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## Market chain analysis of goat in south omo zone of SNNPR, Ethiopia

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### ABSTRACT

This study was initiated to identify market chain actors and their function in the market, investigate the structure conduct and performance of goat marketing in south omo zones of SNNPR, Ethiopia during the year 2018. Primary data were collected from sampled pastoralists and agro pastoralists, traders and brokers. Before the household survey, key informant interview and focus group discussions were conducted with producers, traders and brokers. Descriptive Statistics and qualitative data analysis techniques were employed to analyze the goat market structure, conduct and performance. The results show that producers, brokers, traders and consumers were the major goat market actors. Regarding the market structure, cattle market is known to be dominated by few traders. Although the degree of competition varies, goat market structure in the study area has an oligopolistic nature. This shows that only few traders have the majority of market share and earn abnormal profit. Besides, goat market is characterized by entry barriers, distant market point, high trucking cost, seasonality of marketing, information asymmetries and unfriendly relation between actors. As the pastoralists and agro pastoralists mainly depend on goat for their livelihoods and other cultural values, traders take advantage of the asymmetric market information towards them. The larger share of the market gains remains with end traders thereby limiting the pastoralists and agro pastoralists chance to realize the economic gains in goat production. Thus, linking producers to market and its benefits, establishing cooperatives and development of infrastructure could play a significant role for optimization of the sector.

**Keywords:** Goat marketing, Structure, Conduct and Performance

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## Introduction

Goats are among the most common livestock species in Ethiopia with an estimated population of 32.74 million, of which 70.49 % are females (CSA, 2018). Compared to the rest of the continent, Eastern Africa has the greatest concentration of goats (Payne, 1981; FAO, 2008) being more than 74 million. Ethiopia has the highest number of goats (18 million), Kenya (10 million), Tanzania (12 million) and Uganda (8 million). They produced over 0.7 million tons of milk and 0.2 million tons of meat in the year 2006 (FAO, 2008), besides mohair, cashmere, leather, and manure for fuel and fertilizer. The majority of these animals are found in smallholder farms in dry pastoral areas and in the highlands (Sibanda *et al.*, 1999; Juma *et al.*, 2010; Ahuya *et al.*, 2005).

It is appreciated that live small ruminants have been and are currently marketed from various regions of Ethiopian rangelands to various

destinations through use of various market players. Under normal circumstances, small ruminants are the first choice of livestock species to be sold, mainly to meet immediate household needs (Abdi, 1996). It is however noted that more than domestic markets, international destinations are more difficult to access due to stringent animal health and quality control requirements.

Majority of goat marketing information in the pastoralist level is outdated, unreliable and as the result it could not able to provide, the real picture of the economic contribution of pastoralists sector for the country economy and the community engaged in the sector. For the pastoralists' community undertaking research on structure conduct and performance of goat is believed to enhance its productivity by locating economical goat marketing routes. Current knowledge on Small Ruminant market chain,

price formulation, market structure, channels/outlets, conduct, performance is poor and inadequate to inform policy and for institutional reform in southern region. South Omo zone is one of the southern regions with high potential in goats. However, Knowledge on the marketing chains is not well understood on how it is organized and structured. The present studies try to fill the gap and see the goat market chain opportunities and problems in the study area. Therefore, this study will provide relevant information with respect to the market chain of goat by (a) identifying the major market actors and their function of cattle market, (b) identifying the marketing channels, (c) examining the market structure, conduct and performance, determinants of goat market participation decision and quantity supply, challenges and opportunities of goat marketing in the area.

## Objectives

### General objective

To undertake market chain analysis of goat in selected areas of southern Ethiopia.

### Specific objectives

- To overview structure, conduct and performance of goat trade.
- To sort out major market actors and their function in the market.
- To identify and map the major market channels of goat trade.
- To identify major opportunities and constraints of goat trade.

