in the Garissa market Borana and Dauara are reported to fetch the same price with Surco getting lower price. Therefore Borana is the first choice for traders, when the market stock of Borana breed is exhausted Dauara becomes the target and finally Surco when there is no other choice. According to the brokers Borana animals get a better price in Nairobi because of their higher carcass yield. Borana is widely available in the Garissa market because it is the breed reared in the cross border area.

Borana is also the breed of preference for the Mombasa market for both fattening and slaughtering. Dauara bulls are rarely available in the Kenyan market because of the stiff

competition with the Gulf markets. Therefore the second choice is Surco, which fetch lower prices due to the lower carcass yield and demand. In Thika market Borana is the first choice, the second choice is Dauara and at last Surco. Borana and Dauara fetch equal prices. On the contrary Surco gets the lowest price in Thika market. In the case of Akamba markets (Mwingi, Kitui, etc) Borana and Dauara are also the first choices. Surco is the last choice and gets lower price. Surco bulls are not appreciated for draught because they are very poor in ploughing performance even if well trained. In Masai markets, Borana and Dauara are the two choices. Apparently there is no demand for Surco. It should however be considered that Borana is the most available breed in the market since it is reared in all the regions along the Kenyan Somali border and is obviously the most popular amongst the trading community in Garissa.

To have an idea of the price differential between these three breeds the brokers provided price estimates. For the Nairobi market a Borana 5 year bull of grade I fetches a price of 12,000 KSH, whereas for a Surco of the same age and grade not more than 9,000 KSH are offered. For the Mombasa market a Borana 8 year bull of grade I fetches a price of 18,000 KSH, whereas a Surco of the same age and grade do not exceed 11,000 KSH. Thus, there is a significant price difference between the two breeds.

Nutritional Status

The specification of quality requirements for the nutritional status of cattle is given at three levels: excellent, good, and fair corresponding to grades I, II, and III respectively. On average, about 98% of the exporters are aware of the specifications of quality requirements for the nutritional status of cattle for export. About 86% of agents of exporters in the market chains considered are aware of the specifications of quality requirements for nutritional status of the cattle for export purpose. All the small scale traders in all market chains considered are aware of the specification of quality requirements of the nutritional status of the cattle for export purpose. Thus, there is high level of awareness among livestock traders in Somali regarding the specifications of quality requirements for nutritional status of cattle for export purpose.

There are two levels of quality specification requirements for shoats in terms of nutritional status: excellent and good. The exporters and agents of exporters in all market chains considered are aware of the nutritional status of the shoats have to be excellent or good for export purpose. More than 95% of the small scale traders in market chains considered also know that the nutritional status of the shoats has to be excellent or good for export purpose. Thus, similar to cattle, there is also smooth flow of information on specification of quality requirements for nutritional status.

In the case of camel, about 60% the exporters know that the nutritional status of the camels has to be excellent for export purpose. However, none of the agents of exporters of the camels considered are aware of the specification of quality requirements of nutritional status for export and this information is not obtained for small scale traders.

Brokers report that nutritional status and body condition scoring of cattle is estimated according to the extent that flesh and fat cover specific anatomical parts, allowing or not the visual appreciation of specific prominences and areas of the skeleton. Such anatomical parts mentioned include: coat, hump, hips (*trochanter major*), hooks (*tuber coxae*), pins (*tuber ischii*), thigh, hind flank, ribs, Spinous processes of the *thoracic vertebrae* (back), transverse process of the *lumbar vertebrae* (loin), the first *coccygeal vertebrae* (tail head), brisket and the jugular vein area of the neck. The more the layering of fat and flesh over skeletal prominences, as appraised visually and by physical examination or palpation the higher the grade or scoring assigned to the animal. It was found that this process was highly consistent throughout the various markets investigated in Somalia. Such finding is similar to the report of previous studies (Nicholson and Butterworth 1986).

In shoats, body condition scoring is mainly done by visual appraisal of the coat, thigh, hind flank and the ribs for condition of muscling and fat deposition. However, the main areas for palpations are the spinous processes of the 13th thoracic vertebrae (back), transverse processes of the *lumbar vertebrae* (loin) and hip (*trochanter major*), hooks (*tuber coxae*) and pin (*tuber ischii*) (altogether). Others areas are the rump and first *coccygeal vertebrae* (tail head, only for sheep), brisket and the neck with particular reference to the area of the Jugular vein. The amount of tissue between the bones and the fullness of muscles determines the condition of the animal. This finding is consistent but goes beyond the strategy used in the developed world in that it emphasizes a multiplicity of areas for examination (Russel 1991, Suiter 1994). In pastoral production systems nutritional status cyclically changes during the year, being at its peak following the rains and progressively decreasing to reach the lowest level during the dry periods.

Weight of Animal

There are five levels of cattle weight quality specifications for export market inferred from survey data: less or equal to 150 kg, over 150-250 kg, over 250-350 kg, 350-450 kg, and over 450 kg (Table 3.9). The demand for cattle weighing over 450 kg is very limited. The proportion of exporters who indicated over 450kg cattle weight is less than 20% for all market chains. None of the agents of exporters and small scale traders indicated cattle weighing more than 450kg for export market. Actually, none of the agents of exporters in Garissa and Bossaso market chains indicated cattle weighing over 350 kg.

In general, it is observed that significant proportions of livestock traders in Somalia are unaware of the cattle weight requirements for export. This result probably reflects the fact that there is no weighing of livestock for export in Somalia. It may however, be possible for experienced persons to provide rough estimate of the weight of animals by eye balling. It is on this basis that traders provided animal weight preferences for export markets. It is also observed that there are significant variations among livestock traders in terms of the level of awareness of cattle weight requirements for export markets. For example, about 68% of exporters are aware of the cattle weight requirements for export while only about 17% and 3% of the agents of exporters and small scale traders, respectively are aware of cattle weight requirements for export. Thus, there is a lack of smooth flow of cattle weight specification information across the different market levels. There is also variations among market chains in terms of the level of awareness of cattle weight requirements for export markets in that all exporters and agents of exporters in Berbera market chain are aware of the cattle weight specification requirements while this is less than 50% for Garissa and Bossaso market chains.

In the case of shoats, there are four levels of weight quality specification requirements for export market based on traders' survey response: less than or equal to 25 Kg, 25-30 Kg, 30-40 Kg, and over 40 Kg. The proportion of traders indicating shoats weight more than 40 Kg is less than 20% across all market chains considered. In terms of the level of traders' awareness of shoats' weight quality specification for export similar to that of cattle is observed. More than 85% of the exporters of shoats and 44% of agents of exporters in all market chains considered are aware of the weight quality specification of shoats for export market. On the other hand, about 58% of small scale traders are aware of the weight quality specifications for shoats. In terms of market chains, it is observed that exporters, agents of exporters and small scale traders in Bossaso market chain are less informed about weight quality specification requirements compared to their counterparts in Berbera market chain. All of the small scale traders operating through Berbera market were aware of the weight requirements for shoats being exported. Although they may not have the knowledge of the particular weights, but by practice and in their buying decisions they only supply/purchase reasonable sized animals whose weight they were able to estimate by eyeballing.

Brokers reported that they were able to estimate live body weight in small ruminants and this is always strictly correlated to the assessment of the nutritional status. When considering if an animal is excellent or good they visually estimate also the weight and for confirmation, in case of doubt the animal is manually lifted to estimate the weight more accurately. Brokers reported a margin of error of about 1-2 Kg for animals ranging between 30 and 40 Kg. Some traders were reported to request weight estimation before purchasing.

Animal Health Requirements

It is observed that many Gulf countries including UAE, Yemen and Egypt demand an animal health certificate by the government of the exporting country stating that the animals are free from disease before they are imported to these countries. In terms of cattle health requirements all of the exporters operating in Bossaso and Berbera chains are aware of the government health certificate while none of the exporters in Garissa market chain mention any health requirement for export perhaps because none is required or enforced in the porous border⁵. The specification of health requirements for export is given in terms of weight certificate, private health certificate, pedigree certificate, production records, and inspection declaration. Information on knowledge of animal health quality requirement specifications is not available for the agents of exporters and small scale traders for all species considered.

All of the exporters indicated that they do not buy any sick animals. Furthermore, more than 80% the exporters through the Bossaso and Berbera market chains do not buy cattle from disease areas while only about 42% of the exporters through Garissa market chain do not buy animals from disease areas. All of the agents of exporters in Bossaso and Berbera chain indicated that they neither buy sick animals nor animals from disease areas. In Garissa market chain 22% of the agents of exporters reported that they do not buy sick animals and 11% of them said that they do not buy cattle from the disease areas.

The cattle traders use different ways to ascertain health and quality of animals purchased. These include: self-inspection, assertion by the sellers, assertion by the broker, and assertion by the market inspector. Self-inspection is the most common way of ascertaining the health and quality of animals purchased in the market. For example, more than 90% of the exporters in Garissa and Berbera market chains self-inspect the health and quality of cattle they buy. More than 65% the exporters in Bossaso market chain also practice self-inspection. The assertion of brokers is also used by about 50% of the exporters in Bossaso chain while the assertion by market inspector is used by about 63% of the exporters in Berbera chain and more than 15% of the exporters in Bossaso chain. All of the agents of exporters in Bossaso and Berbera market chains self-inspect the health and quality of cattle they purchase while 22% of the agents of exporters in Garissa practice self-inspection. The assertion of seller is also used by 50% of the agents of exporters in Berbera chain while the assertion by the broker is used by about 11% of the agents of exporters in Garissa chain. About 8% of the agents of exporters in Bossaso market chain use the port veterinary office to ascertain health

⁵ Officially there is no cross-border trade between Kenya and Somalia. All animals traded in Garissa are considered of Kenyan origin.

and quality of cattle purchased. Thus, there is no well-established formal means to ascertain the quality of animals for export that meets the OIE requirements for global livestock trade.

3.5.2 Grading system practiced in selected markets

Following a formal survey, a rapid appraisal is conducted through group discussions with brokers (*dallaal*) in Jowhar, Afgooye, Hargeisa and Afmadow markets in Somaliland and Somalia and Garissa in Kenya in order to assess how traders and brokers grade animals for export markets using what criteria and in what order. Jowhar and Afgooye markets supply cattle to Garissa and to the Gulf via Bossaso. Hargeisa supplies sheep and goats to the Gulf via Berbera. Afmadow supplies cattle to Garissa. Garissa gets animals from Somalia then forwards them to different destinations in Kenya- both urban and rural (Terra Nuova, 2006).

It is observed that livestock traders describe the quality of the animals according to grades. There are three most commonly used animal grades in the market: Grade I, Grade II, and Grade III. Grade I refers to the best quality animals and this is the most frequently demanded class of animals although is the most expensive to purchase. Nevertheless, most traders also take Grade II and a few Grade III animals. When the traders were asked to describe what each of the different grades embodies, it is observed that a combination of different levels of specific attributes or characteristics attributes is considered when assigning these grades to animals and such attributes include nutritional status of the animal, age, size and weight. While nutritional is the most frequently cited quality attribute in defining the grades, quality attributes such as age, size and weight of an animal tend to be highly correlated with each other and could therefore be viewed as representing the aspect of the volume/ quantity of meat that an animal can produce. Size may also represent a proxy for body conformation of an animal since tall and large size animals are reported to be preferred for slaughter by most of the traders.

It is observed that the grade of animal is determined based on the combination of the level of the above mentioned attributes so that an animal within a certain age bracket is classified of a I, II and III grade if its nutritional status is Excellent, good or fair respectively. An example of the grading of shoats for export based on age and nutritional status is given in Appendix 3. Because of restrictions on export of female animals to the Gulf, only males are graded for export to the Gulf but both male and female cattle are exported to Garissa. In all the markets, age, nutritional status and health status are used in different combinations and order to grade animals. Health status is basically determined by the presence or absence of certain diseases. A number of indicators related to physical make up and body conditions are used to arrive at each of the three grades practiced for animals. The combination of breed, age and nutritional status is used especially when purpose of the traded animal is taken into

consideration. For example, an animal destined for breeding may require different criteria compared to an animal destined for slaughter. Depending on which market is targeted in Kenya, specific types and grades of animals are chosen. Grades and standards were assessed for various cattle breeds in different markets within Somalia. A three point informal grading system/quality classes (I, II and III) based on nutritional status has been described by traders and brokers.

Conversely the grading system in shoats is slightly different being a combination of age and nutritional status. Broadly grade I in sheep encompasses only fat animals between 3 and 5 years of age compared to between 4 and 6 years of age in goats. For further details see Appendix 3.

During the rapid appraisal survey, effort is also made to establish the relationship between grades and prices. There is significant variation in prices across different grades of animal, sex and age. For example, on August 2006 the average price of grade I, II, and III sheep price for Hargeisa market is 265,000, 230,000, and 190,000 Somaliland Shillings. There are also two important observations related to the relationship between quality of animals and prices. First, male cattle fetched higher prices than female cattle. Second, the average price of male cattle increases with age while for female cattle the price decreases with the age as older cows with a lot of calving are considered less desirable for fattening.

For export of sheep, goats and also cattle to the gulf, each exporter usually makes a batch containing the optimal blend of animals of all three grades. This is geared towards achieving maximum uniformity and homogeneity to attain the highest possible average quality standard at the least possible cost. Uniformity towards the highest possible standard is essential to avoid rejection of the whole lot on the ground of sub-standard quality: a consignment entirely composed of II grade animals or with a limited proportion of I grade animals would not be accepted in the market even if in good health. Quality is afterwards assessed individually and each animal graded on its own merit. Sheep and goats are usually mixed together.

The optimal blend within consignments is not constant throughout the year but changes according to the seasonal pattern of demand in the importing country. This is because of the strain on supply posed by the sharply increase of demand for top quality animals during the three months between Ramadan and Haj. The volume of animals absorbed in the market during that short period is in fact more than the three times the monthly volume imported during the remaining part of the year.

Generally during the lean season I, II and III grade animals are blended in the proportion of 40%, 40%, 20% or 50%, 40% and 10% respectively. This changes drastically during the pick season to 30%, 20% and 50% respectively.

Somaliland export traders profit most from III grade animals being the cheapest export category at home followed by II grade. Profit on I grade animals is reported to be limited due to the high purchase cost in spite the premium price paid in the importing country. However the proportion of III grade animals is normally kept very low in order not to undermine the quality of the entire export lot and for that reason ordinarily cannot exceed 20%. Export traders are however extremely clever in exploiting the window of opportunity provided by the Ramadan-Haj period when the sharp increase in demand heavily strains supply and quality requirements are consequently relaxed on the other side to secure slaughter stock.

Based on the above it appears that knowledge of traders at different points in the market chain corroborate the actual practice in terms of use of age, nutritional status and health as important criteria for grading.

To establish the relative importance of the various quality attributes used to define the grades of animals traders and also brokers in the formal survey are explicitly asked to rank these attributes. Econometric analysis of these ranks will be discussed in the next section.

