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Price Spread Analysis of Cattle in Hadiya Pastoral Areas

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Abstract

This study was undertaken in the pastoral areas of Hadiya zone of SNNPR, Ethiopia with the objective of assessing the efficiency of cattle marketing. The required data were generated from both primary and secondary sources. The marketing margin analysis manifested that, butchers incurred the highest cost of 94 Birr per head followed by itinerant and amateur traders while rural collectors made the largest profit (542 Birr per head) followed by butchers (506 Birr per head). The producers share was found largest in the direct sale to consumer followed by sales directly to butchers and to butchers through rural collectors. So as to improve the gain for pastoralists it is better to integrate vertically and since adding activities adds costs and risks, identifying an appropriate technologies, training on marketing systems to be undertaken, and providing information and working capital would alleviate the problem and improve gain from marketing.

Key words: Price spread, Pastoral cattle marketing

1. Background and Justification

The pastoral sector contributes significantly to Ethiopian economy, employment and agricultural production and demand creation for agricultural and industrial products, even though evaluation of its total benefits is difficult (Hatflied and Davies, 2006). The pastoral production system often geographically located in the lowland areas and their livelihood depends on the movement of livestock to and from seasonal grazing areas, which in turn may require movement across national boundaries (Getachew, 2001). It is estimated that the pastoral sector supports over 40% of the country's livestock, 61% of the total area of the country of which 46% is arable land, and 12% of the population (Mohammed, 2003).

Livestock markets have a very important effect on pastoralists' welfare because converting herd mortality losses into sales could avert widespread, human suffering. This also accelerates both herd recapitalization (once range conditions improve) and economic growth more broadly by conserving local wealth (McPeak, 2001). However, the net gain to the producer is influenced primarily by shifts in retail demand, farm supply, and marketing input prices. But other factors also can be important, including time lags in supply and demand, market power, risk, technical change, quality, and spatial considerations.

An efficient marketing system is one capable of moving goods from producer to customer at the lowest cost consistent with the provision of the services that customers demand (FAO, 1977). Channel comparisons and price spread analysis are commonly used measures of market efficiency (performance). The price spread (margin) entails the difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of farm produce. This spread consists of marketing costs and margins of the intermediaries, which ultimately determine the overall effectiveness of a marketing system. The price spread will be helpful in studying the efficiency of the marketing system if used to show how consumers' expenditure is divided among market participants at different levels of marketing system (Jema, 2008).

2. Research Methodology

2.1. *Description of the Study Area*

The pastoral and agro-pastoral areas of Ethiopia are mainly found in border areas of the country in North East, East, South, South West and West. These areas cover about 2/3rd of the country's total area and are found in altitude of less than 1500 (Alemayehu, 2007). This study was conducted in two pastoral and agro pastoral districts of Hadiya zone, south Ethiopia. These are Soro and Gombora district.

2.2. *Data and Sampling Technique*

The data for the study were collected from both primary and secondary sources. The secondary sources are Central Statistical Authority (CSA), International Livestock Research Institute (ILRI), Pastoralists' Forum Ethiopia, District and Zone Finance and Economic development offices, Districts' offices of Agriculture and Rural Development, and the primary data sources include individual pastoral households, group of pastoralists and traders, and key informants.

For this particular study a two stage purposive sampling (to select the districts and the PAs) followed by random sampling techniques (to select the households) was used. Factors like percentage of pastoral population of the districts, number of pastoral PAs and cultural issues (local titles based on cattle number) were important while selecting the districts. Six major pastoral PAs (Peasant Association) from Soro district and three PAs from Gombora district (one third of the pastoral PAs from each district) were then identified based on season the pastoralists are available in the PAs, tribe/clan distribution, neighbouring ethnic groups and area of production. Market survey was undertaken through visual observation, and by discussion with buyers and sellers at the time of cattle transaction.

