

The camel chains in East Africa- Importance of gaps between the data and the apparent reality

Véronique Alary and Bernard Faye*

CIRAD-ES, UR Système d'élevage, TA C-18/A, Campus international de
Baillarguet, 34 398 Montpellier Cedex 5, France

Abstract

The 11.8 million head of camel counted in East Africa account for 62% of the 2006 world camel population. Less than 4.75% of this stock is slaughtered for national consumption purposes. The official statistics report that annual exports did not exceed 41 thousand heads. This study attempts to examine the following issues: Firstly, how to understand the gaps between the live capital and its economic development through the markets and secondly whether the socioeconomic functions within the pastoral systems sufficiently explain these gaps. The cross-sectional data analysis between different sources revealed significant gaps. For example, the formal market was around 5,030 heads from Djibouti, Ethiopia and Somalia while the official data of exportation from the Berbera and Bossasso Ports registered 7,636 heads in 2004. However, according to the estimation of holding areas capacities in Ethiopia, around 57,000 camels could be exported. From a personal survey conducted in 2007 in the Somalian region of Ethiopia, exportations from said region are estimated to be around 37,000 heads with a profit margin for exporters ranging between 22 to 33 USD per head. At the regional level, official exportations would represent 10% of potential exportations. This range of various gaps that have emerged from different sources of data and from the differences between the collected data and the apparent reality raise a number of questions relating to the economic development of camels. Furthermore, the lack of reliable data on camel activity may explain why camels are often viewed almost as a myth of the pastoral area despite the reality being quite different.

Keywords: camel chain, Ethiopia, illegal market, economic indicators, potential supply

*Corresponding author: Bernard Faye, email: bernard.faye@cirad.fr

Introduction

In East Africa, the 11.8 million heads of camel stock counted represent 62% of the world camel stock in 2006 (FAOSTAT, 2006). Less than 4.75% of this stock was slaughtered for national consumption. Meanwhile, the official annual exportation did not exceed 41 thousand heads. How can markets explain the gaps between the live capital and its economic development? Are the socioeconomic functions of camels within the pastoral systems sufficient to explain these gaps? These are some of the issues that will be covered in this study.

Few research studies have been developed to analyse the socioeconomic functions of camels. In the majority of research works, camels were considered to be a component of the pastoral system based on the mobility and flexibility in relation to access to common natural resources (Scoones, 1999). Geographers or sociologists have highlighted the capacities of this pastoral system and more specifically the resistance of the pastoral society in arid areas (Bonfiglioli, 1987; Clanet, 1999). More recent studies on the livelihood assets attempted to measure the contributions of camel activities. The main objectives of these research and development

studies have been aimed at emphasising the role of camels in the reduction of the vulnerability of pastoral households (Hjört af Ornäs and Ali Hussein, 1993; Faye, 1997). In Ethiopia, it was shown that the number of animals that can form a minimum livelihood norm for an average sized pastoral family (7 persons) were around 23 camels, 17 cattle and 75 small ruminants (ACF, 2003; FAO, 2006). The equivalent in the case of a single species holdings are 50 camels or 30 cattle or around 160 sheep and goat. Accordingly, the camel population in Ethiopia would ensure the minimum livelihood for 9,400 households of the official data, or more than 48,000 households considering the estimation of Stanford *et al.* (Stanford *et al.*, 1999, cited by Bonnet, 2000). Compared to 88,000 households for small ruminants and 282,000 households for cattle, this impact is far from negligible. Nevertheless, this research still struggles to estimate the real benefits of camel activity in terms of milk production, cost energy reduction, transport income, and also meat economic development along the camel chain. More recent studies have pointed to the development of dynamic camel milk chains in the peri-urban areas (Faye *et al.*, 2004; Chaibou, 2005; Koussou, 2008). However, camel meat chains are seldom studied. Not

only is consumption of meat in pastoral areas far from negligible, but markets for camels are also dynamic, even among societies where there is no herding of camels (Kadim et al., 2008).

This paper uses different sources of data to analyse the importance of the camel chain in the economy. These data have been cross analysed with field data collected in Ethiopia in 2007. This field study aimed to capture a global view and recount of the constraints and facilities of animal markets in the Horn of Africa. In this study, consideration was restricted to data relating to the camel chains in the Somalian pastoral area of Ethiopia. The objective was to emphasise the relevant gaps between data of different sources and between the data and the apparent reality that reflect a large underestimation of the importance of camel economic development in the region.

Overview of the camel sub-sector in the IGAD region- Some controversies

The portion of African camel stock in the world increased from 74.7% to 81.3% during the last decade (1995-2005). In 2005, the Intergovernmental

Authority on Development (IGAD) region counted around 40% of cattle stock, 36% of small ruminants stock (called 'shoats' in the region) and 76% of camel stock of the total African animal stocks. For camels, Somalia counted 59.6% of the regional stock, followed by Sudan with 28% (Table 1). But as for other African countries, the animal stocks declared to the FAO database resulted from calculations based off the regular annual rate of growth of the initial stock established 20 or 30 years ago. Moreover, the livestock population, given that there is no form of vaccination organised for camels, is often underestimated in pastoral areas (Faye, 2008) where only sedentary camels are generally surveyed. In Ethiopia, Stanford *et al.* (1999) estimated the camel population at 2.4 million in pastoral areas (cited by Bonnet, 2000).

