

## Kavango FMS Discussion Paper No.1

### Household Consumption, Income and Production in Kavango: The Cattle Factor

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- *Cattle are an important source of cash, in contrast to crops, which are not.*
- *Crops retain the same importance as a source of overall production regardless of cattle herd size.*
- *Non-farm cash income sources are more important for non-cattle owners than cattle owners. One third of total production comes from non-farm cash sources for large herd owning households, compared to two thirds for non cattle owners.*
- *Households with no cattle who are under strong pressure to seek non-farm production opportunities turn to beer brewing as a major cash source.*
- *The value of both crop and livestock production is significantly lower for households without cattle versus those with and is also significantly lower for households with smaller versus larger herds.*
- *Members of households with no or few cattle consume and produce less per person than their counterparts in households with large herds*
- *The value of non-farm cash income does not differ significantly between households with versus those without cattle or between households with larger versus those with smaller herds.*

## **PART 1: Major Discussion Points**

### **Introduction**

In the Farm Management Survey Report for Kavango it was noted that the proportions of gains from crop and non-crop sources obtained by households did not differ according to the number of cattle owned. This was because as cattle ownership increases, both crop and livestock production increase.

The measure of net non-crop gains used in the Farm Management Survey Report was an aggregate of cash income, cash expenditure and non-cash livestock gains from own consumption and inventory changes. In this brief these elements are desegregated to provide a more complete picture. The disaggregated analysis indicates that consumption, income and production patterns do differ according to cattle ownership. It also contributes to an understanding of the reasons for these differences.

The brief contains two parts. The first part develops broad measures of consumption, income and production and examines how these differ across cattle owning groups. The second section provides statistical information and a more detailed analysis of the elements that make up cash incomes and cash expenditures.

The major implications of the findings for extension and development in the region are:

- 1. The acquisition of cattle by households without any or with small herds is likely to lead to an increase in agricultural production in the region.**
  
- 2. The development of non-farm cash earning opportunities is an important way of improving the welfare of the poorest rural households.**

### **Consumption and Cattle Ownership (Figure 1a)**

Consumption is defined as consumption of own produced crop and livestock products plus cash expenditures. These are summarised for three cattle ownership groups in Figure 1a.

Own consumption of livestock products is a combination of values of livestock consumed and changes in inventories. Thus if no livestock products are consumed, but herd sizes increase, this is treated as a consumption gain. On the other hand if livestock products are consumed and this results in a decline in herd sizes of equal value to the consumption, this is treated as zero consumption gain.

Figure 1a indicates that net own livestock consumption gains are small relative to the other consumption categories of cash expenditures and crops. However own consumption gains from livestock are larger absolutely and relatively in groups owning more cattle.

Groups owning more cattle have higher absolute levels of consumption of own produced crops. This is because crop production is directly related to area planted and households with higher numbers of cattle plant larger areas. However the relative contribution of own consumption of crops to total consumption remains the same between groups (about one third).