Table 3.7 Percentage of Traders Aware of Live Animal Quality Attributes Specification Requirements in the Importing Countries

Types of Traders	Live Animal Quality Attributes	Cattle				Shoats			Camel		
		Garissa	Bossaso	Berbera	All	Bossaso	Berbera	All	Bossaso	Berbera	All
Exporters											
	Sex	91	71	100	89	100	100	100	64	60	63
	Age	100	100	100	100	100	100	100	82	60	75
	Breed Type	91	7	14	30	6	30	15	9	40	19
	Nutrition	100	93	100	98	100	100	100	64	60	63
	Weight	45	36	100	68	75	100	85	64	60	63
	Health	0	100	100	77	--	--	--	--	--	--
	N	11	14	22	47	16	10	26	11	5	16
Agent of Exporters											
	Sex	89	86	100	88	75	100	83	78	--	78
	Age	100	100	100	100	100	83	94	100	--	100
	Breed Type	89	76	100	71	25	0	17	22	--	22
	Nutrition	100	93	100	86	100	100	100	0	--	0
	Weight	22	3	100	17	17	100	44	--	--	--
	N	9	29	4	42	12	6	18	9	--	9
Small Scale Traders											
	Sex	100	100	--	100	100	86	93	--	--	--
	Age	100	100	--	100	92	100	96	--	--	--
	Breed Type	70	46	--	82	25	5	16	--	--	--
	Nutrition	100	100	--	100	96	95	96	--	--	--
	Weight	10	0	--	3	21	100	58	--	--	--
	N	10	24	--	34	24	21	45	--	--	--

Table 3.8: Preferred Ages (Years) of Animals in the Importing Countries According to the Surveyed Livestock Traders in Somalia

Age	Exporters (%)			Agents of Exporters (%)			Small Scale Traders (%)		
	Garissa	Bossaso	Berbera	Garissa	Bossaso	Berbera	Garissa	Bossaso	Berbera
Cattle									
≤3	27	79	45	44	83	75	30	75	-
4	46	79	55	33	86	75	50	92	-
5	55	71	82	33	83	100	80	100	-
6	64	71	91	78	76	100	80	79	-
7	64	86	50	89	66	75	70	67	-
8	36	57	36	67	45	75	50	17	-
>8 ¹	0.	21	5	0	21	25	20	4	-
N	11	14	22	9	29	4	10	24	-
Shoats									
≤1	-	31	0	-	25	17	0	13	0
2	-	88	100	-	50	67	25	25	86
3	-	81	100	-	92	67	25	88	100
4	-	94	100	-	83	67	25	92	100
≥5	-	50	80	-	42	67	25	13	77
N	-	16	10	-	12	6	4	24	21
Camels									
≤4	-	82	60	-	67	-	-	-	-
5	-	82	60	-	89	-	-	-	-
6	-	64	60	-	56	-	-	-	-
7	-	27	60	-	56	-	-	-	-
8	-	27	60	-	44	-	-	-	-
9	-	45	60	-	44	-	-	-	-
10	-	45	60	-	56	-	-	-	-
≥11	-	27	60	-	11	-	-	-	-
N	-	11	5	-	9	-	-	-	-

¹ Males beyond the age of 8 years along the Garissa chain are very rarely found in herds except for those at the end of their breeding career. For females animals of such ages are available they may not stand the rigor of trekking and therefore not sold for export.

Table 3.9: Preferred Weights (Kg) of Animals in the Importing Countries According to the Surveyed Livestock Traders in Somalia.

Weights	Exporters (%)			Agents of Exporters (%)			Small Scale Traders (%)		
	Garissa	Bossaso	Berbera	Garissa	Bossaso	Berbera	Garissa	Bossaso	Berbera
Cattle									
≤150	9	21	14	0	13	25	0	0	-
150-250	9	36	50	22	0	100	11	0	-
250-350	27	14	73	22	13	100	0	0	-
350-450	27	7	32	0	0	50	0	0	-
>450	9	17	0	0	0	0	0	0	-
N	11	14	22	9	29	4	9	24	-
Shoats									
≤25	-	69	80	-	0	67	25	17	52
25-30	-	50	100	-	17	83	25	13	90
30-40	-	56	30	-	17	17	0	13	38
>40	-	13	0	-	17	17	0	4	0
N	-	16	10	-	12	6	4	24	21
Camels									
≤300	-	64	60	-	-	-	-	-	-
350-450	-	64	60	-	-	-	-	-	-
450-550	-	9	60	-	-	-	-	-	-
550-650	-	9	60	-	-	-	-	-	-
>650	-	27	60	-	-	-	-	-	-
N	-	11	5	-	-	-	-	-	-

3.6 Relative Importance of Live Animal Quality Attributes

As discussed in the previous sections, livestock traders in Somalia target or consider different live animal quality attributes in making their buying and selling decisions. The relative importance that traders attach to these animal quality attributes reflect their response to market demand and changes in consumer preferences for quality and how it is transmitted across the different levels of marketing in the market chain. The information on the traders' relative importance of live animal quality attributes is useful to policy makers and various market actors. First, it informs the debate on the policies and processes toward the development of effective and efficient formal grades and standards. Second, it improves

producers' understanding of what traders demand in the market thereby enhancing their marketing ability. In other words, this information allows the livestock producers to target buyers (traders) for their livestock based on their animal quality attributes demanded in the market and to price them according to traders' preferences for these quality attributes. In order to respond to the changing preferences of consumers, livestock producers need to get information on what quality attributes traders look for in a particular market chain. Third, this information is also useful to livestock traders operating at different levels of market chains to be able to better communicate on the preferences for different live animal quality attributes observed in the final consumer markets.

Qualitative information about relative importance of live animal quality attributes among traders and by market chains is prevalent and there are perceived differences among trader types and market chains in this respect. Since multiplicity of attributes are used in quality determination and their order may not be the same for all traders and market chains, a more comprehensive quantitative assessment was made to discern the differences more clearly. Thus, the relative importance rankings of six live animal quality attributes are assessed based on sample survey of cross-sections of livestock traders in Somalia. The live animal quality attributes considered in relative importance ranking are: age, breed type, sex, weight, nutritional status and size of animal. The quality attributes are evaluated by traders on a 1 to 6 point scale, 6 represents the highest relative importance ranking while 1 represents the lowest relative importance ranking of a given quality attribute. It should also be mentioned that traders use nutritional status as a proxy for classification of animals into three grades: I, II and III. Fat animals are usually described as grade 1, medium fat as grade 2 and lean as grade 3. In reality, to arrive at a grade classification, several physical characteristics of the cattle along nutritional status and age are considered so that for each age class, there may be three grades of animals (Terra Nuova, 2006). However, while asking questions, traders were asked to classify on a 6 point scale as in the case of other attributes so that point 1-2 might define grade I, 3-4 grade II and 5-6 grade III.

For shoats a closer interaction between nutritional status and age is considered so that due to the more limited intra-species variation grades appear to occur across age clusters (Appendix 3).

The main purpose of this analysis is to provide precise estimation of how livestock traders rank live animal qualities and how their ranking varies across the marketing chains and by trader types. The specific questions to be addressed in this analysis are:

- 1) How important is a given live animal quality attribute as compared to other quality attributes or what is the order of importance of the selected live animal quality attributes in Somalia?

- 2) Is the ranking for live animal quality attributes the same or different across different marketing chains?
- 3) Are the individual attributes equally important to the surveyed traders? Which qualities are more important for which type of traders?
- 4) Is there interaction between market chains and trader types in terms of relative importance ranking of live animal quality attributes?
- 5) What are the determinants of livestock traders' ranking of live animal quality attributes?
- 6) Is there a relationship between live animal quality attributes and their prices?

Several hypotheses related to the relative importance rankings of live animal quality attributes are tested in step-wise fashion following Chen et al. (2002) and Hui et al. (1995). First, the null hypothesis that there is no statistically significant difference among relative importance rankings of live animal quality attributes regardless of market chain used and types of traders involved is tested using a non-parametric Kruskal-Wallis statistical procedure. This procedure uses sum of ranks of quality attributes in order to determine whether the relative importance of live animal quality attributes are significantly different. The results indicate that there is a statistically significant difference in the relative importance rankings of various live animal qualities attributes by traders at a probability of less than 1% (Table 3.10). In other words, the individual live animal quality attributes are not equally important to the surveyed traders.

Second, once statistically significant difference is established among the various live animal quality attributes, the next step is to establish the order of importance for live animal quality attributes. For this purpose, pair-wise multiple comparisons of relative importance rankings for live animal quality attributes are made using a non-parametric Mann-Whitney test. This test is used to determine which live animal quality attributes differ in relative importance rankings. It is observed that the nutritional status of the live animal is ranked first and the breed type last among all the live animal quality attributes. As indicated in column 3 of Table 3.10, overlapping of the relative importance rankings is not observed in that all relative importance rankings of each quality attribute are distinct from each other. In general, the order of importance of live animal quality attributes based on the traders' relative importance ranking is nutritional status, size, age, weight, sex, and breed types.

Third, the effects of market chain and trader types on the relative importance rankings of live animal quality attributes are analyzed using multivariate analysis of variance (MANOVA) involving all live animal quality attributes and a univariate analysis of variance

(ANOVA) involving only one live animal quality attribute at a time. The results are presented in Table 3.11. The results of MANOVA indicate that the effects of market chain and trader types on the relative importance ranking of live animal quality attributes are jointly statistically significant at a probability of less than 1%. Furthermore, the individual effects of market chains and trader types and the interaction between market chains and trader types are also found to be statistically significant at a probability of less than 1% when all quality attributes are considered jointly.

The individual effects of market chains and trader types are also analyzed for a single quality attribute at time using an ANOVA. Based on the analysis of variance, the variations in relative importance rankings of each quality attribute across market chains and trader types are plotted and given in Figure 3.1. Jointly, the effects of market chains and trader types on individual quality attributes are found to be statistically significant in all cases. It is observed that the effect of market chain on relative importance ranking is significant for all quality attributes except for sex of animal. Similarly, in the case of trader types the effect is significant in all cases except nutritional status and breed types. Thus, the relative importance of live animal quality attributes is different by market chains and trader types. The interaction between market chain and trader type is also analyzed and the results show that it is statistically significant in all cases except for nutritional status and breed type quality attributes. In other words, the relative importance ranking of a given quality attributes for a given trader types varies across market chains which can be seen from Figure 3.1.

Table 3.10: Results of Non-Parametric Kruskal-Wallis and Mann-Whitney Tests of Relative Importance Rankings for Live Animal Quality Attributes

<i>Live Animal Quality Attributes</i>	<i>Kruskal-Wallis Mean Ranks of Live Animal Quality Attributes¹</i>	<i>Mann-Whitney Procedure for Pair-wise Comparison of Quality Rankings²</i>	<i>Importance Ordering³</i>
Nutritional Status	1319.6	A	1
Size	1037.3	B	2
Age	839.0	C	3
Weight	721.6	D	4
Sex	461.4	E	5
Breed	376.1	F	6

Note: 1The null hypothesis that the relative importance rankings of six selected live animal quality attributes are equal is rejected at a probability of less than 1%. 2The different letters suggest that there is a statistically significant difference between live animal quality attributes. 3The numbers show the order of importance for the live animal quality attributes based on multiple pair-wise non-parametric comparisons.

Table 3.11: The Effects of Market Chain and Trader Types on the Relative Importance Rankings of Live Animal Quality Attributes

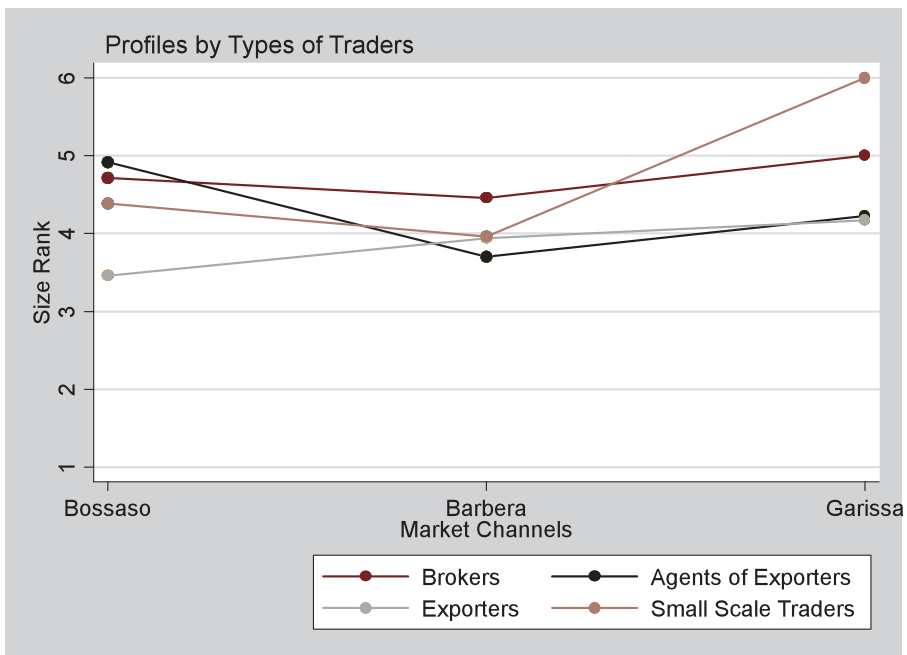
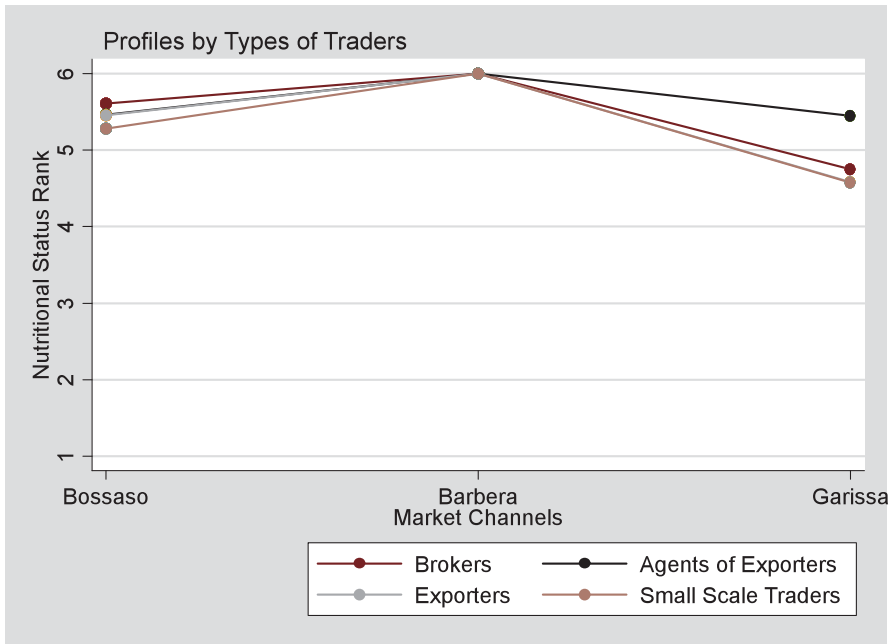
<i>Dependent Variables</i>	<i>F-Test Statistics</i>			
	<i>Model</i>	<i>Market Chains</i>	<i>Trader Types</i>	<i>Interaction between Market Chains and Trader Types</i>
Multivariate Analysis of variance (MANOVA)	8.53***	22.51***	5.42***	4.10***
Univariate Analysis of Variance (ANOVA)				
Nutritional Status	8.54***	33.84***	1.89	1.50
Size	5.00***	8.01***	7.47***	4.32***
Age	12.97***	33.27***	6.76***	5.56***
Weight	24.29***	70.33***	5.72***	3.84***
Sex	7.78***	1.13	9.63***	10.75***
Breed Type	10.62***	37.47***	2.59*	1.20

