

## The Economics of Animal Production in Animal Holders' Households in the Butana

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### 1 Problem setting and objective

Although important changes have taken place in the last decades, animal keeping in the Butana continues to be the most important source of income for the majority of the population that live there.<sup>2)</sup> This applies mainly to the rural areas of the Butana where other possibilities of earning an income are limited. Thereby, in the survey region, there are very different forms of animal keeping characterized by animal species and the animal keeping systems and the availability of other sources of income. It is only in a few exceptional cases that animal holders practice livestock keeping exclusively. Very often, agriculture is practiced in addition, trade is carried out and/or services are offered (multiple employment)<sup>3)</sup>. The survey presented here is concentrated on extensive animal keeping which is practiced in connection with agriculture<sup>4)</sup>. It thereby represents the traditional form of animal keeping<sup>5)</sup>, even if its organization has changed considerably.

### 2 Income from animal keeping

According to their resource endowment, the animal holders try to earn their livelihood under extreme living conditions and, above all, variable conditions of production. Nowadays, the resource endowment suffices, only under relatively good to satisfactory conditions of production, to earn an adequate income on the farm. In times of crisis as during droughts, however, it is obvious that animals, precisely as the most important resource, offer no secure basis of subsistence, as will be shown in the following chapter.

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2) According to IBRAHIM (1991): animal keeping has a share of 21 % in the gross domestic product of Sudan (1988/89). WINROCK (1992) states that animal keeping constitutes a share of 51 % in the contribution of agriculture to the GDP.

3) Regarding multiple employment, see also BADIÉL (1992).

4) There are different agricultural systems: traditional wadi cultivation, irrigated, flooded and rain-fed agriculture.

5) The farming systems described here as extensive animal keeping are classified, in the appropriate literature, according to the development of nomadism, semi-nomadism or of transhumance (e.g. RUTHENBERG 1980; JAHNKE 1982; ANDREAE 1977).

### 2.1 Household level

Income from animal keeping is earned from the meat production and the used milk. The animal holders' most important concern within the framework of animal keeping is to expand their livestock since it alone promises a certain security, prosperity and prestige. Although milk is considered by them more or less as a by-product, it takes an important place in the daily diet. The value of the milk consumed becomes evident, for example, if, when calculating the marginal income on the side of performance, it is valued at loco farm price (Diagram 1).



Diagram 1: Average marginal income from animal keeping from 1988/89 to 1991/92 (CU TLU sheep).

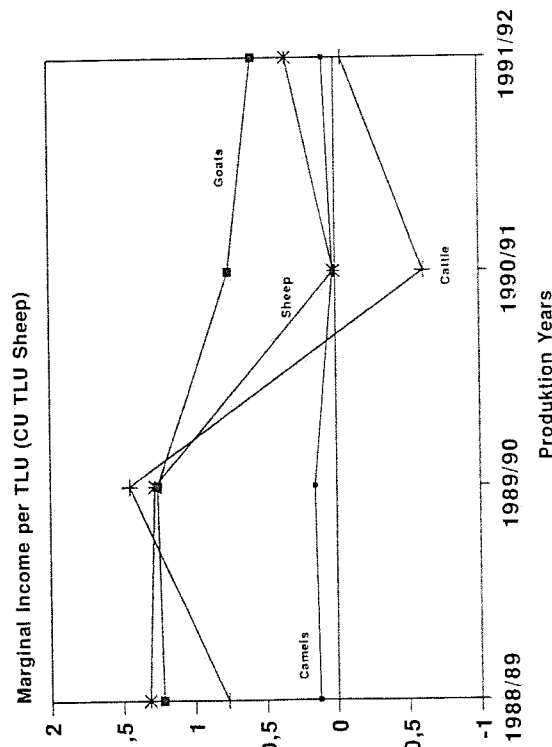
Source: Surveys by G. Rahmann

The price which is acknowledged as loco farm price is the one claimed on the markets which the animal keepers usually visit exclusive transport costs. In the case of milk, this is an imaginary value since the animal keepers cannot sell the milk they consume on the markets. To be able to record the inflation rate in the rural areas, a calculating unit based on sheep (CU TLU sheep) was used in the calculations. It reflects the development of animal prices on the markets and, moreover, it represents the most important source of cash income for animal holders. The CU TLU sheep can be converted into monetary

terms or other units. Thus in 1988/89, one CU TLU sheep was equivalent to £S 3,600, in 1989/90 to £S 6,000, in 1990/91 to £S 7,060 and in 1991/92 to £S 10,740.

