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MARKET NICHES FOR INCREASED SMALL RUMINANT PRODUCTION IN SOUTHERN NIGERIA

M.A. Jabbar
International Livestock Research Institute, Socioeconomic Sciences Division, P.O.Box 5689, Addis Ababa, Ethiopia

ABSTRACT: *A year-long survey of rural small ruminant markets in southern Nigeria shows that supplies from local sources fail to keep pace with increased demand, particularly at festival times, and the gap is filled by supplies from the northern part of the country. Subsistence oriented southern producers sell animals throughout the year mainly for various cash needs such as buying food, clothing and paying school fees. Prices are higher at festival times but on a yearly basis variations are not significant, so production technologies that contribute to year-round increased supply may be better value for small-scale subsistence oriented producers while commercial production may be geared to the peak festival time markets.*

1. Introduction

In the humid zone of southern Nigeria, livestock production is limited by the prevalence of the disease trypanosomiasis, transmitted by the tsetse fly. Trypanotolerant dwarf goats and sheep are the most common ruminant species kept by small-scale crop farmers in the zone. Jahnke (1982) estimated that there were 9m small ruminants in the zone of which 62% were goats. However, the aggregate demand for small ruminant meat in the humid zone exceeds supply from local sources, so the gap is met by a continuous flow of supplies from the sub-humid and semi-arid zones in the north.
For example, in 1984 over 1.7m goats and 0.3m sheep were transported by road from the north to the southern Nigerian markets (FLD, 1985).

This supply-demand imbalance has important implications for markets, prices and increased production potential for small ruminants in the humid zone. Okali (1979) postulated a good potential for increased production in the south on the basis of three observed features of the southern markets:

1. Variation in supplies and prices throughout the year with both supplies and prices peaking sharply at festival times such as Eid-el-Kabir for Moslems and Christmas-New Year for Christians.
2. A higher price for southern compared with northern breeds indicating a consumer preference for southern breeds.
3. A higher price for southern breeds in urban compared with rural markets.

These features were later confirmed by Okali & Upton (1985), Francis & Ingawa (1988) and Francis (1990) on the basis of empirical evidence obtained from a survey of rural and urban markets conducted between January 1983 and May 1985 in southern Nigeria. Okali & Upton (1985) also argued that very few northern breeds were actually

sold in the rural markets, so an expanding rural market was for increased local supply, particularly of goats which are the main species produced in the south. Upton (1985) reinforced the argument by showing that, despite high mortalities, the potential return from sheep and goats kept under traditional management systems were attractively high.

The objective of this paper is to re-examine the scope for increasing small ruminant production in the south, on the basis of a more recent survey of rural markets in both south-west and south-east Nigeria. The methodology is presented in section 2 and results are presented in Section 3, with discussions and conclusions at the end.

2. Method

Most small-scale producers sell their animals in the rural markets. Moreover, urban market prices can be generally predicted on the basis of transport and storage costs between rural and urban areas (Francis, 1990). That is why this study was concentrated on rural markets. Two markets were monitored in each of south-east and south-west Nigeria. The markets in the south-west were Oja, about 10 km outside Oyo town, and Apomu, about 35 km away from Ibadan in Oyo State. These were two out of four rural markets surveyed in 1983-85. The markets in the south-east are Ariam and Ndoro, respectively, 15 and 20 km away from Umuahia, the capital of Abia State.

Oja and Apomu are functionally independent in the sense that their supply hinter lands and service areas are largely different. On the other hand, Ariam and Ndoro are functionally related, but not dependent, in the sense that their supply hinterland and service areas overlap to some degree.

All four markets are general commodity markets, a section of which is used for trading small ruminants. All are periodic. Oja and Apomu normally occur every 4 days, and more frequently before major festivals such as Eid-el-Kabir and Christmas. Ariam and Ndoro are slightly smaller markets and they normally meet every 12 days. In Ariam and Ndoro, animals are sold only on market days but in both Oja and Apomu, some resident traders have permanent stalls where they tie their animals and offer them maintenance-level feeds and sell on both market and non-market days; however, only market days were monitored for this study.