The percentage of slaughtered heads gives an initial indication as to the off take rate of the animal stock. The average slaughtering rate was around 9% for cattle and 25% for small ruminants and goes down to around 4.75% for camel in the IGAD region in 2005 (table 1). This slaughtering rate varied significantly between countries within the region, from 3.7% in Somalia

Table 1: Camel stock and slaughtered animals for the IGAD region in 1995 and 2005 (FAOSTAT, 2006).

Pays	Stock (number)		Slaughtered animals (%)	
	1995	2005	1995	2005
Djibouti	64,010	69,000	6.41	6.38
Eritrea	71,000	75,000	8.03	8.13
Ethiopia	340,000	470,000	7.15	8.09
Kenya	787,700	830,000	8.00	7.95
Uganda				
Somalia	6,100,000	7,000,000	3.36	3.71
Sudan	2,903,000	3,300,000	3.79	5.55
IGAD	10,265,710	11,744,000	4.01	4.75

to 8% in Ethiopia, Eritrea or Kenya. If this rate reflects the variability registered in the literature (Hjört af Ornäs and M. Ali Hussein, 1993), it can be said that it is generally far from the real rate of slaughtering especially for camels where a large part of slaughtering occurs in the remote pastoral area and is not included in the official data (Aklilu, 2002). Moreover, a large proportion of animal trade at the regional or international level was trade of live animals. The slaughtering rate registered in Ethiopia could be realistic if it was presumed that the formal market would represent the main circuit for camels. This hypothesis seems less probable in pastoral area. Therefore, this first set of data raises a number of questions related to data reliability and to the estimation of the real part of camel sub-sector in the

livestock economy. If the official data reveals the importance of camels in terms of stocks and capital assets, it is difficult to estimate the real economic development pathway that has emerged from this activity.

It is also difficult to understand the role of camels in the pastoral economy of this region without referring to the historical background of this issue. At the end of the 19th century, the ‘Somali’ pastoral area (that covered the eastern part of Ethiopia, northern part of Kenya and central and northern part of Somalia) established a well-functioning market chain to supply the Brittany garrison established at Aden in 1839. The international trade was extended to include the Persian areas and the borders of the Indian continent (Hersi,

1977, cited by Djama, 1999). This period experienced the development of a very dynamic network of pastoral traders and brokers (based mainly on strong parental ties or lineages) that registered an increase of their activities, partially attributed to the explosion of demand in Saudi Arabia (due to the success of the pilgrimage to Mecca and the petroleum boom).

The different wars in the 1970s and 1980s (Somalia- Ethiopia in 1977; the civil war in the northern part of Somalia in 1988) perturbed the organisation of the legal market which was mainly based on family networks and also involved the organisation of a smuggling market. In addition, this period witnessed the emergence of new competitors in the region (such as Australia, New Zealand, Egypt or Sudan)

Since 1991, the civil war at Mogadiscio has induced the disorganisation of official services, such as veterinary services, Customs and banking services mainly in the export ports. This has consequently favoured the official position of Djibouti and Port Sudan in the international market of live animals for the region. In the sub-region of Djibouti-Ethiopia-Somalia, this has led to the development of various networks

of smugglers who export animals via Yemen traders who then re-export animals to Saudi Arabia. If the Somaliland area in the north of Somalia experiences a relatively peaceful process, the bargaining power of the traditional traders' networks will be weakened in the region. Besides, the marginalisation of the northern part of Kenya has encouraged the smuggling activities from this area to the Port of Kismayo (Somalia) then to Saudi Arabia. Nowadays, two border markets along the Somaliland/Ethiopia border and near Djibouti border dominate the livestock cross-border trade: Togwajale and Borana. Borana is strongly linked to the Djibouti market.

Livestock smuggling activities were strengthened by the wars that occurred during the mid-1970s and by the strong family relationships (kinship, ethnic and clan-based affiliations) in the pastoral area that cover east of Ethiopia (region V or Ogaden), Somaliland (Somalia) and Northern Kenya (Little *et al.*, 1998). Somalian and Boran traders have since ensured that the transfer of livestock among the three countries and their trekking Ports of Somalia (Barbara, Mogadiscio and Kismayo) or Djibouti has remained active. These smuggling activities have involved the use of

camels to transport merchandises from the Ports to remote areas.

Moreover, restrictions were imposed by Saudi Arabia (1998 to 2000 and 2001 to 2004) due to health issues in Ethiopia and Somalia and insufficient veterinary control (Faye, 2003) which consequently landed pastoralists in economic crisis (Pratt et al., 2005). Camel activities continued through either the exportation of live animals or by the increase in illegal markets of merchandisers. As a direct result of this, only camel exportation increased from 50 in 1995 to 61,400 in 2004.

Camels are imported by the Gulf States, primarily for racing. Camels for slaughter are mainly marketed in Egypt and Libya. It is noted that exports of camels from Djibouti have dropped off in recent months (Faye, 2003). The objective of this paper is to analyse the different circuits of ruminants in the region and the vital role of camel chains in the livestock economy.

Materials and method

In 2004, OIE submitted to the STDF committee a grant application aiming to implement a survey regarding the “development of a strategy and action

plan for selected African regions to enhance public and private sector capacity in meeting international sanitary standards in international trade of livestock and livestock products”. With the STDF committee’s approval, the OIE asked FAO to address the implementation of this survey.