## Methodology

### Description of the study area

South Omo Zone is one of the 13 administrative zones found in SNNPRS which covers an area of 25530 km<sup>2</sup> and is located 4.430-6.46' N and 35.790-36.06'E, and has a human population estimated 472977. The population density of the zone is 21 persons per km<sup>2</sup> it's bordering with GamoGofa Zone, Keffa Zone and Konta and Basketo special Woreda in north, Kenya in south, konso and Derashe special woredas in east and Sudan & bench maji Zone in west.

The Zone is divided into 8 woredas and 1 city administration. Generally, the altitude of the zone ranges between 360 and 3500 masl. The traditional agro-ecologies Dega, woinadega, kola and semi-arid cover 0.5, 5.1, 60.0, and 34.4 percent, respectively of the total area. Rainfall pattern in the area is both unimodal and bimodal. The mean annual rainfall ranges between 400 and 1600 mm. The mean annual temperature ranges between 10.1 and >27.0°C.

Market concentration ratio was used to estimate the market structure. Market concentration was analyzed using the equation:

$$C = \sum_{i=1}^r Si$$

Where:

$C$  = concentration ratio handle

$Si$  = percentage share of  $i^{\text{th}}$  firm

$r$  = number of largest firm for which the ratio is going to be calculated. The HHI is expressed as:  $HHI = (S_1)^2 + (S_2)^2 + (S_3)^2 + \dots + (S_n)^2$  (where  $S_n$  is the market share of the  $i^{\text{th}}$  firm). The value of HI index can also be calculated by the following formula:

$$HI = \sum \ln(\text{percent share})^2$$

### Methods of data collection and data collection instrument

The major data collection methods that were used in the investigation periods includes individual household interview, group discussion and key informant interview. A preliminary assessment was conducted to collect basic information about the woreda in order to select representative kebele and the major goat marketing centers. Thus, discussions with key informants and market chain actors at various levels within the zone and observation was conducted.

The study was planned to develop flow diagrams of the supply chains focusing on goat, showing how and where value is added and the strengths and weaknesses along the supply chains. The survey also include relative importance of pastoral goat production system (dependency, livelihood, etc.), types of inputs and costs of input, total revenue from goat marketing and perceptions of marketing actors (relationship with suppliers/buyers, relative benefits of the business, key constraints (horizontal and vertical) and Possible solutions.

### Sampling techniques and sample size

For this particular study a two stages sampling techniques were used. The producers interviewed in the study were agro pastoralist/pastoralists. Both traders and brokers were selected purposely and interviewed. The random probability sampling technique was used for selecting the representative producer households from the area. Two stages sampling technique was used for selection of agro pastoralist/pastoralists Kebele identification that made through secondary data of woreda offices. Three Kebeles from each pastoralist and agro pastoralist woreda were considered in the survey. Respondent sample size per each Kebele will be determined proportionally to the number of total household in the study area. The sample size determination techniques that employed was Rule of Thumb Techniques that estimate by using the following

formula: 100% for 0-100 populations, 10% for 101-1,000 populations, 5% for 1,001-5,000 populations, 3% for 5,001-10,000 population and 1% for more than 10,000, respectively (Yount, 2006). Based on this technique the sample size of agro pastoralist/pastoralists household interviewed from respective kebeles. The survey study at Woreda level considered the number of producers, traders, brokers and other market actors in proportion to the population size and for the traders based on their availability. The major market actors that were interviewed include traders, agro pastoralist/pastoralists, trekkers, truckers, consumers and hotel owners.

## Methods of data analysis

### Descriptive analysis

Descriptive statistical analysis was used to define mean, mode, percentage and standard deviation of important economic variables considered in collecting information. In addition to this descriptive statistical analysis, analysis of market structure, market conduct and market performance was also carried out.

