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**MARKETING AND PROCESSING
OF SMALL RUMINANTS IN
HIGHLAND BALOCHISTAN**

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MARKETING AND PROCESSING OF SMALL RUMINANTS IN HIGHLAND BALOCHISTAN

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Key words: marketing, processing, small ruminants, transhumance, nomadism
pastoralism, Balochistan, Pakistan.

ABSTRACT

Most small ruminants in highland Balochistan are produced under transhumant and nomadic pastoralist systems. This study investigated the livestock and meat marketing practices in this area through interviews with producers, village dealers, wholesalers, commission agents, butchers and consumers. Producers have little knowledge about market forces and quality of livestock, and this limits their ability to increase income. However, they incorporate liveweight in their perception of livestock price per unit of weight. The average weight of a sheep was 26.4 kg and for a goat was 21.8 kg, with estimated farm-gate prices of Rs 512 and Rs 480, respectively. Average prices paid by the consumers were Rs 750 for a sheep and Rs 682 for a goat. Correspondingly, services of intermediaries in the marketing chain represented 32% and 30%, respectively, of the price paid by consumers. Meat grading is absent but there is government regulation of retail prices. Thus, consumers do not have ways to convey their degree of dissatisfaction to producers through intermediaries in the marketing chain. Most services could be improved for the benefit of consumers and producers: overall volume of the market could be higher, the quality of the meat could be more uniform and some marketing costs could be decreased. However, extension efforts to improve the market awareness of producers will face the pastoralists' risk minimizing strategy in livestock management.

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INTRODUCTION

Highland Balochistan is located in the central and northern part of Balochistan, a province in western Pakistan. Covering 15 million hectares, annual rainfall is low and highly variable (150-350 mm) and winters are cold with air temperatures often below freezing from December to February (Nagy et al. 1989). Transhumant and nomadic pastoralists own 85% of the livestock (FAO, 1983) and large numbers of livestock move within Balochistan, and between Balochistan and the surrounding provinces and countries, according to regular seasonal patterns.

Offtake occurs throughout the year but it is higher in February and March, July and August and during the migration from the highlands to the Indus valley from September to November. Producers' goal is to maintain, if not increase, their flock size rather than increase income. They perceive old, unproductive or infertile animals as a ready source of cash. However, their production systems depend on the feed cycle, and reproductive rhythm of their animals, rather than on price seasonality. [See Nagy et al. (1991) for an analysis of small ruminant production systems in Balochistan].

It is estimated that highland Balochistan produces annually 35,500 metric tons of mutton (see producer section below). This is about 7% of Pakistan's mutton production (GOP, 1986) from 19% of the national flock of small ruminants and is due to production and marketing constraints and the goals of pastoralist societies mentioned previously. Little is known about the presence or absence of opportunities and incentives for producers to behave in a more market oriented fashion. As a first step in analyzing the livestock and meat market situation in highland Balochistan, a survey was conducted with the following objectives: 1) to identify services provided by different agents in the livestock and meat marketing chain and their respective constraints, 2) to estimate the costs associated with these services as well as distributive margins, and 3) to suggest guidelines for future research to improve the marketing system.

METHODS

The survey was conducted during July 1989 at three locations in highland Balochistan: Sanjavi (Loralai District), Kuchlak (Quetta District), and

Zarchi (Kalat District). Twenty five producers from each location and 10 village-dealers were interviewed. In addition, five wholesalers, five commission agents and 10 butchers (processors/retailers) were interviewed at Quetta livestock market. Livestock producers were reluctant to allow actual weighing of their animals; therefore, girth and height were used to estimate liveweights as described by Fazal (1975). Producers and intermediary agents were asked the estimated selling prices of different types of animals, the costs for marketing their livestock and the problems they face in the marketing process. In addition, 20 consumers from Quetta, equally distributed across the income brackets below Rs 1200, Rs 1201- 2500, Rs 2501-4000 and above Rs 4000 per month, were interviewed to determine their annual consumption of mutton, beef and chicken meat consumption patterns.