Data were collected each market day between December 1989 and January 1991 from both buyers and sellers. Detailed information was collected for all animals traded each market day except that, during the June-July 1990 festival period, when large numbers of animals were traded in the south-west markets, records of a random sample of traded animals were taken. During the entire period, two south-west markets met for a total of 223 days and the two south-east markets met for 68 days. Detailed records were collected of 4504 traded animals in the south-west and 956 in the south-east. The records for December 1989 and January 1990 from the south-east markets were lost and records would have been slightly higher if they had been available.

3. Results

3.1 Volume of Supplies and Sales

Table 1 shows the number of small ruminants on offer for sale per month and per market day, and the proportion of animals sold in the two regions. In the south-west, supplies peaked in June-July coinciding with the Moslem festival of Eid-el-Kabir, and

there was a smaller peak in December coinciding with the Christian festival of Christmas-New Year. In the south-east there are very few Moslems, so lack of a peak in June-July was expected, but the Christmas-New Year period also did not attract much additional supply. This may be partly explained by the fact that few animals in the south-east markets were bought by direct consumers (see below) and that most local people possibly used home-reared animals for Christmas-New Year celebrations.

Table 1: Monthly supplies and sales of small ruminants in selected markets in southern Nigeria

Year/month	South-west markets			South-east markets		
	Total supply/month	Supply per market/day	% sold	Total supply/month	Supply/ market/day	% sold
1989 Dec.	1245	78	31	-	-	-
Jan.	1152	77	31	-	-	-
Feb.	559	40	46	105	35	91
March	741	46	43	139	28	93
April	624	42	42	180	38	88
May	1464	45	41	83	22	80
June	6325	92	60[a]	179	33	67
July	553	351	60[a]	141	24	90
Aug.	449	37	42	129	25	84
Sept.	522	30	53	117	23	76
Oct.	463	33	47	173	27	88
Nov.	1243	31	46	121	32	89
Dec.		44	42	164	41	69
1991 Jan.	477	53	42	109	28	91
Total/average	16495	74	-	1695	30	87

[a]Guesstimates: a full census of sales could not be made for June and July.
__Not available.
Source: Field survey.

In the south-west markets, there was a build-up of supplies over the few weeks prior to the Eid-el-Kabir in July. Actual supplies in June-July accounted for 55% of total supplies during January-December 1990; July accounted for 43% of the annual total supply. Out of the total July supply, 73% were on offer on three market days within 10 days prior to Eid-el-Kabir.

Average supply per market day in the south-west markets was 2.5 times higher than in the south-east markets. Excluding the June-July peak period, average supply in the south-west would be 47, 1.5 times higher than in the south-east markets. In the south-west markets, 40-45% of daily supplies were actually traded during normal periods, while in the south-east over 85% of daily supplies were traded. Therefore, the actual numbers of animals traded on a normal market day were about the same in the two regions.

In the south-west markets, 64% of all the animals on offer during December 1989-January 1991 were of southern origin but 78% of all the animals traded during the same period were of southern origin; the remainder were of northern origin (Table 2).

Table 2: Composition of supplies and sales of small ruminants in selected markets in southern Nigeria

Type of animal	South-west market		South-east market	
	% Supply	% Sold	% Supply	% Sold
Southern goats	52.7	69.5	68.8	67.1
Southern sheep	11.3	8.6	28.6	31.5
Northern goats	33.8	21.0	2.6	1.4
Northern sheep	2.2	0.9	-	-
All	100.0	100.0	100.0	100.0

Note: Southern goats and sheep are West African Dwarfs but several breeds of goats and sheep are included among the northern animals. That is why, rather than referring to breed, types of animals in this paper are identified as southern and northern.

Source: Field survey.

During the normal period in the south-west, southern animals constituted 72-80% of the supplies and 75-84% of sales. During peak periods, shares of southern animals in supplies went down to 51% in July, 60% in June and 62% in December, but the shares in sales were still high at 71% in July and 74% in June and December. This means that, compared with animals of northern origin, a higher proportion of southern animals on offer in the market were actually sold during the peak periods. However, buyer choice for sex and type of animal varied in the south-west depending on the purpose for which the animals were bought (Table 3). For example, hardly any northern animals were bought for sacrifice, but a majority of the animals bought for Eid-el-Kabir, Christmas and ceremonies, which constituted the peak demand periods, were of northern origin. Such variations were not observed in the south-east where goats and sheep accounted for about 75 and 25% in each category of purchase. Few northern animals were purchased only during Christmas and for ceremonies.