### Market structure of goat

Market share can be analyzed using the equation:

$$MS_i = V_i / \sum V_i$$

Where:

$MS_i$  = market share of buyer  $i$

$V_i$  = amount of product handled by buyer  $i$

$\sum V_i$  = total amount of product

Market concentration can be analyzed using the equation:

$$C = \sum_{i=1}^r S_i$$

Where:

$C$  = concentration ratio handle

$S_i$  = percentage share of  $i^{\text{th}}$  firm

$r$  = number of largest firm for which the ratio is going to be calculated.

The concentration ratio  $CR_x$  (as expressed by Kohls and Uhl, 2002) refers to the percentage of the market sector that is controlled by the biggest  $X$  number of firms. A ratio of four firms ( $CR_4$ ) is the most typical concentration ratio for judging market structure. A  $CR_4$  of more than 50 per cent indicates a tight oligopoly;  $CR_4$  between 25 and 50 per cent is generally considered a loose oligopoly; and a  $CR_4$  of less than 25 per cent is a competitive market. We analyzed the degree of market concentration ratio for all sampled traders in the study area, measuring the percentage share of the volume of goats bought by the largest four traders annually.

### Market conduct of producers and traders

Under market conduct of goat trade in the district, Price Setting Mechanisms and terms of payment were the major variable to be observed thoroughly.

### Market performance of goat

#### Marketing margin

Marketing margin was calculated taking the difference between producers and formal exporter or informal exporter or trader prices. Producers' share can be expressed as: the ratio of Producers share of the Price to traders share. Mathematically,  $PS = P_p/P_t = 1 - MM/P_t$  where  $PS$ =producers share,  $P_t$ =price of traders, and  $MM$ = market margin. It was possible to Calculate the total or gross marketing margin of goat trade=Traders Price-less--agro pastoralist/pastorlists price/traders price\*100. Market performance refers to the impact of structure and conduct as measured in terms of variables such as prices, costs, and volume of output. Analysis of the level of marketing margins and their cost components enabled to evaluate the impact of the structure and conduct characteristics on goat market performance.

## Results and Discussion



Figure 1. Regular goat suppliers for traders.

Table 1. Reasons for low price of goat.

Reason for low price	Yes	No
Excess supply during favorable conditions	45.5	54.5
Excess supply due to drought	81.8	18.2
Trade regulation	54.5	45.5
Increase in other substitution: sheep or other	55.6	44.4

According to respondents, the reason for low price of goat was about 45.5% due to excess supply during favorable condition whereas about 54.5% of respondents were those who said excess supply was not the reason. Of the respondents 81.8%, 54.5% and 55.6% were those who said excess supply due to drought, trade regulation and increase in other substitution such as sheep or other respectively were the reason for low price of goat where as 18.2%, 45.5% and 44.4% those who said no reason for low price (Table ?).

About 87.5% of the sample respondents who said that supply of labour for goat production were not a problem whereas the remaining 12.5% of the respondents said supply of labour was a problem. Those who said the supply of labour was not a problem because that about 96.7% of the sample respondents have been used family labour for goat production while the remaining 3.3% get hired labour and cooperation as indicated here below in the graph