RESULTS AND DISCUSSION

Services, Costs and Constraints Faced by Market Agents

Marketing of livestock and meat involves many agents and it is difficult to be precise about their exact number, and their role in the marketing process which can often be multiple. A schematic representation of the market agents and their spatial location in the marketing chain is shown in Figure 1.

Producers. Livestock producers are widely dispersed and have almost no coordination among themselves. They mostly dispose of their livestock at the village level because they have no transport to take them to larger markets; this also avoids difficulties of transporting them to town markets. In addition, because they sell small numbers to meet urgent cash demands, the producers are not in a position to bargain very effectively.

The producers interviewed had an average flock size of 84 hd (standard deviation of ± 22) ranging from 26-160 hd, of which 25% were goats. This 3:1 ratio of sheep to goats is higher than the 1.8:1 ratio found by Nagy et al. (1989) whose sample was taken from the southern areas of highland Balochistan. Goats were 20% lighter but showed 30% more variability in liveweight (Table 1). Carcass weights of 13.2 kg for sheep and 11.9 kg for goats were calculated using dressing percentages of 50 and 55 of liveweight, respectively (FAO, 1983).

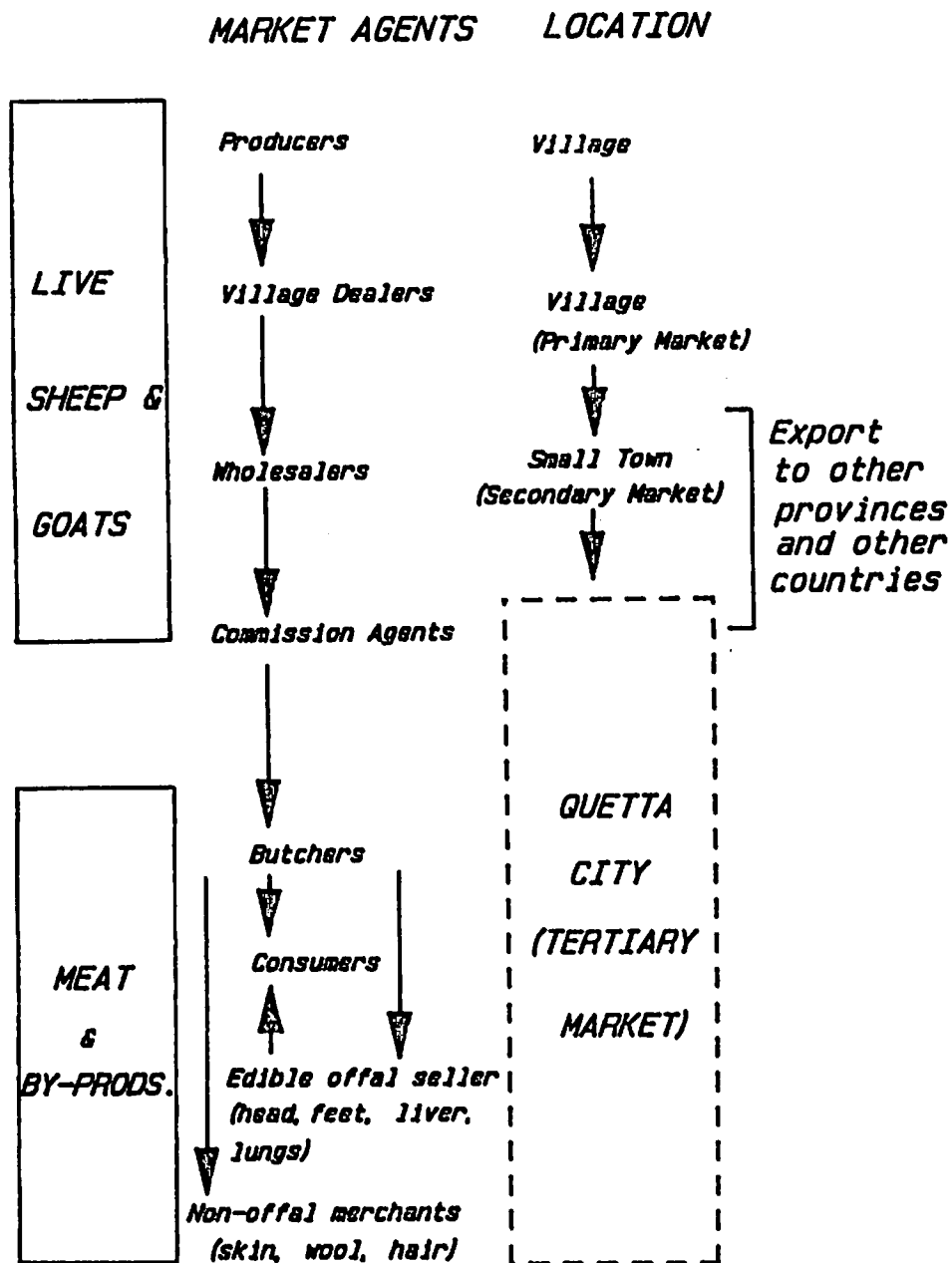


Figure 1. Market agents and location in the marketing chain of small ruminants in highland Balochistan.

Table 1. Average liveweight of animals at sale, prices received by producers, and marketing costs and profits of village dealers, livestock traders and commission agents in highland Balochistan (Rs¹ per hd).

	Sheep		Goats	
	Mean	S.D.	Mean	S.D.
Livestock Producer				
1. Liveweight (kg per hd)	26.4	5.4	21.8	6.1
2. Sale Price	512.1	97.1	480.2	106.3
Village dealer				
3. Marketing costs	29.0	3.6	28.5	3.4
4. Sale price	570.2	41.8	533.7	44.7
5. Margin (4-2)	58.1	----	53.5	----
6. Profit ² (5-3)	29.1	----	25.2	----