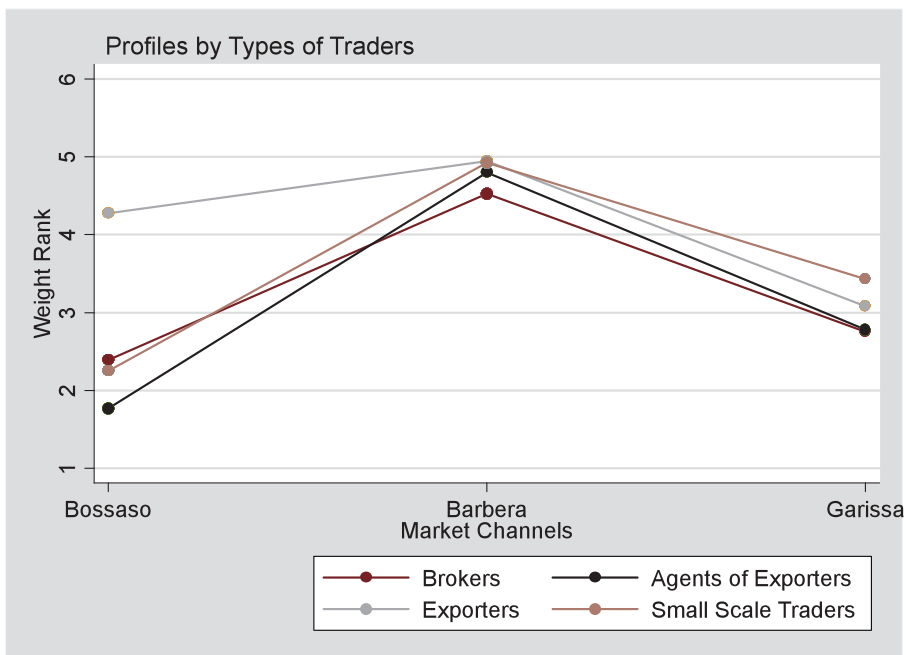
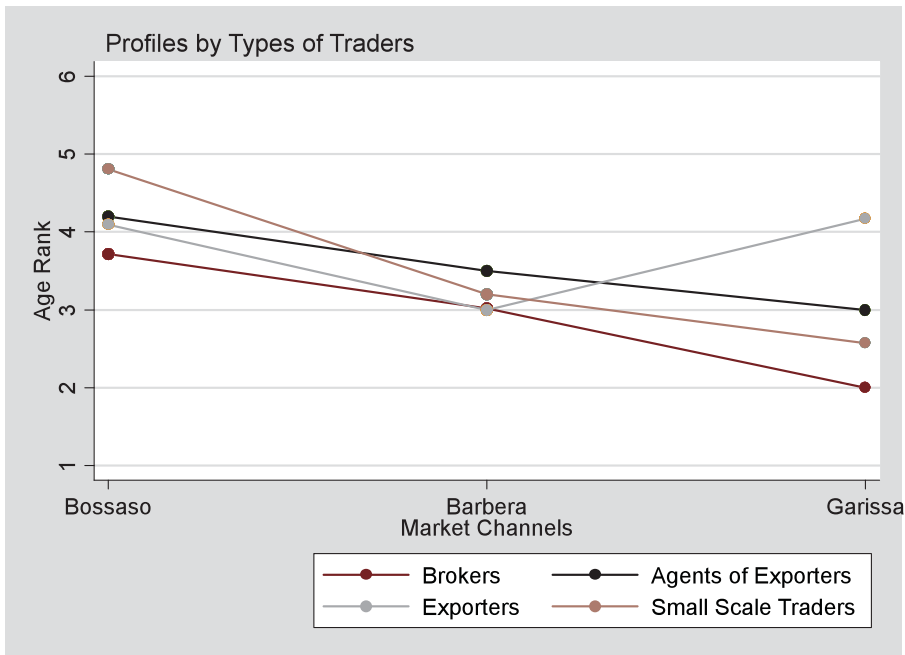
Note: The number of observations used for multivariate analysis of variance is 264 while it is 244 in the case of univariate analysis of variance.

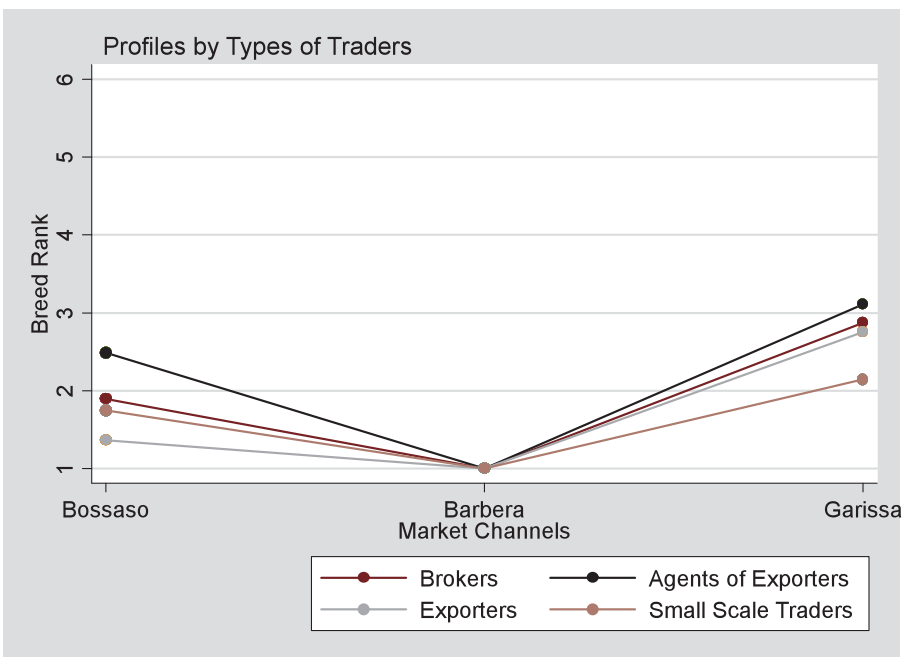
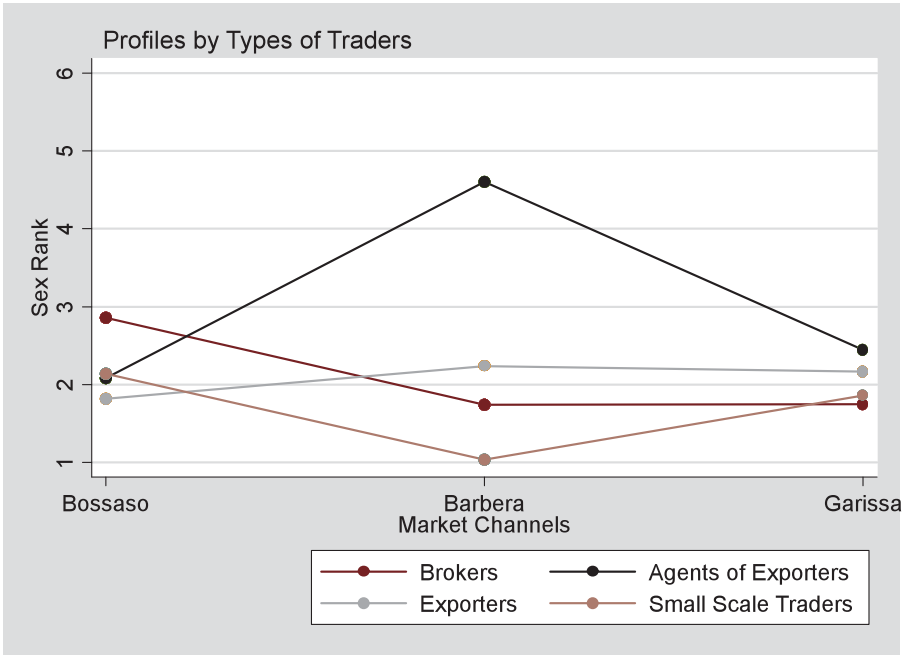
***, **and * indicate statistical significance at a probability of less than 1%, 5%, and 10%, respectively

In general, the results indicate that the relative importance ranking varies across market chains and across cross-sections of traders within a given market chain (Figure 3.3). For example, the rank of nutritional status as a quality attribute is about the same for all trader types in Bossaso and Berbera chains but in the Garissa chain, agents of exporters ranked it at higher level than exporters and petty traders. Ranking differences of other attributes may be interpreted from the figure in the same way. These variations may indicate that traders at different market levels have differential access to information on live animal quality attributes. The variations in the traders relative importance rankings among cross-section of traders within a given market chain is an indication of limited transmission of live animal quality preference information across the different market levels. If the market for the live animal is operating efficiently, it is expected that there is smooth information flow across the different market levels and the relative importance ranking of live animal quality attributes for different types of traders within a given market are expected to be similar or not expected to be significantly different.

Figure 3.1: Traders' Relative Importance Rankings of Live Animal Quality Attributes by Marketing Chain in Somalia







3.7 Determinants of Relative Importance Rankings of Live Animal Quality Attributes

In light of ordinal nature of relative importance ranks of live animal quality attributes, an ordered probit regression model is used to analyze the effects of various factors on traders' relative importance rankings of six live animal quality attributes⁶. The results of regression analysis are presented in Table 3.12. The model chi-square indicates that the overall goodness of fit of the model is statistically significant at a probability of less than 1% in all cases. Specifically, the results indicate that observable traders' characteristics do not have statistically significant effect on the relative importance rankings of live animal quality attributes at a probability of less than 1% except in the case of weight and nutritional status. In the case of weight the age and the level of education of traders and the language spoken by the traders are found to have statistically significant effect at a probability of less than 1%. Confirming the results of ANOVA and MANOVA, the ordered probit regression model also indicates that the effects of market chains and trader types are statistically significant for all quality attributes at a probability of less than 1%.

3.8 Relationship between Live Animal Quality Attributes and their Prices

The effects of various live animal quality attributes on the cattle and shoats buying and selling prices are analyzed using hedonic price regression model. Particularly, we are interested in investigating the cattle price variations due to live animal quality differences. The price differences based on quality are some times referred to as premiums or discounts (Tomek and Robinson, 1990). In hedonic price regression model, the major assumption made is that prices are a function of quality attributes demanded in the market. The hedonic price analysis shows us how the market discriminates among different quality attributes in terms of prices. For example, it shows traders' willingness to pay for different live animal quality attributes. The empirical understanding of the price and quality relationships for a given product is important in making production and marketing decisions by different economic agents involved. This information also allows producers and traders to target a specific live animal quality attribute in the market in order to get better price or to maximize profit.

For detailed technical discussion of the regression model used here see: Greene, 1997; Maddala, 1983; Wooldridge, 2002.

Table 3.12: Results of Ordered-Probit Model Estimations of Factors Affecting Relative Importance Rankings for Live Animals Quality Attributes

Dependent Variables Independent Variables ¹	Age	Sex	Breed	Weight	Nutrition	Size
<i>a) Observable Traders Characteristics</i>						
Age_trader1 dummy	-0.40 (0.32)	-0.03 (0.32)	0.30 (0.35)	-0.77 (0.40) *	0.55 (0.41)	0.50 (0.32)
Age_trader2 dummy	0.01 (0.17)	-0.23 (0.17)	-0.24 (0.21)	0.32 (0.19) *	-0.10 (0.21)	0.11 (0.17)
Education1 dummy	-0.28 (0.23)	0.04 (0.23)	-0.31 (0.29)	0.23 (0.24)	0.58* (0.31)	-0.13 (0.22)
Education2 dummy	0.27 (0.20)	0.07 (0.20)	-0.38 (0.25)	-0.22 (0.21)	0.24 (0.24)	-0.19 (0.20)
Education3 dummy	0.31 (0.30)	0.25 (0.31)	0.09 (0.37)	-1.72 (0.36)***	0.34 (0.34)	0.43 (0.30)
Education4 dummy	0.36 (0.28)	-0.12 (0.28)	-0.24 (0.29)	-1.61 (0.48)***	1.10 (0.32)***	0.47 (0.29)
Experience	0.002 (0.01)	0.002 (0.01)	-0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)
Business Ownership dummy	-0.12 (0.20)	-0.08 (0.20)	-0.34 (0.23)	0.20 (0.23)	0.18 (0.24)	-0.04 (0.20)
Speaks Arabic dummy	-0.05 (0.18)	-0.26 (0.19)	-0.18 (0.25)	0.27 (0.20)	0.14 (0.25)	-0.19 (0.18)
Speaks English dummy	-0.10 (0.29)	-0.07 (0.30)	-0.37 (0.39)	1.11 (0.32) ***	-0.50 (0.34)	-0.38 (0.28)
<i>b) Unobservable cross-sectional effects</i>						
<i>1) Market chains</i>						
Bossaso dummy	1.30 (0.17)***	0.50 (0.16)***	1.44 (0.24)***	-1.85 (0.19)***	-1.27 (0.23)***	0.33 (0.15)**
Garissa dummy	0.13 (0.18)	0.43 (1.18)**	1.90 (0.23)***	-1.51 (0.23)***	-1.40 (0.23)***	0.69 (0.19)***
<i>2) Trader Types</i>						
Broker dummy	-0.70* (0.37)	0.50 (0.38)	0.30 (0.47)	-1.25 (0.41)***	1.11 (0.43)***	0.65 (0.36)**
Exporter dummy	-0.30 (0.26)	0.25 (0.27)	0.39 (0.35)	0.73 (0.28)***	-0.08 (0.32)	-0.50 (0.25)**
Agents of Exporter dummy	-0.34 (0.21)	0.79 (0.22)***	0.85 (0.26)***	-0.24 (0.24)	0.03 (0.26)	0.08 (0.21)
<i>Cut-off points</i>						
1	-1.81 (0.34)	0.17 (0.32)	1.30 (0.42)	-1.88 (0.36)	-3.23 (0.49)	-1.99 (0.35)
2	-1.39 (0.32)	1.33 (0.33)	1.65 (0.42)	-1.65 (0.36)	-2.64 (0.44)	-1.64 (0.33)
3	0.31 (0.31)	1.89 (0.34)	2.58 (0.44)	-0.99 (0.35)	-1.84 (0.42)	-1.04 (0.31)
4	1.30 (0.32)	2.14 (0.34)	3.11 (0.45)	-0.20 (0.34)	-0.95 (0.41)	0.26 (0.31)
5	1.81 (0.33)	2.23 (0.35)	3.62 (0.48)	1.94 (0.37)		1.13 (0.31)
Number of observations	257	256	257	257	257	257
Model Chi-Square	105.68***	35.67***	134.28***	223.53***	74.52***	6196***

Note: Age_trader1 is a dummy for traders less than 30 years old, age_trader2 is a dummy for 30-40 years, age_trader3 is a dummy for trader over 40 years old; education0 is a dummy for no formal education, education1 is a dummy for elementary education, education2 is a dummy for intermediate level of education, education3 is a dummy for secondary education, and education4 is a dummy for Koranic and other types of education; Age1, Age_trader1, Nutrition1, education0, and Garissa are omitted dummy variables.

***, ** and * indicate statistical significance at a probability of less than 1%, 5%, and 10%, respectively.

Due to limited availability of data on buying and selling prices by different live animal quality attributes, only three live animal quality attributes are included in this analysis. These quality attributes are: nutritional status, sex, and age, of animals. Dummy variables are used to represent different levels of live animal quality attributes. For example, the age of animals is divided into three categories. The first age category is represented by age1 dummy variable and consists of animals less or equal to three years old, age2 is dummy variable for age category 2 and consists of animals with age greater than 3 years but less or equal to 6 years, and age3 is the dummy variable for age category 3 and consists of animals with age greater than 6 years. For shoats only the first and second age categories exist while for cattle all the three age categories exist. Based on nutritional status there are also three grades or quality levels that are distinguished in the market. Accordingly, based on these responses three dummy variables are created for nutritional status of animals: nutrition1 is dummy variable for grade 1, nutrition2 is dummy variable for combination of grade 1 and grade 2 and nutrition3 is dummy variable for grade 2.