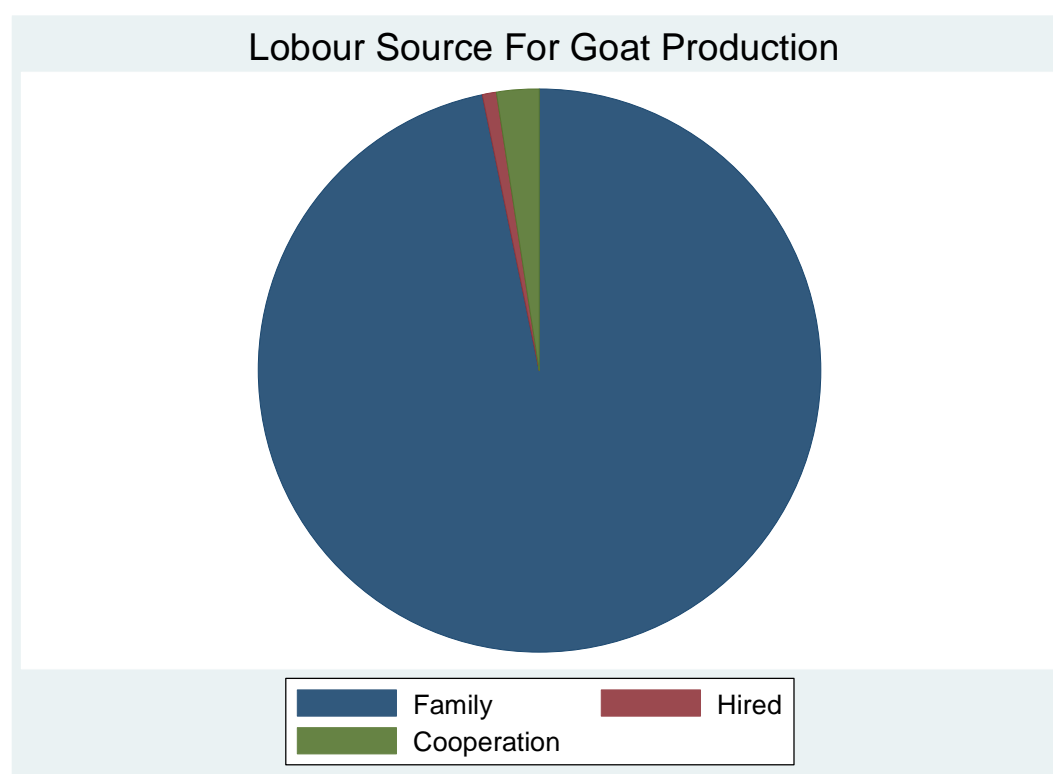


Figure 2. Labour source for goat production.

### Goat production constraints

According to the sample respondents the major constraints for goat production when ranked in order of importance were include Disease, shortage of fodder, wild animal, theft, shortages of vaccination, miscarriage and other constraints such as water shortages and lack of awareness on goat production.

### Live goat marketing and actors

According to the sample respondents in 2008, the individual pastoralists and agro pastoralists

have been supplied goat to the market and market agent on average about 3.46 that ranged between 1 and 30 goats. The average price per goat sold to the market and market agent was 476.84 birr. Of the total sample respondents, 99% was sold their goat in cash while only 1% exchanges their goat with food grains like sorghum or maize. When the pastoralists and agro pastoralists need cash for home consumption or other home problems they either sell their goats at their farm gate to local collectors or trek them to the market. According to the survey The pastoralist and agro pastoralist



sell their goat about 82.00% to the local traders, 1.80% to traders and collectors, 5.40% to other pastoralist, 5.40% to abattoirs and to all market agents. Majority of agro pastoralists and pastoralists sell their goat to the local traders. According to the sample respondents they have put the reason why they sale to the local traders in order of importance. Accordingly, the reason was good price, air scaling, proximity, buyers go to their residence and they are customers to agro pastoralists and pastoralist. From the sample respondents the pastoralist and agro pastoralist the number of goat sold to each market actors on average include 3.56 to small and medium traders, 2.86 to other pastoralist, 2.39 to local collectors, 1.75 to abattoirs while 1.00 to brokers.

**Local collectors:** These are part-time traders live in rural areas as pastoralists or come from nearby town markets. They collect goats from pastoralists in bush markets and resell them to retailers, butchers, hotels, restaurants and household consumers in the study area. The local collectors in the study area market chain connect pastoralists with traders, playing an important and active role in the market chain despite they face financial constraints. They are familiar with the pastoral producers who have goats available in remote areas.

**Medium-scale traders:** These actors are in the middle of the market chain that are financially strong and have management knowledge of all aspects of business activity and actors in the chain. They source goats from producers, small-scale traders and local collectors. Medium-scale traders have many opportunities to sell their goats, mainly to butchers and hotels as well as end consumers. They also play a large role in tracking goats from the study area market to

other market places — including Mojo, Debrezeit, Arba Minch.

