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**OF MARKETS, MEAT, MAIZE AND MILK,
PASTORAL COMMODITIZATION IN KENYA**

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1. INTRODUCTION

The story about pastoralists' loss of power, and loss of control over resources is almost universally acknowledged. But is it true in all cases, and if not, can lessons be learned from these exceptions? In this paper, this question is discussed with two cases in Kenya in mind. In the case of the Pokot in West Pokot District, it is clear that the Pokot in West Pokot District have indeed been at the margin of Kenyan society, economy and the Kenyan political fora for some time now, and they experience insecurity and poverty daily, unable as they seem to be to recover from the disasters of 1979 and later years. In the case of the Maasai, none of the true-isms on pastoralists seem really true for all of them. In this paper we will investigate whether there are any possibilities for improvement in the position of pastoral producers through involvement in the market, and what this means in terms of risk.

A debate about poverty and prosperity among East African pastoralists should include a thorough analysis of trends in pastoral commoditization, its impact on wealth and livelihood levels for a number of reasons:

- a) the insight it gives in the changing position of pastoralists vis-a-vis the wider economy and in the relative position of pastoralists in the wider society
- b) the insight it gives in the risks involved caused by market behaviour, in addition to the natural risks, and the differential impact of those combined risks on segments of the pastoral population
- c) the insight it gives in longer-term trends of income and wealth differentiation between segments of the pastoralists.

Commoditization is a process whereby assets, goods and services increasingly change from having a use value, to be used for subsistence, into having an exchange value as well, to be sold and acquired on the market. At first this exchange may take place without money as barter trade, but increasingly it will be with money as an intermediary. In the debate about pastoralism the following elements of this process should be highlighted:

- the commercialization of livestock production (through the sale of milk, meat, wool, hides and skins, manure, draught animals) takes place when the balance between own use and sale changes in favour of the latter; and local livestock trade becomes part of national trends in supply and demand, with impact on price formation;
- the acquisition of food through the market becomes important; a change often accompanied by a change in the diet from more livestock based to more grains based;
- the acquisition of non-food consumption items through the market, both material goods (often starting with ornaments and clothing; items for the house; medicinal drugs and stimulants) and services (education, health care) takes first place;
- inputs to be used in the production process may increasingly be purchased (buying of water or land use rights, veterinary medicine, salt, additional feed; fencing materials; breeding animals or semen). One could in some cases also add: the buying of firearms and ammunition to defend or acquire property and rights of access;
- the privatization of land and/or water ownership;
- the commoditization of labour relations may change, when a growing part of the pastoral and livestock marketing work is being done by labourers, for a wage.¹

The debate about pastoral commoditization in Eastern Africa has long been dominated by 'livestock commercialization' and 'offtake rates', often motivated by the growing demand for meat in the ever more dominating non-pastoral sector of the economy of the three East African countries (e.g. Aldington & Wilson, 1968), and not so much as a possible answer to growing tensions in the pastoral economy itself. The government drives to better 'tap the livestock wealth' of the pastoralists came in waves: a first one in the second half of the 1930s, provoking the famous Akamba Political Protest against forced destocking in 1938 (cf Forbes Munro, 1975) and failed attempts to develop stock auctions; a second one in the second half of the 1950s, again often using ecological argumentation to force a higher offtake rate (e.g. on Karamoja, Baker 1967, Evans-Jones 1960, Quam 1978; for Kenya: Raikes 1981) and a third one with the launching of the World-Bank financed livestock development programmes in the late 1960s and early 1970s (e.g. in Kenya the Kenya Livestock Development Programme).

Scholars looking from the perspective of pastoralists to these government-led drives to increase offtake rates often complained about 'unfair terms of trade'. Especially in the early 1980s there was much scientific work on economic unfavourable relationships of pastoralists. Raikes (1981, p. 97) blamed East African governments

because the pastoralists' "reluctance (to sell livestock) is at least in part due to low prices". Evangelou (1984a, p. 140) wanted "more favourable national pricing policies" for livestock and he added (1984b, pp.50) that the transition to market-oriented production has been hindered because the Kenyan government succumbed to "short-term political advantages gained by 'cheap meat' and other urban-biased policies". Campbell and Axinn (1980, pp. 7-8) wrote: "official prices of beef, in particular, have remained controlled and low during the past 15 years in Kenya". Aronson (1980, p. 181) speaks about a "sharp decline in the terms of trade, so that more and more livestock product is necessary for a given amount of grain or industrial goods". Hjort (1981) cited Swift (1979) and Kjaerby (1976) to suggest a decrease in exchange ratios for cattle and camels against maize. And also Little (1983) was convinced that "in recent years... the rate of inflation for consumption items (particularly maize and finger millet) has increased faster than livestock prices, eroding the purchasing power of the herdowners". Elsewhere one of us already questioned the wisdom and empirical basis of this negative attitude towards pastoral commoditization (Dietz, 1987 and 1993).

On the basis of the above, the main issues addressed in this paper are the following:

(1) can (partial) commoditization ease the tension between pastoral production capacity and household consumption needs;

(2) what would be the requirements for commoditization at the market level;

(3) does commoditization actually take place and how does it affect various wealth classes in pastoral society.

The argumentation will presently be given in the form of a model, followed by a presentation of empirical findings from among the Pokot in North Western Kenya, and from among the Kajiado Maasai in Southern Kenya².

2. THE APPROACH TOWARDS PASTORAL MARKETING, BASED ON CALORIC TERMS OF TRADE AND MARKET RISKS ANALYSIS

a. subsistence production

Pastoralists who produce milk, meat, or blood for their own consumption with the aim to be self-supporting in the provision of food, need enough animals to do so. The absolute amount of food that provides energy as well as proteins, minerals, and vitamins is generally dependent on household composition (children-adults; men-women, breast-feeding women), on the average weight and the body efficiency to handle food, on the climate and on the type of often work-related energy requirements. People can do with temporary lower energy inputs, but at a certain point bodies become 'wasted' and death or long-term damage to the body is a result. The food people produce from their herds and flock has a certain caloric (and protein etc.) value, which can fluctuate a bit, mainly depending on the fat contents of milk and meat.

Assumptions:

- A person in East African pastoral circumstances needs 800,000 Calories per annum.
- A household unit consists of seven people who need 5.6 million Cal in all.
- A litre of milk contains 700 Calories
- An average (zebu) cow gives 400 litres of milk per annum for human consumption (there is competition with milk for the calves and milk production for human consumption will generally be between 2 and 3 litres per day in the short rainy season and between 1 and 2 litres per day in the long dry season)
- Cows form 60% of the herd
- A kilogram of cattle meat contains 2,300 Calories (goat meat lower, sheep meat much higher)
- A zebu has a consumable meat weight of 100 kgs.
- The natural life of zebu cows is thirteen years, and the culling of most male animals is at three years, which results in an average life span for all new-born calves of eight years. That would mean an average 'normal' offtake rate of 12.5 per cent per year.
- A pastoral household unit can manage a herd of 30 to 40 animals without labour problems; to team up with other herders and herds for seasonal mobility is often useful for security and labour efficiency reasons. Beyond 40 animals additional labour is often required.

Conclusions:

- If the average pastoralist would only drink milk he or she needs 1140 litres of milk in a year, that is 8,000 litres per assumed household unit, requiring 20 cows or a total cattle herd of 33 animals.
- If the average pastoralist would only eat meat he or she would need 350 kg of meat in a year and the assumed household unit 2,450 kg, requiring 25 cattle to be slaughtered for food. In a 'normal' situation, with an offtake rate of 12.5 %, this would require a herd of at least 200 animals.
- Combining the milk and meat production, full dependence for all food requirements on animals would mean that a pastoral household needs a cattle herd of at least 28 animals (producing 6,720 litres of milk and 350 kgs of meat). This is within the labour potential of an average household. It would mean an average of 4 head of cattle per capita.

Complications (beyond the ones which result from the fact that 'averages' are of course only analytical tools, and can be far from individual households' and herds' situations):

- A large seasonality in milk production would require dependence on other food sources during part of the year. In pastoral societies, the 'hunger period' is generally during the dry season when milk gift is lowest and labour energy required highest.
- The assumed 'normal' offtake rate for cattle is based on the assumption that all animals end up as meat for the household. However, part of it is not eaten, either because of losses due to predators or disease or because of certain taboos concerning the consumption of certain animals exist.
- The assumed 'normal' offtake rate for cattle is based on a 'natural' life for cows, but on culling of (most) male animals as soon as they are adults. This might not always be possible because of cultural requirements in which male animals are allowed to become older, e.g. because of shared ownership with far-away stock friends and cultural taboos against early slaughter (or sale).
- With regular droughts animals die of starvation and/or lack of water, and these animals are either not eaten (they go to waste) or they have lost a lot of weight (and all their fat) so that if eaten the food value is much lower.
- Cultural norms prescribing diet behaviour might complicate the food (milk and/or meat) entitlements of particular members of the household.
- Even if certain households have herds big enough to provide them with milk and meat during dry seasons and droughts, other households might be faced with structural or temporary food problems, and customary sharing of meat and milk among a larger group than the own household may still jeopardise the household food situation.

b. production with minor commoditization

In many pastoral regions in East Africa, population densities have increased because of natural growth, immigration of pastoralists from elsewhere (Boran to Marsabit from Ethiopia; Upe Pokot to Kenya; Somalis from Somalia to Kenyan Somali areas), and of non-pastoralists pushed out of the high-potential areas (see Dietz, 1986). It is generally assumed that long-term pastoral population growth since 1960 has been (much) higher than livestock growth, partly because of the devastating consequences of the droughts (in most Kenyan pastoral areas in 1960-61, 1965, 1968-69, 1974-76, 1979-81, 1984-85, 1987, 1989, 1991-93), preventing the rebuilding of herds and flocks. On the other hand it is probable that the total absolute number of animals in the pastoral areas is higher now than it was in the 1950s. On the whole, the overall trend of livestock per capita has been downward. For many pastoralists it must have meant a loss of wealth to a level below the requirements for subsistence production (in the model described above, below 4 TLU³ (5.7 cattle equivalents) per capita).

There are a number of options to avoid a food crisis when the pressure grows. Of course the pressure is mostly felt during periods of drought (see Dietz, 1991).