2.3. *Data Analysis Technique*

The study used price spread and commodity chain analysis (CCA), which involves mapping the chains, involved in particular production sectors, the different types of activity, geographical location and actors in different roles at different levels. In addition, it identifies the interrelationships between marketing agents, opportunities and constraints at the different levels and the different interests and power relations which influence how value is distributed at these different levels (Adina and Farmer, 2006).

Livestock marketing margins is the difference between the sales price of the animal (meat) and the costs incurred by the seller including the acquisition price of the animal (Solomon, 2004). The study of cost of livestock marketing as animals change hands from the producer to consumer involves assessing the costs and the actual expenses incurred in the marketing process. The costs include not only the costs of performing the various marketing functions, but different levies as well were considered (Dhillon *et al.*, 2005). As considered by Solomon (2004 cited from FAO, 2004), the costs considered in livestock market study are:

(i) transporting (trekking, trucking and/or railing);
(ii) feeding (including grazing);
(iii) marketing levies and taxes imposed by local and national authorities;
(iv) mortality or loss (some animals die during transit because of diseases or other physical stress; some might stray and not be recovered);
(v) conditioning or/ and processing costs;
(vi) capital as represented by the interest on the money tied up by the livestock from the point of purchase to the point of sale; and
(vii) the opportunity cost or salary of the operator (trader, etc.)

In the marketing margin analysis, Total Gross Marketing Margin (TGMM), the producer's share in consumer price or Producers' Gross Marketing Margin (GMMp), the net marketing margin (NMM) were considered as indicators. While computing TGMM the final price paid by the end buyer used, and it is expressed as percentage of the final price (Mendoza, 1995).

$$TGMM = \frac{\text{End buyer price} - \text{First seller price}}{\text{End buyer price}} X\ 100 \quad (1)$$

Where TGMM = Total gross marketing margin.

In order to get producer's portion or producer's gross margin (GMMp) which is the portion of the price paid by the consumer that goes to the producer. The producer's margin is calculated as:

$$GMMp = \frac{\text{End buyer price} - \text{Gross marketing margin}}{\text{End buyer price}} X\ 100 \quad (2)$$

Where GMMp = the producer's share in consumer price.

The net marketing margin (NMM) is the percentage of the final price earned by the intermediaries as their net income after their marketing costs are deducted.

$$NMM = \frac{\text{Gross marketing margin} - \text{Marketing costs}}{\text{End buyer price}} X\ 100 \quad (3)$$

Where, NMM = Net marketing margin.

3. Results and Discussion

3.1. *Cattle Marketing System*

Marketing system is a collection of channels, intermediaries, and activities, which facilitate the physical distribution and economic exchange of goods (Kohls and Uhul 1985). The cattle marketing system in the study area was discussed with respect to the pastoralists marketing behaviour, which governs season, amount, and the choice of their marketing channels and outlets.

3.1.1. Purpose of marketing

Markets link producers to consumers. Markets affect producers/pastoralists either when they trade cattle or purchase food and other necessities. The pastoral households purchased cattle for breeding, fattening, for gifts (marriage, circumcision, fines) or to be slaughtered and consumed. Moreover, the sample pastoralists ranked their reasons for selling cattle, 32% to escape the disease and drought, and 27% sold in fear of predators and raids/since both need the fattened animals, 16% to fly to South Africa, replacement and income need accounted for 14% and 11% (Table 1). But all the respondents who were engaged in buying, bought cattle for breading purpose and all of them bought steers and heifers for the purpose. There was a statistically significant ($P<0.05$) difference among the three off-take positions with respect to reason of off-take. A shown in the Table 1, about half of the households in the selling position are risk averse *i.e.* they sell cattle in expectation of bad weather and or disease. This is mainly due to the fact that since they have fulfilled their cultural obligations they do not want to lose their capital for nothing provided that a sales option is there.