The effects of live animal quality attributes on the buying and selling prices of cattle and shoats are investigated using hedonic regression model. Following Espinosa and Goodwin (1991), we run two types of hedonic price regressions for each buying and selling prices of cattle and shoats. In the first regression (Model I), the only independent variables considered are live animal quality attributes while in the second regression (Model II), in addition to the live animal quality attributes we also included observable traders' characteristics and unobservable cross-sectional effects using dummy variables for market chains and trader types. In the case of cattle prices, the regression results are presented in Table 3.13. The overall goodness of fit of the hedonic price regression model is found to be statistically significant at a probability of less than 1 % in all cases. The R² for Model I also indicate that live animal quality attributes alone explain about 37% and 25% of the variations in the cattle selling and buying prices, respectively. As compared to Model I, the explanatory power of hedonic regression Model II increased by 40% to 77% for cattle selling prices and by 37% to 62% for cattle buying prices.

The effects of live animal quality attributes on prices when other variables are also included in the regression is examined by conducting F-test of exclusion restrictions for live animal quality attributes in Model II. The null hypothesis that coefficients on live animal quality attributes in the hedonic regression model II are all jointly zero is rejected at a probability of less than 1%. Thus, the results indicate that the quality attributes, even after accounting for the effects of other variables, have statistically significant effect on the buying and selling prices of cattle. This indicates the existence of strong relationship between various live animal qualities attributes and cattle prices. The results also confirm the existence of cattle quality differentiation in the market and its importance in price determination.

Coefficients on the dummy variables for quality attributes represent the premiums or discounts associated with moving from one quality level to another. The positive coefficients on dummy variables for quality attributes show premium while negative coefficients show discounts. For example, after controlling for the effects of other variables male cattle selling price and buying price is higher than that of female cattle by about 93 US\$ and 20 US\$, respectively. The selling and buying prices for cattle also increase with age and quality levels of nutritional status of animals. The observable trader characteristics except education have no statistically significant effect on the selling prices and buying prices of cattle. Compared to no informal education, traders with elementary education are observed to have lower selling prices and buying prices at a probability of less than 5%. However, this result is anomalous and hard to interpret. The effects of market chain are highly significant in all cases. The cattle selling prices and buying prices for Berbera market chain are significantly higher than that of Garissa. However, the cattle buying and selling prices for Bossaso market chain are not statistically different from that of Garissa market chain⁷. Thus, there is also geographic differentiation of cattle markets in Somalia. It is also interesting to note that the effects of live animal quality attributes are found to be stronger for selling prices than that of buying prices.

In the case of shoats, the overall goodness-of-fit for the hedonic price regression model is also found to be statistically significant at a probability of less than 1 % (Table 3.14). However, the R² for the model indicates that live animal quality attributes alone (Model I) explain little variation in the selling and buying prices of shoats. It is observed that live animal quality attributes explain only about 5% and 12% of the variations in the shoats selling and buying prices, respectively. As compared to Model I, the explanatory power of hedonic regression model for Model II increased by 5% to 10% for shoats selling price and by 17% to 29% for shoats buying prices. In order to see the effects of live animal quality attributes on prices when other variables are also included in the regression, it is examined by conducting F-test of exclusion restrictions for live animal quality attributes in Model II. The null hypothesis that coefficients on live animal quality attributes in the hedonic regression model II are all jointly zero is rejected at a probability of less than 1%. Thus, the results indicate that the quality attributes, even after accounting for the effects of other variables, have statistically significant impact on the buying and selling prices of shoats as well. The shoats markets are also differentiated based on quality attributes.

For example, after controlling for the effects of other variables selling price and buying price of male shoats is higher than that of female shoats by about 6 US\$ and 5 US\$, respectively. The selling and buying prices for shoats also increase with age and nutritional status of

⁷Actual market prices are dependent on trade patterns in the importing countries i.e. seasonality, supply, demand, festivals, etc.

animals. The observable trader characteristics except age and education have no statistically significant effect on the selling prices and buying prices of shoats. Compared to no informal education, traders with elementary education are observed to have lower selling prices and buying prices at a probability of less than 5%. However, this result is anomalous and hard to interpret. As opposed to cattle prices, the effects of market chain are found to be statistically not significant in all cases for selling and buying prices of shoats. Shoats show little variation in prices across market chains. In general, compared to cattle, in the case of shoats live animal quality attributes explain little variations in selling and buying prices of shoats. Thus, live animal quality attributes are less important in the price determination for shoats. This may be either due to less developed or less articulated quality preferences by buyers for shoats in the market or due to more uniformity among individual shoats in terms of size or weight so that price differences between individual animals is minimal. Compared to cattle. Moreover, some other variables such as size and type of trading business of the buyers and sellers, which might influence market power and price negotiation ability, could not be included in the model.

In general, the results of hedonic price analyses show that cattle and shoats available in the market are not strictly homogenous, i.e., there are quality variations but it is more prominent among cattle than among shoats. The results show that there is an informal grading system and there is a correlation between the informal grading system and prices, which again is more pronounced in case of cattle than shoats. Then, the assumption of single average price for cattle or shoats does not hold. The hedonic price regression models also indicate that the current cattle and shoats marketing system or pricing in Somalia reflect the relevant quality information. Thus, formal grades and standards can be developed along these lines.

3.9 Marketing Costs, Margins, and Gross Profits

Marketing costs are important factors in determining the prices received by producers and the prices paid by traders and consumers. High marketing costs decrease the profitability and competitiveness of livestock trade and can limit the livestock market opportunities for livestock producers. In other words, marketing costs can be a barrier to trade. Thus, efforts to expand market access for livestock producers require focus on how to reduce marketing costs that impede trade and its competitiveness. The understanding of the structure of livestock marketing costs is useful to identify areas where cost reduction can be made and in order to devise strategies on how to reduce these costs. The objective of this section is to provide an analysis of livestock marketing costs build-up at different levels of livestock marketing in Somalia in order to identify areas where cost reduction could be possible. Identifying the marketing cost components also provide avenues for further close investigation of the size of individual marketing costs. In this section, we present the results of both descriptive and econometric analysis.

Table 3.13: Results of Hedonic Price Estimations for Selected Cattle Quality Attributes

Independent Variables	Selling Price		Buying Price	
	Model I	Model II	Model I	Model II
<i>a) Live Animal Quality Attributes</i>				
Sex dummy	92.91*** (16.51)	20.38** (9.00)	67.50*** (12.18)	25.73*** (8.02)
Age2 dummy	106.12*** (17.03)	54.89*** (14.47)	73.08*** (12.4)	34.89*** (10.72)
Age3 dummy	135.01*** (20.24)	64.44*** (15.13)	105.20*** (14.95)	54.03*** (11.27)
Nutrition2 dummy	-75.74*** (23.82)	-27.22** (11.77)	-75.32*** (18.36)	-38.30*** (11.84)
Nutritionn3 dummy	54.92** (22.27)	-28.67*** (15.27)	-8.49 (17.11)	-20.05 (12.44)
<i>b) Observable Traders' Characteristics</i>				
Age_trader2 dummy		-0.71 (15.60)		5.19 (8.20)
Age_trader3 dummy		2.14 (18.19)		-1.22 (9.70)
Education1 dummy		-36.46** (16.84)		-24.67** (12.07)
Education2 dummy		21.00 (14.61)		15.95* (9.31)
Education3 dummy		-4.41 (15.20)		7.46 (11.86)
Education4 dummy		9.19 (16.89)		4.86 (9.10)
Experience (number of years)		-0.31 (0.61)		0.18 (0.36)
Business Ownership dummy		2.92 (8.92)		-2.07 (5.91)
Speaks Arabic dummy		23.48 (15.81)		10.32 (9.57)
Speaks English dummy		13.03 (11.61)		-4.15 (8.75)
<i>c) Unobservable Cross-Sectional Effects</i>				
Berbera dummy		172.64*** (17.49)		108.52*** (13.84)
Bossaso dummy		15.58 (13.81)		-3.35 (9.85)
Constant	82.71*** (16.74)	110.69*** (17.30)	78.62*** (12.20)	91.84*** (10.52)
Number of observations	180	178	278	276
Model F-Test Statistic	21.00***	53.00***	18.41***	29.00***
R ²	0.37	0.77	0.25	0.62
F-Test Statistic for Quality Attributes		4.85***		7.66***

Note: Age1, Age_trader1, Nutrition1, education0, and Garissa are omitted dummy variables.

***, ** and * indicate statistical significance at a probability of less than 1%, 5%, and 10%, respectively

Table 3.14 Results of Hedonic Price Estimations for Selected Shoats Quality Attributes

Independent Variables	Selling Price		Buying Price	
	Model I	Model II	Model I	Model II
<i>a) Live Animal Quality Attributes</i>				
Sex dummy	11.66*** (2.11)	6.13*** (2.06)	10.17*** (1.71)	5.44** (2.16)
Age2 dummy	11.08*** (1.81)	11.96*** (3.55)	5.82 (4.28)	9.85** (4.03)
Nutrition2 dummy	10.46*** (3.19)	16.60** (6.50)	3.24 (2.57)	3.25 (2.77)
Nutrition3 dummy	8.21*** (2.25)	15.09*** (5.46)	-7.72** (3.81)	-0.46 (3.30)
<i>b) Observable Traders' Characteristics</i>				
Age_trader2 dummy		7.51 (7.59)		7.94 (5.49)
Age_trader3 dummy		17.71 (13.99)		10.70** (5.23)
Education1 dummy		13.63 (13.83)		-1.51** (0.83)
Education2 dummy		4.86 (3.96)		3.30 (2.39)
Education3 dummy		5.71 (4.83)		-0.64 (2.23)
Education4 dummy		-0.43 (3.41)		0.65 (1.78)
Experience (number of years)		-0.11 (0.10)		-0.01 (0.03)
Business Ownership dummy		0.14 (2.26)		0.001 (1.04)
Speaks Arabic dummy		-1.68 (2.14)		-1.16 (1.48)
Speaks English dummy		-2.31 (2.27)		-0.64 (1.98)
<i>c) Unobservable Cross-Sectional Effects</i>				
Berbera dummy		-2.39 (6.31)		2.88 (1.80)
Bossaso dummy		-0.47 (4.25)		2.02 (2.11)
Constant	19.11*** (1.43)	11.02 (8.67)	13.89*** (1.66)	7.22 (5.88)
Number of observations	195	191	228	224
Model F-Test Statistic	44.33***	7.17***	11.44***	10.02***
R2	0.05	0.10	0.12	0.29
F-Test Statistic for Quality Attributes		9.77***		3.53***

Note: Age1, Age_trader1, Nutrition0, education0, and Garissa are omitted as dummy variables.

***, ** and * indicate statistical significance at a probability of less than 1%, 5%, and 10%, respectively.

Descriptive Analysis

The summary statistics of detailed components of cattle marketing costs by marketing chains are provided in Table 3.15. There are four major groups of marketing costs depending on the stages or levels in cattle marketing. These costs include: inland costs, port costs, shipment costs, and costs of exporters in the importing countries. The inland costs involve payments to agents, broker fees, trekking and transport costs, payment for obtaining movement permits, local authority costs, official and unofficial costs, tips paid to move animals along the marketing channel and en-route losses of animal values. The port costs include feed and water costs, animal health certification and certification of origin, export taxes, custom charges, local authority charges, port authority charges, losses at the port, losses of value at the port and other costs. The traders also incur shipment costs which involve freight charges, feed and water and other costs during shipment. The exporters' costs in importing countries include mainly feed and water costs while awaiting sale and delivery to buyers in the importing countries.

The proportion of the major marketing costs in the total per unit cattle marketing costs are given in Table 3.15. In Garissa market chain only inland costs are incurred while in Bossaso and Berbera market chains all types of costs are incurred even though the magnitudes vary. The total marketing costs per cattle varies across the market chains. The lowest costs are recorded in the Garissa chain at about 10.656 US\$ per cattle. These costs are distributed as 5.9, 2.9 and 1.95 US\$ for exporters, agents of exporters and small traders respectively. Trekking costs comprise the major cost component accounting for about 43%, 48% and 55% for exporters, agents of exporters and small traders respectively while brokers fee account for 16%, 12% and 35% for exporters, agents of exporters and small traders respectively per unit cattle cost

The total per unit costs of marketing cattle in Bossaso market chain is found to be about 30.5 US\$, distributed within the chain as 9.6, 18.4 and 2.5 US\$ for exporters, agents of exporters and small traders respectively. The inland costs are still a significant cost component accounting for about 50.23% of the per unit cattle marketing costs for exporters. The major cost components of the inland marketing costs for Bossaso chain are broker fee, transport costs, and official taxes. On the other hand, the cost components for Berbera market chain are very different from that of Garissa and Bossaso. This chain has the highest per unit cost of 56.4 US\$ dollar is incurred for this market chain by exporters mainly attributed to the developmental tax which is more than double of that of Bossaso market chain and also due to higher shipment costs. This cost is distributed within the chain as 53.9, 1.755 and 0.76 US\$ for exporters, agents of exporters and small traders respectively. The inland costs

accounts only for about 12.6% of total per unit costs for exporters in the Berbera market chain. The traders in Berbera also incur significant costs in the importing countries for feed and water before they make the final delivery to the buyers in these countries. The costs of exporters in the importing countries account for about 18% of the total per unit costs of cattle marketing. Port costs and shipment costs are also significant for Berbera market chain which account for about 11%, and 17% of the total per unit cattle marketing costs, respectively. It is also important to mention that within the Berbera chain, most marketing activities (i.e., trucking of animals from secondary markets) are undertaken by exporters themselves, whereas in the Bossaso chain, the activities are handled largely by agents of exporters.

Detailed data on various taxes and fees charged at Berbera and Bossaso is also obtained from secondary sources and presented in Table 3.16 and Table 3.17, respectively. For Berbera total tax and fee charged is 3.61 US\$, 13.14 US\$, and 18.51 US\$ for shoats, cattle, and camel, respectively. On the other hand, for Bossaso the total taxes and fees charged for shoats, cattle, and camel are 0.42 US\$, 1.50 US\$, and 2.65 US\$, respectively.

In general, the components of cattle marketing costs varied across the market chains which suggest different strategies in order to reduce the cattle marketing costs. In order to reduce the costs of marketing in all chains focus must be given to improve the provision of market information services in order to reduce broker fees as this is a major cost component across all the chains. The efficiency of trekking and transporting of live animals also need to be improved to reduce the marketing costs. In the case of Berbera reducing the waiting period for the delivery of live animals to the final buyers in the importing countries reduces the costs of feed and water thereby reducing the marketing costs of exporters in the importing countries and improving their competitiveness. The taxes and fees also account for large proportion of marketing costs. Furthermore, these costs are not uniform across trade types and market chains causing a lot of risk and uncertainty to traders.

The summary statistics of prices, marketing costs, gross marketing margins and profits for cattle by market chain and trader types is also provided in Table 3.18. The average cattle buying and selling prices in Somalia are 154.42 US\$ and 207 US\$, respectively. However, considerable variation in cattle buying and selling prices are observed across market chains and trader types. The highest prices are observed for Berbera market chain followed by Bossaso market chain. The lowest prices are observed for Garissa market chain. In terms of gross profit the highest is obtained for Bossaso market chain and the lowest gross profit is observed for Berbera market chain. The gross margin for Berbera is the highest but due to very high marketing costs its gross profit is the lowest of all chains. The summary statistics

for shoats' prices, costs, margins and gross profits are presented in Table 3.19. In the case of shoats the variations observed are also similar to that of cattle and detailed discussion is not made here.

Econometric Analysis

Tomek and Robinson (1990) provide two alternative definitions of marketing margin. First, marketing margin is defined as the price difference between two marketing stages (consumer, wholesale, processor or producer). In this sense marketing margin is interchangeably used with price spread. Second, margin is also defined as the cost of the services provided along the marketing channel. In empirical work, mostly the first definition is used due to the difficulty in obtaining the detailed costs of marketing services provided (Helmberger and Chavas, 1996).