- Pastoralists have always participated in marketing during these periods, e.g. selling or bartering milk, hides and skins, or hunting trophies and getting non-livestock food in exchange (e.g. Schneider, 1981; Kerven 1992).
- They also try to get additional food by hunting and gathering (or by stealing food from neighbouring cultivators), even if it is often regarded as culturally taboo.
- And using patches where cultivation still seems a possibility, some also start to grow their own food, starting with what sometimes is called 'hit and run' cultivation of millet or sorghum, sometimes intensifying to more labour-intensive forms of rainfed or water harvesting types of agriculture. The problem is that during years in

which droughts cause most stress in the livestock economy, also the chances of a harvest are meagre. However, in years with adequate rainfall, the cultivation of cereals by pastoral households enables the livestock to recover more quickly. There is a growing problem of access for pastoralists to the few niches where cultivation is possible, because these have gradually been occupied by non-pastoral immigrants or former pastoralists.

- Often relationships with groups in higher potential areas are formed by marriages, especially when the exchange is within the same ethnic community. Bridewealth arrangements then often include livestock as well, which is sometimes retained as part of the son-in-law's herd in the lowlands, but owned by the highland-based father-in-law.
- These relationships often form the basis of temporary migration of women and children to these higher potential areas. Migration is one of the important ways of reducing the energy requirement of households in dry areas during drought.

c. market-intermediated reproduction using the positive terms of trade between livestock and grains

Growing tension between pastoral production capacity and household consumption needs can also force a more active involvement in the market economy. Selling a steer or milk on the market and buying cereals instead could be a much more lucrative affair, as long as the 'Caloric Terms of Trade' (CToT) are positive for the livestock owners. This Ctot relates pastoral production, expressed in energy values, with pastoral consumption of cereals, also expressed in energy values, through the price of the respective products and their energy value on the market.

Assumption:

- One kg of maize or sorghum provides between 3,000 and 3,600 Calories (say 3500), depending on milling and storage losses.

Conclusion:

- For the exchange to be positive in caloric terms the pastoralist should be able to get more than 65 kgs of cereals for selling a steer, and more than 200 grams of cereals for a litre of milk⁴.

Complications:

- Pastoralists who become (ever more) dependent on the market, should be able to rely on three things:
 - a) there should be traders willing to buy the animal or the milk at the time when the pastoralist is in need of cash to buy food, and at a market place that can be reached without too many problems (trekking distance, security for animals and herders against raiders, and greedy civil servants, health risks);
 - b) there should be traders willing to sell food at the time when the pastoralists want to buy it and at places which are accessible for pastoralists at low costs and with low risks;
- It is not always obvious that urgent or foreseen food needs in the household will be covered by the sale of animals or milk for cash to buy cereals. Decision-making is often gender specific. It is mainly the women who are confronted with lack of food to feed the household, and they often cannot make the decisions concerning the sale of animals; the male head of the household does and even he often has to consult other male or female members in the family hierarchy, or 'stock friends' who have a partial claim of ownership. And even if an animal can be sold, the man generally gets the money and there can be so many competing uses for this cash (from buying veterinary medicine, to buying beer) that it might easily 'evaporate'. In some households male heads simply regard it as their wives' responsibility to provide for food and they don't contribute. It then depends on her ownership of animals (often some small stock) and the possibilities she has to participate in the livestock and milk market. Generally women do have the opportunity to sell milk and do so independently. But then there should be a market for milk nearby.
- The availability of food aid provided by government or NGOs complicates the situation further. Occasional food hand outs or food for work arrangements undercut the position of food and livestock traders and could result in the absence of any reliable trading infrastructure after food aid comes to an end. The collapse of trading infrastructure could well mean that 'positive caloric terms of trade' become an illusion and people become ever more dependent on food hand outs.

Not all commercialization of livestock is a result of a gradual or dramatic process of diminishing livestock per capita, or of short-term disaster sales. Part of it can also be a deliberate strategy of rich pastoralists (and absentee herdowners -cum- politicians in particular) to become ranchers. They may focus on purely commercial

production as an accumulation strategy. The emphasis then shifts to meat production, offtake maximalization, and market-derived inputs (medicine, top-quality breeds, special feed), and fixed assets (water facilities, dips and sprays, fences). When livestock becomes a commodity as well, this could mean that pastoralists land tenure situation also changes. Behnke (1984, p. 265) states that a pastoral nomadic system of land use then changes to an 'open range ranching system', as a spontaneous process.

d. high level of commoditization, supporting a market-intermediated intensification and diversification of the pastoral economy

With a further diminishing of livestock-per-capita ratio's, growth of additional non-food consumption needs, or a change to a 'ranchers' mentality', pastoralists might be forced to intensify or diversify their economy. When adequate land and water or the access to it becomes a problem, investments in private water facilities and commercially available feed will be required (starting with payment for access to cultivators' stubble fields after harvests). In some cases individual herders succeed in acquiring pasture as property so that land becomes a commodity. Some herders then start to invest in fencing to keep others out, or at least to control access (sometimes demanding money for the use of pasture and water).

According to Behnke (1984) this phase is often characterised by a shift from what he called the 'Open-range Ranching system' to a 'Fenced Ranching system'. This system has its roots in the USA where ranchers wanted to better control their land, not their cattle. Land had become a commodity and had to be protected from occupation by others. At this stage, cattle had already been a commodity for a long time. After fencing, the ranchers were trapped in their ranches and had to adapt their practices and reduce grazing pressure. This shift was thus initiated through commoditization of land. This practice was subsequently seen as a necessary step towards commercial production, and it was introduced in Africa since the fifties. Most Sahelian and semi-arid Eastern African countries have seen these projects fail. It would mean changing a labour intensive subsistence production system to a labour extensive commercial production system. There would be a shift from low per capita incomes to higher incomes for fewer people, and an expulsion of people from the production system due to lower labour demands. Migration would increase, while the pressure on those areas that did not make this shift yet would increase as well. Rutten (1992) states that land tenure change, and not improvement of productivity, is the only reason for this shift, because productivity of fenced ranching as practised in the USA is lower (in terms of protein production per hectare, see also Grandin, 1987). Improved natural resource management is often mentioned as a reason for change as well, but degradation can be found in both systems.

Productivity per animal can also be improved by improved veterinary care, improved breeds, better feeds and improved access to water. The cash involved is acquired through informal or even formal forms of credit and this could mean (it not necessarily does) that interest payments become an additional force to increased levels of commoditization.

A higher level of commoditization in land, production and consumption is often accompanied by a higher level in commoditization of labour. Pastoralists try to get (additional) cash by working elsewhere or to get access to local wage-paying jobs, related to the government, NGOs or private traders. But if pastoral commoditization results in increased stratification within the pastoral society, pastoralists who accumulate animals beyond levels which they can manage with their family labour, start to employ fellow pastoralists as labourers, a process that is often hidden behind various types of patron-client arrangements of labour and a large element of non-cash payment of labour. On the other hand pastoralists whose herds and flocks have diminished to levels that force them to get most of their income from other sources try to get jobs as paid herders. Rebuilding the own herd/flock becomes a possibility, especially if payment is partly in the form of animals and if the pastoral employer allows their dependent herders to share the management of the small number of their animals with the employers' herd and flock. In a number of cases the pastoral sector is invaded by absentee herd owners who invest in animals, but put the management of their herds in the hands of paid managers and labourers.

In the following paragraphs, the theoretic treatment to commoditization and the role of the terms of trade experienced by pastoralists is illustrated with two examples in Kenya. A general picture of recent political and economic trends is followed by more historical data, both on national and regional level, and a description of two cases.

3 ECONOMIC TRENDS IN KENYA.

There have been a number of major changes in Kenya's economy and political situation in recent years, of a scale and intensity that are difficult to underestimate and that make themselves feel at every level of society. Much of the discussion presented here is based on Meijlink (pers comm, 1994).

First of all, multi-party democracy was introduced. In the period towards and after elections in 1992, due partly to spending on campaigns, inflation went up. The exchange rate of the Kenya shilling against other currencies collapsed⁵. But there were other causes for economic stagnation in the early 1990s. The economy as a whole, being dependent to a large degree on agriculture, contracted due to drought conditions experienced in 1991/2. Kenya's export commodity prices went down or stagnated due to recession in the western world. And partly due to the apparent resistance in Government to multi-party democracy, partly to the slow implementation of Structural Adjustment Programme measures, and partly to discontent with widespread corruption, donors were withholding development aid. The costs of living in the country went up considerably. At the same time, the costs of imported inputs went up even more.

Since donors no longer made up fiscal deficits, these were taken care of by increases in money supply until 1992, and after the new government was installed in 1993, by the issuing of short term high interest treasury bonds. The exchange rate was left free to float as one of the SAP measures and went down further to almost 70 Kshs to the dollar. By the end of 1993, donors resumed development aid, in the expectation that this situation would hold and help the Kenya economy recover through increased exports.

Figure 1, indexes, 1975-95

However, due to the declining value of the dollar itself, the repatriation of money from outside the country attracted by the high interest treasury bonds, improved agricultural production, and good export earnings, the value of the Kenyan shilling went up, and inflation went down. Figure 1 (based on table A.1 in the annex), which presents the cost of living index for low income families in Kenya, shows how the index went up as a result of these developments. It also shows how prices for cattle and maize meal have developed relative to the national index as, traditionally, these are the most relevant products for pastoralists. A ratio with a more solid footing of parity, the Ctot, was around 6 in 1995. Estimates for earlier years are as follows: in 1975 the ratio was 4, in 1980 it was slightly below 11, in 1985 it was about 6, in 1990 it was slightly above 8⁶.

Market liberalization went ahead with a gradual reduction of barriers to trade, in particular the livestock and meat trade, and the grain trade. Increasing amounts of maize were allowed to be transported⁷, though this process was a long drawn out one, in which measures were reversed with regular intervals (Nation, 21.8.94 and 27.11.94).

Recently, maize shortages are covered by imports from Uganda and Tanzania into Kenya (Argwings Kodhek, 1992; 53). This situation continued well into 1994 and producers in Loitokitok (Kajiado District) complained about the low price levels in the border area, especially in the irrigated areas around Loitokitok itself, because of competition from Tanzania.

The livestock and meat trade was liberalized in the early 1990s as well. In effect, the slaughterhouse of the Kenya Meat Commission (KMC, the parastatal for meat trade) in Athi river near Nairobi had been out of operation on and off since the mid-1980s, and finally collapsed in 1993 under a load of liquidity and management problems, political interference and corruption. Plans were under way beginning of 1995 to reopen KMC in partnership with Mitsubishi Corp, with a capacity roughly that of the private slaughterhouses combined (600 heads per day). Export would be through Mitsubishi Corp. to the EU, after EU licence to export.

Private slaughterhouses however had taken over even before liberalization in the early 1990s. Since the meat from Kajiado District slaughterhouses is transported to Nairobi markets, wholesalers, and butchers this has brought the customers closer to the producers, so improving the prices on the markets in the District. All along Kajiado District's main roads one can now find these slaughterhouses, all privately owned. Livestock is 'imported' from Tanzania as well in quite considerable numbers, though with the low value of the Kenya Shilling, trade temporarily reversed in December 1993. The most important slaughterhouses are in Ngong area, near Nairobi, where more than half the animals are taken⁸.