In the south-east, 97.4% of supply and 98.6% of traded animals were of southern origin. Generally, movement of animals between south-west and south-east Nigeria is rare and if there were any, there would be none between the markets under study because of their distant locations.

3.2 Buyers and Sellers

There were only two categories of sellers, farmers and traders; but buyers could be categorized into farmers, traders, butchers, food caterers and consumers, depending on the purpose for which animals were bought. Some traders operated locally, buying animals from farmers on the spot or from the gate, for resale. Other traders bought northern animals from urban markets for selling locally and bought local animals to resell in urban markets. Some of them maintained stalls where animals could be bought on non-market days.

It was difficult to keep track of the actual number of buyers and sellers in each category operating on a market day because a buyer or a seller could be involved in multiple transactions. However, from the record of individual transactions, it was found

that in the south-west markets, 76.2% of the animals were sold by farmers and 23.8% by traders. In the south-east, 98.3% were sold by farmers and 1.7% by traders.

Table 3: Buyer choice of sex and type of animals by reason for buying in south-west Nigeria

Reason for buying	% Male	% Animal by type			
		Southern goats	Southern sheep	Northern goats	Northern sheep
Trade	44	88.0	10.9	1.0	0.1
Rearing	42	84.3	14.8	0.9	-
Catering	54	80.5	0.7	18.9	-
Consumption	58	81.5	3.0	15.5	-
Eid-el-Kabir	65	28.4	4.7	66.6	0.4
Christmas/New Year	73	38.4	7.2	46.9	7.6
Sacrifice	77	94.8	5.2	-	-
Ceremony/Party	44	33.9	3.2	62.9	-
Others	-	28.6	-	71.4	-
Not specified	94	76.5	5.9	17.7	-
All	54	69.5	8.6	21.0	0.9

In the south-west, 24.5% of the traded animals were bought by farmers for rearing, 27.1% by traders for resale, 7.4% by butchers, 6.6% by food caterers and 34.4% by consumers of different types for various purposes such as festivals, ceremonies and home consumption (Table 4). In the south-east, 8.9% were bought by farmers for rearing, 90.0% by traders to resell in other markets/towns and 0.2% by consumers. Thus, the south-east markets appeared to serve as a supply source for urban markets while the south-west markets served the needs of a wide variety of mainly local customers.
Farmers, traders, caterers and butchers bought most of their animals from farmers. Only direct consumers in the south-west bought a majority of their animals from traders who principally traded northern animals. In the south-west, 19% of the total transactions took place between farmers compared with 8.5% in the south-east.

Table 4: Market share of different buyers and their sources of animals by region

Buyer type	South-west			South-east		
	% of total purchase	Source (%)		% of total purchase	Source (%)	
		Farmer	Trader		Farmer	Trader
Farmer	24.5	96.7	3.3	8.9	95.2	1.8
Trader	27.1	99.3	0.7	90.9	98.6	1.4
Caterer	6.6	80.4	19.6	-	-	-
Butcher	7.4	83.4	16.6	-	-	-
Consumer	34.4	36.8	63.2	0.2	100.0	-
All	100.0	76.2	23.8	100.0	98.3	1.7

3.3 Buyer and Seller Sex

Based on individual transactions, 38.8% of sellers and 44.1% of buyers in the south-west were female compared with 52.9 and 13.3% in the south-east. The differences in the types of buyer and seller between the two regions contributed to differences in their sex composition. There were more farmer sellers in the south-east than in the south-west, and many women farmers own small ruminants, hence a higher proportion of south-east sellers were female. Actually, 47% of south-west and 53% of south-east farmer sellers were female. Only 13% of south-west and 31% of south-east trader sellers were female. On the other hand, most buyers in the south-east were traders who were mostly male but in the south-west, among several categories of buyers, females accounted for about 50% among farmers and traders, 31% among consumers, 99% among food caterers and 4% among butchers. Hence a higher proportion of south-west buyers were female.