Table 1. Reason of cattle commercial off-take by commercial off-take position

Reason of sales	Autarky n%(n=47)	Selling n%(n=50)	Buying n%(n=63)	Total sample	χ2-value
Escape disaster	41	47	23	32	6.34**
Insecurity	20	19	23	27	
Fly abroad/SA[c]	16	26	8	16	
Replacement	10	3	23	14	
Income need	14	3	23	11	

Source: survey result, 2009

***Significant at 5% significance level, n= sample size*

[C] migrate to South Africa

3.2. *Commodity Chain Analysis*

Commodity Chain Analysis is used to refer to the overall group of economic agents (or the relevant activities of those agents) that contribute directly to the determination of a final product (final use). Thus the chain encompasses the complete sequence of operations which starting from the raw material, finishes downstream, after several stages of transformation or increases in value, at one or several final products at the level of the consumer (FAO, 2005).

3.2.1. Actors

According to KIT and IIRR (2008), chain actors includes direct chain actors, which are commercially involved in the chain (producers, traders, retailers, consumers) and indirect actors, which provide financial or non financial support services. The agents identified in the area along the commodity chain are pastoralists and their input suppliers, rural collectors, amateur traders, itinerant traders, brokers, and butchers.

Pastoralists

As depicted in Appendix 1, pastoralists are the first link along the cattle commodity chain, who decide on how much to produce, and how much, where and when to sell. The pastoralists travelled long distances along the commodity chain *i.e.* they undertake some type of inter-firm upgrading like medicating, fattening, transporting. Pastoralists sold 12% of their total sale at their farm gate, 17 and 71% at the primary and secondary markets respectively. In the primary market the pastoralists sold 7% of their total sales to amateur traders, 3% to butchers, 6% to itinerant traders, and 1% to consumers. In the secondary markets the pastoralists sold 25% of their total sales to amateur traders, 27% to itinerant traders, 12 and 17% to consumers and butchers respectively. Pastoralists as a seller and pastoralist trader as village collectors dominate the transactions in the primary markets. They trek cattle to the nearest village (primary) or secondary markets where they can sale either directly or indirectly through brokers.

Village collectors

According to the group discussion, these actors are buyers and sometimes speculate cattle since in one way or another they are engaged in cattle production. This category of actors mainly consists of pastoralist traders and farmer traders. They collect heifers and steers from other markets to sell to the pastoralists. Village collectors are the major suppliers in the primary and secondary markets, next to the pastoralists. They bring together the relatively small number of cattle, which individual households wanted to sell. According to Hailemariam *et al.* (2009), these actors attract larger traders because they provide access to larger quantities of cattle and eliminate the need for traders to locate and contact producers at their scattered yard. They purchased all the sales made at the farm gate by the pastoralists, and sold 42% of their total sales to amateur traders, 33.5% to itinerant traders, and 17% to butchers, 8% to consumers (Appendix 1). Village collectors function commonly in the remotest and least accessible areas where institutional services frequently do not reach, thus providing marketing services for rural surpluses, and often also fulfilling the consumption needs of the rural communities by selling consumer goods (Bolokang 2006).

Amateur traders

The amateur traders are those actors who trade cattle sometimes in a year (Williams *et al*,. 2006). Appendix 1 shows that these traders purchased 32% from pastoralists directly (7% in the primary market and 25% in the secondary markets), 42% of the total sale by the village collectors, and sold 5% to consumers, 7% to itinerant traders and 4% to butchers in the primary markets and sold 57% to itinerant traders (19% in primary and 38% in secondary), 38% of their total sales to butchers. According to Solomon (2004) they participate in cattle trading business at the time of high margin, which is at the time of festivals. In the study area the amateur traders identified includes those who are engaged in grain trade, cattle medicine and salt trade, small ruminant traders. These traders purchase cattle in bulk as compared to the rural collectors.