The general objective of this study is to assess constraints on intraregional and international exportation of livestock and animal products from two targeted zones of Africa and to make proposals to enhance the public and private sector capacity in meeting OIE international sanitary standards. In the IGAD region, Ethiopia has been identified as a representative of the main stakes that emerge on the SPS requirements, especially with the Gulf States.

A first type of analysis developed through a literature review was carried out at a regional level. The first step of this analysis was aimed at collecting data on potential trade of livestock and animal products of the existence or prospects of an export market, and also on the constraints facing exports. The data obtained from the study indicated that Ethiopia, as a main provider of meat and live animals in the region and in the Middle East, became an interesting case study for the whole region.

The second type of analysis was the field review. It was built on interacting with the stakeholders/actors of the livestock chains including production (farmers association, feeding factories, additives retailers), management of animal health (State veterinary services and private vets), and livestock traders and exporters.

In this study, various issues concerning the production and marketing of animal chains were tackled. These included the constraints that have historically hindered export and the role of each supplier, production and market chain. It also included the possible improvement of the production chains in terms of safety, quality and veterinary certification system or in terms of pertinence and reliability. This field study also provided original data on the livestock marketing sector that allowed an analysis of the role and importance of camel chains in this region.

Results and discussion

Livestock marketing circuits in Ethiopia

Most of the research or development papers in the region distinguish the formal from informal markets of live

animals (Aklilu, 2002; Belachew, 2005).

The informal markets cover various realities, including illegality, clandestine and the role of the barter economy; In fact, the reality is very complicated in many hybrid systems.

The formal market

The formal markets comprise of two distinct sectors: the meat sector and the live animal sector. Apparently, these two sectors do not involve the same stakeholders. The meat sector is dominated by large businessmen, who control the meat export market. The country forms 5 export abattoirs mainly localized around Addis Ababa: Debrezeit, Nazareth, Mojo. Meats for export are mainly chilled and frozen meats that are exported by air. There is also a modern abattoir in Dire Dawa (ELFORA), however, this abattoir has no licence to export although it is in the process of obtaining one. Dire Dawa has the second largest international airport in Ethiopia with regular lines that join Dire Dawa to Djibouti, the Gulf States, other African countries and Europe. These export abattoirs are approved by the Middle East. They are equipped with refrigeration trucks and use airfreight for exporting. Despite this, it remains until now that camel meat is not exported.

In the live animal sector, the main legal exporters around Addis and Dire Dawa have their own collecting points where the animals are gathered, fed, treated, and vaccinated before being exported. These collecting points play the role of quarantine. The animals are parked around 20 to 30 days before being exported by rail or by truck thru of Djibouti.

The animals are collected by agents/brokers or small traders, who are working for the benefit of the exporter. Around Addis, animals are collected in the bush/villages or on the primary markets and eventually on the secondary markets but not on the terminal markets that are mainly focused on the supply of live animals or meat for domestic demand. Around Dire Dawa, animals are mainly marketed on the primary or secondary markets but there are also some traders operating at the village/bush level. One broker explained that he uses some relationships to contact pastors at the bush level regarding the demand in live animals and the pastors trek their animals until the local markets.

The main internal circuits are mentioned in figure 1. Different types of procedures are established at the terminal points

according to the destination of the animals:

1. Yemen's market: the majority of animals are trucked to Djibouti then directly shipped on Yemenite boats without the use of quarantine or veterinarian services in Djibouti. Generally, Djiboutian intermediaries ensure that the transfer of animals to Yemenite traders and loading of animals at the Port of Djibouti is at the charge of the Yemenite traders. In this chain, the Yemenite traders acknowledge the sanitary certificate delivered by Ethiopian veterinary services at the collecting points of Ethiopian exporters.
2. Saudi Arabia or Emirates markets: the animals are parked for at least 21 days in the quarantine station of Djibouti before being re-exported. This procedure has been implemented since December 2006. The animals come from Ethiopia through the Ethiopia-Djibouti border or through Somaliland (animals are shipped in the Port of Berbera to be re-exported to Port of Djibouti)

3. Egypt market: Egyptian inspectors come directly to Ethiopia to control the sanitary status of animals (mainly cattle) before their exportation through the Port of Djibouti.

These circuits are considered legal by the Ethiopian government so that all the Ethiopian traders can accomplish the formality through the veterinarian service (at the collecting points) and respect the financial procedures of exportation through letter of credit or credit advance from the importing traders. If the formal circuit of Djibouti is well developed, the Ethiopian government would like to develop its legal export market through Somaliland, particularly through the Port of Berbera, towards Sudan and Kenya. Different measures have been undertaken in favour of the legal trade of live animals through Somalia. Generally, traders can choose between two financial procedures: the classical letter of credit or an advance of the buyer to an Ethiopian bank. In this matter, Ethiopia banks have been opened in Somaliland and Djibouti and in some local pastoral area in Ethiopia (Jijiga). The payment may be done in an exchange currency (notably in USD). The Ethiopian government have also developed important military

controls on the Ethiopia-Djibouti border to limit the smuggling market.

Ethiopia stakeholders (officials and private exporters) would like to diversify their points of exportation. Therefore, the Ethiopian government is developing its own system of quarantine in Ethiopia. Seven quarantines are set up along the way towards Sudan, Djibouti and Somali land to facilitate the international marketing of live animals. This type of investment reflects the common willingness of the public and private sector to enhance the added-value of the live animal market.