### Consumption, Income & Production per Household

Figure 1a

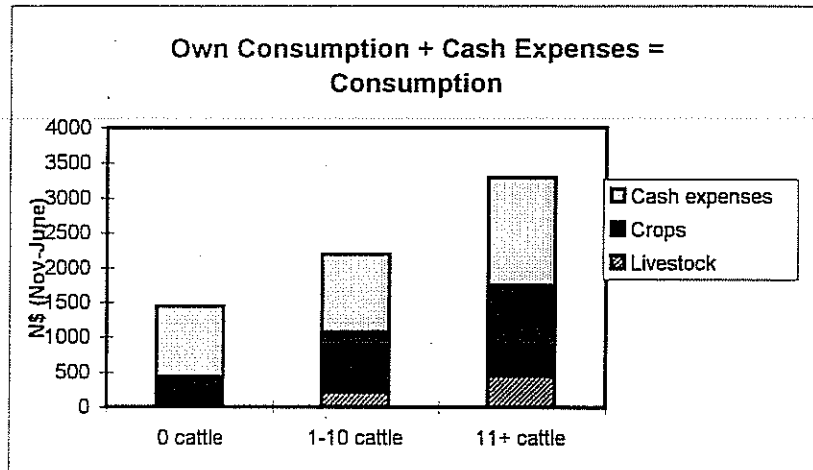


Figure 1b

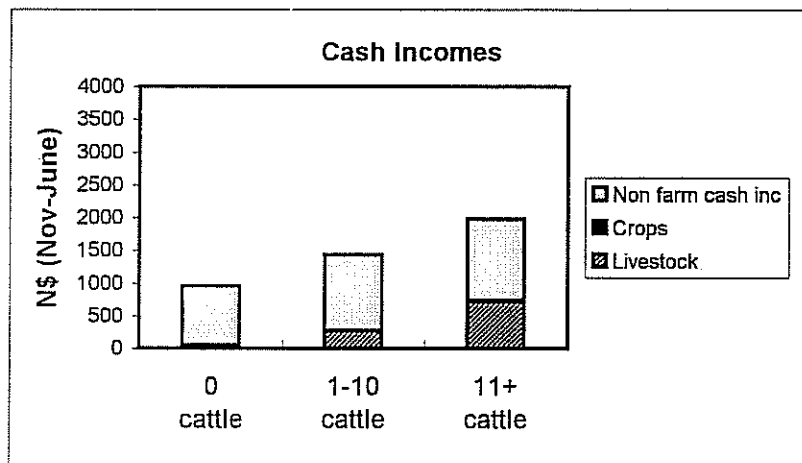
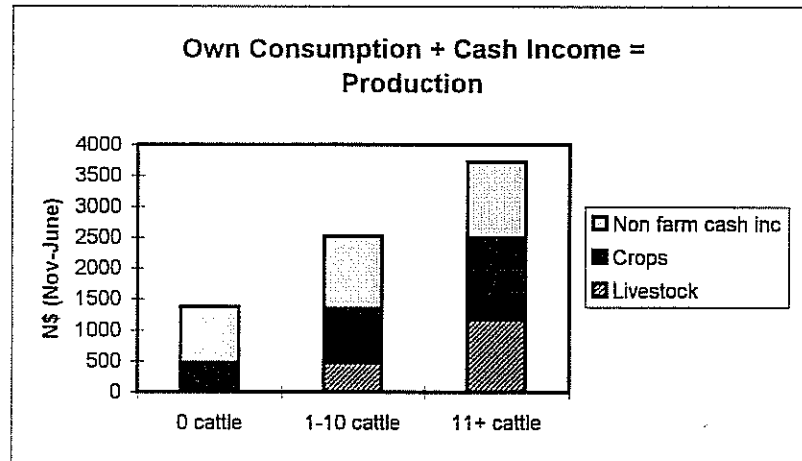


Figure 1c



The absolute levels of cash expenditures increases for cattle owning groups with larger herds. However the proportional contribution of cash expenditures to total consumption is smaller for those households owning cattle (50%) compared with those owning no cattle (72%).

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*Households without cattle have a relatively higher need for cash to meet their consumption requirements than do households who own cattle.* The major sources of this cash income are discussed in the next section.

#### **Cash Incomes (Figure 1b)**

Effectively there are only two major sources of cash income: livestock and non-farm cash income. Crops are not a source of cash income for most households, even those with many cattle, cultivating 10 hectares or more.

This means that for households with no cattle, virtually all cash needs must come from non-farm sources. As cattle herds increase there is an increase in both absolute and relative amounts of cash income derived from sales of livestock and livestock products. While households with no cattle have to meet 95% of their cash requirements from non-farm sources, for the largest cattle owning group, only 63% of cash requirements need to be met from non-farm sources.

*Cattle then are an important source of cash, in contrast to crops, which are not.*

#### **Production (Figure 1c)**

Crops are however an important source of production, contributing about one third of overall production. *Indeed crops retain the same importance as a source of overall production regardless of cattle herd size.*

From Figure 1c it is apparent that production from both crops and livestock become more important in terms of overall production as herd sizes increase. The contribution to overall production by non-farm cash sources is one third for households with 11 cattle or more, it is half for households with herds of 1-10 head and it is two thirds for non cattle owning households.

*Households with no cattle are under stronger pressure to seek non-farm production opportunities than households with cattle.*

## PART 2: Further Analyses

### 2.1 Significance tests of differences between groups

The table below indicates the probabilities of significant differences existing between cattle ownership groups in respect of own consumption, incomes and values of production. Where probability values are less than 0.1, it means that there is less than 10% probability that the differences observed between groups are not real differences due to the grouping and could have occurred by chance due to random variation in the data. The F statistic gives an indication of the probability of the differences between groups not being real. When the F statistic indicates a significant difference between the groups, the t statistic can be used to examine whether there is a significant difference between any two groups.

With survey data of this type, which are subject to high variations, it is usual to take probabilities of 10% or less as indicating that observed differences are due to the groupings used. On this basis then the following statements can be made.