Despite its predominance in the calculations presented here, milk should not be overestimated since it is a by-product of the meat production. Security and wealth are only assured by large herds of animals that represent not only a stock of capital because of their reproduction potential but also allow interest yield. Even if milk is very valuable, it can only be consumed and conserved to a limited extent only. In the rural areas where the surveyed animals holders keep their animals, milk cannot be sold since there is no market for it. This is why non-consumed milk has no economic significance.

Costs arise in animal keeping (Diagram 1). According to the year and the season, medicines, water, harvest residues and salaries must be paid. Since natural pastures and own water are free of charge, a positive total marginal income is achieved even in extremely dry years. Here, however, there are differences between the individual animal species due to the varying demands on husbandry and production possibilities (Diagram 2).



**Diagram 2:** Average marginal income per TLU according to animal species from 1988/89 to 1991/92 (in CU TLU sheep).

Source: Surveys by G. Rahmann

However, even the positive total marginal income in the extremely dry year and in the following year should not delude as to the fact that economic difficulties may occur. The marginal income from animal keeping does not suffice, by far, to guarantee the maintenance of the herding collective. To be able to meet all the expenses (that are important for survival), more and more animals must be sold. Thus, for example, in the extremely dry year of 1990/91, the livestock was reduced by one-third on the average, due primarily to sales and not to the death of animals as is often assumed (Tab. 1).

**Tab. 1:** Gross income from animal keeping and changes in the livestock from 1988/89 to 1991/92 (CU TLU sheep and percentage of TLU).

	88/89	89/90	90/91	91/92
Gross income	27.1	38.4	5.8	6.2
Changes in livestock	+2%	+2%	-33%	-13%

Source: Surveys by G. Rahmann

## 2.2 Animal markets

Markets are of great importance to animal keepers. There, they sell their animals and buy consumer goods. This is why the animal holders' economy is largely orientated towards the market. Usually, animal holders sell their animals on the regional markets which - according to the geographical situation of their camp/village - lie at a distance of 40 to 100 km. Altogether, the survey covered seven market locations which have a more or less great significance for the animal holders concerned (Tab. 2). 6)

Lorries are the most important transportation means to reach the markets. Since a lorry is not available in every camp/village, much less to all animal holders, transportation facilities constitute the most serious limitation when selling animals. The few lorries which are available travel very irregularly. The reasons thereof are either impracticable tracks after rainfall, wrecked vehicles or the owner uses them for other purposes.

6) Sobath, El Heleo and the refugee camp Shagarak can, according to OESTERDIKHOF (1991: 383), be defined as first level markets since they are of local importance only. Kassala, New Halfa, Gadaref and Showak are of regional importance and therefore count among the second level markets. There are no third level markets of supraregional or international significance in the Butana. For example, Omdurman and Port Sudan belong to those.

**Tab. 2:** Animal supply on selected markets at the end of 1991 per market day (in number of animals).

	New Halfa	Gedaref	Showak	El Heleo	Kassala
Sheep	100	1000	500	400	500
Goats	60	500	100	100	500
Camels	2	300	1,000	400	100
Cattle	40	300	0	100	100
Donkeys	5	100	0	10	30
Market days/ week	6	6	2	2	7
Main season (Months)	Sept.- Feb.	Oct.- April	Oct.- March	Jan.- April	Jan.- March

Source: Surveys by G. Rahmann

According to the distance, up to 10% of the value of the transported animals must be paid as transportation costs. Additional transportation costs arise as fare for the person who travels to the market and eventually for purchases he brings back (e.g., a sack of sorghum). Altogether, travelling costs may add up to 40 % of a sheep's value. The sale can take two days generally. The night is spent either at relatives' in the market localities or in the open.