In the south-west, there was no significant difference between male and female buyers in terns of choice of sex of seller but in the south-east, female buyers appeared to have a preference for female sellers. In the south-west, 37 and 40% of male and female buyers, respectively, bought from female sellers while in the south-east, 51 and 64% of male and female buyers, respectively, bought from female sellers.

3.4 Reasons for Selling Animals

Traders are in the business of making profit, but small-scale farmers rear and sell small ruminants for a variety of reasons. In both the regions, nearly 60% of animals were sold by farmers to meet various cash needs, particularly to buy food, clothing and to pay school fees for children (Table 5). Thirty per cent of the animals in the south-west and 15% in the south-east were sold due to some traits of the animals, some of which made their continued rearing risky and unprofitable, such as disease and old age.

Table 5: Distribution of farmer sellers according to reason(s) for sale by region

Reason for sale	South-west		South-east	
	First reason	Second reason	First reason	Second reason
	% of animals sold			
Cash needs	56.4	6.2	58.4	1.2
Buy food, clothing	30.5	3.4	26.5	0.6
Pay school fees, books	17.1	1.6	19.3	0.2
Pay hospital, drugs	5.1	0.9	9.0	0.4
Cash for ceremony	3.7	0.3	3.6	–
Production traits of animals	30.0	10.9	14.6	–
Weaned	13.9	5.5	–	–
Unproductive	8.5	2.0	2.3	–
Sick, diseased	4.7	2.6	10.9	–
Old age	2.9	0.8	1.4	–
Not specified	13.6	8.5	27.0	1.6
Not applicable	–	74.4	–	97.2
All reasons	100.0	100.0	100.0	100.0

Source: Field survey.

Cash needs for buying food and clothing were a more prominent reason for selling by women farmers, and paying school fees and books was a more important reason for selling by male farmers (Table 6). These reasons for selling confirm widely held notions that for small-scale subsistence farmers, small ruminants perform several functions, including meeting cash needs, and serving as a valuable asset or savings. They also confirm that men and women in southern Nigeria have different and separate responsibilities, and small ruminant rearing may have an important role to play in enabling them to perform those responsibilities.

Table 6: Distribution of male and female farmer sellers according to principal reason for sale by region.

Reason for sale	South-west		South-east	
	Male farmers	Female farmers	Male farmers	Female farmers
	% of animals sold			
Cash needs	55.5	54.9	56.4	59.9
Buy food, clothing	23.2	34.3	20.6	30.9
Pay school fees, books	23.9	11.0	21.1	18.0
Pay hospital, drugs	6.1	4.2	10.8	7.7
Cash for ceremony	2.3	5.4	3.9	3.3
Production traits of animals	27.9	34.1	11.9	16.6
Weaned	12.6	16.7	-	-
Unproductive	7.8	9.6	2.0	2.6
Sick, diseased	4.9	4.8	7.9	12.9
Old age	2.9	3.0	2.0	1.1
Not specified	16.6	11.0	31.7	23.5
All reasons	100.0	100.0	100.0	100.0

3.5 Price and Related Factors

Apart from species and sex, size (both height and weight) and physical condition (healthy or sickly) are probably the most important criteria used by buyers and sellers in bargaining and arriving at the price at which the animal is exchanged. Animals are not normally weighed by buyers and sellers but an ability to make a good guess about weight helps in making a good bargain.

For the purposes of this study, each traded animal was weighed immediately after the buyer and the seller reached an agreement. Age was measured by examining teeth and by asking the seller, particularly farmers.

Table 7 summarizes average age, weight and prices for different types of animals by region. Several features appear:

1. Animals sold in the south-east were older but lower in weight and fetched lower prices per animal than in the south-west.

2. In both regions, northern animals were older, were of higher weight and value per head but fetched lower prices per kg than southern animals. In the south-east goats were dearer.
3. In both regions, females were older and of higher weight and value per head, but prices per kg did not differ from males.