**Butchers and hotels:** These are the final links in the commodity chain before the end consumer. They create jobs for temporarily employed slaughters and hotel staff. They are regular buyers, except for Orthodox butchers during the fasting time. Most of the Orthodox butchers close until fasting is broken, but Protestant and Muslim butchers remain open.

**Consumers:** These are individual actors who buy goats for their own consumption directly from producers or via local collectors, small and medium-scale traders or butchers.

### ***Marketing cost, margin and market performance***

Comparing average marketing costs for different actors in the goat market channels, we found that pastoralists, at the start of the chain, have the lowest marketing costs and medium-scale traders have the highest. Pastoralists' costs for transportation, taxes and vaccination amounted to 52.15 birr per goat on average, which is less than the costs borne by other actors. Costs for local collectors, medium and small-scale traders, butchers and hotels commonly included expenses for watching, warding, fodder, grass, telephones, transportation and ropes. When demand is low, small-scale traders incur higher costs as they have to keep the goats, feed and water them before selling them on other market day. When transporting goats from the study area to Mojo and Nazret market places, costs to medium-scale traders included loading and labour for transportation. The study identified 8 possible marketing channels for pastoralists.

- pastoralist → other pastoralist
- Pastoralist → brokers → local collector → abattoirs
- Pastoralist → small/medium scale traders → abattoirs
- Pastoralist → small/medium scale traders → exporters
- Pastoralist → local collectors → small/medium scale traders → exporters
- pastoralist → brokers → local collectors → small /medium scale traders → abattoirs → consumer

Among the above channels, in channel IV producers receive better price than other channels

Producers share = Producers price / Traders price  
 $517.95 / 565.83 \times 100.00\% = 91.54\%$

The total gross marketing margin (TGMM) is useful to calculate the producer's gross margin (GMMp), which is the portion of the price paid by the consumer that goes to the producer.

$TGMM = \frac{\text{Traders price} - \text{Producers price}}{\text{Traders price}} \times 100\%$

$TGMM = \frac{565.83 - 517.95}{564.83} \times 100\%$ , which is equal to 8.5%

### ***Structure, conduct and performance of goat marketing***

#### ***Market structure of cattle***

Diverse actors including pastoralists, agro pastoralist local collectors, brokers, traders, hotels and restaurants, characterize Goat market structure in the study area. Each actor has its own function. Pastoralists and agro pastoralists are the first actors of in the market chain of goat. Some of major duties and responsibilities of pastoralists and agro pastoralists include supplying healthy and quality goat. Brokers are important actors in the market chain of goat and

they play facilitation of market process, market information provision, price setting, and acting as delegates of traders such as making agreement between sellers and buyers. Traders' role is purchasing, price setting, giving final market price, controlling marketing process and market information provision.

With respect to marketing channel, *formal* goat marketing channels were identified in the study area. According to key informant interview, there was no any informal marketing channel in the study area. As traders pay taxation fee for respected organization in the chain, goat traveled to Mojo. Natheret, Arbaminch, A. Abeba and Konso referred as formal market channel ([South Omo Zone Trade & Industry Office, 2018](#)). The formal market channel has been developed and has different sub channels.

### **Channel I. Pastoralists-other pastoralists**

In the cattle market channel pastoralists sell goat to other pastoralists and it is known for restocking and usually undertaken around farm gate. The major aim of this market chain is for production. The proportion of pastoralists that depend on this type of goat market channel amounts to 5.40%. Pastoralist households undertake marketing activity in this route by friendship, kinship and neighborhood pattern.

### **Channel II: Pastoralist-broker-local collectors-hotels and restaurants**

In this goat market channel 0.9% of pastoralists sell their goat to brokers and brokers sell to collectors. Here, collectors resell to hotels and restaurants.