If that formal market is well organized, some stakeholders may use illegal practices along the chain either for the financial/customs procedure to facilitate the conveying of animals or for the veterinary procedures to avoid the legal procedure imposed by importers. These circumventing acts aim to maintain the international market of live animals in the region.

Clandestine or illegal market

At the extreme of the formal market, there is a clandestine market called the illegal market or smuggling activities. The smuggling chain is quite developed in Dire Dawa and could constitute the “lung” of the town (declaration of one

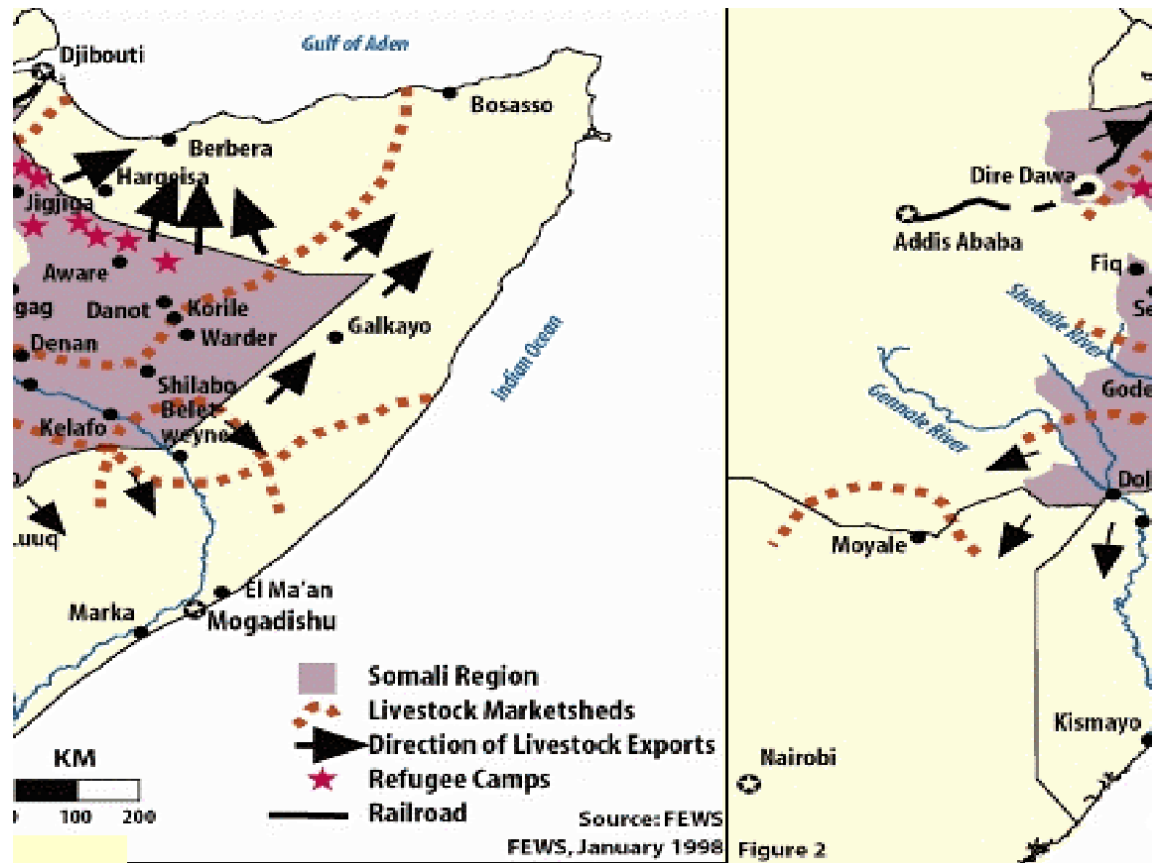


Figure 1: Livestock market sheds in the Horn of Africa (Source: FEWS, 1998, cited in Pratt et al., 2005)

trader). This chain is based on the barter economy: the trade of live animals for merchandises (staple food, household electrical appliances, computer, mobile phone, etc.) as if the purchasers of animals can be different from the sellers of merchandises. In this system, camels are the main mechanism used to transport the merchandises.

Before the reinforcement of the official controls on the Djiboutian border, the majority of this trade was developed with Djiboutian traders who belong to the same social network (family or

ethnic). Around 50 large traders near Dire Dawa would control this economy and ensure the maintenance of social links with Djibouti. Small traders who depended on these large traders gather the animals. Usually they buy animals directly from the farm/bush level or from the local markets around Dire Dawa (no more than 8km from the town). They fix a site and a date to different farmers (i.e. where and when the farmers must convey the animals). From this point, the clandestine smuggling traders trek the animals alone

to Djibouti. Generally, a convoy includes around 100 heads of small ruminants, 100 heads of cattle and a dozen camels. The convoy takes between 10 to 15 days to reach Djibouti. In Djibouti, they deliver the animals and take different merchandises loaded on camels to come back to Dire Dawa. The capital to buy the animals is based on trust relations in the social network. The monthly profit would be around 20 to 30000 Birr (between 150 to 200 Birr/cattle and 50 to 100 Birr/Small ruminants). Nowadays, this clandestine activity is developing with Somali traders through the Somaliland border.