Table 7: Average age, weight and prices of small ruminants by region, type and sex

Location and Type/sex of animal	Number	Age (month)	Weight (kg)	Price per head(Nair)	Price per kg (Naira)
South-west	4504	16.12	12.93	163.94	12.94
		(10.97)	(6.61)	(92.86)	(3.90)
South goats and sheep	3520	15.54	11.55	150.94	13.24
		(11.86)	(6.20)	(90.01)	(3.88)
Northern goats and sheep	984	18.18	17.86	206.83	11.86
		(6.45)	(5.62)	(89.74)	(3.76)
Male	2418	11.91	10.92	140.74	12.94
		(5.86)	(5.35)	(89.54)	(4.23)
Female	2086	21.00	15.26	186.14	12.94
		(13.25)	(7.15)	(89.84)	(3.47)
South-east	941	20.30	10.70	127.67	11.87
		(16.11)	(4.30)	(61.10)	(2.78)
Southern goats and sheep	926	20.04	10.63	126.97	11.88
		(15.97)	(4.24)	(60.89)	(2.79)
Northern goats	14	33.14	14.92	171.00	11.61
		(18.34)	(5.50)	(60.27)	(2.16)
Male	636	15.69	10.13	121.72	11.82
		(12.61)	(3.93)	(60.21)	(2.80)
Female	305	29.16	11.87	140.09	11.97
		(18.29)	(4.77)	(61.18)	(2.73)

Figures in parentheses are standard deviations.
Source: Field survey.

Table 8 shows average weight and price per kilogram live weight by month. Animals sold in the south-east were of significantly lower weight than those in the south-west throughout the year. This was also true when weight of each species was considered separately. This is probably because animals in the south-east are generally confined and tethered while those in the south-west are mostly free roaming, so have a better choice in terms of feed

Another feature of the market is that animals sold during the festival periods in December, June and July in the south-west and December in the south-east were of higher weight. This higher weight might have resulted partly from the large number of bigger northern animals traded during the festival period.

In the south-west, average price per kilogram live weight followed a cyclical pattern. from a high level in December 1989, it decreased up to May 1990, then increased during June-July, coinciding with the Eid-el-Kabir festival, then decreased again before increasing during the Christmas period. In the south-east, price data for the

initial 2 months were lost but observations indicate that prices were as high in December 1989 as in December 1990. There was no other clear peak during the year.

The prices mentioned above are nominal prices. The period under study was a period of considerable inflation, therefore equal prices in December 1989 and December 1990 did not represent value for money. When the nominal prices were deflated by the index of the official exchange rate of Naira (consumer price index would have been a better choice but was not readily available), the prices in peak demand periods were still higher than at other times, but there was a real decline in the value of seller receipts as time passed by (Figure 1).

An ANOVA shows that price variation over the entire period of the study was not significant although a *t* test showed that differences between yearly average price and the price of certain months were significant. This was because, within each month, prices varied widely (high standard deviations) due to differences in sex and breeds of animals traded.

On the basis of the above, assuming time (month) as unimportant in overall price variation, the following demand function was specified to determine significant factors in price variation: $P=A+B_1X_1+B_2X_2+B_3X_3+B_4X_4+B_5X_5+U$, where P is the value of an animal, X_1 is a location dummy (south-west = 0, south-east = 1), X_2 is a source dummy (southern=0, northern = 1), X_3 is a sex dummy (male = 0, female = 1), X_4 is the body weight of the animal in kilograms, X_5 is the square of the body weight and U is a random error.

The function was fitted to the entire sample from both the south-west and south-east, and separately for each region. Estimated parameters and related statistics for the functions are shown in Table 9. The predicted price per kilogram live weight for the south-west was almost equal to the observed price, but for the south-east, the predicted price was slightly higher. In the south-west, females fetched a significantly lower price than males and northern animals fetched a significantly lower price than southern animals, but such factors were not significant in the south-east. In general, prices in the south-east were significantly lower than in the south-west. The negative effect of the variable $(\text{body weight})^2$, particularly in the south-east, indicates that older/heavier animals command lower prices.