Detailed theoretical discussions and empirical analysis of agricultural marketing margin and key variables influencing the sizes of and changes in margin are found in Helmberger and Chavas (1996) and Tomek and Robinson (1990). There are several factors which influence the levels of marketing margin. Margin is a function of changes in input prices, marketing costs, marketing infrastructure, technologies used, government's marketing policies, risk and uncertainty in the marketing system, the level of competition existing in the market, and quality and quantity of marketing services provided.

Assuming perfect competition, profit maximization by livestock traders implies that marketing margin is equal to the marginal cost of marketing (Helmberger and Chavas, 1996). Margins higher than marketing costs will attract new entrants and competition keeps the margin just to be equal to the level of marketing costs. In other words, if the market is competitive the margin might be lower as when the traders compete they provide higher price to the producers and lower prices to consumers thus narrowing the margin. On the other hand, if the market is not competitive the margins might be high reflecting excessive profit. The lack of competition in the market decreases the incentive for the firms to reduce their marketing costs, the higher is the marketing cost the higher is the marketing margin.

If marketing infrastructure, like road network is not developed, the cost of transportation and risks associated with transportation increases and as a result the marketing margin increases. The risks and uncertainty faced by livestock traders at the different marketing levels, particularly the unofficial taxes and risks associated with livestock movement restrictions may also contribute to livestock traders demand for higher margins. In these situations the traders charge higher prices to consumers and pay lower prices to producers to compensate for the risks involved. Marketing costs also depend on the level of development

of agricultural marketing. Marketing costs could be low sometimes because there is no formal grading, processing, packaging or other forms of value addition in the marketing system. Thus, the lack of investment in infrastructure and the lack of competition may result in relatively high costs and margins.

The effects of prices and marketing costs, live animal quality attributes, observable traders characteristics and unobservable cross-sectional effects on the marketing margin in Somalia is analyzed. In our case, the marketing margin is given as a difference between the cattle buying and selling prices at a given market level. How the margins respond to the changes in the cattle selling prices and marketing costs can allow us to assess the efficiency of cattle marketing system in Somalia.

The results of the analysis of factors affecting the cattle and shoats marketing margins are presented in Table 3.20. The F-statistic indicates the overall goodness of fit for the regression model is statistically significant for both cattle and shoats at a probability of less than 1%. The model R² also shows that about 70% and 91% of the variations in the cattle and shoats marketing margins respectively are explained by the model. In the case of cattle, the effects of selling prices and marketing costs are statistically significant at a probability of less than 1% and the signs of the coefficients are in agreement with theoretical expectations for both cattle and shoats. For example, an increase in the cattle selling prices by 1 US\$ increases the cattle marketing margins by 0.29 US\$. On the other hand, the increase in marketing costs by 1 US\$ increases the marketing margins by 0.39 US\$. This indicates that the margins are more sensitive to the changes in marketing costs than to the changes in the cattle prices. However, in the case of shoats, margins are more sensitive to the changes in the selling prices than the marketing costs. There is almost a one-to-one relationship between the changes in shoats marketing margin and shoats selling prices. The margin for shoats is more price sensitive than that of the margins for cattle. However, the margin for shoats is less sensitive to the changes in the marketing costs.

It is also observed that the effects of live animal quality attributes are significant on the marketing margin for cattle and shoats. For example, the effect of sex of animal on the marketing margin is negative and is statistically significant at a probability of less than 5%. In

the case of cattle, the age of animal and nutritional status also have significant effect on the marketing margins. The margins are lower for older cattle and higher for lower grade cattle in terms of their nutritional status. The age and nutritional status of shoats do not have statistically significant effects on the shoats marketing margin. Since animals are sold as a lot, it is apparent that lower grade of animals would thus be sold at a higher average price compared to true first grade animals. It is apparent that there is an element of mixing of

grades along the chain in order to maximize benefit (price) to the exporter from both the supply and demand side.

The effect of market chain on the marketing margin is not statistically significant for cattle while it is observed that the margins for exporters are significantly higher than that of small scale traders. In the case of shoats, the effects of market chains and trader types on the marketing margins are not statistically significant.

Table 3.15: Components of Cattle Marketing Costs by Market Chains in Somalia (US \$/ Animal)

Cost Items	Affected market participant	Garissa			Bossaso			Berbera		
		Mean			Mean			Mean		
Inland costs										
Agents payment	Exporter	0.373			0.1			0.144		
	Agent of Exporter	0.344			0.211			0		
	Small trader	0			0			0		
Broker fee	Exporter	0.94			0.606			1.102		
	Agent of Exporter	0.352			1.93			0.545		
	Small trader	0.679			1.277			0.398		
Trekking costs	Exporter	2.532			0.56			0.023		
	Agent of Exporter	1.4			0.964			0.09		
	Small trader	1.064			0.325			0.131		
Transport costs	Exporter	0			2.607			5.406		
	Agent of Exporter	0			14.457			1.12		
	Small trader	0			0			0		
Movement Permit	Exporter	0			0			0.084		
	Agent of Exporter	0			0.005			0		
	Small trader	0			0			0.017		
Local authority costs	Exporter	0.385			0			0		
	Agent of Exporter	0			0			0		
	Small trader	0			0			0		
Official taxes	Exporter	0.176			0.853			0		
	Agent of Exporter	0			0.799			0		
	Small trader	0.133			0.755			0.214		
Unofficial taxes	Exporter	0.557			0.029			0		
	Agent of Exporter	0.367			0.017			0		
	Small trader	0.073			0.069			0.001		
Movement tips	Exporter	0.104			0.057			0		
	Agent of Exporter	0.415			0.017			0		
	Small trader	0			0.069			0		
Losses of values	Exporter	0.762			0			0		
	Agent of Exporter	0			0			0		
	Small trader	0			0.045			0		
Other costs	Exporter	3.521			0.003			0.044		
	Agent of Exporter	0.1			8.06			2.8		
	Small trader	0.85			3.26			2.68		
Sub total	Exporter	9.4			4.815			6.803		
	Agent of Exporter	3			26.46			4.56		
	Small trader	2.9			5.8			3.44		
Port costs										
Feed and water costs	Exporter	--	--	--	2.55			0.69		
Personnel costs	Exporter	--	--	--	1.637			0.14		
Animal health certification	Exporter	--	--	--	0.167			0.06		
Certificates of origin	Exporter	--	--	--	0.033			0.01		
Export taxes	Exporter	--	--	--	0			5.77		
Custom charges	Exporter	--	--	--	4.444			0.06		
Local authority charges	Exporter	--	--	--	0.342			0.16		
Port authority charges	Exporter	--	--	--	0.02			0.63		
Losses at the port	Exporter	--	--	--	0			0		
Other costs at the port	Exporter	--	--	--	0.37			7.83		
Sub total		--	--	--	9.563			15.35		
Shipment costs										
Freight charges	Exporter	--	--	--	30			28		
Feed and water and other costs	Exporter	--	--	--	5			0.32		
Sub total		--	--	--	35			14.94		
Costs of exporters in importing countries										
Feed and water and other costs	Exporter	--	--	--	53			62		
Sub total		--	--	--	53			62		
Total costs	Exporter	9.4			9.585			112		
	Agent of Exporter	3			26.46			4.56		
	Small trader	2.9			5.8			3.44		

Note: 1 Percentages are out of the total costs

Table 3.16: Livestock Taxes and Fees at export from Somaliland (Berbera), July 2001

Tax/Fee Item	Cost in Somaliland shillings per head		
	Shoats	Cattle	Camel
Custom tax	55	348	448
Port service charge	155	900	1,200
Loading fee	200	1,200	2,000
Municipal (water)	100	600	1,000
Municipal tax (cleaning)	300	1,800	3,000
Veterinary certificate	10	40	40
Total	820	4,888	7,688
Subtotal (US\$)	0.11	0.64	1.01
Development Tax (US\$)	3.50	12.50	17.50
Total (US\$)	3.61	13.14	18.51

Note: Somaliland shilling July 2001:5,900/1US\$; July 2003: 7,600/1US\$

Source: FAO, The World Bank, and European Union. 2004.

Table 3.17: Livestock taxes and Fees at export from Puntland (Bossaso), July 2001

Taxes/Fees Item	Cost in Somali shillings per head		
	Shoats	Cattle	Camel
Custom tax	5,000	16,000	27,000
Port service charge	1,000	5,000	11,000
Brucella Test	1,500	6,000	10,000
Veterinary Certification	300	800	1,000
Total	7,800	27,000	49,000
Total (US\$)	0.42	1.50	2.65

Note Somali shilling July 2001:18,000/1US\$; July 2003: 18,500/1US\$

Source: FAO, The World Bank, and European Union. 2004.

Table 3.18: Summary Statistics of Prices, Marketing Margins, Costs, and Profits for Cattle by Market Chains and Trader Types in Somalia (US \$/ Animal)

<i>Types of Market Chains</i>	<i>Types of Traders</i>	<i>Buying Prices</i>	<i>Selling Prices</i>	<i>Gross Margins</i>	<i>Marketing Costs</i>	<i>Gross Profits</i>
Bossaso	Small Scale Traders	115.20 (38.19)	128.62 (32.81)	13.41 (24.46)	5.80 (2.09)	7.61 (24.85)
	Agents of Exporters	121.03 (41.05)	215.56 (18.52)	94.53 (42.15)	26.46 (15.51)	68.07 (44.50)
	Exporters	193.57 (48.54)	301.14 (27.24)	107.57 (55.43)	91.88 (30.23)	15.69 (49.75)
	Total	123.61 (44.08)	194.85 (53.27)	71.24 (53.87)	24.24 (24.08)	47.00 (48.88)
Berbera	Small Scale Traders	239.24 (94.38)	250.93 (96.68)	11.69 (4.34)	3.44 (1.08)	8.25 (3.93)
	Agents of Exporters	233.03 (92.25)	--	--	4.56 (3.48)	--
	Exporters	286.95 (62.32)	405.30 (51.05)	118.35 (46.09)	99.56 (31.25)	18.80 (59.57)
	Total	262.26 (81.19)	369.40 (91.34)	93.55 (60.84)	54.60 (52.62)	15.68 (52.36)
Garissa	Small Scale Traders	105.26 (45.57)	122.58 (57.56)	17.32 (16.16)	2.88 (1.77)	14.44 (15.87)
	Agents of Exporters	129.05 (40.60)	153.99 (40.58)	24.94 (32.67)	3.03 (1.92)	21.90 (32.27)
	Exporters	124.34 (40.95)	159.28 (18.36)	34.95 (34.11)	9.38 (5.13)	25.70 (34.01)
	Total	121.86 (42.21)	150.67 (37.79)	28.81 (31.55)	6.09 (4.82)	22.41 (30.83)
Grand Total		154.42 (79.59)	207.33 (94.16)	59.09 (53.95)	24.90 (34.56)	32.53 (45.53)

Note: Returns to labour, and capital are not computed due to limited data availability on labour and capital input costs.

Table 3.19: Summary Statistics of Prices, Marketing Margins, Costs, and Profits for Shoats by Market Chains and Trader Types in Somalia (US \$/ Animal)

<i>Types of Market Chains</i>	<i>Types of Traders</i>	<i>Buying Prices</i>	<i>Selling Prices</i>	<i>Gross Margins</i>	<i>Marketing Costs</i>	<i>Gross Profits</i>
Bossaso	Small Scale Traders	23.66 (4.34)	32.99 (32.12)	9.33 (32.12)	1.34 (0.77)	7.99 (32.12)
	Agents of Exporters	25.55 (3.83)	29.68 (4.07)	4.13 (4.25)	1.62 (0.85)	2.52 (4.25)
	Exporters	26.33 (7.75)	40.83 (5.44)	14.50 (4.23)	17.42 (15.76)	-2.92 (16.64)
	Total	24.49 (4.79)	33.00 (25.32)	8.51 (25.29)	3.58 (7.32)	4.93 (25.92)
Berbera	Small Scale Traders	24.11 (5.94)	28.83 (6.12)	4.72 (3.86)	1.12 (2.27)	3.60 (4.44)
	Agents of Exporters	23.09 (2.59)	--	--	0.41 (0.21)	--
	Exporters	28.01 (20.58)	44.33 (2.46)	16.33 (18.92)	11.25 (4.65)	5.07 (15.45)
	Total	24.27 (8.25)	31.05 (7.91)	6.38 (8.77)	2.32 (3.93)	3.42 (7.05)

NB: For small scale traders in the Garissa chain the Shoats do not necessarily end up in Kenya. Returns to labour, and capital are not computed due to limited data availability on labour and capital input costs.

Table 3.20: Determinants of Cattle and Shoats Marketing Margins in Somalia

Independent Variables	Cattle	Shoats
<i>a) Prices and Marketing Costs (US \$/ animal)</i>		
Selling Price	0.29 (0.06) ***	0.95(0.05) ***
Marketing Costs	0.39(0.13) ***	0.08(0.12)
<i>b) Live Animal Quality Attributes</i>		
Sex of Animal dummy	-14.04(5.43) **	-5.15(2.33) **
Age2 dummy	-18.83(11.47)	0.78(7.22)
Age3 dummy	-37.92(12.34) ***	
Nutrition2 dummy	7.51(8.91)	5.02(6.30)
Nutrition3 dummy	26.268.75) ***	10.04(7.52)
<i>c) Observable Traders' Characteristics</i>		
Age_trader2 dummy	10.03(7.08)	-6.95(5.67)
Age_trader3 dummy	14.23(8.14) *	-10.17(5.46) ***
Education1 dummy	-16.57(7.69) **	1.21(1.62)
Education2 dummy	-11.43(7.28)	-3.34(2.35)
Education3 dummy	-14.61(8.38) *	2.06(2.26)
Education4 dummy	-13.71(8.01) *	-1.83(2.08)
Experience (Number of Years)	-0.17(0.24)	0.01(0.04)
Business Ownership dummy	9.40(6.67)	0.21(1.61)
Speaks Arabic dummy	-5.26(10.67)	2.51(1.52)
Speaks English dummy	9.35(6.77)	0.26(2.07)
<i>d) Unobservable Cross-Sectional Effects</i>		
Berbera dummy	-16.81(10.56)	-1.53(2.01)
Bossaso dummy	8.15(7.93)	-0.21(2.48)
Exporter	28.77(14.07) **	-12.79(7.79)
Constant	-26.72(13.32) **	-8.74(6.25)
Number of observations	178	191
Model F-Test Statistic	23.13***	25.99***
R2	0.70	0.91

Note: ***, **and * indicate statistical significance at a probability of less than 1%, 5%, and 10%, respectively.

3.10 Livestock Marketing Constraints

Nowadays, livestock trade is increasingly becoming very competitive which requires the existence of effective and efficient market support services. In view of improving the competitive position of Somali livestock trade in the global market, especially the Middle East and Kenya markets through the development of efficient market support services, key constraints affecting the Somali livestock industry were identified for each market chain as perceived by different types of traders.