Wholesaler				
7. Marketing costs	55.9	9.8	55.2	9.5
8. Wholesale price ³	658.8	54.3	616.1	40.2
9. Margin (8-4)	88.6	----	82.4	----
10. Profit ² (9-7)	32.7	----	27.2	----
Commission agent⁴				
11. Transaction costs	2.4	1.0	2.4	1.0
12. Commission fee charged	20.0	7.1	20.0	7.1
13. Profit ² (12-11)	17.6	----	17.6	----

S.D.=standard deviation.

¹Rs 21.8 = \$ 1.0 (July 1989).

²Excluding labor, management and risk costs.

³Includes an average of Rs 20 per hd paid to the commission agent.

⁴Commission agents mediate on behalf of wholesalers or butchers for the same Rs 20 per hd commission fee.

An estimate of annual offtake in Balochistan would be at least 24% for sheep and 25% for goats³. Multiplying the combined offtake by the number of sheep and goats in highland Balochistan (11.7 million hd) by the average carcass weight (12.6 kg), yields 35,500 metric tons of meat per year. This estimated annual offtake is valued at about Rs 1,400 million.

Prices received by producers were 7% higher for sheep than for goats (Table 1) and producers interviewed felt they were receiving an inadequate proportion of the price paid by consumers. In a few cases producers attempt to time animal sales to take advantage of seasonal fluctuations in demand. But, in general, expected price was not the major determinant of the decision to sell. Even though producers do not perceive themselves as "market oriented", they incorporate liveweight (kg) in the estimated price per unit of weight (Rs per kg) [$PR = 21.4 - 0.09 \times LWT$, $r^2 = 0.46$, $p < 0.01$ for sheep and $PR = 43.1 - 0.34 \times LWT$, $r^2 = 0.19$, $p < 0.01$ for goats; where PR is price per unit of weight and LWT is liveweight]. This implies that price per unit of weight is higher for younger animals or for those with potential for compensatory gains. Similar price relationships are reported for sheep in Ethiopian markets (Andargachew and Brokken, 1990). Factors not included in producers' estimations of price are discussed below.