In West Pokot District meat markets, and especially goat meat markets, have boomed as well with many butchers opening shop in the highlands in particular. There, demand is rapidly growing with population growth and improved incomes. Markets at the edge of the semi-arid lowland areas such as Chepereria do particularly well.

4. WEST POKOT DISTRICT, NORTHWEST KENYA

Traditionally, the Pokot have been divided into two groups: agricultural (often agro-pastoral) Pokot and purely pastoral Pokot. The agricultural sections lived in the northern foothills and nearby plains of the Cherangani and in the Sekerr hills. As did their neighbours to the southeast, the Marakwet, they developed an ingenious system of gravity irrigation for their sorghum crops, but they also had goats, sheep and few cattle. Recently, many went to the upland areas of the Cherangani (combining maize and potato farming with a commercial sheep enterprise) and to the area around the district headquarters Kapenguria-Makutano to become commercial farmers (maize, dairy cattle), or to work in non-agricultural occupations.

The pastoral Pokot live in the lowlands north and northwest of the Cherangani mountains, and east and west of the Sekerr hills in current West Pokot district (which includes Karapokot), with extensions in Uganda (Upe county of Karamoja) and in the northern parts of Baringo District in Kenya. Pastoral and agricultural Pokot have always been connected by extensive contacts, through bridewealth arrangements, *tiliantan* (stock friendship), and barter trade (mainly goats against millet and sorghum; after the 1950s also maize). It is a classical example of a 'vertical society' in a geographical sense, where different agro-ecological zones, from dry lowlands to moist mountain areas, all contribute to the livelihood organization of society as a whole (e.g., see Porter 1965).

Population and livestock figures, collected during 1926, when the colonial administration was established in the area, showed that there were approximately 210,000 head of cattle in West Pokot (including the 'Karapokot' area, that was to be administered by Uganda from 1926 to 1970), and 220,000 sheep and goats, together with a human population that was estimated to be 'between 24,000 and 45,000'. This would mean 169,000 TLU or between 4 and 7 TLU per capita⁹. Purely looking at food availability, this can be regarded as more than sufficient, without any trade link necessary with the outside world, and probably with a very low grain element in the pastoral diet. However, the pastoral Pokot, by that time, had been recovering from a disastrous period of drought and disease, which had lasted from 1918 to 1923, and during that period they had definitely needed the trade links with their (irrigating) agricultural counterparts near the mountains.

The period until the early 1950s, with ups and downs of course, strengthened the Pokot pastoral economy, and it can be estimated that the number of cattle had increased to about 300,000 and of goats and sheep to beyond 250,000. But also the population had grown, to at least 66,000 (including Upe and the whole of West Pokot), meaning that the average TLU/capita figure had gone down to between 3 and 4. Some more grain consumption in the diet was enabled by a growing production of grains by the agricultural Pokot, more barter trade and the growth of some weekly markets (like Chesegon, Sigor). In these markets, food trade was in the hands of Pokot and Marakwet women, and trade in goats mostly in the hands of Somali men. In some of the lowland areas the colonial officers reported the start of forms of 'hit and run' sorghum and millet cultivation. The colonial administration in the meantime tried to force the Pokot to sell part of their cattle; during the war and between 1954 and 1960 compulsory quota for cattle sales existed. 'Official', registered trade in cattle went up from a level of 1,000-2,000 to 8,000-10,000 per year in West Pokot (excluding Karapokot and Upe), or from an estimated registered offtake of close to 1 per cent only to between 6 and 9 per cent in this area. Officially registered sale of

smallstock was between 7,000 and 14,000 in drought years and 4,000 and 6,000 in other years. In Uganda-administered Pokot area (Karapokot and Upe) officially registered cattle sales fluctuated between 1,300 to 2,500 in years of good rainfall and between 3,000 and 4,000 in years with droughts, which was still below an estimated offtake rate of 4 per cent per annum in that area. Figures for the sale of smallstock are unknown. With the breakdown of colonial rule (and effective taxation) and the drought of 1961 the 'official registration' of trade collapsed and probably trade as well, both in the Kenyan and in the Ugandan areas of Pokot.

During the mid 1970s the number of cattle was still around 300,000, but the sheep and goats had increased to 400,000 and the Pokot population to 150,000 (Upe and the whole of West Pokot, including Karapokot), showing a considerable natural population growth after the major investments in health care by government and missions, and also a considerable immigration of non Pokot to the highland areas. The average TLU/capita figure stood at between 1.5 and 2 and the pastoral Pokot had become a minority and quite a number among them had increased their sorghum cultivation. However, the Pokot of the northwest and northeast clearly regarded themselves as pastoralists, even if milk was often supplemented with 'grains and greens' in their diet, which were bought, not bartered. Their trade in cattle and goats went largely unrecorded, with the exception of drought years when the need for distress sales forced herders to come to the official markets (e.g 1973: 9,000 cattle, 6,000 smallstock in West Pokot without Karapokot). If we look at the total commoditization picture for the pastoral Pokot during the mid 1970s, it becomes evident that some commercial sale of livestock existed for most pastoral households. Ceremonial slaughter of cattle was probably more important than sale of cattle, and slaughter of goats and sheep for home consumption more important than sale of smallstock. Milk was not sold at all, with the exception of some exchange on weekly market days. The need to buy other consumer goods was very minimal as 'western' or 'decent' clothes were not yet forced upon the pastoral Pokot by government action or missionary drive. Education was still a minimal affair and the few pastoral children who went to school did so under missionary arrangements of a total subsidy. Some livestock inputs were only beginning to be acquired through the veterinary services.

The years from 1979 to 1981 have been disaster years for the pastoral Pokot. It started with a major goats disease that wiped out most of the flock; it was followed by an exceptionally long drought, lasting three years in most places, and accompanied by cattle epidemics. And last but not least, Idi Amin's flight through Karamoja, opening the army barracks of Moroto for the Karamojong to grab, and the resultant chaos suddenly changed the balance of power, and *ngorokos* (heavily armed cattle robbers) became a scourge. It took the Pokot a few years to get access to heavy weapons as well, but then the Kenya government found it wise (first in 1984 and then in 1986) to disarm them and punish them by taking cattle as hostages; cattle that died in their thousands near the army camp due to drought and mismanagement. In 1983 the total number of cattle in West Pokot (again including Karapokot) had decreased to less than 100,000 and the number of shoats to around 200,000; while most of the Upe Pokot had fled to Kenya, with the remains of their animals. The total number of Pokot had gone up to 180,000, with a TLU/capita figure of around 0.5. Pastoral Pokot had to develop a variety of survival strategies to cope with this dramatic turn of events, from becoming more devoted to (marginal forms of) agriculture, to becoming dependent on food aid, on sale of gold and *miraa*¹⁰, on casual labour jobs in the Pokot highlands and in nearby Trans Nzoia (see Dietz 1987, pp 118-127; and 1991).

In 1987 the livestock officers in the district estimated the number of 'local cattle' to be 170,000 again and the number of shoats at 230,000 (and in addition 10,000 'grade and cross cattle and 70,000 wool sheep in the highlands) (DDP 89-93, p. 64). This means an improvement of the TLU/capita figure to between 0.6 and 0.7. In the lowlands Pokot pastoralists-cum cultivators-cum gold diggers tried to reestablish their pastoral economy, assisted by government and NGO through water development, disease control, and goat breed and pasture improvement.

They also tried to make good use of the positive caloric terms of trade between livestock (products) and grains, although money was ever more needed for other goods and services as well. The Government during the 1980s forced most of the pastoral Pokot to wear 'decent' clothes. Many pastoral Pokot children had joined primary and even secondary education (partly because of the school food and missionary food assistance through schools). However, grazing land nor pastoral labour were commodities (yet) and 'subdivision of group ranches' was no issue, partly because group ranches had never properly functioned and individual claims to land only began to be relevant in some of the 'new' cultivation areas, e.g. along the Suam river.

Many (former) pastoralists in West Pokot¹¹ failed to strengthen their pastoral resource base after the 1979-81 disasters. An example can illustrate what happened. In an area called Nakwijit, west of the Sekerr massif, below *Maral* (the 'mountain of thirst'), a small community of isolated pastoral Pokot mainly existed on their herds and flocks, with some sorghum cultivation. They herded their animals across the Suam river in Karapokot area. In 1979, before the onslaught, they had 37 TLU per household of nine people on average (38 head of cattle, 86 goats and 16 sheep). This gave them a reliable pastoral food base, although some additional sorghum food was produced as a fallback strategy. Not much food was bought during years without droughts. Barter exchanges at the Nakwijit market nearby mainly functioned to cement ties and maintain personal networks. In bad years however, these trade contacts became crucial. Between 1979 and 1982 an average household lost 6 cattle and more than 10 shoats to *ngorokos*, and on average two cattle were exchanged for guns and ammunition. In addition, many animals died of diseases, and others were sold. A survey done in 1982 showed that an average household had only 16 TLU (13 cattle, 36 goats and 36 sheep, meaning cattle were only 56% of the total TLU value). Half of the remaining cattle had been brought to stock friends elsewhere, in areas that were regarded as safe (see Dietz c.s. 1983). In 1995 the Nakwijit area was revisited¹² to reconstruct what happened to people and livestock between early 1984 (before the drought had started, and after the good years 1982 and 1983) and early 1995 (after the droughts of 1984-5, 1986-87, and 1991-93).

Compared to late 1982, the livestock situation had considerably improved in early 1984: an average household owned about 30 TLU (73% cattle; 21% goats and 6% sheep), and the 1982 'anomaly' of 'too many sheep' in the eyes of the Pokot had been corrected¹³. In 1995 though, the situation was back at what was regarded as the 'disaster level' of late 1982. An average household now had 15 TLU (an average of 15 cattle, 32 goats, and 10 sheep, with one household owning four camels; cattle thus formed 72%, goats 21% and sheep 7% of the total TLU value). Compared to the situation of late 1982 livestock numbers had not increased, but the composition had changed considerably, with a stabilised number of goats, a rather improved number of cattle and a strongly decreased number of sheep. In 1995, livestock wealth per capita was about 1.6 TLU, potentially providing less than half the food needs of the average person.