During rapid appraisal, different stakeholders in different market chains were asked about key problems affecting the livestock export business. Since the number of people interviewed is few, frequency of responses could not be meaningfully built. Furthermore, given the qualitative nature of the responses and given different types of expressions for seemingly similar problems, the problems were grouped into seven categories as follows:

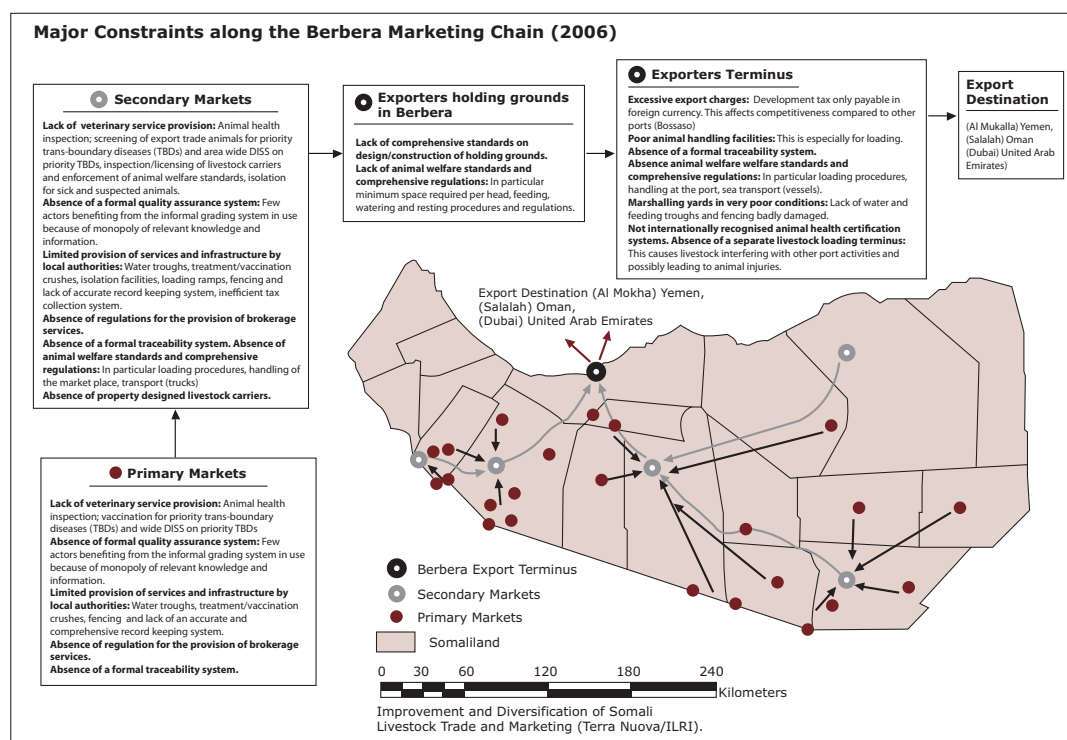
- *Veterinary health service provision*: lack of veterinary services/ limited vigilance on veterinary inspection and clinical examination/ trans-boundary diseases;
- *System of certification and quality assurance*: absence of a formal quality assurance system/absence of a formal traceability system/ lack of internationally recognized animal health certification system/ lack of animal welfare standards and comprehensive regulations/ disorganization and confusion in the certification process;
- *Functions and efficiency of local authorities*: limited provision of services and infrastructure by local authorities/ lack of comprehensive standards on design and construction of holding grounds/ poor animal handling facilities/ lack of professional certification of traders and brokers/ poor Local Administration/ difficulties in charging market taxes which in turn hinders service provision/ lack of recognized working government/insecurity;
- *Export port facilities*: poor condition of marshalling yards / absence of separate livestock loading terminus/ absence of properly designed livestock carriers;
- *Regulations on trade and standards*: absence of regulation of the provision of brokerage services/excessive export charges/limited awareness and enforcement of animal welfare standards and regulations;
- *Prices, information, finance and banking*: unstable prices especially for the export quality livestock/ lack of banking and insurance institutions/poor access to market information and information collection without feedback/ delay of payments by the buyers/ poor

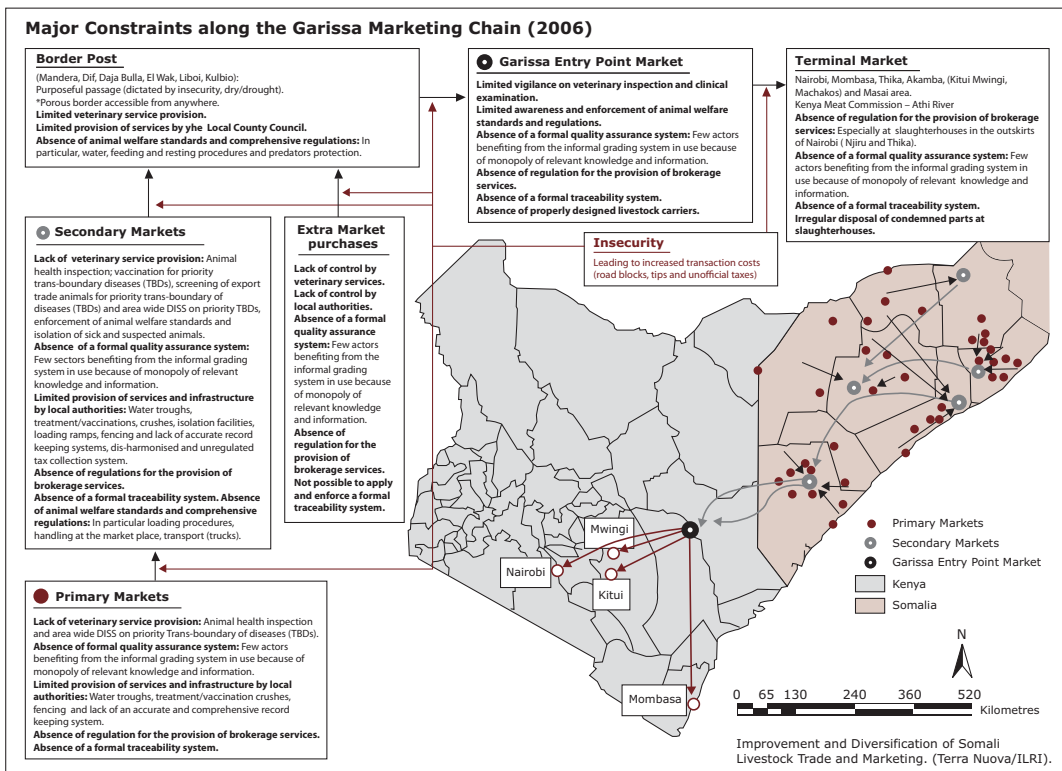
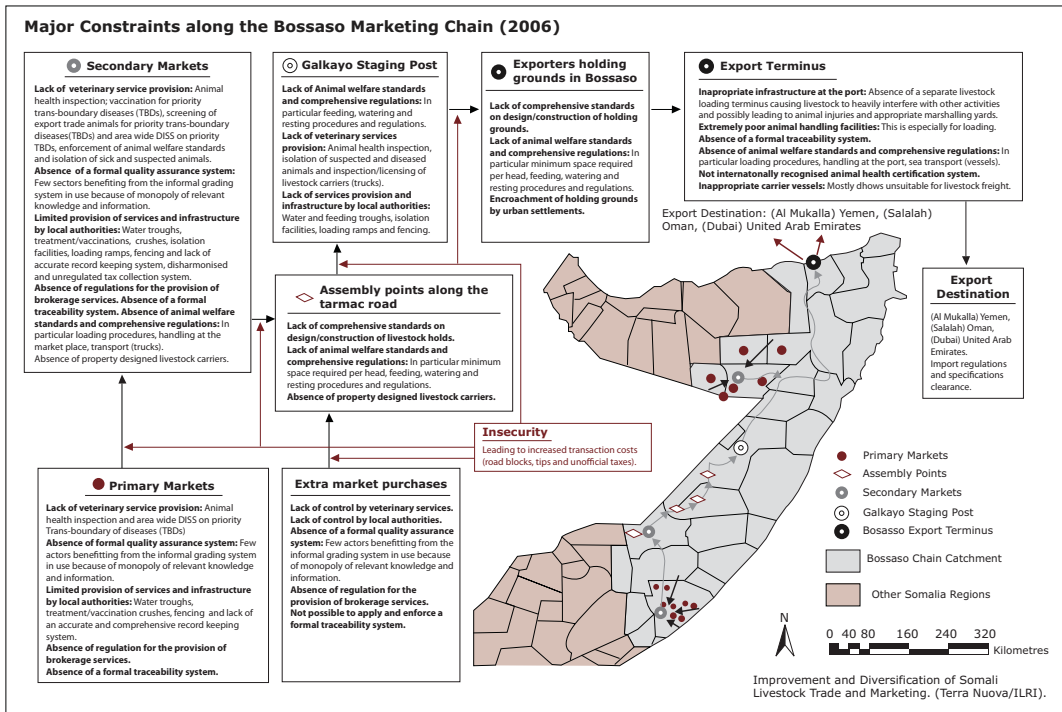
grading of animals by traders thus all are sold at the same price regardless of quality/ currency fluctuations; and

- *Production environment:* drought that caused the closure of near markets/ absence of grazing schemes/ water shortages.

The above lists provide insights as to what kinds of problems in which domain are prevalent but their relative importance could not be ascertained. Flow maps outlining the constraints at various levels of the marketing chains were prepared (Figure 3.2).

Fig. 3.2 Major constraints identified along the livestock marketing chains in Somalia





In order to get clearer picture about the relative importance of these or other problems, during formal surveys, each sample trader was asked to mention three most important constraints affecting the livestock trade. The responses were grouped into five most frequently reported livestock marketing constraints by traders as summarized in Table 3.21. The list of top three was not the same for all types of traders; hence the list of top five constraints is longer once aggregated together. These include within the domestic chain: lack of market infrastructure, fluctuations in livestock prices, high costs of animals, unauthorized road taxes and poor market support services. From the demand side problems include: delayed payments, low selling prices, lack of recognized certification, seasonal fluctuation of import demand, low preferences for Somali animals and import bans.

Other less frequently reported constraints reported by livestock traders include: lack of dispute resolution mechanisms, lack of formal credit, insecurity, no or partial payment on deliveries, absence of proper grades and standards, high and multiple taxes, presence of unlicensed traders, and lack of internationally recognized government. However, the discussion below is focused on the top five most frequently reported constraints.

Based on the percentage of traders reporting a specific livestock marketing constraints, the importance of different marketing constraints varies by trader types and marketing chains (Table 3.21). For example, in the case of exporters, lack of market infrastructure (good roads, transport facilities, and water and feeding facilities in holding/staging points) is one of the most important problems followed by delayed payments by importers. All of the exporters in Berbera market chain reported lack of market infrastructure as one of the livestock marketing constraints. In the case of agents of exporters, high cost of animals is the most frequently reported livestock marketing constraint followed by unauthorized road taxes. For small scale traders and brokers, lack of market infrastructure is the most frequently reported livestock marketing constraint.

In general, it appears that some of the constraints reported during rapid appraisal were also reported during the formal surveys while some new but critical constraints were also reported by a good number of traders during the formal surveys. Two sets therefore provided complementary information.

Overall, it appears that Somali livestock market support services are inadequately equipped to assess the quality requirements of importers in the absence of an appropriate certification services required in order to comply with those requirements. This has resulted in frequent livestock import bans by major importing countries with serious financial and economic consequences for Somalia (Holleman, 2002; Steffen et al, 1998). For example, there was

US\$ 22 million loss of income for the Bossaso market chain from trade during the peak period in 1998 due to the Saudi Embargo in 1997 in response to the reported outbreaks of Rift Valley Fever in Southern Somalia and North-Eastern Kenya in Late 1997 (Steffen et al., 1998). There was also import ban in September of 2000 which decreased the number of livestock exported, resulted in the dramatic depreciation of Somaliland Shilling, and local currency, loss of revenue by port authorities, urban poverty and unemployment and deforestation (Holleman, 2002).

Table 3.21: Percentage of Somali Traders Reporting the Problems they face in the Livestock Markets in the Selected Market Chains

<i>Trader Type</i>	<i>Constraints</i>	<i>Bossaso</i>	<i>Berbera</i>	<i>Garissa</i>	<i>All</i>
Exporters	Lack of Market Infrastructure	81	100	8	68
	Delayed Payments	73	88	17	62
	Low Selling Prices	36	88	17	53
	Fluctuation in Livestock Prices	27	65	42	48
	High cost of animals	27	59	42	45
	N	11	17	12	40
Agents of Exporters	High cost of animals	34	40	11	31
	Unauthorised Road Taxes	37	10	11	28
	Fluctuation in Livestock Prices	11	80	22	26
	Lack of Recognised Certification	31	0	22	24
	Lack of Market Infrastructure	20	60	0	24
	N	35	10	9	54
Small Scale Traders	Lack of Market Infrastructure	27	74	20	41
	Low Import Demand	22	70	20	38
	Delayed Payments	32	21	13	25
	Low Selling Prices	9	43	0	18
	Low Preference for Somali Animals	18	0	27	11
	N	44	23	15	76
Brokers	Lack of Market Infrastructure	23	39	0	29
	Fluctuation in Livestock Prices	8	48	0	27
	Import Bans	8	37	0	21
	Delayed Payments	23	17	20	18
	Poor Market Support Services	0	20	0	10
	N	40	46	20	94

4 Conclusions and Recommendations

This study was conducted with the main objective of providing empirical evidence that informs debate and decision making process towards improving livestock trade and marketing in Somalia. Specifically, this information was to facilitate the development of effective and efficient marketing support services, provided by accountable and competent rural institutions. The data were collected first through rapid appraisal, whose output was then used to design and implement formal surveys among livestock traders and other market agents along three market chains using structured questionnaires. Statistical and econometric methods were used in data analysis. In this section, some key findings of this survey are highlighted, their implications discussed and policy recommendations suggested to address any emerging concern.

This study has established that although livestock production in Somalia is undertaken under diverse production systems, the marketing system is operating in such a way that it is able to select and present at export ports seemingly homogenous products from this richly diverse production environment. However, in order to increase the benefits accruing to all traders in the livestock market, it is important to address a number of factors as informed by the findings of this study.

4.1 Livestock products grades and standards

This study established that: (i) there exists a three point grading system for cattle (i.e., Grade I, II, and III) and these grades are dependent on the nutritional status, age and sex; (ii) the grading categories in small ruminants is not as well defined, probably because they are traded in batches in export markets where exporters may mix different grades in a single batch. In fact each batch is composed of the optimal blend of animals of all three grades. This is geared towards achieving maximum uniformity and homogeneity to attain the highest possible average quality standard at the least possible cost and by extension lessen their demand for grades of highest quality; and (iii) these quality traits significantly affect buying and selling price of animals. These findings have two key implications. First, there indeed exists an informal grading and standard system practiced in the Somali livestock export marketing chains, and secondly, this grading and standards system determines the buying and selling prices of livestock.

This information provides an important starting point with regard to formalising these informal grades and standards into the Somali livestock marketing system. Its is of necessity

to formalise classes and grades for livestock not only to provide market information that would be intelligible through the public press, but also provide traders and consumers of livestock with a thorough knowledge of the classes and grades of livestock as they relate to meat quality requirements. Hence therefore, it is important to define, document and disseminate the commercial attributes of Somali livestock and ensure that producers, traders and consumers have access to this information. Specifically such information may comprise of bulletin descriptions, definitions and/or photographs of the market grades of cattle and the market grades of the resultant meat quality. This requirement is reinforced by the growing demand throughout the livestock industry, meat industry and consuming public for uniform grading standards for livestock and livestock products. This information would be more acceptable and valid if it is based on sound scientific evaluation, say through a genetic evaluation of all livestock breeds in Somalia so as to decipher any inherent tradable genetic properties.

4.2 Market information flow

This study has shown that exporters are more advantageous as far as awareness of the requirements of the importing countries are concerned. Such requirements include commercial characteristics of live animals and quality and safety standards. This finding suggests a scenario of information asymmetry among the different categories of market participants. Furthermore, exporters were found to exploit this asymmetry by only transmitting an interpretation of these requirements to the lower end market agents in a way that benefits them most. Despite this finding depicting the existence of an autonomous information flow within the market chain, and in essence leading to selection of quality products, it would be prudent to correct for the inherent asymmetry shortcomings through establishment of a livestock marketing information (LMIS) system that equally empowers all players. Such a system would enable traders target those market segments in which they have comparative advantage.