The semi informal chain

Despite the civil war in Somalia (and the reinforcement of Ethiopian military controls at the border) and the ambiguity of the status of Somaliland (no recognition by the international community), the export activities through Somalia are always functioning. If Ethiopia has tried to control its borders, 2400 km of borders with Somalia would be very porous. This has been confirmed through some interviews among traders at the markets.

During several visits to different local markets between Dire Dawa and Jijiga, we met many stakeholders who were practicing this informal trade. In this

system, the Ethiopian traders buy the animals on the local or secondary markets and truck them to the Somaliland border. They would have already contracted with Somali traders who ensure the passage of animals across the border through dealers. In few cases, the traders are from Somalia. They buy animals at the local or secondary markets through Ethiopian brokers and ensure the transfer to the Somaliland border by an Ethiopian agent who play the role of figurehead. Some Somali agents are also presented in the market places just to have information on price and supply in order to inform Somali traders.

Since the reinforcement of control on the Ethiopia-Djibouti border, the main informal circuit is through the cross-border of Ethiopia-Somaliland.

The live animals can be sold on the local markets in Somaliland or trucked to the Port of Berbera or Bossasso to be re-exported. In December 2006, 400,000 sheep and goats were carried from the Somaliland' Ports to Djibouti. After 21 days in the Djiboutian quarantine, they were re-exported to Saudi Arabia. This long circuit involved many changes of ownerships and result from a combination of informal and formal circuits.

Some economic indicators of performance

The official data on the purchasing price of Dire Dawa's local market and the prices registered among different traders on the local market in the Oromia and Somali regions (Dawea and Babile) are reported in table 2. At first, table 2 shows an important gaps in the prices between Dire Dawa (terminal markets) and the local markets oriented to domestic and export markets. This explains why few traders buy animals at terminal markets.

The average price of sheep and goat at local markets are around 190 and 210 Birr per head respectively (or 21 and 23 USD/head for sheep and goat respectively). They average price is around 2500-3000 Birr (275-330 USD) for cattle and 3000-4700 Birr (or 330-517 USD) for camel.

Profitability estimations of the livestock export activity (table 3) reveal a profit of around 60 Birr/ shoat (around one third of the purchasing price), 150 to 243 Birr/cattle and around 300 birr for camel (that represent 10% of the purchasing price). The profit at the informal market in Somalia would be lower, around 200 Birr per head of camel. These data must be considered with important precautions. It has been difficult to

obtain data on the legal and illegal taxes on road check points. The legal exporters in Dire Dawa operate based on friendly or family links connected to traders in Djibouti that contract with importers and ensure the procedures of the shipment of animals. Some of them practice other marketing activities, such as cereal grain marketing.

Estimation of the potential of the camel sector in Ethiopia

It is difficult to estimate the total volume of exportation from the official data only. Rather, it is proposed that estimating the potential of exportation from fragmented data can only be used to determine a trend. Here we propose to cross official data derived from the Ethiopian Ministry of Trade and Industry (table 4) with other estimations issued from the data collected from exporters (Table 5). In Dire Dawa, a large and a medium exporter were interviewed. However, according to discussions with veterinarians who ensure the monitoring of live animal export at the collection points, there are 2 large exporters and 2 medium exporters in Dire Dawa that work on the same area (Somali, Harari, East and West Harerghe and Dire Dawa regions).

Table 2: Estimation of price per category of animal (Birr/head) in 2006

		Official survey : market prices (MOARD, Dire Dawa)						Field review (personal survey)		
		Market price						trader 1	trader 2	trader 3
Species	Category	Sept.-06	Oct.-06	Nov.-06	Dec.-06	Average (Sept to Dec. 06)	Average (Sept to Dec. 06)	Jan-06	Jan-06	Jan-06
		Birr	Birr	Birr	Birr	Birr	US\$	Birr	Birr	Birr
Oxen	cat 1	3900	3600	3075	2700	3318.75	378	3000	2500-3000	
	cat 2	2880	3300	3000	2500	2920	333			
	cat 3	2375	2460	2300	2000	2283.75	260	2055		
Calf	Male	950	900	1000	1200	1012.5	115	1700		
Sheep	Male	580	550	500	470	525	60	160-210		200
	Female	250	220	200	180	212.5	24			
Goats	Male	600	550	650	550	587.5	67	180-200		240
	Female	280	250	290	260	270	31			
Camel	Male	2000	2300	2200	2150	2162.5	247	3000		4700

* Exchange rate: 1 birr = 0.11404 USD in Dec. 2006

Table 3: Approach of marketing costs and profit for different traders and different chains (Birr per head)

Localization	Item	Trader 1 (from Dire Dawa to Djibouti)			Trader 2 (From Dire Dawa to Somalia)	Trader 3 (from Borona to Djibouti)		
		Shoat	Cattle	Camel	Camel	Shoat	Cattle	Camel
Local market	Producer price	160-200	2500	3000	2750	220	3000	4700
	Broker fees	15.00	25.00	30.00	20.00	4.00	30.00	50.00
	taxes	1.50	3.00	5.00	25.00			
Feedlot	permanent worker	0.70	3.50	3.50		5.00	24.00	24.00
	Feed	1.25	10.00			4.00	6.00	7.00
	vaccination	5.50	5.50			5.50	5.50	5.50
	Veterinary certificate	0.20	1.00	1.00		0.20	1.00	1.00
Transport	From local market to	5.33	33.30			15.00	130.00	400
	From the feedlot to	22.50	90.00	112.50		45.00	130.00	225.00
	From the market to Somaliland border				100.00			
	Loading	1.00	3.00	5.00		1.00	3.00	5.00
	Conveyer	1.00	4.00	5.00	165.00	1.00	4.00	5.00
	Maintenance				5.00			
	Somaliland Port tax							
	Shipping to Jeddah							
Balance	Total cost	54	178	162	315	81	334	723
	Selling price	294	2828	3462	3265	363.00	3562	5732
	Profit (Birr)	60	150	300	200	62	229	310
	Profit (US\$) ¹	7	16	33	22	7	25	34