There is evidence that the livestock distribution had become more skewed than it had been before. In early 1984 there was one extreme case of destitution (a household without cattle and only ten goats) and at the other extreme there was a household with 80 cattle, 300 goats and 60 sheep. 21% of all households surveyed had 43% of all animals and only 11% of the households had less than 10 TLU. In 1995 there was again one destitute household without any cattle, and at the other extreme a household with 60 cattle, 80 goats and 35 sheep. However, in 1995 19% of the households owned 50% of the total livestock wealth (all above 25 TLU) and 57% of all survey households had below 10 TLU (of whom 24% below 5 TLU). It is indicative of the wealth differentiation that the five most wealthy households had 82% cattle, 13% goats and 4% sheep in TLU terms (with 179 TLU in total among them), while the five poorest households had 52% cattle, 34% goats and 14% sheep (with only 16 TLU among them). Young households had a very low TLU/capita ratio (households with children below 5 years only 0.4, households with children between 5 and 15 years 0.7) while well established, older households (with at least one child above 15 years old) had an average TLU/capita value of 2.0). With one exception, all older households experienced a rather drastic decrease in TLU value, from 35 per household to 18.¹⁴

The large majority of pastoral households in West Pokot now have to combine three major sources of food. They produce some sorghum themselves, but there is a high chance of failure. Their own herds and flock produce some milk, but this covers less than half the food needs. And some food is acquired through the market, either by selling animals (making use of the good caloric terms of trade) or by selling gold that they dig in one of the various gold sites in the district. Seasonal migration with animals has become less important due to the dangers involved, but seasonal migration to gold places has become an important activity for men, women and children. As these 'hunger trips' take place in the rainy season mostly, they have a negative impact on labour availability for cultivation and herding at home

It brings us to the caloric terms of trade (CToT) again. Elsewhere we provide detailed information and calculations (Dietz, 1993, p. 96). Here, we will give a summary of the findings only. During the first decades of this century, sorghum and goats were exchanged on the basis of a CToT of between 4 and 6, so that pastoralists selling a goat could get four to six times the caloric value in return in the form of sorghum grains. Gradually the

pastoralists' position further improved, until the CToT had reached a level of between 8 and 10 in the mid 1970s. After the mid 1970s the situation changed to the detriment of the pastoralists, although even in very bad years, e.g. 1979, the CToT was positive for the pastoralists. However, the relevance of the goats-for-sorghum trade was soon to become negligible, because the pastoralists started to prefer to buy and eat maize grains. The supply of maize grains from the Pokot highlands increased considerably during the 1970s. Maize-for-goats trade was less dominated by 'traditional obligations' compared to sorghum-for-goats trade (where even during drought years traders exchanged according to custom; e.g. "a goat for a bag"). Maize traders entered the scene who were beyond the long-standing Pokot-Somali networks and many new shops appeared in the pastoral areas either run by non-Pokot (many Kikuyus) or by Pokot from the highlands. Trade in goats changed as well, as young Pokot traders took over from Somalis who mainly concentrated on the gold trade after 1979. All this meant that prices started fluctuating to become more congruent with supply and demand situations. And it meant that the pastoralists' position improved a lot because the Ctot for maize grains against goats was between 8 and 17 throughout the period after 1980, well above the level reached by the Ctot between sorghum and goats. In addition pastoralist women close to the centres also improved their position by selling milk, which also had good Ctot. People of *Maral* have become very much dependent on maize, sorghum, millet and also beans from the market places (Nakwijit in the lowlands, Ptoyo and Chepnyal in the Sook highlands). Although prices have become increasingly unstable (and with strong seasonal variations), 'normal' caloric terms of trade in 1995 were between 12:1 and 16:1 for maize grains against goats or cattle but only between 4:1 and 6:1 for millet or sorghum against goats or cattle. In a dry year like 1983, however, extreme situations were experienced with Ctot ratios of below 1:2 for maize grains against goats, and probably below parity for millet against goats. In addition people had to spend a lot of time and effort to find traders¹⁵.

During the 1980s, lowland markets expanded rapidly. Most of them functioned once a week (like the larger markets of Chepareria, Chepkobegh, Ortum and Lomut), or twice a week (Sebit and Chesegon). In addition there were smaller markets, either once a week, or irregular. According to an inventory made by the ASAL programme, at least 8,000 head of cattle were on offer during an average year, at least 40,000 goats and at least 25,000 sheep (MLD 1990, p. 36-37). In addition the markets also provided chickens and eggs, hides and skins, grains, fruits, and some clothing and utensils as well. In most of the markets shops were started, and increasingly pastoralists could buy maize meal there.

If 8,000 cattle, 40,000 goats and 25,000 sheep would have been eaten, 5,000 pastoral people would have been provided for. With a CToT of 10:1, 50,000 people would be able to survive on grains. With 75,000 people living in the lowlands, most of whom are at least partially pastoralists, the estimated exchange situation is adequate in theory.

The most important threat to this market-intermediated form of food security is the availability of grains on the market places. Most grains in the 1980s came from the Pokot highlands in the southwestern part of the district (Kapenguria and surroundings; Lelan). Already during the 1980s, large-scale traders, related to government-owned or private companies, started to buy highland maize to transport it to the urban centres in Kenya, outside the district. Trade was redirected from a northern, lowland direction to a highland/urban, southern direction. Some of it came back as maize meal, at double the price of maize grains. Of course a growing dependence of pastoralists on meal instead of grains would lower the CToT considerably (although they remain positive). And the major threat of it is that during times of national food scarcity, traders in the lowlands of West Pokot cannot get adequate supplies. With the liberalization of the livestock and grain prices after 1990 as part of the structural adjustment package, the market has become very unreliable and dangerously insecure for potential buyers at the tail end of these markets chains.

5. KAJIADO DISTRICT, SOUTHERN KENYA

Most of Kajiado District is used as a grazing area, though rainfall in some parts is high enough for cultivation (the highland area of the Ngong hills, and the area around Loitokitok, near Kilimanjaro in particular). There is some cultivation along seasonal rivers, as well as cultivation using techniques such as '*Fanja Juu*' terraces, but on a very limited scale. The District is mostly semi-arid (Agro-climatic Zone V, about 50% of the area) or arid (Zone VI, about 30%), with rainfall figures between 400 and 800 mm a year (RoK/Kajiado District Annual Report, various years; White and Meadows, 1981). The carrying capacity¹⁶ based on average rangeland qualities

in the zones, was estimated to be 465,700 TLU in the dry season and 1,304,000 TLU (Bekure et al, 1987) in the rainy season. The Ministry of Livestock Development in the District uses a much more conservative estimate of about 285,000 TLU for the District (computed from Rutten, 1992; 123, 346).

The earliest data on livestock numbers are from 1912, when the Maasai had been moved from the Northern Reserve to the southern area of present day Narok and Kajiado Districts. They had lost many people and animals at the turn of the century to rinderpest, smallpox, Contagious Bovine Pleuro Pneumonia and East Coast Fever (in 1891/92, 1897/8 and 1909 respectively). 200,000 heads of cattle were counted, at a time when human population probably stood at 10,000. Huge losses were caused by this move, but still the figure of 20 heads of cattle per capita, if correct, would have made a purely pastoral life possible. The years following were not good either, there were droughts and outbreaks of diseases in 1915/16, 1918 and the mid 1920s and mid 1940s. In 1943, the number of cattle was estimated to be 360,000, while the Maasai population was stated to be 16,215 people (RoK/ Kajiado District Annual Reports), or 15 TLU per (Maasai) capita. The number of non-Maasai slowly started to grow as well. In 1943/47 drought and pests caused much loss of stock, and there was no growth of the herds. Only in 1954 a number of 600,000 was probably reached, even though there had been outbreaks of ECF and Foot and Mouth disease. Another high of 750,000 heads of cattle was reached in 1960, before the drought that killed massive numbers of animals. This would have been 10 TLU per Maasai, already a considerable reduction in cattle per capita. In 1962 however, a person could count on 3 TLU on average, a disastrous loss of animals. Most Maasai, some 40,000 of 53,200, received food aid during this time¹⁷.

Rainfall since then was good, until the early seventies. A drought caused huge losses of animals. Especially in 1975 after a row of bad rainfall years, many tens of thousands of animals were lost. An estimated 566,000 survived, with probably around 90,000 people depending on them, more than 4 TLU per Maasai¹⁸. Rains resumed as did stock growth. In 1979, when 93560 Maasai were counted (and 55,445 non-Maasai), an estimated 602,000 cattle were kept, or 4.5 TLU per Maasai (still assuming Maasai owned most of the herds). In 1983 there were an estimated 675,000 heads of cattle, dropping to a low of 350,000 the year after when drought and ECF killed half the District herd.

In 1989, around 670,000 heads of cattle were estimated to roam the pastures, with 146,268 Maasai, and 112,391 non-Maasai living in the District. This would mean more than 3 TLU per Maasai. The last livestock estimates, for 1992, are 886,000 cattle, 969,000 sheep and 896,000 goats, a total of 992,000 TLU. These figures seem too high compared to earlier data, but express clearly the impression living in the area that herds are very large, since no disaster really struck them since the early 1980s¹⁹. This is interesting, since livestock marketing is very important in the District. With these livestock/ population ratios, a large part of the population would not be forced to sell at all but would be able to subsist on milk and meat alone. The poorer part of the population would have to sell large numbers of animals, but they are too poor in stock to do so for such a long time.

Cultivation and the urban environment in Kajiado District is slowly spreading. Ngong area carries the burden in this respect, where overflow from Nairobi is clearly causing rapid expansion of cultivation and urban land use, but in the group ranch areas along the road to Tanzania, cultivation is spreading as well. Here we find the earliest subdivided group ranches. Immediately after subdivision, land was subdivided further and is now sold, for a variety of reasons: improvements to the remaining part of the ranch, repayment of debts, starting businesses, or consumptive use. Buyers have many reasons as well: speculation, cultivation, and commercial ranching by non-Maasai are among them. Land has become a commodity fetching tens of thousands of shillings per hectare. It will appear that this change has precipitated a number of other changes that have been slow to spread, but have now gained momentum.

In the Maasai area, conditions for livestock marketing are incomparably more favourable than in many other dry regions of Kenya. Kajiado District in particular has a good connection with Nairobi through the tarmac road to Tanzania that runs through it, while the northern part of the District borders the railway line, the main road to Mombasa and the densely populated Machakos District. Of course, in the interior of the District the roads are sandy, and the southeastern part of the District is better reached from Tanzania.

Usually, animals are either sold or given to brokers who collect the animals at the producers' homes until they have a sizeable herd for marketing, or the animal is taken to a nearby market by the producer himself. Small

markets serve as collection points, from which the bigger markets are supplied. In Kajiado District, Emali market has always been one of the most important markets (Bekure et al, 1991). Even recently this is the case though other markets now have a considerable share. A study of Emali cattle market in Kajiado District in 1990/1 revealed that supply varied considerably from 1500 heads per week in November (1990)-January (1991) to a peak of 5000 in June-July, 1991. Numbers sold were between 30 - 90% of numbers offered. However, average prices were relatively high throughout the year, and varied between 2200 KShs and 3200 KShs (weighted average) (Zaal, 1993).