Itinerant traders

Itinerant traders are fulltime traders permanently engaged in cattle trading activity throughout the year that either have or do not have any cattle-trading license (Solomon, 2004; Umar and Baluch, 2007). According to the focus group and key informant discussions they have relatively better capital as even as compared butchers. Four of the livestock traders inherited their business from their family. None of them have had access to financial institutions. Rather they depend on family and friends/co-traders. Based on Appendix 1, itinerant traders were buyers in the primary markets and were both buyers and sellers in the secondary markets. They bought 6% of a total sale of pastoralists, 19% of total sale of the amateur traders, and 34% of the total sale from village collectors in the primary markets. And in the secondary markets they bought 27% from pastoralists 38% of total sale of amateur traders and sold 43% their total sale to butchers and 58% to consumers. All of these traders do not have cattle trading license, more surprisingly three of them (eight itinerant traders) are from one family and two from another, who informally collude (for they are tied in blood or marital relations) to dominate the market to decide on prices and quantity. They used this relationship to dominate the market in setting prices and cooperate during transportation.

Butchers

Butchers are the final links before the consumers along the commodity chain. They have purchased 20% of total sales by pastoralists, 17% of total sales by rural collectors, 38% of total sales by amateur traders, and 42% of the total sales by itinerant traders. Three butcheries from Hosanna, Gimbichu and Jajura towns were considered in this study to make the chain mapping complete. All of the butcheries used abattoirs built by the municipality of their respective towns. Butcheries are regular purchasers of cattle (*Denbegnas*), especially during non festival seasons. In Appendix 1, consumers are the final actors of the chain, and represent both local consumers in the study area, and markets outside the study area so that to help finalise the chain mapping.

3.3. *Price Spread Analysis*

As Appendix 2 displays different marketing cost components incurred in the course of cattle marketing by different actors along the cattle marketing chain. Along the chain, butchers incurred the highest cost of marketing (94 Birr/head) while the pastoralists incurred 25.5 Birr/head. The high cost of the Butchers is attributed for payment to abattoirs (sanitary and phytosanitory), transport, and labour which amounts 53.2% of the marketing cost *i.e.* 50 Birr/head. Whereas other traders incurred more or less related costs for cattle feed, holding stations, market levy, broker fees and estimated labour costs. The amateur traders and itinerant traders incurred equivalent cost of 39 Birr/head; this is mainly related with similarity of value addition.

As also depicted in Table 2, eleven major channels were identified in the process of cattle marketing from pastoralists to consumers. The share of the market actors was different along each channel. The total gross margin is the highest in the third (13.2%) and the ninth (13.2% of the consumer's price) channels implying relatively shorter channels brings in low total marketing margin. The producer's share was highest (100%) in the first channel, in which the pastoralists had disposed of their products directly to the consumer and it was lowest (71.5%) in channel seven (Table 2). The producers' share in other channels was lower than channel one because the producers sold their produce through the traders (traders of all scales including butchers) who reaped away large amount from the consumers Birr. Next to first channel (*i.e.* direct sale), the fifth (sales to butchers through rural assemblers), sixth, eighth, and the eleventh channels (direct sale to butchers) was comparatively profitable channels for sale of cattle in the study area. In the cattle chain analysis rural collectors get the highest gross margin 750 (23% of the final consumers' prices) in channel five, amateur traders get 350 (11%), itinerant traders and butchers get 550 (17%) and 400 (12.3%) respectively. Table 2 demonstrates the costs and profits that each agent along the chain make. In their course of action amateur traders made the largest profit of 311 Birr per head followed by butchers (306 Birr per head), village assembler (272.5 Birr per head) and 161 Birr per head by itinerant traders.