* Camel: around 140 kg of meat * 4.5 US\$/kg; bovine: 290 kg *1.35 US\$/kg; ¹ Exchange rate : 1 birr= 0.1099 US\$ (20/01/2007)

Table 4: Exportations of live animals from Somali, Harari, East and West Harerghe and Dire Dawa regions (in value)

Calendar Julian	Gregorian Calendar	Value of exportations (million Birr) ¹	Value of exportations (thousand euro) ²	Cattle (heads) ³	Shoat (heads) ³	Camel (heads) ³
1995 ⁴	Sept 2002-sept 2003	1.1	94	91	3058	27
1996 ⁴	sept 2003- sept 2004	5.7	485	471	15848	142
1997 ⁴	Sept 2004-sept 2005	40.6	3451	3353	112884	1013
1998 ⁴	Sept 2005-sept2006	43.37	3687	3581	120586	1082
1999 ⁵	Sept 2006-jan 2007	54.7	4650	1492	185980	1563

¹ Ministry of Trade and Industry, regions of Somali, Harari, East and West Hararghe and Dire Dawa; ² euro=11.76279 birr; ³ Estimation of average price for each type of animal based on market price collected by the Ministry of Agriculture: 250 Birr/shoat, 3300 Birr/cattle and 2100 Birr/camel; ⁴ Estimation for each species (cattle, Shoat, camel) was done on the basis of the estimations of exportation according to CSA data. Here it is supposed 68% shoat, 5% camel and 27% cattle in the composition of exportation; ⁵ Estimation of % according to two events: the Egyptian ban for cattle from Ethiopia and the demand for Arafa during the last two months (November, December 2006). So it was supposed 85% shoat, 6% camel and 9% cattle in the composition of exportation (% head/ total stock).

Table 5: Estimation of exportations of live animals from Somali, Harari, East and West Harerghe and Dire Dawa regions from the declarations of exporters (number of heads)

		Estimation from declarations of exportations in 2006		Estimation from the capacity of each holding area	
		Volume (heads)/exporter	Total	Capacity /month (heads)	Total
Medium exporter	Cattle			300	1800
	Shoat	11000	22000	1500	24000
	Camel	300	600	250	500
Large exporter	Cattle	18000*	24000*	10000	60000
	Shoat	30-100000*	60-200000*	25000	400000
	Camel	5000*	10000*	8000	16000
TOTAL For the region	Cattle		24000*		61800
	Shoat		222000*		424000
	Camel		10600*		16500

* Estimation for all the holding area of the large exporter.

If there is some coherence on small ruminant export stock, it has been noted that there exist large gaps between the estimations of cattle and camel generated from official data and private data. These gaps could be explained by: 1) the method of estimation (based on % of the exportation) and 2) the estimation of large exporters of their total exportations from Ethiopia (including the exportations from Addis and Afar).

At the national level, it is presumed that of the 14 members of the Association of Livestock Exporters, 7 are large exporters and 7 are medium exporters. The official exportation would be around 126,000 cattle, 500,000 shoats and 37,000 camels with a capacity of exportation of 226,000 cattle, 1.4 m of shoat and 57,000 camels (Table 6).

By comparing these estimations (Table 6) with the different estimations (Table 7), the estimations of the real exportations are close to the real official estimations of small ruminants based on CSA data. In 2006, the Egyptian ban that stopped the exportations of cattle to Egypt since March 2006 affected the real exportations of cattle. This could partly explain the gap between our estimations and the official estimations; however, the gaps remain important to camels. Less than 25% of our estimations of camels would be exported, which is quiet close to the potential estimations (Alary, 2006; Belashew, 2005). In fact, a large proportion of camels evade the legal market.

Table 6: Estimation of exportations of live animals from Ethiopia (Hypothesis: 7 large exporters and 7 medium exporters) (heads)

Exporter	Animal Species	Estimation from declarations of exportations in 2006		Estimation from the capacity of each holding area	
		Volume (heads)/exporter	Total	Capacity /month (heads)	Total
Medium exporter	Cattle			300	16 800
	Shoat	11000	77 000	1500	31 500
	Camel	300	2 100	250	1 750
Large exporter	Cattle	18000	126 000	10000	210 000
	Shoat	60000	420 000	25000	1 400 000
	Camel	5000	35 000	8000	56 000
Total	Cattle		126 000		226 800
	Shoat		497 000		1 431 500
	Camel		37 100		57 750

Table 7: Estimation of exportations of live animals from Ethiopia (heads)