There are a number of explanations for these high average prices. Private slaughterhouses serve as new end-points of the marketing chain, with Nairobi butchers contracting traders to buy and slaughter animals for them in Ngong area, but now increasingly also in Kajiado slaughterhouses further away. After slaughtering, the carcasses are transported to Nairobi by car, so-called 'meat matatus', high-speed unchilled pickup trucks with special boxes in the back that take about an hour to reach Nairobi. secondly, animals are usually taken from Tanzania to Kajiado, but this changed in 1993, when the value of the Kenya shilling was so low that for the first time since the early sixties, animals were taken from Kenya to Tanzania instead. This helped keeping prices up, though probably marginally. Thirdly, the politically inspired conflicts between various tribes in Rift Valley Province disrupted flows of animals to Nairobi. Finally, the conflict in Somalia resulted in a hesitance of traders to go and buy animals in neighbouring Districts.

We now come back to the point of the caloric terms of trade. Under the circumstances, pastoralists do gain on average when they sell their animals for maize. To sell a goat with average weight for 1000 Kshs in 1995, is giving up about 11 kg of meat and two kg of '*matumbo*' (liver, hart, stomach, etc), a total of 29,250 Cal. Buying maize meal at the price of 15 KShs per kg gives 67 kg, or 230,000 Cal, a ratio of 8 to 1. To feed a family of 7, one would need to sell almost 25 goats, from a flock of 80 at average offtake rates, or 120 at a very low offtake rate for goats of 20%. A similar ratio (7:1) is obtained when cattle are sold to buy maize meal. The ratio for milk is 5 to 1, but better for pastoralists in the dry season. There is a clear profit to be made in food energy terms when it is being sold²⁰.

In earlier years the situation was as follows. In 1990, one head of cattle, on average, was sold for 3,000 KShs, for which 600 kg of maize meal could be bought. This is a ratio of 8:1 in caloric terms. In 1985 an estimated 1830 KShs for an animal would get you 445 kg of maize, a CToT ratio of 6:1. In 1980 it was one head of cattle against 800 kg of maize meal or a CToT of 11:1. In 1975 it was one head of cattle, admittedly of lower quality, against 300 kg of maize meal; a CToT of only 4:1; probably the lowest ratio in the last decades. Comparing the 1995 situation to earlier periods shows a considerable fluctuation in the relative position of pastoralists, while the worst years still provide positive terms of trade in food energy terms.

It is not enough to look at trends in maize meal and livestock prices only as these are gross prices. With the increased use of commercial inputs in animal husbandry the price trends of these inputs should be made part of the analysis as well, which is especially relevant for the more wealthy pastoralists who mainly are the ones buying these inputs. Recently, prices for livestock inputs have gone up much more than for maize. In fact, almost all pastoralists have stopped spraying all their animals, and usually spray only the best, most valuable animals, cows carrying calves, and those which are sick. For them, the terms of trade have deteriorated recently though they can afford to continue buying these supplies. They have a position similar to the farmers in Western Kenya who produce maize for the market. Improved seeds, fertilizer and pesticides have become expensive as well, while maize prices have gone up, though less.

An example, of Olkarkar group ranch in Kajiado District, gives us an idea of the income and expenditure situation of a number of Maasai producers. It sheds light on this issue of expenditure on food and inputs, and the sources of money needed to buy these. It also sheds light on the relative positions of wealthy and poor producers.

The case of Olkarkar Group Ranch

Change of land tenure, the division of former Group Ranches into individually owned ranches, is progressing quickly in Kajiado District. This change is but the last in a long list of changes (Rutten, 1992). The first grazing scheme appeared in 1949 in the Konza area, and the first Group Ranches under the first World Bank funded 'Kenya Livestock Development Programme' were established in 1964 among the Kaputei Maasai in Central

division. However, change in production parameters was slow if not absent. Subdivision of the Group Ranches was proposed in 1982, and the first Group Ranch that was subdivided was Olkinos, in 1986. By 1994/5, the Group Ranch that we want to focus attention on, Olkarkar, had been subdivided, the pastoralists had shifted to their own ranch, even though title deeds were not yet in their possession.

Wealth distribution (1980/1 - 1994/95)

Cattle can be taken as a proxy for wealth and certainly in more traditional settings this can be adequate, since cattle often dominate in numbers and importance. However, since small stock are supposed to increase in importance in the Maasai region for their commercial importance, we have combined all types of animals in one measure of TLU. In addition, a high percentage of improved breeds and crosses in the herds was considered a sign of wealth, as was the ownership of a hand spray to control ticks. Though not a sign of wealth as such, the hypothesis was that through their labour needs for intensive production, wealthy pastoralists would be less likely to migrate to townships and Nairobi, and would have fewer non-agricultural jobs in view of the higher labour needs of improved breeds. While walking through the area, in discussions with respondents, we asked them to identify the people they considered very poor and very rich, and interviews with these people were held.

In 1980/1, White and Meadows (1981; 16/7) found relatively high levels of stock ownership. They divided the population in 'below average', 'average' and 'above average' households, but the average numbers of cattle and smallstock in these groups were rather high: 20.5, 8.1 and 3.7 heads of cattle and 10, 8, and 6.1 heads of small stock per capita respectively. This seems enough even for the below average category to live off the herd (as in a subsistence based community such as described in model A). With the household sizes at the time, this meant average herd sizes of 215 heads of cattle and 156 heads of smallstock per household or 14.3 heads of cattle and 10.4 small stock per capita on average. Expressed in TLU this was 166.1 TLU per household, and 11 TLU per person. Obviously, some very rich Maasai live in Olkarkar. Distribution among the population was unequal in 1980/1, with one third of the households owning 69% of the cattle. Since rich households were larger in size, per capita differences were smaller, and the upper third of the survey owned 5 times the number of cattle the lower third owned.

The situation in 1994/5 was rather similar in per capita terms. Average household wealth in TLU in the population was 59, but this is still considerable when set against the average household size of 7.5: 7.9 TLU/capita. We have encountered some under-enumeration of younger children and young adults, and have made a rough estimate of the average household size in the population as a whole. But even when such a higher estimated figure of 8.7 members per household is used, an average of 7 TLU/person is obtained. Distribution between wealth classes is important. Of the households, 21% had herds below the threshold levels mentioned above of 4 TLU/capita. Like in 1980/1, the upper third of the households surveyed had 5 times the number of livestock (in TLU) the lower third possessed.

The average figure of 7.9 TLU/capita compares favourably with our estimate of the minimum requirements 4 TLU/capita. In another part of Kajiado District, Rutten (1992, 346) found an average of 9.1 heads of cattle and 12.9 heads of small stock in the group ranch areas he studied²¹, a total of 7.6 TLU/capita. It seemed to him that there appeared to be a break in the trend of declining per capita stock ownership levels, and at least our data seem to support this statement for Olkarkar. In fact, it means that even though District livestock figures have been fluctuating in the past, the average pastoralist in this particular area has been able to hold on to an adequate number of animals to feed the household.

Distribution of livestock within the population is highly skewed as we saw. Figure 1 gives the distribution of animals (expressed in TLU/ household) of the survey population.

Figure 2: household wealth in TLU

The range found in the survey was between 6.1 and 327.9 TLU (on the one hand, a herd of 6 cattle and 5 smallstock, and on the other hand a herd of 422 cattle and 305 smallstock). These differences are considerable

by all standards, but it is even more interesting to see that there seems to be a 'wealth gap' between those with average sized herds and the very rich. We will present some data on the separate groups below, because the owners of these huge herds may well be the ones to have made the shift to commercial production. Of course, there is a lot of differentiation in the lower wealth class, both in ownership and alternative sources of income.

There proved to be a negative correlation between livestock ownership (in TLU) and involvement in non-agricultural jobs, and between wealth and migration for the group as a whole, but correlations were low. We will see that income other than from cattle sales was relatively small as well for wealthy pastoralists. White and Meadows (1981; v) found a positive correlation in 1980/1. There will have to be some further enquiry into the issue to establish this relationship. It appeared there was no correlation between wealth and ownership of hand sprays at all, since practically everybody possessed one, regardless of wealth. It may well be that possession of hand sprays is more closely correlated with availability of water; the only nearby permanent source of water is just outside the group ranch area. In other areas of the District dipping is still common, but for dipping, a reliable source of water is required.

Wealth and household size

Compared to 1980/1, average household size is considerably smaller. But similar to the situation in 1980/1, bigger herds are often owned by bigger households. There was a positive correlation between average number of animals and size of households. Still, all producers but one owning big herds (between 90 and 327 TLU/household) also have the highest number of animals per capita (between 9.5 and 22 TLU/cap).

There has been only a slight shift in sex distribution of animals in the herds. While in 1980/1 percentages of between 72 (the above average group) and 64 were found, with an average of 69, we found an average of 64% cows in 1994/5. This is still at a level characteristic of subsistence milk-oriented pastoralists.

Introduced improved breeds and their crosses in the cattle herd as a percentage of total number of cattle differed between the two wealth classes of livestock owners (table 1). These percentages are high for both groups by most standards, but they are highest for the wealthy pastoralists. It is also clear that the wealthy pastoralists have relatively high numbers of cattle, and fewer smallstock. This is a phenomenon described elsewhere, which appears here very prominently: poorer livestock producers rely more on smallstock. Rich pastoralists have more smallstock than poorer pastoralists, but the percentage smallstock declines.

Table 1,
average number of introduced/ crossed breeds of cattle and smallstock
per wealth class.

Not only are improved breeds more expensive, they need more care and more regular watering. The costs of this can only be met when productivity, and marketed offtake is higher. Water is one of the major problems in the area, and those who live furthest away from the permanent source of water often have their breeding bulls in another group ranch area. This involves additional costs for grazing as well. How are these costs met?

Income (1980/1-1994/5)

In 1980/1, when White and Meadows studied the production system of the Maasai in Olkarkar and other group ranches²², Olkarkar was the only group ranch area where average cash income was lower than average income in kind (figure 3). Other group ranches studied at the time had income in cash percentages of 58 (Longosua), 59 (Poka), 60 (Elang'ata Wuas) and 62 (Kiboko). Olkarkar has now achieved an equal distribution.

We have used similar categories to those used in the White and Meadows study, from which cash income from the sale of cattle, small stock and milk can be computed and combined with income in kind. The latter is mostly

consumption of meat and milk produced from the herds. Also, we have studied income and expenditure patterns for a full year (data collection is now in its second year) within the group ranch area.