The market structure must be considered as being unfavourable for animal holders who practice extensive animal keeping since:

- the markets are "demand markets",
- numerous suppliers (polypolists) are confronted with few buyers (oligopson) and
- both sides stand out because of different price elasticities.

When the animal holders go to the markets, they often want to buy foodstuffs. To that end, animals are sold (according to the requirements, a sheep or a goat, and sometimes even a head of cattle or a camel) in order to obtain the necessary cash.

Moreover, since they had to meet relatively high transportation costs, many animal sellers are more or less forced to sell their animals when they go to the market. They are confronted with animal buyers, very often wholesalers and butchers, who are aware of their awkward situation. Since the supply of animals is very often greater than the demand, they have an advantage over animal holders in trade and can choose from the most favourable offers. This is obvious especially in the different price elasticities of buyers and sellers. The price elasticity of supply is much greater than that of demand.

Usually, animal holders accept the market conditions which are unfavourable for them for the only reason that they do not know anything else and participate partially only in the market with a degree of subsistence of up to 90 % (DOPPLER 1991).<sup>7)</sup> In order not to be exposed to surprises when they go to the market, animal holders make inquiries beforehand about the prices they can achieve. These prices are then considered together with the urgency of selling the animals.

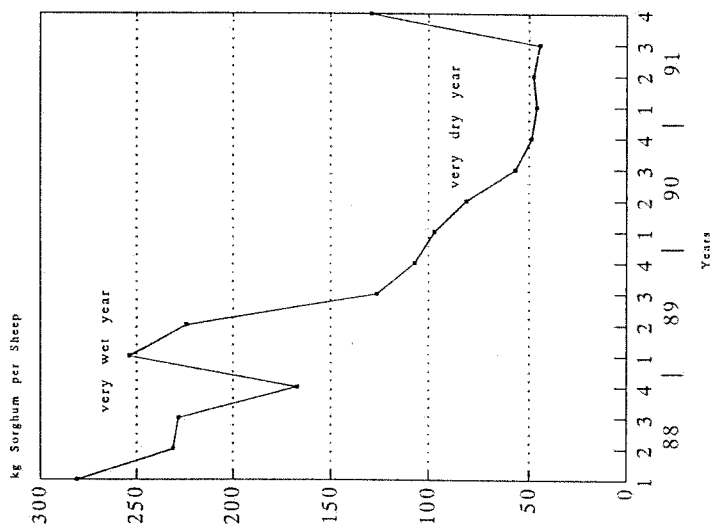
In times of crisis, as during the extremely dry year of 1990/91, the disadvantage of animal holders on the market is very considerable and even threatening. The unfavourable marketing effects worsen considerably for them. Thereby, the terms of trade are especially significant: as a result of the strongly decreasing demand and very abundant supply (maintenance difficulties in animal keeping), animals are very cheap; in contrast, basic foodstuffs such as sorghum are very expensive (Diagram 3).

In such years precisely, the animal holders' subsistence is at its lowest level (less than 40%). Above all, there is a lack of self-cultivated sorghum and of milk.<sup>8)</sup> These basic foodstuffs or their substitutes must be bought at the markets. In addition to the low degree of subsistence, the costs of animal keeping increase considerably since the animals, instead of grazing on natural pastures, must be given harvest residues, and water is expensive for being scarce. Many animals must be sold to meet the costs.

Finally it can be said, that traditional animal keeping suffers by many constraints. Beside environmental constraints, institutional constraints, e.g. disadvantages on the markets or property rights, strikes against an successful animal keeping in traditional way. The final consequence will be that traditional animal keeping disappear, despite it is relatively adapted to the environmental constraints.

7) This applies to good and satisfactory production years. The degree of subsistence fluctuates between 20 and 100% according to the year and the season.

8) Either there are no lactating animals or they are so far away from the households that they cannot supply any milk.



**Diagram 3:** Price relations of Sorghum as compared to sheep from 1988 to 1991 (Sorghum at retail prices).

Source: Surveys by G. Rahmann

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