Village dealers. Village dealers purchase animals from surrounding areas and sell them to wholesalers in town markets (e.g. Loralai, Kalat, Kuchlak and Sanjavi). They pay the animal transportation costs, octroi (local tax paid when livestock are brought within city limits), feeding costs and their own transportation and food costs. These costs averaged Rs 29±3.5 per hd (Table 1). Transportation costs averaged Rs 0.15 per hd per km based on distances ranging from 20 to 50 km. Village dealers' sales prices for sheep were higher than for goats (Table 1) and their sales price variation of both sheep and goats was much lower than producers' sales price variation. This suggests that producers have less bargaining power than village dealers, or that as the

³57 and 55% of the sheep and goat population, respectively, were assumed to be reproductive females with corresponding 61 and 65% lambing and kidding rates (Nagy et al. 1989). The result of multiplying these two figures was decreased by 10% to account for mortality and replacement of the females. Lastly, 7% was subtracted to represent the annual growth rate of Balochistan's small ruminants (Nagy et al., 1989). Animals given as gifts and for religious ceremonies and social events were included in these calculations.

animals are incorporated into the marketing chain the buyers become more and more selective.

Wholesalers and Commission Agents. Wholesalers buy from the village dealers in small towns and transport the livestock to Quetta, the major consumption center in the province, to other consumption centers in other provinces such as Karachi and Lahore, or to other countries such as Iran and Afghanistan. Babar (1975) noted that 1.2 million lambs and kids were sold to other provinces of Pakistan and a larger number of animals are smuggled across the borders to Iran and Afghanistan. The interviewed wholesalers were reluctant to provide information about livestock smuggling but acknowledged it does happen.

Wholesalers sell to commission agents in the consumption centers. In Quetta, wholesalers stated that commission agents were an essential link with the buyers (butchers), doing the bargaining and arranging livestock sales. The wholesaler arranges transportation to Quetta costing Rs 0.10 per hd per km, feeds the animals, pays the octroi, and absorbs the costs of animal shrinkage during a journey that ranges from 40 to 150 km. These marketing costs total Rs 56 per hd (Table 1). In addition, an average fee of Rs 20 per hd is paid to the commission agent.

Quetta market is located on city property with no formal charge for its use, but the city authorities collect and sell the manure. Commission agents are not required to pay any license fee or other government levies but they pay the social costs of the purchasing process (tea and biscuits for wholesalers and butchers); these social costs averaged Rs 2.4 per hd. Wholesale prices of sheep were still 7% higher than for goats (Table 1).

In Quetta there is no facility to provide rest or shelter to the animals before slaughter. The city slaughter house, which is beside the livestock market, can process between 350 and 400 small ruminants per day. It provides veterinary certification to the slaughtered animals and links the non-offal merchants, who operate as contractors with the slaughter house, and the butchers. The number and capacity of unregulated slaughter houses is unknown.

Workers in the slaughter house receive no formal training and use traditional tools. Nevertheless, damage to skins is more likely to occur before animals reach the slaughter house. Standards of hygiene are very low and lack of cold storage and chilling facilities result in the slaughtering of

small numbers of animals that can be sold on a daily basis. There is no large scale industry for processing slaughter house by-products into useful materials such as blood and bone meal. However, there are small contractors who collect by-products for later sale to consumers or redistribution to specialized merchants. Traditional methods of carcass transportation by donkey or camel cart cause the contamination of uncovered carcasses with flies, dust and dirt, lowering the quality of the meat offered to consumers.

Butchers. Sheep and goat meat is sold fresh and without refrigeration in small shops 8-10 hours after slaughter; little, if any, meat is carried over to the following day. In July 1989, the retail price of both sheep and goat meat was Rs 50 per kg. This price is controlled by the local Deputy Commissioners on the authority of the Ministry of Industries (Notification No. CGPS 9-77, dated on July 8, 1977). Marketing costs, which include feeding and slaughtering were slightly higher for sheep than for goats (Table 2). Most of the gross returns to butchers come from meat sales, but a substantial portion (16%) is received from by-products such as skin, head, feet, stomach, lungs and liver.