Source of data	Reference period	Cattle (heads)	Shoats (heads)	Camel (heads)
Ethiopia Government Committee of Concerned ministries, unpublished data, 1983	1981/82	225 450	758 200	
AACMC, 1984	1983/84	55 000	330 000	
Ministry of Foreign Trade 1987	1985/86	260 000	1 200 000	
FAO, 1993	1987/88	150 000	300 000	
World Bank, 1987	1987	225 000	750 000	100 000
MEDaC, 1998	1998	260 000	1 200 000	
Gebresellasie et al (1998), Dirbaba (2001)	2001	325 000	1 150 000	16 000
Ahrens, 1998	1998	64 606	372 656	42 828
Pratt et al., 1997	1997		1 407 244	
Pratt et al., 1999	1999		1 024 063	
Belashew and Jembery, 2005 (potential)	2005	322 000	4 500 000	69 000
Belashew and Jembery, 2005 (real)	2005		558 000	
Estimation from CSA, 2001-2002 (Alary, 2006)	2001	272 288	720 427	9 223
Estimation Field review (real)	2006	127 620	635 240	40 988
Estimation Field review (potential)	2006	226 800	1 431 500	57 750

Source: Alary, 2006; * the informal estimations result from interviews among local traders who met in local markets: around 8-10 small trucks (that represent 15-18 cattle, 12 camels or 70-80 shoats) would load animals in direction of the Somaliland border for each market of the region (Somali region) and around 5 markets per week.

Estimation of the potential of the camel sector at the regional level

Another estimation of the potential could be derived from the estimated parameters relating to yield carcass and off take rate and estimated data related to the domestic consumption and official

exportation. This estimation has been done at a regional level (IGAD region).

If the cattle market is relatively well controlled, the camel chain evades the official market and then this opportunity doesn't appear in the national or regional economic indicators (table 8).

Table 8: Estimation of potential supply at the regional level

	Cattle	Camel	Small ruminants
1. Stock (Fao, 2004)	102 104 688	11 742 390	179 579 520
% of slaughtered animals (Fao, 2004)	9.0%	4.7%	25.3%
2. Consumption (g/capita, Fao, 2004)	16.25	0.98	7.96
Estimation of total consumption (tons)	1 094 166	66 289	535 827
Estimation of total consumption (heads)	11 256 852	392 709	39 735 623
3. Potential exportation or importation			
Off take rate (FAO, WB, EU, 2004)	11.30%	7.00%	27.30%
Exportation (heads)	280 978	429 258	9 289 586
4. Exportation			
Exportation (FAO, 2004)	201 515	40 692	2 800 578
Exportation (Somali & Port Sudan)	240 061	43 298	4 068 654
% of potential exportation	85.4%	10.1%	43.8%

Source of data: Stock, slaughtered, consumption (Faostat, 2004); Yield carcass for sheep & goat (El Khidir et al. 1998), for Bovine (Lemma et al 2007); Yield carcass of camel (Kurtu 2004); Off take rate (FAO, WB, EU, 2004)

Conclusion

If the sheep and goat market dominate the live animal market of the region, it is difficult to understand the sustainable livelihood of pastoral systems without considering the camel activities. The camel activity ensures the livelihood of more than 235,000 households in the pastoral areas (on the basis of 50 camels to sustain one family). However, the socioeconomic functions assigned to camels in the pastoral pattern of living were unable to explain the economic

development of the camel activities. Knowing that pastoral households are regularly facing natural shocks (such as droughts or epidemics) and that they then need to search for equilibrium to survive in these harsh environments, the role of camels appear to be neglected in household economy viability and also in sustainable economy of the pastoral region. In the regional contraband, camels represent a good and sure way to transport merchandises. The study of the livestock chains around Dire Dawa

(Ethiopia) showed more diversified marketing root that articulate the formal and informal sectors and that closely link camel chains to the other livestock chains.

An analysis of the different sources of data used to estimate the economic development of camel activity has revealed different gaps among different sources of data and between the official data and the reality. These gaps can be explained by the following factors: 1) the importance of the cross border markets to trek the animals toward potential ports of exportation, making it more complicated to count animals; 2) the clandestine activities permitted by camels; 3) the rusticity of camel to avoid common roads. These factors emerge from observing reality and were insufficient in explaining the lack of information on the camel chain. Perhaps this sector suffers from the traditional and old image of camels (Faye, 2006). Moreover, developed countries are much more concerned in ruminants or cattle development than in camels, which reflects the lack of interest in the research of such animals (Camel).

If these primary estimations were to be explored, it would mean that camel meat could be an interesting option to meet the growing demand for meat in

developing countries, particularly for low income families as has been shown by Saparov and Annageldiyev (2005).

Acknowledgments

The original data used in this study were collected during the field study of the STDF 13 project funded by OIE and managed by the FAO. We would particularly like to thank the participants (traders, intermediaries, farmers, and agents from different administrative and extension services) who took time to answer to our questions.