4. Discussion and Conclusions

The survey of the rural markets in the south-west shows wide variation in supplies and sales during the year with a sharp peak in June-July coinciding with the Moslem festival of Eid-el-Kabir and a smaller peak in December coinciding with Christmas-New Year. In the south east, no sharp or major peaks were observed. During the previous survey (1983-85) in the south-west, Eid-el-Kabir related supply peaked in September; because of lunar cycles, the Eid comes 10-11 days sooner every year, hence the difference. Subsistence producers have little difficulty in adjusting to this continuous movement of the peak market but fattening schemes geared to the Eid market have to be adjusted continuously and at times have to be run during periods of severe dry season feed shortages. In so far as production is geared to the festival related market, slow movement of the peak period should not pose a serious problem.

Table 8. Average weight and price per kilogram liveweight of traded animals by month and region

Month	Average weight (kg)		Average price per kg (Naira)	
	South-west	South-east	South-west	South-east
1989				
Dec.	13.21	—	14.48	—
1990				
Jan.	11.75	—	14.28	—
Feb.	11.94	10.18	12.73	11.76
March	12.96[a]	10.33[a]	11.84	11.25
April	12.16	11.72	11.59[a]	10.63[a]
May	12.96[a]	10.38[a]	11.51[a]	9.64[a]
June	13.72[a]	10.47[a]	13.14[a]	10.04[a]
July	14.55[a]	10.16[a]	13.26[a]	10.65[a]
Aug.	12.76[a]	9.50[a]	12.25	11.64
Sept.	12.36[a]	9.93[a]	11.54	11.52
Oct.	11.66[a]	9.84[a]	12.33	11.85
Nov.	12.25	11.48	13.27[a]	10.59[a]
Dec.	13.48	12.04	14.29[a]	13.20[a]
1991				
Jan.	13.04	12.28	14.68	14.67
Feb. 1990				
–Jan. 1991	13.01[a]	10.70[a]	12.65[a]	11.87[a]

[a]The difference between south-west and south-east was significant at 5% level.
— Not available.
Source: Field survey.

variation, the following demand function was specified to determine significant factors in price variation:

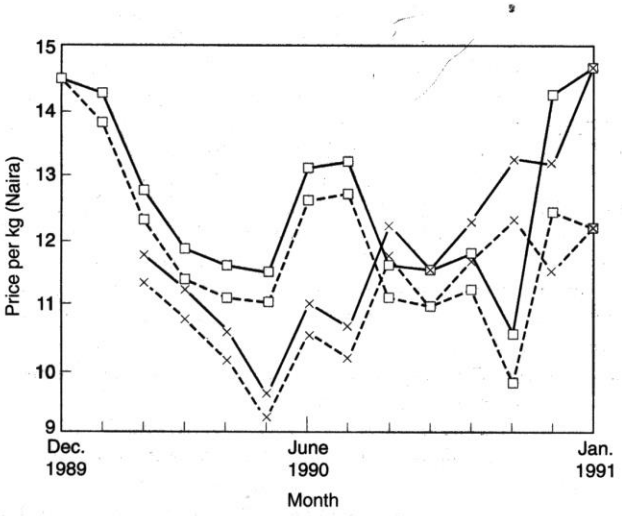

Figure 1. Monthly average price of small ruminants per kg liveweight by region. (—) Nominal price; (----) real price; (□) south-west; (×) south-east.

Table 9: Estimated parameters and related statistics for small ruminant demand functions

Parameters	Location		
	All	South-west	South-east
Intercept	8.684[a]	9.899[a]	12.662[b]
Location dummy	-10.581[a]	-	-
	(1.881)		
South dummy	-22.930[a]	-22.098[a]	-6.635
	(2.168)	(2.154)	(8.401)
Sex dummy	-6.015[a]	-6.129[a]	-2.408
	(1.583)	(1.719)	(2.269)
Body weight	12.146[a]	12.716[a]	14.324[a]
	(0.458)	(0.491)	(0.948)
(Body weight)^2	0.0148	-0.0164	-0.0902[b]
	(0.0143)	(0.149)	(0.0390)
R^2	0.70	0.68	0.73
Adj R^2	0.6999	0.6788	0.7277
F	2191.456	2379.993	28.999
Probability	0.0001[a]	0.0001[a]	0.0001[a]
DF	5, 4690	4, 4499	4, 936

[a]Significant at less than 1% probability.
[b]Significant at less than 5% probability.