Butchers' shops appear to be proliferating on the outskirts of Quetta, an indication that there is a demand for such services. It is also possible that access to these butchers' shops is more convenient for small local flock owners than the central market, where there is severe traffic congestion. In some cases the butchers keep a reserve of five to eight live animals and slaughter them as demand changes.

Consumers. Ungraded meat is retailed in butcher shops which lack appropriate storage facilities and the flies, dust and dirt increase the risk of health problems in consumers. The government regulates consumer prices but not meat quality and there are no ways for consumers to convey to producers their dissatisfaction about meat quality or to butchers for not providing a hygienic service. This is the most notable market deficiency identified in this study.

Figure 2 depicts the consumption patterns for different types of meat according to monthly income. More beef than mutton is consumed in the lowest three income groups. Informal estimates of the total liveweight traded each day in the Quetta livestock market suggest that there is more trade in large ruminants than small ruminants. Poultry and beef are substitutes for mutton,

Table 2. Butchers' marketing and processing costs, margins and profits in highland Balochistan (Rs¹ per hd).

	Sheep		Goats	
	Mean	S.D.	Mean	S.D.
1. Marketing and processing costs	29.2	4.2	25.6	2.8
2. Sales of meat	653.4	52.6	594.0	45.2
By-products				
Skins	61.6	12.3	53.4	7.7
Head, feet, stomach lungs and liver	35.0	3.3	35.0	3.3
3. Total sales of by-products	96.6	11.9	88.0	8.1
4. Margins (2+3-8 ²)	91.2	----	66.0	----
5. Profit ³ (4-1)	62.0	----	40.4	----

S.D.=Standard deviation

¹Rs 21.8= \$ 1.0 (July 1989).

²From Table 2.

³Excluding labor, management and risk costs.

but the latter is highly preferred for cultural reasons. These consumption levels are a reflection of the prices of poultry, beef and mutton which were Rs 40, Rs 26 and Rs 50 per kg, respectively, when the survey was conducted in July 1989.

Distributive Margins

The difference (margin) between the price received by producers and the retail price of meat and butchers' sales of by-products is Rs 238 per hd for sheep and Rs 202 per hd for goats. These margins, expressed as percentages of the sum of the prices paid by meat consumers and by-products merchants, are 32% for sheep and 30% for goats, and are shared by the intermediate agents in the marketing chain. These percentages are comparable with those found by Hasnain (1985). The margins for sheep and goats from Tables 1 and 2 were