### **Channel III: Pastoralist-small/medium traders-abattoirs**

This goat market channel is one of usual market channel. Brokers are not used as mediator but the small/medium traders in this market channel purchase from producers directly and resell to abattoirs. The proportion of sampled pastoral households accustomed to use these types of cattle market channel amounts to 82.0%.

### **Channel IV: Pastoralist-small/medium traders- formal exporter**

In this channel, the producers sell goat to small/medium scale traders and small/medium scale traders sell goat to formal exporters.

### **Channel V: Pastoralists-brokers - local collectors - small/medium scale traders - abattoirs - consumers**

In this goat market, channel pastoralists sell cattle to local collectors and local collectors sell to small/medium scale traders, the small/medium scale traders sell to abattoirs and abattoirs then to consumers.

## **Degree of market concentration**

Here, the market concentration ratio of the goat is presented and discussed. As it was indicated in the above section, the market concentration ratio was calculated using two usual techniques. The two techniques employed for estimating market share of the goat market were Concentration ratio and Herfindahl Index. Market power of firms is estimated using Concentration ratio of top four traders as well as HI Index. The HH index is the sum of the squares of the market share of goat traders, which are 1803.18. This indicated that the market structure for the goat trade was imperfect in the study area has oligopolistic set up since it is greater than 1800.

## **Pastoralists and agro pastoralists marketing practices of goat**

The sample respondents indicated that about 56.8% of the sample respondent buy the goat from village market, 32.2% from woreda market while 9.3 from both woreda and village market. According to the sample respondents, majority (84.0%) of the sample respondents buy goats from pastoralist, 2.5% buy from local traders, 0.8% from local collectors where as 10.1% from both pastoralists and local collectors.

According to sample, pastoralists and agro pastoralists bought respondents, on average 1.67 goats on one market day that ranged between 1 to 8 goats at an average price of 401.96 birr. According to the sample respondents about 91.8% buy goats in terms of cash while 6.4% was in kind by exchanging goat with food grains and the remaining only 1.8% was both in cash and advanced payment. Of the sample respondents, about 60.8% was known informally the market prices before they sold their goat whereas 39.2% did not. However, the majority (80.0%) of the sample respondents informally know the nearby market price before they sold their goats. According to the sample respondents, they get market price information from local traders, neighbors, local collectors and by visiting the market. The sample respondents indicated that about 58.0% of the respondents said the price trends of goat in the last five years was increasing while 37.0% said the price trends was decreasing, 3.2% the price trends was same and only 0.8% said the price was fluctuating. From the sample respondents those who said increasing in price trend of goat was due to: 8.6% good quality of goats, 10.0% fewer goats in the market, 7.1% decrease in numbers of goats in hands of producers, 4.3% shifting of producers' livelihood system and majority (62.9%) of the sample respondents said price trend was increasing because of increased number of traders, population increase and high demand for goat in the market. From the sample respondents those who said the price trend for the goat was

decreasing due to 45.7% quality of goat was decreasing, 43.5% was shortage of feeds and drought, absence of the market in their surroundings and absence of receivers. According to the sample respondents from the total the number of goats that sold in the market have the best quality desired by major customer were 23.7% very few, 8.5% few, 32.2% about half, 3.4% many and 32.2% said all goats desired by the customers.

The sample respondents indicated that majority 51.5% of the sample respondents said the brokers create wrong price market information, 23.7% cheated on weighing scales, 16.5% was charged high brokerage fee while the remaining 8.3% were wrong price, cheating and high brokerage fee. Majority (73.3%) of the sample respondents face difficulty in finding buyers when they want to sell their goat whereas 26.7% said not difficult to find buyers. This is because of 61.8% low price offered, 24.7% inaccessibility of market, 6.7% due to lack of market information while the remaining 6.7% were low price, inaccessibility of market and lack of market information.