References

- ACF, 2003. Household Economy Baseline Survey- Zones 1 and 4 of Afar National Regional State. Action Contre la Faim, Food Security team, Ethiopia.
- Aklilu, Y., 2002. An Audit of the Livestock Marketing Status in Kenya, Ethiopia and Sudan- Volume I, Pan African Programme for the Control of Epizzotics (PACE), Volume II- Issues and proposed Measures, Pan African Programme for the Control of Epizzotics (PACE), Organization of African Unity.
- Alary V., 2006. Etude du commerce régional du bétail et des produits animaux en Afrique de l'Ouest (Zone Ecowas) et Afrique de l'Est (Zone IGAD). Projet STDF 13 (Standard and Trade Development Facilities), Desk Review, FAO/OIE, Mission Rome du 30 octobre au 4 Novembre 2006, Rapport de mission, CIRAD, 2006, Montpellier-France
- Belachew H., 2005. Assessment of livestock marketing in Ethiopia: Constraints and possible intervention measures. Livestock marketing Department, Addis Abeba, Ethiopia.
- Bonfiglioli A.M., 1987. *Nomades Peuls*. Ed. L'Harmattan, Paris, France, p 72.
- Bonnet P., 2000. *Case study on CAHW's in Ethiopia, RCA and Chad*. EU Impact of privatisation Study, 2000, Draft 09/12/2000, CIRAD/ILRI.
- Chaibou M., 2005. Fonctionnement des élevages camelins de la zone périurbaine d'Agadez au Niger: Enquête typologique. *Revue El. Med. Vét. Pays Trop.*, 58 (4) : 273-283.
- Clanet J.C., 1999. Stabilité du peuplement nomade au sahel central. *Sécheresse*, 10(2): 93-103.
- Djama M., 1999. Producteurs pastoraux et commerce international- l'évolution des rapports marchands en pays Nord-Somali, In: *Horizons nomades en Afrique sahélienne- Sociétés, développement et démocratie*. A.Bourgeot (Ed), Karthala, pp 339-353.
- El Khidir I.A., Babiker S.A., Shafie S.A., 1998. Comparative feedlot performance and carcass characteristics of Sudanese desert sheep and goats. *Small Ruminant Research*, 30: 147-151.
- FAO, 2006. Household Livestock Holding & Livelihood Vulnerability Status Report on PRA and herd Structure Study in Dolllo Ado Woreda, Libane zone of Somali National regional State. FAO.
- FAOSTAT, 2006. <http://faostat.fao.org/>.

- Faye B., Saint-Martin G., Bonnet P., Bengoumi M., Dia M.L., 1997. *Guide de l'élevage du dromadaire*, Ed. Sanofi, Libourne, France, p. 126.
- Faye B., Bengoumi M., Barkat A., 2004. Le développement des systèmes camélins périurbains en Afrique. In : Lait de chamelle pour l'Afrique. Lhoste F. (Ed.), Atelier sur la filière laitière cameline en Afrique, 5-8 nov 2003, Niamey (Niger), FAO/ Production et santé animales (Rome, Italie), p. 11.
- Faye B., 2003. Surveillance and control procedures for camel diseases. Workshop on the surveillance and Control of camels and wildlife diseases in the Middle East. Regional workshop OIE, Sanaa (Yemen) 10-12 March 2003.
- Faye B., 2003. Cadre stratégique de lutte contre la pauvreté. Secteur élevage à Djibouti. Rapport de mission CIRAD-EMVT n°2003-004, Montpellier, 24 p.
- Faye B., 2006. Les pasteurs sont des éleveurs "contemplatifs". In : L'Afrique des idées reçues. Courade G. (Ed), Belin, Paris, pp. 281-287.
- Faye B., 2008. *The production potential and the importance of camel and camelids in the world*. Proc. of WBC/ICAR 2008 Satellite meeting on camelid reproduction. Budapest (Hungary), 12-13 July 2008, P. Nagy and G. Huszenicza (Eds): 1-4.
- Hjört af Ornäs A., Ali Hussein M., 1993. Camel herd dynamics in southern Somalia: long term development and milk production implications. In: The multi-purpose camel: interdisciplinary studies on pastoral production in Somalia. A. Hjort af Ornäs (Ed), EPOS, Uppsala University, Sweden, pp. 31-42.
- Kadim T., Mahgoub O., Purchas R.W., 2008. A review of the growth, and of the carcass and meat quality characteristics of the one-humped camel (*Camelus dromedaries*). *Meat Science*, 80: 555-569.
- Kurtu M.Y., 2004. An assessment of the productivity for meat and carcass yield of camel (*Camelus dromedarius*) and the consumption of camel meat in the Eastern region of Ethiopia. *Tropical Animal Health and Production*, 36: 65–76.
- Lemma T., Geleta T., Sisay A., Abebe T., 2007. Effects of four different basal diets on the carcass composition of finishing Borana bulls. *Journal of Cell and Animal Biology*, 1 (2): 015-018.
- Little P.D., Teka T., Azeze A., 1998. Research Methods on Cross-border Livestock Trade in the Horn of Africa: Further Observations. Research report of

the Broadening access to markets and Input Systems-Collaborative Research Support program (BASIS-CRSP) and OSSREA project on Cross-Border trade and food security in the Horn of Africa. Oct. 1998. p. 14.

Pratt A.N., Bonnet P., Jabbar M., Ehui S., de Haan C., 2005. Benefits and Costs of compliance of sanitary regulations in livestock markets: the case of Rift Valley Fever in The Somali region of Ethiopia. International Livestock Research Institute, Nairobi, Kenya, The World Bank.

Saparov G., Annageldiyev O., 2005. Meat Productivity of the camel Arvana breed and ways to increase it. In: *Desertification Combat & Food Safety*, B. Faye and P. Esenov, (Eds), IOS Press, pp. 211–214

Scoones I., 1999. Les nouvelles orientations du développement pastoral en Afrique. In : *Nouvelles orientations du développement pastoral en Afrique*. Scoones I. (Ed), Coédition CTA/Karthala, pp. 17-73.