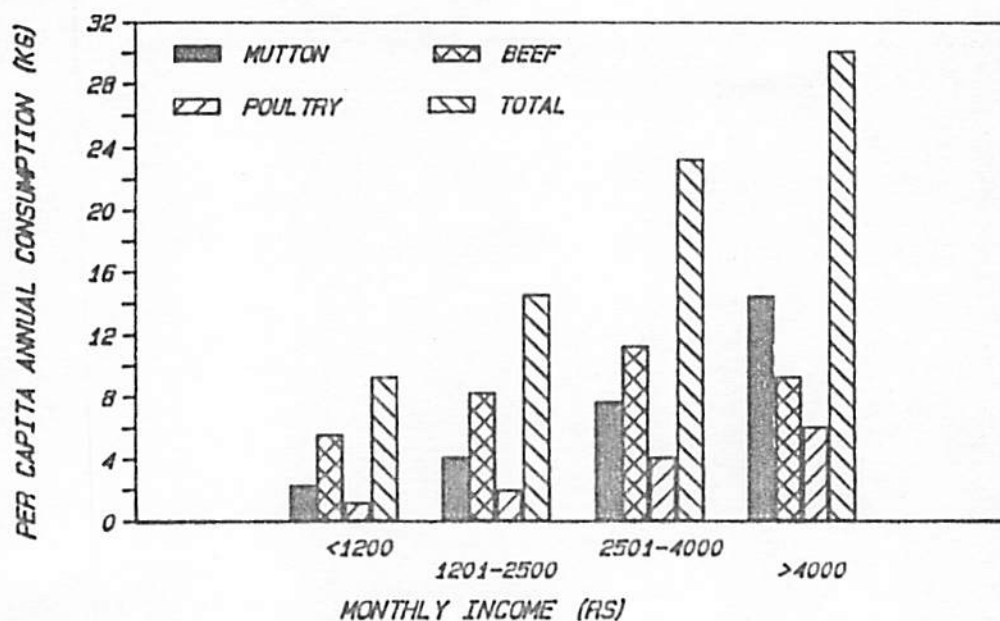


Figure 2. Meat consumption Patterns in Quetta city.

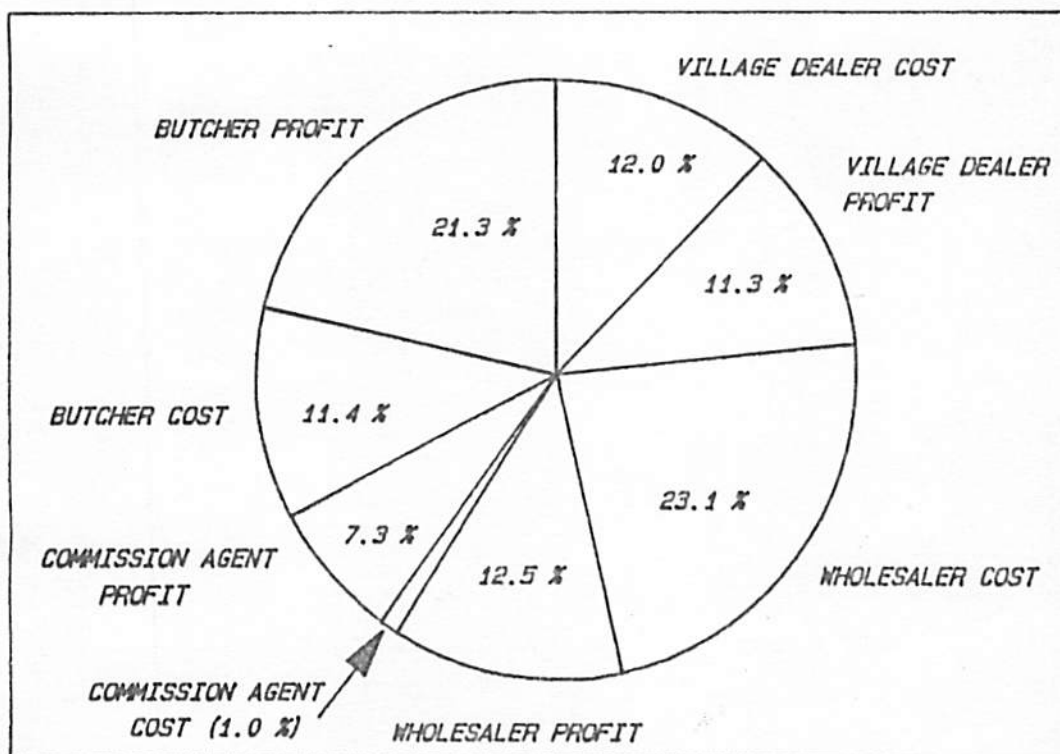


Figure 3. Distributive margins of small ruminants in highland Balochistan (average of sheep and goats).

averaged and broken down into marketing, transaction, and marketing and processing costs and profits (Figure 3). In terms of profit per head, the butchers get double the profit of the wholesalers and village dealers, and three times as much as the commission agents. The marketing costs exclude labor, management and risk costs; therefore, the actual profits may be considerably less than shown in Figure 3.