According to the sample respondents, when they didn't get the expected price from their goat about 44.2% was sold at lower price, 35.8% took the goat back to home, 1.7% took the goat to another market on the same day, 0.8% sold at another market day, 5% took the goat back home and sold them at another market days, 5.8% sold at lower price and took the goat back to home. Of the total sample respondents, 99.2% of the respondents get money as soon as after selling of goat while only 0.8% said on other days.

### ***Intervention needed on improvement of goat***

During the household interview, the sample respondents indicated that feed and water availability, good management of goat and fattening that enables the pastoralists and agro pastoralists to earn higher income from their goat in the market. As the respondents were said changes that are needed to reduce cost of production of goat were about 40.0% lower priced drugs and vaccination treatments, 36.7% was increased availability of fodder and water access while 15.0% were increased fodder and water access as well as lower priced drugs and vaccination treatments. The sample respondents indicated that activities that are important to reduce the cost of marketing were about 39.2% access to information on how to link with buyers and on current price of goats, 5.0% increasing road access, 3.3% eliminating brokers to decrease commission fees, 29.2% was reducing transportation cost and taxation, 6.7% were both increasing road access and access to information on how to link with buyers while the remaining 16.7% were increased road access, access to

information, eliminating brokers to decrease commission fees. The intervention that are important to increase the number of goats that can be supplied to the market were 34.2% was creating high price for goats on the market, 32.5% raising awareness on saving money, 16.7% were both raising awareness on saving money and creating high price for goats on the market and the remaining 16.6% information on the occurrence of future drought and price falls ,creating high price for goats and awareness creation on savings. As the sample respondents indicated types of intervention that would increase the quality of goats for pastoralist and agro pastoralist in order to enable them sell their goat at high price were include 28.3% maintaining the health of goats, 20.0% hybridizing the goat with productive one, 4.2% was focusing on quality rather than quantity, 15.0% were fattening the goat, availability of fodder and good management while 20.0% was maintaining health, hybridizing and focusing on quality as well as switching to other more productive goat stocks. According to the sample respondents, they were ranked the problems of goat marketing in order of importance. Accordingly, these were low price, lack of market, lack of market information; brokers hinder fair sales, lack of transport and taxation. Of the sample respondents about 49.2% made decision to sell goat demand for consumption, 20% fear of drought, 10.8% was maturity, 10% for both maturity and demand for consumption, 1.7% were for both market price and consumption while 7.5% were both fear of drought and consumption.

Most of the time pastoralists and agro pastoralists keep their goats in open access. They incurred costs on transportation, vaccination treatment and taxes which is minimum as compared to that of traders.

### ***Entry and exit conditions in the goat market***

The long market distance from pastoral areas to central towns of Ethiopia and the related high trucking cost, high capital demand, institution based marketing and information asymmetries are some of the major entrance and exit barriers in goat trade in the area. The number of goat supplied to market in holidays, religious festivals and wedding occasions are also higher than that of others seasons. Therefore, informal institutions, market distance, high transaction cost and high capital need are some of major barriers for entry and exit of goat market in the area. For some traders in order to undertake marketing activity directly; it is must to speak local language. So as to take part in goat trade, it is also must secure large amount capital for purchasing goat, trucking and trekking.



## Market conduct

Market conduct refers to the strategies adopted by a player as a way of adjusting to the market conditions in order to fully enjoy the market benefits. Notably, it includes mechanisms such as price setting and terms of payment.

### (i) Price setting mechanisms

The price setting activity of goat in pastoralist and agro pastoralist study area is known to be accomplished by various actors in the market. Regarding to the sale price negotiation 20.2% of the sample respondents said all are sold for the price given by buyers,

Of the 19.3%, most are sold for the price given by buyers and few are negotiated, 28.6% most are sold negotiated and few are sold for the price given by buyers, 26.9% all are sold negotiated and only 5% of the sample respondents said most are sold for the price I call to the buyers and few are negotiated.