From figure 3 (based on table A.2 in the annex) it appears that diversification has taken place in income generation by pastoralists in the survey population in 1994/5. A large part of their cash income comes from smallstock sales and from other sources such as jobs and self-employment (running a shop, a bar, etc.). The dominance of milk consumption in income in kind is disappearing. Instead, consumption of cattle and smallstock (22% of total income) is important. Slaughter for food accounts for only part of total meat consumption. For smallstock for example, only half of the animals eaten were slaughtered, consumption of animals that died adding another 40% (animals killed by wild animals, died of diseases or accidents). Total offtake of cattle is not lower. Combining cattle sales and income in kind (slaughter, consumption of animals that have died, and gifts being the most important) we arrive at 42% (roughly the same percentage as for cattle sales in 1980/1. Slaughter of cattle was extremely rare in 1980/1). Income from milk is low in relative terms and contributes 30% of total income (sales and consumption combined). White and Meadows found a percentage of almost 50%.

Figure 3, income in cash and kind, 1980/1-1994/5

Wealth and income

Large herd owners are not necessarily more involved in the cash economy than poorer households. Pastoralists with smaller herds may have to sell part of their production (both milk and young animals) to buy food, thereby making use of a gain in caloric value. But in the case of Olkarkar, the large herd owners have incomes three times those of the average poorer herd owner, and their dependence on income from cattle sales is higher as well. The following table shows that there is indeed a gap between these groups in level and origin of their incomes.

Table 2, average annual household income in cash

Even though rich herdowners have more smallstock (though a smaller percentage of their herd in TLU), they rely strongly in relative terms on cattle for their income. Milk sales by rich pastoralists are lower even in absolute terms. In the category 'other sources of income', there is hardly any difference in relative terms. As the wealthier households rely on cattle sales, they can retain the milk for home consumption and for the calves. This affects the position of the women in that their control over income declines as milk sales decline.

Expenditure (1980/1 - 1994/5)

For expenditure as well, we compared the findings of White and Meadows from 1980/1 with those of 1994/5. Again, a more or less 'traditional' dominance of food and drinks has disappeared, and expenditure on livestock inputs is high, in particular veterinary medicine (figure 4, based on table A.3 in the annex). The figures for 1980/1 were restricted to cash expenditure only. Animals given away were not included, though the practice of giving away animals is universal in pastoral production systems and probably formed a relevant part of expenditures in 1980/1. In 1994/5, animal gifts formed about 5% of total expenditures. This is remarkably low even considering some under-enumeration, and it indicates the degree of commoditization that has taken place in this area.

Also, Olkarkar was rather particular in that much more money was spent on food and drinks in 1980/1 than in the other group ranches. On average, expenditure on food and drinks for all group ranches together was 33% at the time, 37% was spent on costs related to livestock production (of which livestock was 18%, inputs another 19%), and 29% was spent on other items, including health services, etc. The percentages for Olkarkar in 1994/5 are given in figure 4.

Figure 4, expenditure in cash, 1980/1-1994/5

Even in 1980/1, food and drinks accounted for less than half the expenditures, but in 1994/5, total expenditure on food and drinks has gone down further to about a quarter of total expenditure in cash. Inputs (salt, veterinary medicine, labour, money for grazing and water, hand sprays, etc) account for even more, some 28%. Expenditure on livestock is quite high, and has become a commodity: instead of exchanging animals, they are now sold and bought. This is partly for trading purposes, but mostly for breeding²³.

Wealth and expenditure

The wealthiest people in Olkarkar have made the step towards commercial production, based largely on commoditized inputs, and trade in animals. It is also clear that even poorer households must invest in livestock production. In the particular circumstances prevailing in Olkarkar, land rights are 'clarified' through a process of privatization of land formerly belonging to the group-ranches, and fencing is often not (yet) necessary. Most of the barbed wire one does see in the District is owned by non-Maasai who have now acquired a plot, mainly for cultivation, or by Maasai who depend on other sources of income (Rutten, 1992; 362). They keep their ranch at low levels of productivity. Most Maasai in Olkarkar, instead, spend money on grazing, water, veterinary medicine and improved breeds. This is reflected in the differences in spending between the two groups of pastoralists. Table 3 gives some figures.

Table 3. Average annual household cash expenditure in Olkarkar per household wealth class.

A new system starts to develop referred to in our fourth model, where production is commercial, but where there are no fences. Traditional grazing flexibility is maintained, while resources, and services formerly freely given to clansmen and age-mates are now increasingly becoming commodities.

Two Maasai we talked to are particularly interesting as examples of how some of the richest Maasai have changed their production system. Both live on their own ranch though they don't have their individual title deeds yet. They have bought a Sahiwal steer for breeding together, and one of them has one for himself as well. As he bought his own animal in the dry season, he had to sell 10 heads of cattle to pay for the cost of water and feed. The Sahiwal are kept in neighbouring individual ranches where the chances of catching diseases are lower. The two pastoralists use money for veterinary medicine, salt, spraying, and have fenced part of their land with *Osilalei* (a small tree particularly suitable for this purpose). They still call these fenced areas *Olopololi* -land set aside for young animals, sick and lactating cows-, though the area is larger than is usual. The Zebu cows they have are used for breeding, being crossed with the Sahiwal bulls. They won't sell cross breeds but allow others to

keep one or two heifers in the herd for breeding with the bull. They want the herd to consist of improved breeds or crosses only. They have invested in grazing and water though water is still one of the biggest problems they face. The water in the small dam does not last beyond August. One of the men has a square house with iron sheet roof. They have bicycles with which they visit each other and others regularly. They don't allow their women to sell any milk, because it would result in competition between calves and children over the remaining milk. He prefers dams and pans to boreholes: they are cheap to maintain, and there is always lack of maintenance with communal boreholes. When the grazing is finished some time in August or September, they move to neighbouring Kiboko group ranch area, and sometimes on to Makueni and Machakos District North of that. Animals are sold to pay for inputs during that shift, in particular for veterinary medicine and grazing because the animals get exhausted. Spraying is done twice instead of once a week, as is usual.

We also talked to a producer with very few animals who made the best of the fact that his neighbours migrated during part of the year. He chooses to stay and take on small jobs, such as the fencing of other people's *Olopololi*. Migration is a strain to the animal, which needs additional veterinary medicine, grazing and water, on which he saves by staying. During that time his animals graze on the small patches of grass and herbs left by the bigger herds, in particular in those areas where the soils are slightly waterlogged for part of the year. The owners let him graze there, he does not have to pay for grazing. On the other hand, he sometimes allows the neighbours to graze their animals on his land, for which he receives a small amount of money. His house is small, of the traditional kind, and in a bad shape. The compound likewise is small and because he lives in an area with few trees, the fence is incomplete. The lack of trees is an extra burden on his wife who fetches wood and water from considerable distances (up to 15 km), especially in the dry season. She has to get water at Masimba in the dry season, at the other end of the group ranch, since he does not have his own dam. Most of the money he earns he spends on maize, other food, and livestock inputs.

Changing gender balance

The roles of men and women in the production and consumption of goods is changing in Olkarkar. Women in Maasai areas are usually dependent for their cash income on the sale of milk and hides and skins. In relative terms, the role of milk as a source of cash is declining when wealth increases and production is more commercial. Increasingly, women complain about the fact that men prevent them from milking enough for household consumption. The relative importance of income from milk, be it in kind or cash, has declined. The sale of hides and skins has gone up, but this hardly makes up for the loss.

On the other hand, women in poorer households still have control over a large part of family income. And also, there are now women who decide on expenditure themselves and go shopping, instead of asking their husbands to pay for the goods the women subsequently carry home on their backs. Usually, these women are married to men who either have a job somewhere else, or to men who have more than one wife. The second wife, often living in close proximity to the market centre, caters for the need of schooling children, and has some of her own animals with her. The men provide them with food aid, a regular supply of small animals, or money whenever they visit the market. In Olkarkar, we also found a group of women who formed a group to save 5 Kshs on each milk sale, and who bought 20 young steers for fattening from the proceeds. There do seem to be initiatives of this kind, but subsequently, there is little support either from the men or from projects. This particular initiative was threatened by a loss of control over the young steers to the male herders, and by dominance of the men in relationships with outside actors (such as researchers, ministry and project personnel) over what kind of help was needed.

In relation to the shift of income away from milk, from the discussions with women it seemed that they lost control over their lives in a more general sense. The shift from subsistence production to increasingly commercial production, accompanied by individualization of land to which women have less access than before, makes them dependent on the man's decision making. After subdivision, the *engkangs* (the traditional residential units) split up, as has clearly been done in Olkarkar, and the separate households, almost 'nuclear families', go and live on the 'ranch'. All women we talked to complained about the isolation that was the result of this. While men went off to the markets, their women stayed behind, to visit the neighbour at most.

Changing power balance

Not everyone within the former group ranch has managed to start the shift to individual commercial ranching - but without fences- successfully. Those who are most successful, were often influential in an earlier phase (Hedlund, 1971), and thus the outcome of this process is partly determined by developments that started in the sixties and seventies (formation of group ranches) and eighties and nineties (subdivision of group ranches into individual ranches). Behnke (1984; 277) quotes Hedlund ('registration itself was considered more important than other kinds of development', 1971; 4) and Galaty ('the major significance of the group-ranch structure lies not in the field of economic innovation, which was occurring previously through individual and neighbourhood channels, but in the essential area of political security', 1980; 165).

The group of very wealthy people we described above, who own more than 100 heads of cattle are very well off. They are increasingly dependent on their cattle for their cash income, and will no doubt continue to invest in their animals. In the process of land privatization the more influential and richer pastoralists have been quick to register, thus getting first choice of land and location. They often obtained the best ranches. Small sums change hands when pastoralists come to research stations, county council land, etc, for grazing which is another way of getting access to resources. The security that subsistence production and the social structure in general no longer gives, will be sought through contacts with politicians and civil servants.

6 CONCLUSIONS

From dominance in the control over land, water, herds and knowledge, and even over other people, pastoral groups have become dependent on others to be able to hold on to these resources. There has been growing insecurity, mostly caused by climatic variability and diseases for which they can prepare themselves less well than before, and in some areas by violence and lack of personal security (e.g. raiding in case of the Pokot). More recently, other uncertainties have become more pronounced: loss of control over and even of ownership of land through privatization and sale. Those who have limited access are now more dependent on increased marketing of produce or on other sources of income. Economic forces, in the persons of livestock and grain traders, and government policies, or politicians in the case of Kenya, have become very important for pastoralists, both in the area close to the political centre (as in the case of Kajiado) and in the area far away from the centre (as in the case of the Pokot).