Establishing sustainable and demand-driven LMIS that serves not only the public but also the private sector is critical to the improvement of the operational efficiency of livestock marketing in Somalia. The LMIS should involve key stakeholders in order to ensure coordination of public and private sectors and its sustainability. However, this intervention should also go beyond the important technical details of market data collection methodology and database management and consider the responsiveness of the system to users' needs – particularly those who can pay for LMIS services - and the institutional setting in which the LMIS can be operational. The strategy should develop a system of marketing data collection, processing and dissemination at reference markets. Dissemination of clearly

defined grades and standards empower producers to better target their production strategies to meet the demand of consumers in premium export markets. On the other hand traders would be better placed to collect better quality animals. The same would also contribute towards development of a sound quality assurance and certification system by the relevant institutions enabling better access to prime export markets.

The circumstances in Somalia call for a unique approach in designing an effective LMIS. It will need among others, the use of promotional material targeting external audience especially importers, traders and consumers in the importing countries. One approach would entail a wide promotional and communication strategy managed by the Chambers of Commerce or Export Traders' Association. A combination of website material, leaflets, videos and bulletins may be appropriate.

4.3 Human capacity development

Formalisation of grades and standards and the establishment of a functional LMIS are likely to be constrained by a number of factors, key among them being limited human resource capacity and lack of supportive infrastructure. This argument emanates from the listing of the major constraints to marketing given by the market participants. Addressing this limitation call for two immediate interventions: first, there is need for provision of tailored technical and organisational training to different stakeholders within the Somali livestock marketing chain to enhance their capacity to incorporate formal grades and standards and implement and manage sustainable market information system among other pertinent issues. Secondly, there is need to increase access to communication tools and materials that will promote networking and enhance the promotional capacities of different stakeholders.

Results of this survey also revealed that livestock traders have limited educational background which does not allow them to understand the complex and dynamic livestock export markets. Providing short-term training in various aspects of livestock export business will help traders and market actors to improve their understanding of export market. Human resource development/capacity building at different levels is required to contribute towards a better understanding of the need for coordination along the value chain to enable ultimate self-enforcement of health certification and voluntary standards within the system.

Role of traders in the establishment and sustainability of the certification system also needs to be highlighted as at the end it is being done for their interest and benefit and any violation of the system for personal gains may raise question about the system as a whole thus jeopardise export in general.

4.4 Development of physical infrastructure to reduce marketing costs

This study established that the components of livestock marketing costs were not only high, but also variable across the three marketing chains that were investigated. This finding implies that there is need to implement strategies that would harmonise and reduce marketing costs across the chains, so as to rationalise and stabilise trader profits. Specific policy measures would include interventions that would reduce marketing costs. Examples include investments in road network and security to reduce trekking and transport fees; and, improvement of port facilities so as to minimise port waiting period to cut down on feed and water costs. In addition there was a perceived requirement of the need for a concerted effort to reduce and harmonise taxes and levies so as to increase trader margins. This is likely to attract more private sector investment, cause stabilisation of margins and eventually lead to an improvement in producer prices and lowering of consumer costs.

4.5 Observing rules that govern livestock export trade

This study established that the Somali livestock export trade has limited ability to accurately monitor the presence or absence of specific features that would foster and support continued participation in the export market. Such characteristics include practices like proper animal welfare and abiding by health and safety requirements within the livestock marketing chain. This finding implies that there are limited control of procedures on health and safety status and animal welfare within the Somali livestock marketing system, despite these two factors being important requirements in the sustained participation and diversification of livestock export trade. Therefore, this calls for a strategy that would lead to the formulation and application of appropriate standards for monitoring livestock to ensure gradual and incremental product compliance to OIE standards as current conditions in Somalia will not permit immediate compliance of OIE standards as such in full. There is thus a need to develop and implement an acceptable, cost effective and sustainable system of certification for health and quality assurance in the livestock marketing chains in Somalia.

Currently, this study has shown that export animals are certified at the port quarantine for health and sanitary conditions especially against some key diseases. Animals passing through the market chain to the port are screened for those conditions at various stages of the chain by local veterinarians. Wider access to export market can't be guaranteed in the long run on the basis of the existing lax certification system as SPS requirements in the importing countries are increasingly becoming strict. Therefore, ways need to be found to improve the quality of the existing certification system involving different institutions whereby a system of certification is to be developed that is acceptable to the importing countries as reliable. The

development of a certification system should be a concerted continuous effort supported by an effective cost-benefit and economic analysis to ensure sustainability and wide acceptance by the various stakeholders.

Important elements of certification should include (a) improved livestock screening along the market chain, (b) harmonisation of grades and standards along the chain and their gradual standardisation, and (c) entrenchment of animal welfare issues along the chain. There is also a need to inspect the animals not only at the port but also at different stages in the marketing system. There is also need to institute surveillance at least at secondary markets. Having inspection at early stage in the marketing channel avoids costly rejections at latter stages.

4.6 Genetic characterization of breeds

This study established that there are some differences in preferences for specific breeds of cattle between different market outlets, and there are some indications of price differences between breeds as well. However, in the absence of scientific classification of breeds, market potential for different breeds can't be fully exploited. Somali livestock have evolved under various environments, production systems and therefore possess unique set of genes that enable them to cope with the often harsh environments. These genes have over-time interacted within the prevailing environment through both natural and traditional selection processes that has resulted in the survival of only those genotypes that match well to the past and prevailing environment. It is important to sustainably breed for the continued accumulation of such gene to exploit their current and future potential. To that end a first essential step is a proper science based characterization and classification of breeds.

4.7 Other supportive key interventions

(a) Empowering livestock traders through strengthening trade associations

There is a need to strengthen the chamber of commerce and traders' associations to improve their bargaining power with their trading partners in importing countries. Enlightening of traders on the need for such association and training them on how to build and maintain strong trade associations and improve interactions among themselves is required.

Stakeholder organisations that organise themselves to offer more than just privileged access to market information will tend to attract more members and to succeed more than one that does not. Such bodies would for instance, provide opportunities for trader collective action and networking so as to increase economies of scale and increase and stabilise marketing margins, actively lobby government bodies on specific issues, negotiate or litigate (or credibly threaten to litigate) on behalf of its members (who are perhaps too small

individually to contemplate such actions) which will provide extra motivation to members to join such an organisation – and to pay subscriptions to do so.

(b) Gender perspective

During the implementation of this study fewer females were accessible as respondents due to their socio-cultural sensibility. Therefore the knowledge and perception of the women traders about the market, their practices and constraints was not adequately investigated to show any differences between male and female traders. Given the results of the detailed formal surveys, repeat formal surveys among female traders might be unnecessary, unless sufficient evidence exists of differences arising due to gender perspective. However the implications of a gender perspective on trade and business access and practices and how this could be addressed while designing pilot interventions should be considered. A rapid rural appraisal through group discussions or case studies of women traders should be undertaken in stakeholder discussions for designing pilot interventions so that their perspectives are explicitly accommodated in the intervention designs.

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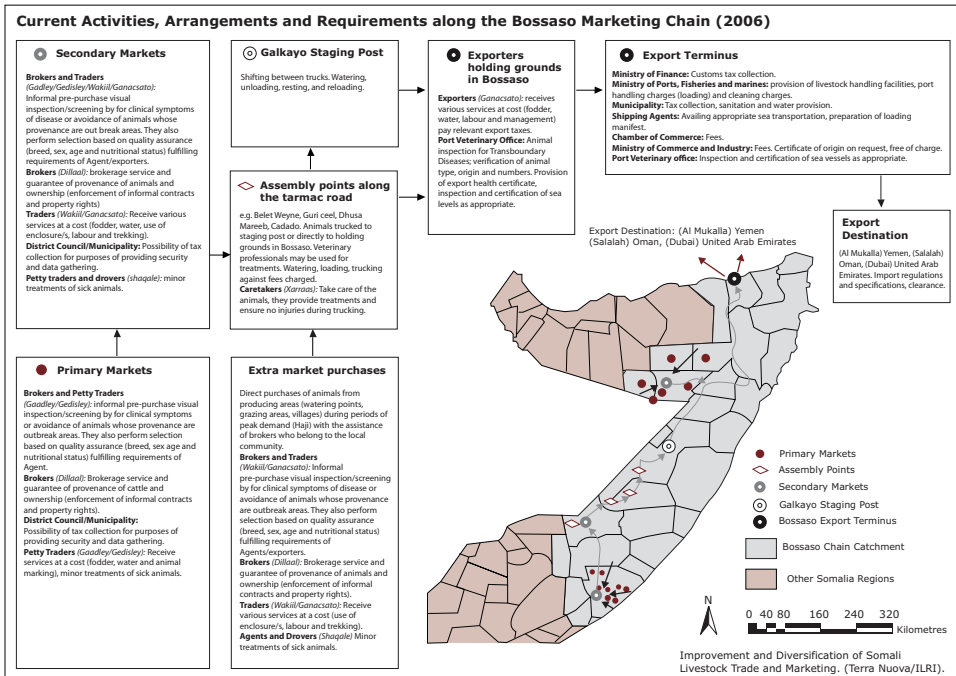
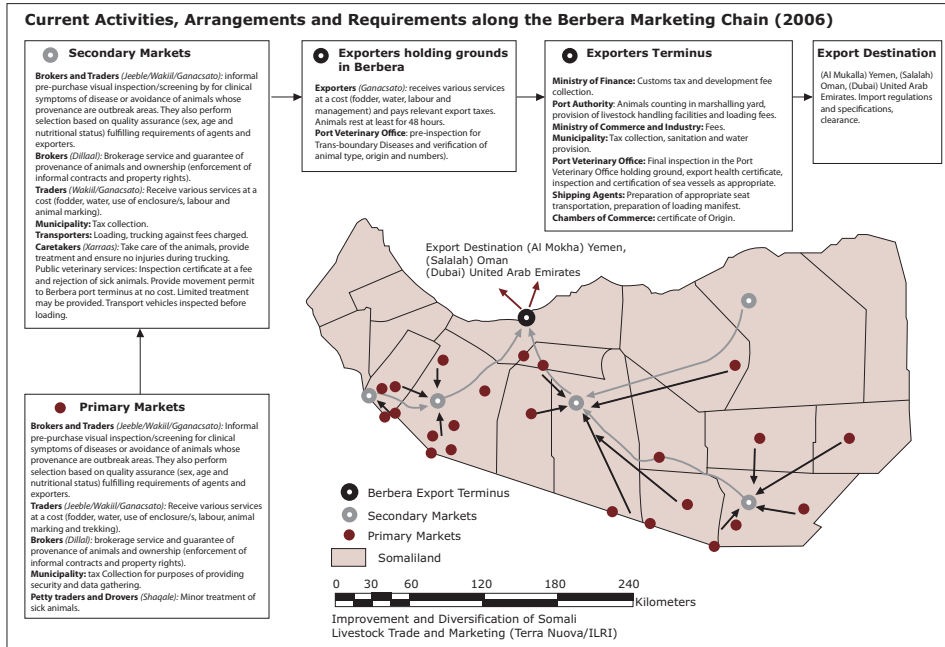
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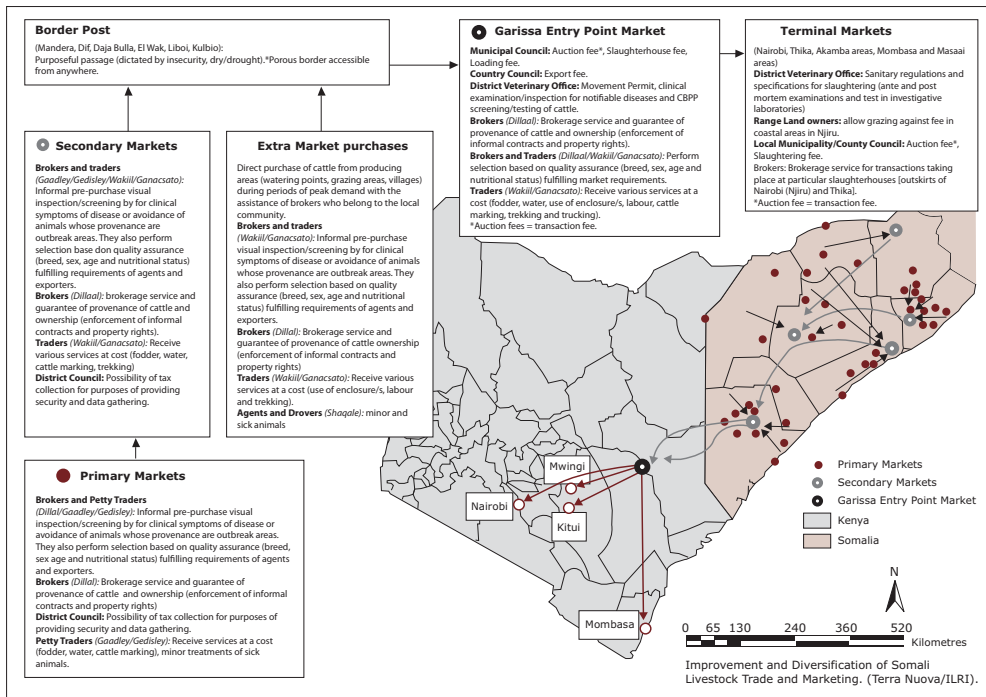
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Appendix 1

Activities, Arrangements and Requirements along the Somalia Marketing Chains (2006)

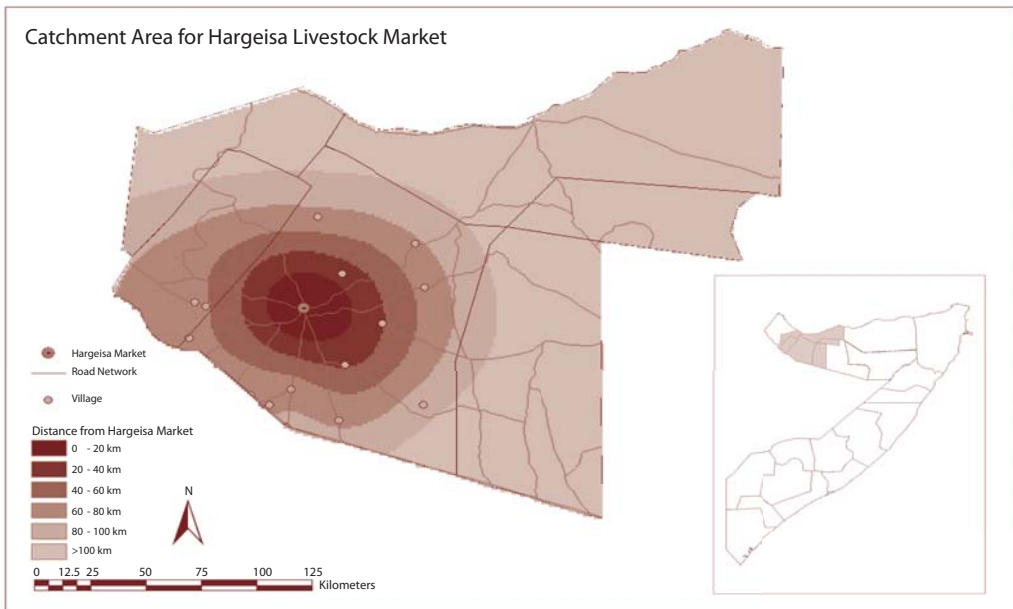
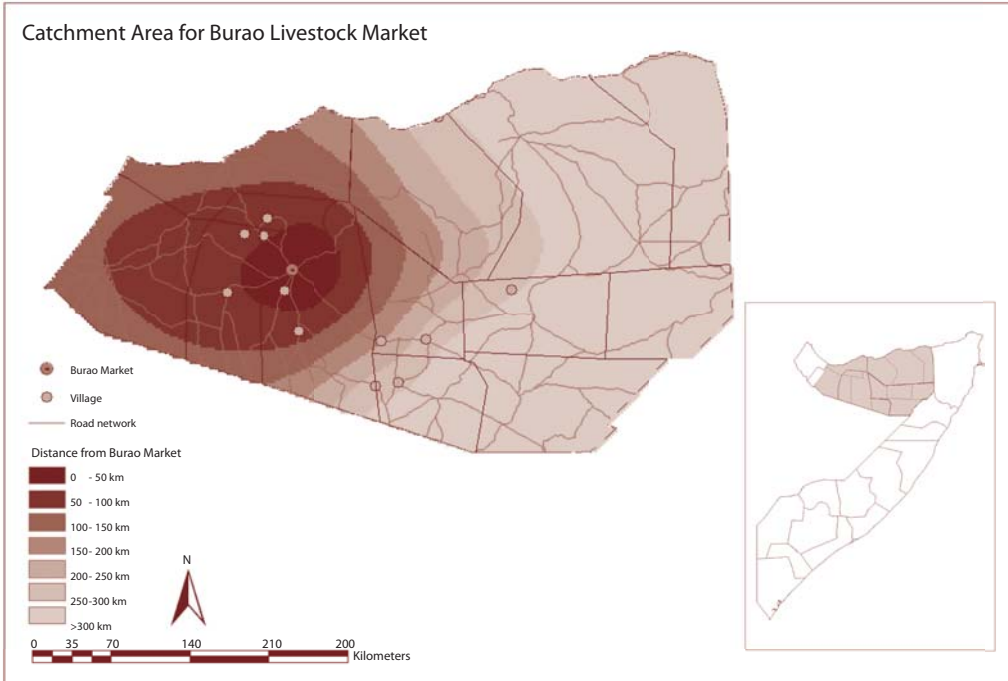