Commission agents are often portrayed as taking advantage of other intermediaries or as being responsible for reducing returns to producers. However, commission agents do the bargaining on behalf of wholesalers and butchers, using personal knowledge of the market forces in Quetta and other major cities in or out of Balochistan. Since there are no regulations which stipulate that it is obligatory to use commission agents to buy and sell animals, butchers and wholesalers must be willing to pay commission agents for their information about the supply and demand situation.

Even though there are only a few institutional regulations in the livestock and meat market, such as octroi paid by traders and veterinary certification provided by the slaughter house, the market system does provide services which are integrated to a relatively high degree.

Developing the Meat Industry

Developing the meat industry in highland Balochistan will be difficult as long as the signals sent by the market to improve offtake and quality are not perceived by the producers. Price negotiations, whether at the producer's farm-gate, at the markets, or in transit, on a one-to-one basis. There are no auctions at markets, but rather numerous individual transactions taking place simultaneously on a willing buyer-willing seller basis.

The main factors affecting the price of animals are the species, breed, quality, sex, age, expected carcass weight, skin condition, and the supply of animals. These factors need to be considered by producers to improve the quality of their output and to strengthen their bargaining position. Most services provided by the market system could be improved for the benefit of consumers and producers; the overall volume of the market could be higher, the quality of the meat could be more uniform and some marketing costs could be decreased.

Because pastoral based systems prevail in highland Balochistan, producers are not market oriented and do not appreciate potential

opportunities to improve their income. Extension efforts should make producers aware of market prices and the need to plan output more carefully according to seasonal price fluctuations. This may conflict with the risk minimizing livestock management strategy of transhumant and nomadic pastoralists, but it is an approach that needs to be tested in highland Balochistan. It would be less disturbing to producers than proposing privatization of landholdings to induce market oriented production.

Limitations of this study

This study is one of the first attempts to understand the livestock marketing and processing situation in highland Balochistan, but it has several limitations. First, respondents were reluctant to give correct information on their costs and returns from livestock transactions. Second, there was an almost complete lack of records amongst producers and intermediaries involved in the marketing of livestock. Third, even though Quetta market is a terminal market and the largest in Balochistan, other intermediate and redistributive markets were not included in the study. Fourth, this study includes neither seasonal price fluctuations, nor price differentials among breeds, sex, age of the animals and their body condition. Thus, our estimations of margins at the different stages of the marketing chain are a generalized glimpse of the situation in the summer of 1989 when the availability of livestock was high.

Future studies

Our findings suggested several new studies. First, there is a need to monitor livestock prices throughout the year (Francis, 1990; Andargachew and Brokken, 1990), and to relate them to forage constraints, migration patterns of transhumant and nomadic pastoralists, and to demand from major population centers. This will provide a better understanding of the degree of sophistication of the livestock and meat market.

It is expected that wholesalers and commission agents incorporate factors such as animal condition, sex, breed and age into their pricing mechanism, but producers are either unaware of this, or they do not perceive the potential price gains from quality improvement and from adjusting production schemes to benefit from favorable market conditions. Testing these hypotheses can be made with econometric models (Francis, 1990) where the pricing mechanisms of producers, traders and commission agents are compared.

Studies should be undertaken to evaluate the potential for adjusting offtake to the best market conditions, such as when demand is high.

Finally, marketing studies can provide a better understanding of the apparent apathy demonstrated by producers to actual and potential incentives present in livestock and meat markets. The transhumant or nomadic producers found in Quetta market may not be profit maximizers, but when they sell, they seek the best price. Quantification of the factors that determine livestock prices presents an opportunity to better understand the behavior of market agents. Furthermore, it is necessary to appreciate pastoralists' viewpoints with regard to the sustainability of their livelihood rather than evaluating their marketing and production systems as purely driven by the profit motive. The approach followed in this study was based on the economic value of livestock and meat transactions which is complementary to the sociological factors associated with those transactions. Studies are still needed to acquire a more thorough understanding of pastoralist' behavior and management.

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