Coming back to the first of the issues raised in the beginning of this paper, commoditization does seem to be an interesting strategy to ease the tension between pastoral production capacity and household food needs and demand for inputs for production. Positive terms of trade, especially a Caloric terms of trade seems to be the rule even in times of crisis.

Requirements at the market level for commoditization to be this interesting strategy are numerous. Liberalization of the livestock, meat and grains markets has helped in food provision in the Districts and in improving marketing of livestock. The commercial system that developed has had favourable effects in Kajiado District, but less so in West Pokot District. A small group of influential businessman and ex-politicians has seen the opportunity to start in this business, which has helped in developing a slaughterhouse and butchery sector in both the Districts, at the cost of increasing inequality. In general, as the economy in Kenya is heavily influenced by political decision making, involvement in marketing has its risks as well. Conditions may suddenly change, as is the case with the redevelopment of the KMC as a private enterprise, at the cost of the smaller scale slaughterhouses. Conflicts between ethnic groups has disrupted markets in Kenya before. Developments that work out positively for pastoralists are there as well. The exchange rate of the Kenya shilling is suddenly of interest to producers in the southern part of the country, and it provided the Kajiado Maasai with an alternative market when the market in Kenya stagnated in 1993.

We found that commoditization does take place in both Districts and there are two distinct roads to commoditization: the road to survival and the road to the ranch. The first road can be explained by a gradual decrease in the TLU per capita figures, especially among the pastoralists at the lower end of the wealth spectrum. In the Pokot society these form the large majority of the remaining pastoralists, after the disasters of the 1979-82 period. In the Kajiado Maasai situation they form a minority. The second road is not forced by decreasing livestock-based food production per capita, but by an increasing need to improve livestock productivity through purchased inputs, by pastoralists following an accumulation strategy at the upper end of the wealth spectrum. This road is followed by rather a large group among current Maasai herders and only a small group among the Pokot. In both cases the accumulation strategy tries to diminish risks related to the market by connections with politics and politicians (that is, if the politicians don't form a large segment of these accumulating pastoralists).

In both societies a clear process of wealth differentiation is visible. Among the poor, we see a strategy of diversification of sources of income, in which livestock-related activities are only part of a broad 'survival package'. Among the rich both specialization and diversification are found. Where marketing perspectives for livestock are good and stable, specialization is a safe option.

To understand what is happening in current pastoral development in Kenya, it is interesting to use the concept of caloric terms of trade between livestock and grains (or maize meal), but it is clearly not enough to explain all the changes, certainly not for the more wealthy pastoralists. The whole package of purchases and sales should be included in the analysis; as part of an overall analysis of all the trends in commoditization, including inputs, land and labour.

Notes

1. Of course there is a complex debate going on about the type of wage, because in so many cases the 'wage labourers' get their rewards in non monetary forms (e.g. food or livestock wealth) and also many of them do have family ties (or age mate; or clan ties) with the 'employer' in various forms of patron-client relationships.
2. The evidence offered comes from a project on the 'caloric terms of trade', as part of the collaboration between University of Amsterdam and Moi University, Eldoret. Other more recent projects in Kenya along the same lines have started in Garissa among the Kenyan Somali, and in Marsabit, where the Gabbra, Boran and Rendille in this northern part of the country are compared in their marketing behaviour. In addition trends in East Africa and West Africa are compared.
3. The unit most widely used in Kenya (Peden, 1984, Bekure et al, 1991; Kilewe and Thomas, 1992; 77): 1 TLU = 1.42 heads of cattle, 10 hair sheep or goat, 1 camel
4. A steer = 100 kg of meat * 2300 Cal = 230000 Cal. This is equivalent to 65 kg of maize or sorghum. A liter of milk = 700 Cal. This is equivalent to 200 gr of cereals in energy terms.
5. The depreciation against the Tanzania shilling and the dollar was considerable.
6. Any trend in index figures depends of course on the basis from which the index is computed. Started 5 years later, the figures for 1995 would be quite different: 909 for maize, 499 for cattle. When we compare national level animal and maize prices for the years mentioned in figure 1, expressed in caloric terms (the CToT discussed above), the discussion is put on more solid footing. A CToT of 4 would mean that with the sale of an animal, about four times its food energy value in the form of grains can be bought.
7. From only one bag of maize in the mid-1980s, first to 10 bags in 1988, then to 44 bags, and later to 88 bags in the early 1990s, and now transportation of maize between Districts in the country as well as imports are supposed to be free.
8. Of an official (under recorded) slaughter figure of 26,298 heads of cattle and 21,965 smallstock in 1994 in Kajiado District, 55% and 52% respectively was slaughtered in Ngong division, serving both Nairobi and local residents (RoK/MoALD, Kajiado District Annual Report, 1995).
9. The total population included agro-pastoral Pokot, probably one-third at the time. Since they had animals, as well as intensive links with pastoral Pokot, they are included in the estimate.
10. Related to the qat family of stimulants.
11. These days, it is very difficult to say who is a pastoralist and who is one no longer. The population census of 1989 (Republic of Kenya, 1994) showed that the district of West Pokot had 225,000 inhabitants, 190,000 of them Kalenjin (and Pokot the overwhelming majority of those Kalenjin). The areas generally considered 'pastoral' are Alale Division in the Northwest, Kacheliba Division in the Southwest, and most of Kipkomo, Batei, Lomut, Masol, Weiwei and Cheptulel locations (half the population there estimated to be pastoral). These 'pastoral areas' had about 75,000 inhabitants, owning probably two thirds of the animals in the district. This would give a TLU/cap figure of 1.3 for these lowlands. It is interesting to note that in census reports of both 1979 and 1989 all Kalenjin had been grouped together, unlike earlier census reports where Pokot and all the other Kalenjin sub groups are mentioned separately.
12. by human geography students Nanda Haverkort and Els Veldhuizen; assisted by local research assistant Simon Lopeyok who had also done the survey in 1983.
13. The improvement may partly be attributed to the shift in power between the Pokot and the Karamojong in favour of the former, resulting in considerable counter-raiding of cattle. Pokot successfully increased

their number of goats as well through purchase and gifts from their relatives in the highlands.

14. The exceptional household improved its livestock wealth from 19 to 54 TLU.
15. In 1993, maize grains had gone up to 40 Kshs per tin, while goat prices were below 300 Kshs per animal. During the first part of 1995, maize grains sold at 8-10 Kshs per 2 kg tin; finger millet at 20-30 Kshs per tin and beans at 25-50 Kshs per tin. Goats prices were above 500 Kshs per animal and cattle prices above 4,000 Kshs. (Haverkort/ Veldhuizen/ Lopeyok pers. comm.).
16. With all its limitations, see De Leeuw and Tohill, 1993; 77-88 for a recent comprehensive view. Stocking rates of between 1.5 ha/TLU and 4.2 ha/TLU were the basis of this estimate. Olkarkar group ranch area was rated as a 1.8 ha/TLU area.
17. Both figures of 750000 heads of cattle and 53200 people, derived from the Annual Reports, seem too high.
18. There were probably around 50,000 non-Maasai in the District by that time.
19. We have no indication that the drought in 1993 caused the stock loss in Kajiado District it was said to have caused by the authorities.
20. Compare this to the farmer who sells maize to buy meat at the butchery! He or she pays 120 Kshs per kg of meat, and has to sell 13 kg of maize, which in terms of food energy values is a negative ratio of 1 to 18 at present prices.
21. Olkinos, Emboloi, Kiboko, Elang'ata Wuas, Lorngosua and Meto.
22. Apart from Olkarkar, Poka, Kiboko, Elang'ata Wuas and Lorngosua were studied, together with individual ranchers in the vicinity of these Group Ranches
23. Of course, more generally there were under-recording errors similar to those reported by White and Meadows in their study, but comparing the cash income and expenditure levels it appears that this under recording is probably not very high. We found that total recorded expenditure amounted to 91% of total recorded income. Part of the difference was spent on drinks in bars (there was a difference for example between what was stated as expenditure on drinks, and what was recorded in the bars). However, there were additional livestock-related expenditures during migration as well. Data are being gathered now to fill in the remaining gap.

Annex: tables

Table A.1 Low Income Cost of Living Index (CLI), maize meal and cattle price index, Kenya, period 1975-1995.

Year*	CLI	Maize meal	Cattle
1975	108	100	100
1980	200	138	378
1985	365	345	523
1990	568	420	857
1995	1564**	1260	1889**

* figures for december of that year, basis CLI: 1974/5 = 100.

** End of 1994. Inflation went further down in 1995.

sources: Economic Review, CBS, various years; White and Meadows, 1981; Kajiado District Annual Reports, various years; Meijlink (pers.comm); Nation (14.2.95); Market Information Survey, various years; RoK/KDAR/Veterinary Division, 1986; Own survey.

Table A.2 Annual income in cash and kind, Olkarkar, per household, in current shs and percentages, period 9/1980-8/1981 and 5/1994-4/1995

Category	1980/1		1994/5	
	hh	perc	hh	perc
cattle sales	18,316	85	88,920	64
small stock sales	1,508	7	19,200	14
milk sales	1,077	5	6,468	5
other	646	3	23,844	17
total cash	21,548	100	138,432	100
total cash	21,548	47	138,432	51
total kind	24,299	53	136,992	49
total income	45,847	100	275,424	100

source: calculated from White and Meadows, 1981, tbls 62, 68, 70, and own survey.

Table A.3 Annual cash expenditure Olkarkar per household in current shs and percentages, period 8/1980-7/1981 and 5/1994-4/1995

Category	1980/1		1994/5	
	hh	perc	hh	perc
food and drink	6,777	46	34,452	27
livestock inputs*	3,282	22	35,328	28

livestock	1,350	9	26,148	21
other items**	3,325	23	30,516	24
total	14,734	100	120,900	100

* including acaracide, veterinary medicine, mineral supplements, water, wages, grazing.

** includes goods, services, cultivation, gifts

source: calculated from White and Meadows, 1981, tbls 38, 47, 52, 57, 58, and own survey.

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Map 1, Upe in Uganda, and West Pokot District, and Kajiado District in Kenya,
source: Republic of Kenya, 1985

Map 2, West Pokot District
source: Republic of Kenya, 1985

Map 3, Kajiado District
source: Republic of Kenya, 1990

figures and tables mentioned in the text.