N\$ per household

	0 cattle A	1-10 cattle B	11+cattle C	F prob	t prob A-B	t prob B-C
<b>CONSUMPTION</b>	<b>1404</b>	<b>2203</b>	<b>3291</b>	<b>.00</b>	<b>.02</b>	<b>.02</b>
cash expenses	1005	1126	1549	.21		
livestock utilisation	91	248	595	.00	.00	.00
inventory changes	-86	-41	-145	.86		
crops	430	869	1296	.00	.00	.01
<b>CASH INCOME</b>	<b>956</b>	<b>1439</b>	<b>1981</b>	<b>.02</b>	<b>.06</b>	<b>.12</b>
livestock	38	273	721	.00	.00	.00
crops	12	2	21	.42		
non-farm	906	1164	1239	.57		
<b>PRODUCTION</b>	<b>1336</b>	<b>2517</b>	<b>3723</b>	<b>.00</b>	<b>.00</b>	<b>.03</b>
livestock	43	481	1169	.00	.00	.01
crops	432	871	1314	.00	.00	.01
non-farm	906	1164	1239	.57		

The value of own consumption per household differs significantly between groups. This is due to significantly larger values of own consumption of crops and livestock by households with no cattle compared to those with some cattle and also by households with smaller herds compared to those with larger herds.

Cash expenses and livestock inventory changes are not significantly different between groups.

Total cash incomes are significantly higher for cattle owners versus non cattle owners. They are not significantly higher for owners of larger herds versus owners of smaller herds. Cash income from sales of livestock products are significantly higher for owners versus non owners as well as for large herd owners versus small herd owners. Cash incomes from other sources (crops and non-farm) are not significantly different between groups.

The significantly higher value of production for cattle owners versus non owners and for larger herd owners versus smaller herd owners is due to differences in crop and livestock production. It is not due to differences in non-farm cash income, which is not significantly different between groups.

## 2.2 Per Capita Analysis

The above analysis has been based on consumption and production per household. Since the number of household members tend to be larger for households with more cattle, it may be that consumption and production per household member are no different across cattle ownership groups.

To test this, the household consumption and production data were divided by the number of members in the household to give per capita measures. The results for the elements of consumption and production that were significantly different on a per household basis are presented in the table below.

NS per Capita

	0 cattle	1-10 cattle	11+ cattle	F prob
<b>OWN CONSUMPTION</b>	<b>186</b>	<b>241</b>	<b>303</b>	<b>.04</b>
livestock utilisation	12	24	62	.00
crops	60	91	124	.00
<b>CASH INCOME</b>	<b>118</b>	<b>147</b>	<b>191</b>	<b>.17</b>
livestock	5	23	72	.00
non-farm cash	112	118	117	.98
<b>PRODUCTION</b>	<b>173</b>	<b>268</b>	<b>345</b>	<b>.00</b>

When examined on a per capita basis the differences between groups is not so great as on a per household basis. Nevertheless production and consumption is significantly lower per capita in households with fewer than with more cattle.

On a per capita basis there is no significant difference in cash income between household groups. Non-farm cash incomes per capita are almost the same for all groups, although per capita cash income from the sale of livestock products is significantly higher for household with more cattle.

This analysis shows that households with no or few cattle do not consume and produce less because they have fewer members compared with households with large herds. The people in households with no or few cattle consume and produce less per person than their counterparts in households with large herds.

## 2.3 Elements of Cash Needs and Sources

In Part 1 it was noted that “households without cattle have a relatively higher need for cash to meet their consumption needs than do households who own cattle”. In the following two sections we look closer at the cash needs and sources of cash income for different cattle owning groups.

### Cash Expenditure Patterns

Table 1: Priority Sources of Income - by rank and % of total cash income per household

	no cattle		1-10 cattle		11+ cattle	
	rank	%	rank	%	rank	%
<b>maize meal</b>	1	39	1	43	1	45
<b>other food</b>	2	30	2	19	3	14
<b>power hire</b>	3	17	3	12	2	16
<b>school</b>	5	3	5	5	4	11

The major cash need for all households is for the purchase of maize meal. Maize meal and other food account for 69% of cash expenditure for no-cattle households, for 62% of expenditure for households with 1-10 cattle and for 59% of expenditure for large herd owners.

Households with no cattle also spend a higher proportion of cash expenses on hiring power sources (especially for ploughing) than other household groups. Households with large cattle herds seem to devote a relatively high proportion of their expenses to schooling.



## Sources of Cash Income

Table 2 shows that the priority sources of income are different for different cattle ownership groups. For those with no cattle, beer brewing is the major cash source<sup>1</sup>, followed by wages/remittances and pensions.

Table 2: Priority Sources of Income - by rank and % of total income per household

	no cattle		1-10 cattle		11+ cattle	
	rank	%	rank	%	rank	%
<b>livestock sales</b>	8	4	2	19	1	36
<b>beer making</b>	1	23	4	4	4	8
<b>wages &amp; remittances</b>	3	21	1	30	2	35
<b>pensions</b>	2	23	3	11	3	9

For those owning cattle, wages and remittances are major cash income sources. For large herd owners, cash from livestock sales are equally important.

Pensions come in the first 3 for all groups. However they are more important for non-cattle owning households than those having cattle.

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<sup>1</sup> One non cattle owner with particularly large earnings from brewing has been left out of the analysis.