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Table 2 Marketing margin calculations along the cattle marketing channels

Market actors	Marketing measures	Cattle market channels										
		CH-1	CH-2	CH-3	CH-4	CH-5	CH-6	CH-7	CH-8	CH-9	CH-10	CH-11
Cattle (head)		18	6	33	24	12	24	86	79	12	202	116
Producers'	Price/head	2100	2100	2100	2100	2100	2100	2300	2300	2300	2650	2850
Rural collectors	Price/head		2300	2300	2650	2850	2650					
	Gross margin/head		200	200	550	750	550					
	Marketing cost/head		27.5	27.5	27.5	27.5	27.5					
	Net marketing margin/head		173.5	173	422.5	442.5	422.5					
Amateur traders	Price/head			2650				2650	2650	2650		
	Gross margin/head			350				350	350	350		
	Marketing cost/head			39				39	39	39		
	Net marketing margin/head			311				311	311	311		
Itinerant Traders	Price/head				2850		2850		2850		2850	
	Gross margin/head				200		200		200		200	
	Marketing cost/head				39		39		39		39	
	Net marketing margin/head				161		161		161		161	
Butchers	Price/head					3250	3250	3250	3250			3250
	Gross margin/head					400	400	600	400			200
	Marketing cost/head					94	94	94	94			94
	Net marketing margin/head					306	306	506	306			106
Total gross marketing margin %		0	8.6	13.2	7	12.3	12.3	18.5	12.3	13.2	7	6.1
Producers portion (%)		100	91.4	86.8	93	87.7	87.7	71.5	87.7	86.8	93	93.9
Rank of channels by producers' share		1	4	6	3	5	5	7	5	5	3	2

Source: survey result, 2009, CH = channel

4. Conclusion and Recommendations

Along the pastoral cattle marketing chain five marketing agents were identified. These are the producers (pastoralists characterized by weak upgrading initiative), rural assemblers, amateur traders, traders (itinerant), butchers and brokers are the major actors along the chain. As already noted conflicts, robbery/raiding, absence of markets, drought and disease were critical problems while absence of marketing and production facilitates were ranked as serious problems in the study area.

The analysis of the marketing costs and margin revealed that pastoralists incurred the lowest marketing cost and butchers the highest marketing cost of 94 Birr where only butchery costs are 54% and that of pastoralists was 23.5 Birr. Marketing margin of the participants was different along different channels; producers get their highest profits in first, fifth, seventh and ninth channels in descending order. None of the actors incurred losses; this may be attributed to the higher demand for the cattle and or underestimation of costs because of computational difficulties in non tradable goods and the existence of public /common property goods.

The chain analysis indicates that there was poor inter group and intra group linkages. And this relationship minimised the gain pastoralists are supposed to obtain. To improve the return of the pastoralists in the chain: it is better to increase the number of chain activities the pastoralist undertakes from rearing, fattening, transportation and trading *i.e*. vertical integration. Vertical integration shortens the chain by cutting out traders or other intermediaries by performing their functions. Since adding activities adds costs and risks, identifying appropriate technologies, training on marketing systems to be undertaken, and providing information and working capital would alleviate the problem. In addition, the major problem reported by both the traders and producers was lack of basic facilities and infrastructure that constrained the progress and/or functioning of the cattle market. Hence provision of such service like veterinary facility, watering stations, roads, telecommunication, holding stations, and market yards would improve the performance of the marketing system in the area.