In the 1983-85 survey in the south-west, 28.2% of animals on offer in the rural markets were of northern origin compared with 34% in the present survey. This increase has occurred along with a more than doubling of supplies. Average supplies per market day including peak periods were 35 in 1983-85 compared with 74 in the present survey. Although southern animals have maintained a stable share of sales throughout the year, numerically, northern animals have taken a large share of the normal as well as peak market periods. In fact, a majority of the animals bought for Eid-el-Kabir, Christmas and other ceremonies were of northern origin. In the south-east, a comparable survey was not available, but traders and sellers observed that availability of northern animals in those markets was a recent phenomenon. Several years ago there were hardly any northern animals in markets located in the deep south-east.

There are three main reasons for increased penetration of northern animals into the southern rural markets. First, transportation of animals from the north has become faster, easier and cheaper due to better and wider roads that allow larger lorries to carry many animals at a time. Within the south, connection of rural markets to urban centres, such as Ibadan with Apomu, has improved. Consequently, northern animals can be sold at more competitive prices at rural markets. Moreover, traders bring in northern animals in lots, in bigger lots at festival times, and sell them over a period of time by keeping them in stalls. When such a period includes short peaks such as Eid-el-Kabir, they try to maximize sales at the peak demand period to take advantage of better prices, but most sellers are unable to sell all their animals at peak times. Both supply and prices build up prior to the festival and they decline thereafter. Therefore traders try to maximize the net

present value of sales over the entire period of rising and falling prices and this strategy allows them to take advantage of all the opportunities provided by the market. On the other hand, small-scale farmers try to sell animals on the day they are brought to market rather than making several trips and incurring transportation and other cost each time. This gives them a lower bargaining power in the market. The fact that southern animals generally command higher prices in the market indicates southern consumers' preference for southern animals but there are already indications that under strong price competition from northern animals, this preference may not last.

Secondly, supply from local sources increases during the peak demand periods but is inadequate to match demand. This is because of the subsistence rather than commercial orientation of local producers as indicated by their sale of animals throughout the year mainly for various cash needs. Subsistence production usually means production for home consumption, but a level of production that is market linked but gives subsistence income due to certain characteristics of production and marketing may also be categorized as subsistence oriented production. Some of the reason for selling animals are time-specific and externally determined, such as cash needs for school fees and books, which occur mostly during January-March, and sale due to sickness/diseases that has a high probability of occurrence during mid-dry (January-February) and mid-wet (July-August) seasons; but most of the other reasons for cash needs and sales may arise at any time during the year. Since farmers' decisions to sell are determined by their cash needs and/or the condition of the animal, they are unable to take full advantage of increased demand and higher prices at short peak periods.

Thirdly, although sales by small-scale farmers are year-round, aggregate off take from the system is low and a good number of local animals go back to the villages for rearing. The market only serves as a vehicle. Sandford (1982) commented that rural markets should not only connect rural producers and urban consumers, they should also facilitate exchange between farmers, particularly of breeding stock, thus contributing to increased production. In most African countries, breeding stock from the organized sector is hard to come by. Animals also change hands for caretaking without going through the market. For example, 309 households in six villages in the supply hinterland of the sough-west markets were monitored from April 1989 to June 1991 by a different research organization. Over the entire period, 2130 exit 2228 entries of small ruminants were recorded for the households. Sales constituted only 10.1% of exits and purchases constituted 2.8% of entries. Other reasons for exits were: death, 51.5%; given out for caretaking, 13.6%; consumption, 2.8%; ceremonies, 11.3%; withdrawn by owner, 9.0%; and stolen, 1.7% (OAU, 1991). Similar exit and entry patterns were reported earlier by Mack (1983), Mathewman (1977) and Okali (1984) for the same geographical region. Therefore, little has changed in terms of mortality, sales and general off take rate.

The results indicate that higher prices at short peak periods may not contribute much too increased production and supply from the subsistence oriented production system. Under such a system, production technologies that require extra cash or even labour may not be in demand. On the other hand, technologies such as disease control measures that contribute to increasing the flock size, and give farmers better leverage to meet their subsistence cash needs as and when they arise, may make a better overall contribution to increased aggregate supply. Such year-round increases in production may

be of particular help to women farmers who have specific family responsibilities and use small ruminants to perform those responsibilities.

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