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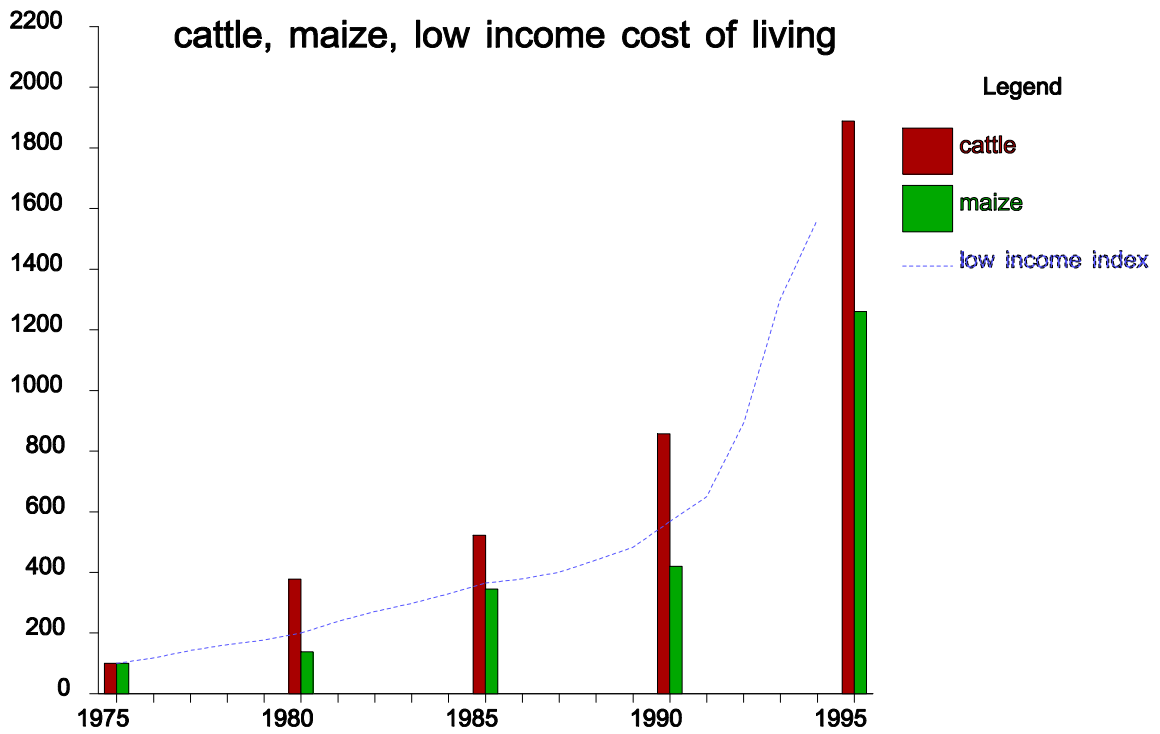


Figure 1
Sources: see table A.1.

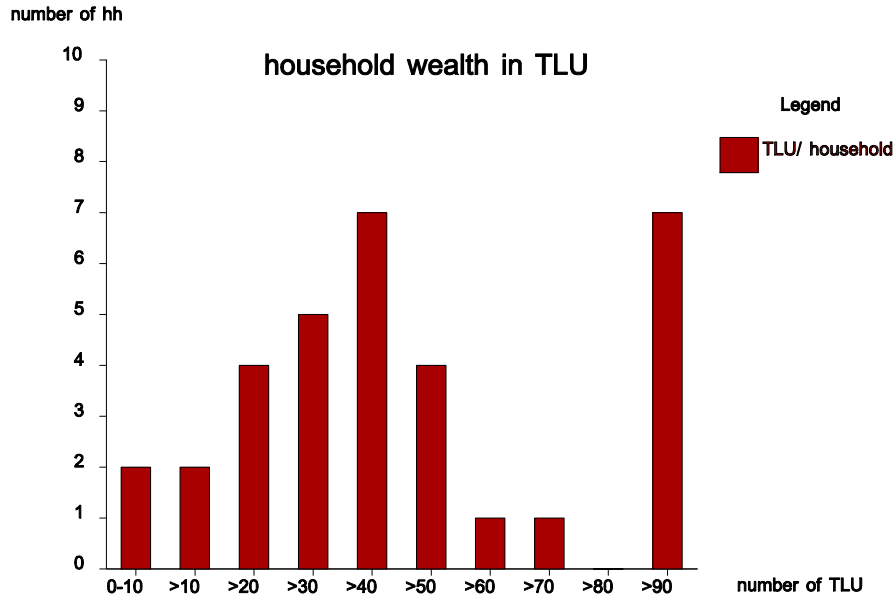


Figure 2, distribution of wealth in TLU
Source: own survey

Table 1, Average number of introduced/ crossed breeds of cattle and smallstock per wealth class (\leq 90 TLU, $>$ 90 TLU), Olkarkar, 1994/5, in TLU per household, and percentage.

Type	\leq 90 TLU		$>$ 90 TLU	
	hds	perc.	hds	perc.
Local breeds, cattle	16	28	24	19
Introduced/crossed cattle	42	72	102	81
total cattle	58	100	126	100
Local breeds, smallstock	6	10	10	6
Introduced/crossed smallstock	56	90	171	94
average total	62	100	181	100

source: own survey

Income in cash and kind, 1980/1-94/5

Olkarkar, in percentages

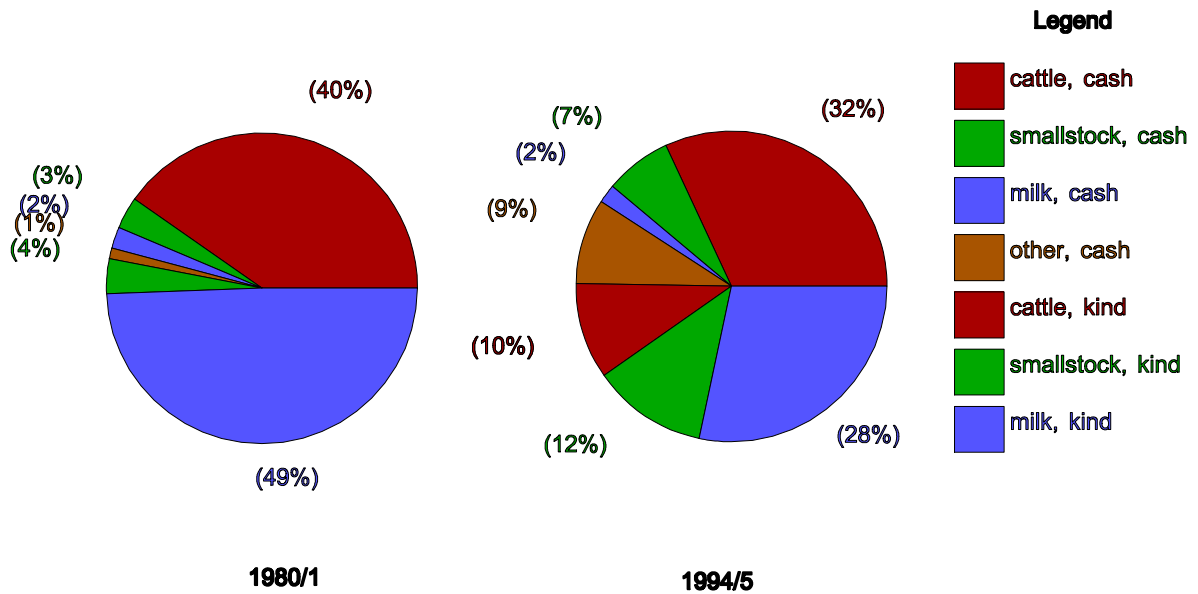


figure 3

Sources: computed from White, J.M. and S.J. Meadows, 1981, tpls 62, 68, 70. Own survey.

Table 2, Average annual household income **in cash** in Olkarkar per household wealth class, in current shs and percentages, period 5/1994-4/1995.

Category	all households		≤ 90 TLU		> 90 TLU	
	shs	perc.	shs	perc.	shs	perc.
Cattle	88,920	64	52,836	57	223,380	73
Smallstock	19,200	14	17,352	19	26,206	9
Milk	6,468	5	6,588	7	5,964	2
Other	23,844	17	16,524	18	50,040	16
Total	138,432		93,300		305,592	

source: own survey

expenditure in cash, 1980/1-1994/5

Olkarkar, in percentages

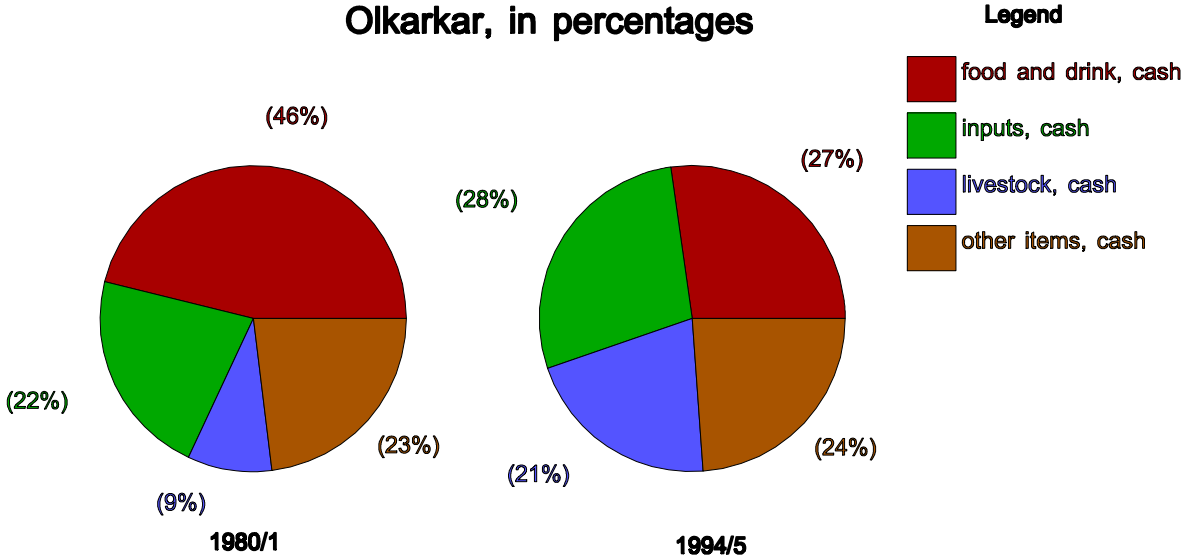


Figure 4
Source: computed from White, J.M. and S.J. Meadows, 1981; tpls 38, 47, 52, 58. Own survey.

Table 3, Average annual household **cash** expenditure in Olkarkar per household wealth class, in current shs and percentages, period 5/1994-4/1995.

Category	all households ≤ 90 TLU		> 90 TLU	
	shs	perc.	shs	perc.
Food/ drink	34,45227	31,90831	44,628	21
Inputs	35,32828		24,12023	
Cattle	21,78017		18,14417	
Smallstock	4,368	3	5,280	5
Other	30,51624		23,94023	
Total	126,44499		103,39299	
			217,548	100

source: own survey (errors due to rounding)