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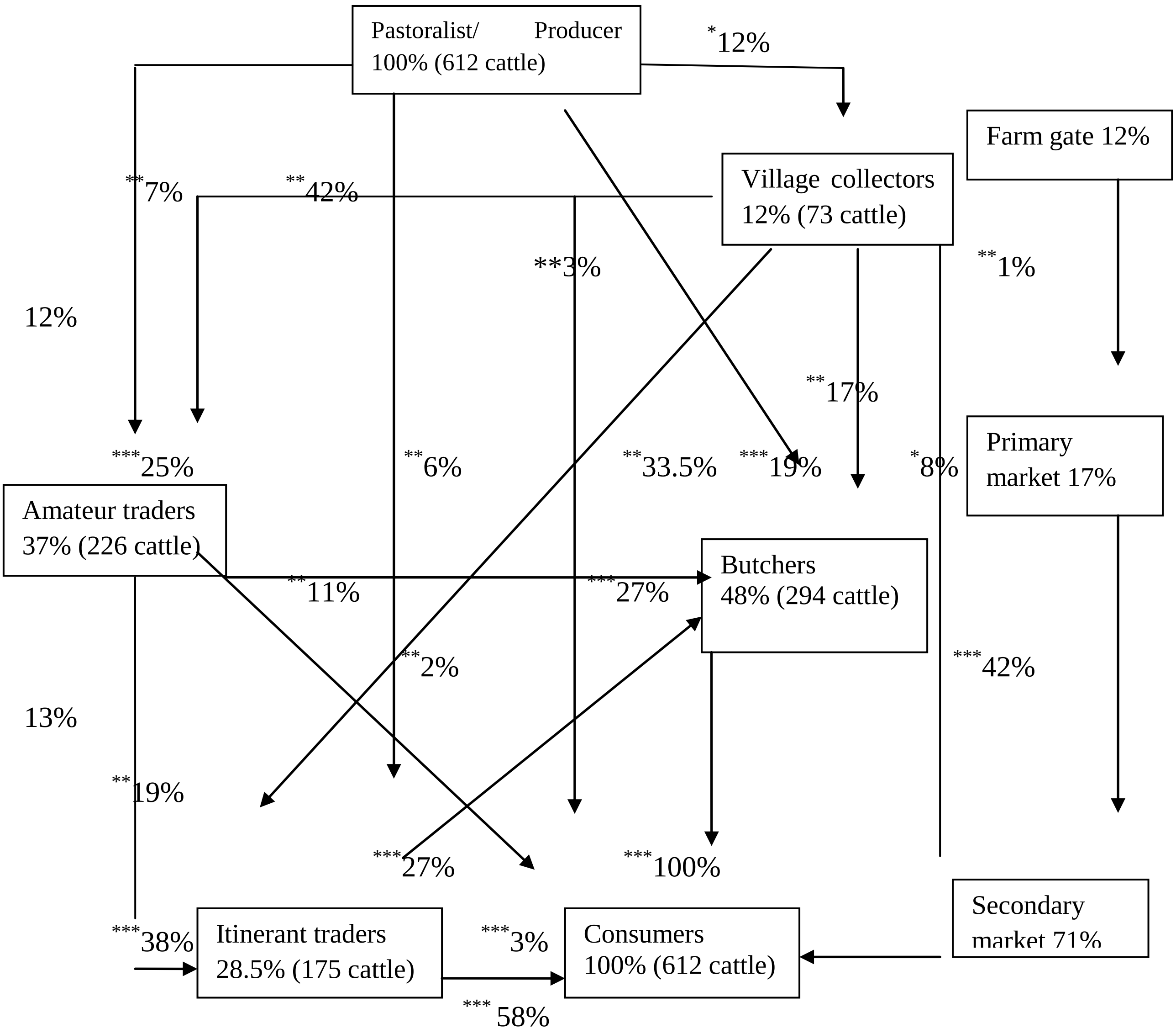
Appendix 1: A Sketch of Marketing Channels in the Study Area



Source: survey result, 2009

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Appendix 2: An Estimated Calculation of Marketing Cost

Cost components	Pastoralist	Rural assembler	Amateur trader	itinerant Trader	Butcher
Cattle sale price /head	2100	2300	2650	2850	3250
Supplementary feed /head	2.5				5
Feed & water/day/head		4	5	5	4
Labour/marketing/day/head	2	2.5	4	4	34
Holding station/day/head	2	2	3	3	3
Tax/head	7	7	7	7	7
Broker fee/head	12	12	20	20	25
Butchery costs /head					20
Total marketing cost/head	25.5	27.5	39	39	94
Total costs/head		2127.5	2689	2889	3344
Profits/head		272.5	311	161	306

Source: survey result, 2009