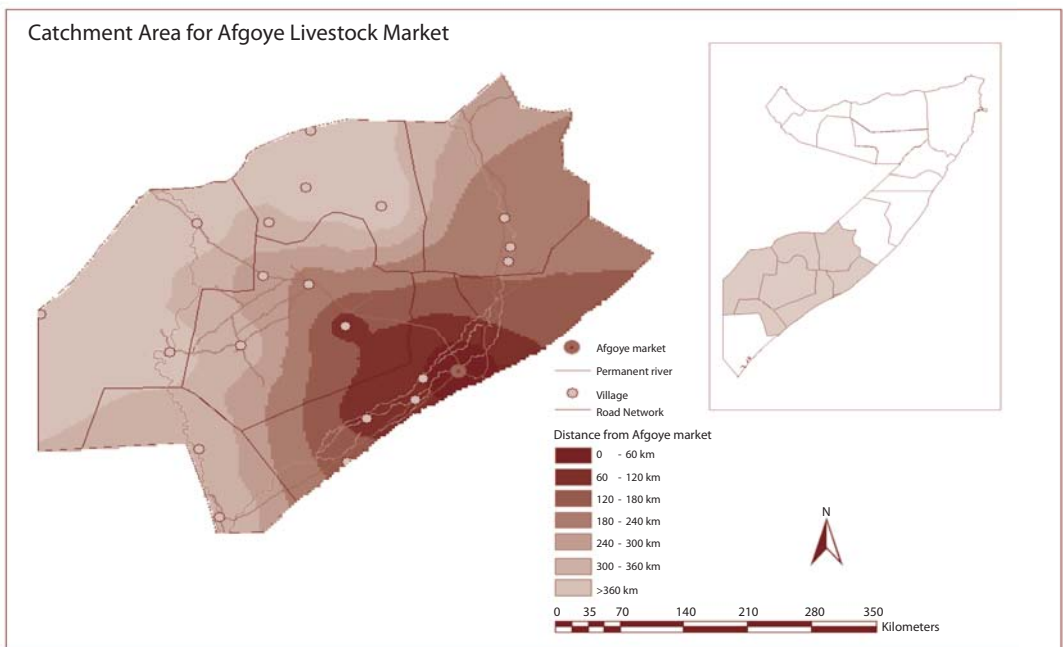
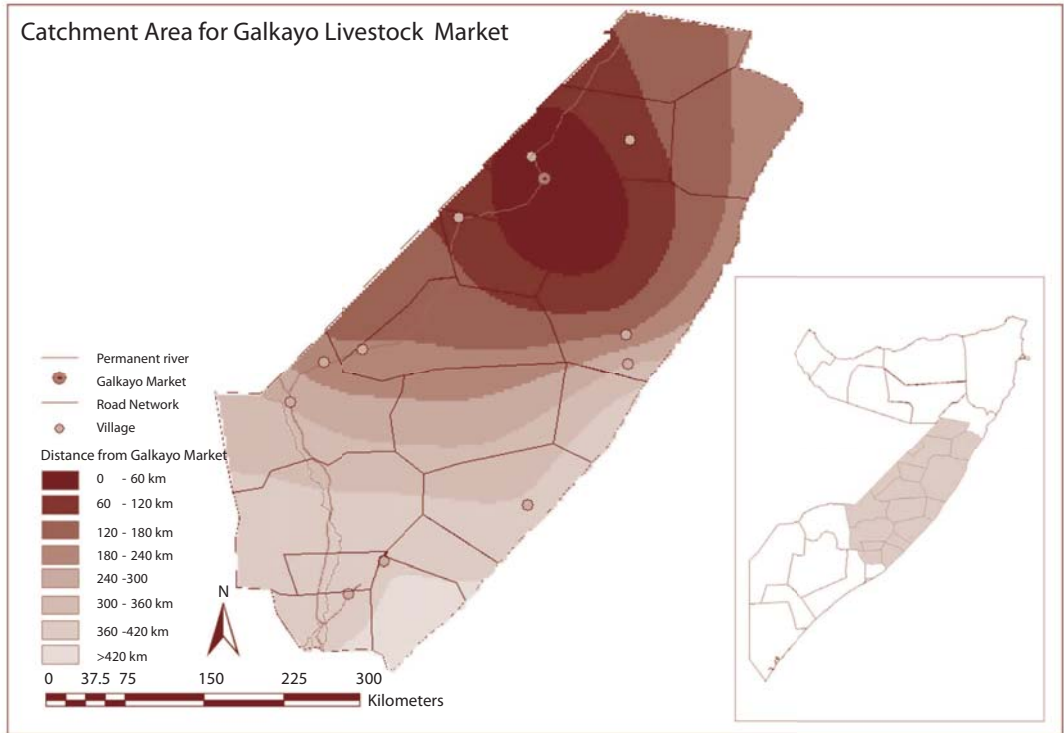
Current Activities, Arrangements and Requirements along the Garissa Marketing Chain (2006)

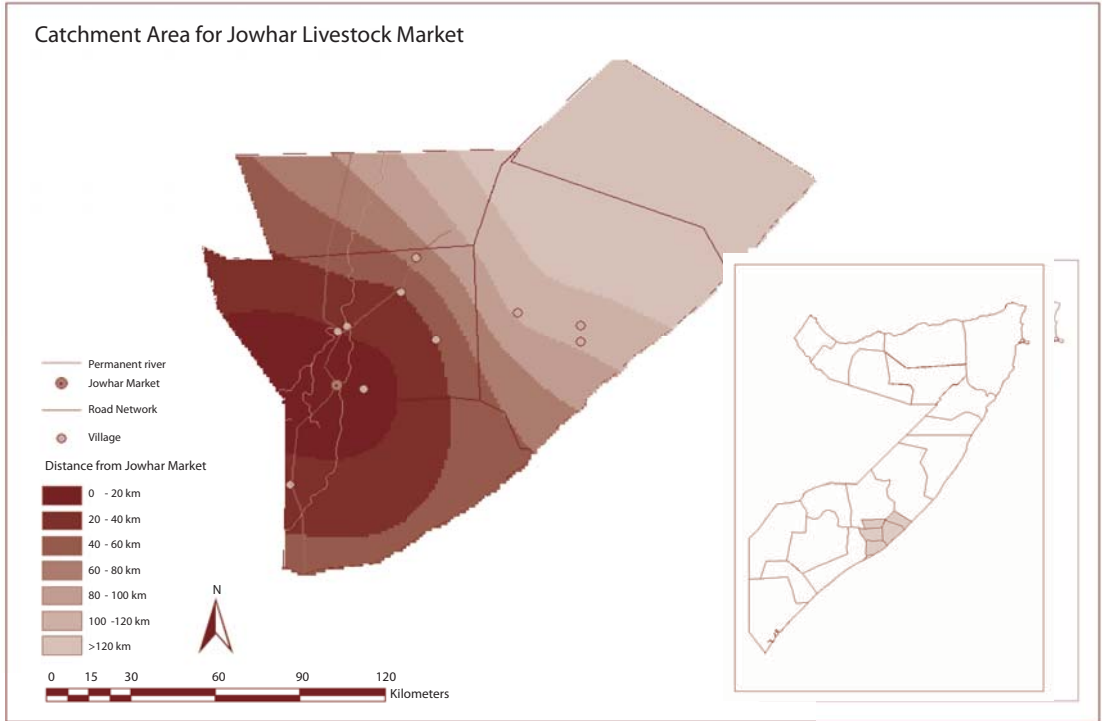


Appendix 2

Catchment areas/satellite markets for various secondary livestock markets investigated in Somalia







Appendix 3

Relationship between Age, Grade and Price of Animals in selected Markets in Somalia and Kenya: Results of Rapid Appraisal with Brokers

Table A.1 The Relationship between Age and Nutrition in Determining Sheep and Goats Grades

Grade	Export Quality Sheep		Export Quality Goats	
	Age (Years)	Nutritional Status	Age (Years)	Nutritional Status
I	3-4 ¹	For all ages FAT	4-5 ³	For all ages FAT
II	2-<3 ²	2 Years FAT; 3 Years NORMAL	3-4 ⁴	3 Years FAT; 4 Years NORMAL
III	<2	NORMAL	<3	NORMAL
		Yemeni Market		Yemeni Market
I	8 Months-1 Year	FAT	8 Months-1 Year	FAT

Source: TN, 2006

¹Males of 2 and 5 years of age can be occasionally of grade I quality but statistically constitute a negligible fraction of the group. Only very well developed and fat 2 year old males can at times be included and 5 year old males are rarely found because they are considered too old.

²Occasionally also animals of 4 and 5 years of age with a NORMAL nutritional status can be of grade II quality, however their number is statistically very low.

³Males of 3 and 6 years of age can be occasionally of grade I quality but statistically constitute a negligible fraction of the group. Only very well developed and fat 3 year old males can at times be included and 6 year old males are rarely found because considered as too old.

⁴Occasionally also males of 4 and 5 years of age with a NORMAL nutritional status can be of grade II quality, however their number is statistically very low.

Table A.2 Prices of Export Quality Borana Cattle by Selected Brokers in Afmadow Market (October 2005)

<i>Age category</i>	<i>Grade</i>	<i>Price (000 Somali Sh) for male</i>	<i>Price (000 Somali Sh) for female</i>
8	I	3,500	2,650
8	II	3,200	2,300
8	III	2,900	1,900
7	I	3,200	2,500
7	II	2,800	2,200
7	III	2,500	1,850
6	I	3,000	2,450
6	II	2,700	2,100
6	III	2,350	1,750
5	I	2,800	2,250
5	II	2,500	1,850
5	III	2,200	1,450
4	I	2,200	2,000
4	II	1,900	1,700
4	III	1,700	1,250
3	I	1,900	na
3	II	1,600	na
3	III	1,400	na
2	I	1,200	na
2	II	900	na
2	III	700	na

Source: TN, 2006

Table A.3 Prices of Export Quality Cattle for Different Breeds by Selected Brokers in Afgooye Market (July 2006)

Sex	Age category	Grade	Dauara Price (000 Som. Sh)	Gasara Price (000 Som.Sh)	Surco Price (000 Som.Sh)
Males	8	I	5,000	4,000	3,500
	8	II	4,500	3,000	2,600
	8	III	3,500	2,500	2,000
	7	I	4,800	3,500	3,000
	7	II	4,200	3,000	2,200
	7	III	3,300	2,300	1,800
	6	I	4,500	3,000	2,700
	6	II	3,500	2,600	2,000
	6	III	2,700	2,000	1,600
	5	I	3,300	2,500	2,200
	5	II	2,600	2,000	1,800
	5	III	2,100	1,700	1,400
	4	I	2,200	1,800	1,600
	4	II	1,800	1,500	1,200
	4	III	1,500	1,300	1,000
	3	I	1,500	1,400	1,300
	3	II	1,300	1,200	1,000
	3	III	1,100	950	800
	2	I	1,200	1,000	1,000
	2	II	900	800	Not for export
2	III	700	600	Not for export	
Females	8	I	2,200	Not for export	2,000
	8	II	1,700	=	1,500
	8	III	1,400	=	1,000
	7	I	2,050	=	1,900
	7	II	1,500	=	1,400
	7	III	1,200	=	900
	6	I	1,800	=	1,700
	6	II	1,400	=	1,300
	6	III	1,200	=	800
	5	I	1,600	=	1,500
	5	II	1,400	=	1,200
	5	III	1,200	=	700
	4	I	1,200	=	1,300
	4	II	1,000	=	1,000
4	III	900	=	600	

Source: TN, 2006

Table A.4 Prices of Slaughtering Quality Cattle (Borana breed) by Selected Brokers in Garissa Market (June 2006) (Nairobi Market: Slaughtering)

Age category	Grade	Price (Kenya Sh) for female	Price (Kenya Sh) for male
5	I	11,000	12,000
5	II	8,500	na
5	III	5,000	na
6	I	12,000	13,000
6	II	9,200	na
6	III	7,000	na
7	I	13,000	15,000
7	II	10,300	na
7	III	6,000	na
8	I	15,000	16,500
8	II	11,000	na
8	III	4,500	na
9	I	9,000	18,000
9	II	7,000	na
9	III	3,500	na
10	I		21,000

Source: TN, 2006

Table A.5 Prices of Slaughtering Quality Cattle (Borana breed) by Selected Brokers in Garissa Market (June 2006) (Akamba Markets: Draught Power, Fattening and Breeding)

Age category	Grade	Price (Kenya Sh) for male	Price (Kenya Sh) for female
1	I	4,000	
1	II	3,000	
1	III	2,000	
2	I	5,500	5,000
2	II	4,500	4,000
2	III	3,500	3,000
3	I	7,000	6,500
3	II	6,500	6,000
3	III	5,000	5,000
4	I	8,500	
4	II	7,000	
4	III	6,500	

Source: TN, 2006

Table A6 Prices of Slaughtering Quality Cattle (Borana breed) by Selected Brokers in Garissa Market (June 2006) (Mombassa Market Slaughtering and Fattening)

Age category	Class	Price (Kenya Sh) for males	Price (Kenya Sh) for females
3	I	7,000	na
3	II	5,000	na
3	III	3,500	na
4	I	7,500	na
4	II	7,000	na
4	III	6,000	na
5	I	13,000	na
5	II	9,000	na
5	III	7,000	na
6	I	14,500	na
6	II	10,000	na
6	III	9,200	na
7	I	17,000	10,000
7	II	12,000	8,000
7	III	9,000	6,000
8	I	20,000	12,000
8	II	14,000	7,000
8	III	11,000	5,000
9	I	21,000	6,800
9	II	16,000	5,000
9	III	11,500	4,500
10	I	25,000	6,000
10	II	20,000	5,000
10	III	12,000	3,200
11	I	na	6,000
11	II	na	5,500
11	III	na	4,000
12	I	na	4,000
12	II	na	3,000
12	III	na	2,500
13	I	na	4,000
13	II	na	3,000
13	III	na	2,500
14	I	na	2,500
14	II	na	2,000
14	III	Na	2,000

Source: TN, 2006