This shows that market actors had different level of influence in the role they played for setting price. It is observed that traders majorly control every aspect of price setting mechanisms. This means that price setting in goat market is often skewed toward traders and brokers. The result indicates that traders undertake non-price competitions including trade experience, personality, financial capacity and language. The implications of this market structure are few potential traders' accounts for large market share, market dominance by these top four traders, interdependency and collusion possible.

### (ii) Terms of payment for producers

Both the household survey and key informant interview reveals that the goat marketing by pastoral and agro pastoral households has been undertaken in the form of cash or hand-by-hand currency. The proportion of producers who indicated cattle marketing carried out in the form of direct cash payment is 99%. The remaining 1% of the pastoralists and agro pastoralist marketed both hand in hand cash payment and in kind exchanging their goat with food grains. This justified that almost all producers market their goat in the form of direct cash transfer.

## Recommendations

- Traders and producers reported that the lack of basic facilities and infrastructure is the major constraint on progress and/or functioning of the goat market. Provision of services including credit services for new traders, veterinary facilities, watering stations, roads and updated market information would improve the performance of the marketing system in the area.
- Our market performance analysis confirmed that the longer the marketing chain, the lower the pastoralists' share in the TCMM. The main actors in goat production and marketing in the study area are producers, local collectors, small and medium-scale traders, butchers, hotels and end consumers. The study identified 5 different market channels, involving different configurations of actors, through which live goats travel to reach the end consumer.
- Pastoralists can shorten the marketing chain by cutting out the intermediaries and increasing the number of activities, they undertake themselves such as rearing, fattening, transportation and trading. However, while such vertical integration could bring benefits, adding activities to the pastoral and agro pastoral production system also adds costs and risks for pastoralists. Support services to identify appropriate technologies and provide training on marketing systems, information and working capital could help alleviate some of these risks.
- Our market concentration analysis showed that in the study area, the goat market structure was an oligopoly with HH index of 1803, in which a few number of male traders were able to dominate the market. The analysis of market margins and performance showed that this was because the medium-scale traders were well connected to markets offering good prices and most producers were obliged to sell their goats through the channels they controlled. However, if producers were to strengthen inter- and intra-group linkages by organizing into cooperatives rather than acting as individuals, they could have greater control over the supply of goats to the markets.

## Conclusions

The study revealed that goat production and marketing chains already support a large number of people, making a sizeable contribution to the regional economy. Reinvesting some of these revenues could help further stimulate the market, encourage pastoralists to participate and produce more goats of the quality consumers' demand. Although the livestock production system of smallholder pastoralists' agro pastoralist in South Omo Zone mainly focuses on subsistence and is not a market-based system, the study identified opportunities to improve performance. Investments in support services could help pastoralists produce the quantity and quality of goats demanded by the market. Health care services and systems for creating market connections and increasing awareness of demand in remote areas would also help pastoralists respond better to market demand.

Almost all market structures of cattle in the area show the non-competitive nature. The HH index is the sum of the squares of the market share of goat traders, which is 1803.18. This indicated that the market structure for the goat trade was imperfect in the study area and has oligopolistic set up since it is greater than 1800. This HH index indicates that the market structure of goat is imperfect and the competition is among the few traders. This few large traders share majority of market share and earn abnormal profit. This could be one of the suspected reasons for producers for low productivity of the sector. Hence, it is for systematic government intervention to minimize exploitation benefits by trader's that belongs to producers through cooperative establishment.

It was observed that there exists larger number of market brokers for goat and in many cases; the brokers hold much needed information so as maximize on the commissions. It is also observed that oligopolistic market structure violates the principle of equity between the traders and the pastoralists. This is because the larger share of the market gains remains with end of traders thereby denying pastoralists and agro pastoralist a chance to realize the economic gains in goat production. Comparing average marketing costs for different actors in the goat market channels, we found that pastoralists and agro pastoralist, at

the start of the chain, have the lowest marketing costs and medium-scale traders have the highest.

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