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## THE EFFECT OF THE TIME OF DAY OF SALE ON THE PRICE OF SHEEP IN THE SHOLLA MARKET\*

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**ABSTRACT:** *A sheep market survey was undertaken in nine key Ethiopian Central Highlands markets in 1989. Data relating to animal (sex, age, condition, breed, weight, colour) and market (price, purpose of buying, time of buying, buyer type, seller type) characteristics were recorded. Two rounds of sheep traders' surveys were also undertaken during the same year. The Sholla market was selected for analysis because it was possible to record time of sale more accurately than in the other markets. The results of the analysis suggest that the time of day of sale did not affect the price of sheep when the sellers were predominantly urban resident traders. It would be desirable to inquire whether this result would remain unchanged when large number of itinerant traders also attend the market.*

### 1. INTRODUCTION

The Sholla market is one of the most important sheep markets in Addis Abeba, the latter being the most important consumption center in the nation. It is a specialized terminal sheep market attended on every day of the week. Two major types of traders offer sheep for sale in the Sholla market : resident urban traders and itinerant traders. Itinerant traders are regular traders who travel long distances to collect as well as sell sheep. Itinerant traders sell their animals to resident urban traders on wholesale basis or retail to consumers directly, mainly on Mondays, Wednesdays and Fridays. Resident urban traders reside in urban centers and buy animals from the same markets they sell or from closely located markets. Such traders are most common in Addis Abeba markets and offer sheep for sale every day of the week. They provide their animals with hay and other supplementary feed. About sixty percent of the traders who responded to the traders survey in the Sholla market confirmed that they provide their animals with some sort of feed.

Given the cost of maintaining their animals and other related expenses, itinerant traders should prefer disposing of their animals as early as possible. Though resident

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urban traders would also prefer disposing of their animals as early as possible, this is not expected to go to the extent of causing significant variation in their prices during the day as they had established system of keeping and feeding their animals. Feeding may be attractive as long as it pays in terms of weight gain and improvement of condition.

Market information is essential to producers, market intermediaries, buyers, sellers, policy makers and researchers. Sheep buyers, sellers and intermediaries would particularly be interested to take most advantage from information about the level and pattern of price and factors underlying its behaviour. It has been shown that certain animal and market characteristics and season underlie price variations and intra-annual price patterns [1]. However, it is not known how the time of day of sale affects the price of sheep. This paper examines the effect of the time of day of sale on the price of sheep in the Sholla market.

## 2. DATA AND METHODS

A sheep market survey was undertaken in the Sholla market during the whole year of 1989 as part of the Ethiopian Central Highlands Sheep Market Survey. Data relating to price, weight, sex, age, breed type, condition, colour, purpose, type of buyer and seller were recorded. Recording was done once a week on a major market day, Saturday, between 8 pm and 5 am and, in all, 6453 animals were recorded. In addition, two rounds of traders surveys were undertaken in these markets during the same period. The traders survey focused on organization of traders, regularity of trade, supply areas, destination, cost of transfer, problems associated with trading of sheep.

The Sholla market was selected for analysis because it was possible to record time of sale more accurately than in the other markets surveyed. This is a specialized terminal sheep market and there are neither traders who would tend to accumulate animals nor reasons that would keep buyers in the market place after they buy one. In the other markets, which are not specialized sheep markets, buyers keep their animals in the market place until they accomplish other businesses or accumulate sufficient number of animals. Since recording was done as buyers left the market place, it would be inaccurate to regard such time as the correct time of sale. Whilst time of sale was recorded equally

accurately in the Addisu Gebeya market (Gojjam road), another important market in Addis Abeba, it was discarded due to inadequacy of observations.

In order to minimize sources of variation and ensure homogeneity of the product the most common and specific type of sheep: male, one year or less of age, average condition, fat-tailed type and brown colour was selected for analysis. A total of 264 transactions were analyzed. The data collected on 52 market days during the year was grouped on the basis of time of day of sale into six periods.

Like any other survey data, the number of observations in the various time periods is unbalanced, Table 1. The traditional analysis of variance methods, in terms of well designed experiments, are generally inapplicable to the present case. On the other hand, regression can be used with some degree of propriety by allocating codes. Accordingly the following linear equation was used to estimate the effect of the time of day of sale on sheep prices.

$$P = b_0 + b_1M_e + b_2M_m + b_3M_d + b_4A_e + b_5A_m + b_6A_l + e_i$$

where:  $P$  = (either) price per kg (or price per head) in Ethiopian Birr (EB)<sup>1</sup>

$M_e$  = Early morning (8:00 - 9:59 am)

$M_m$  = Mid-morning (10:00 - 11:59 am)

$M_d$  = Mid-day (12:00 - 1:59 pm)

$A_e$  = Early afternoon (2:00 - 2:59 pm)

$A_m$  = Mid-afternoon ( 3:00 - 3:59 pm)

$A_l$  = Late afternoon (4:00 - 4:59 pm)

$b_i$  = Structural parameters of the equation

The data was run in the Statistical Analysis System (SAS) software with the TUKEY option of the General Linear Models (GLM) procedure. The GLM procedure uses the least squares method to fit general linear models and is appropriate to perform analysis of data when cell sizes are disproportionate [2].

### 3. RESULTS AND DISCUSSION

Average prices for the different times of the day are presented in Table 1. An overall F test of significance shows that there is no significant difference between the

least squares means of the different times of the day. This suggests that the time of day of sale had no effect on both price per kg ( $p > 0.8080$ ) and price per head ( $p > 0.9484$ ), Tables 2 and 3. In these tables "late afternoon" has been included in the intercept. The (parameter) estimates represent the magnitude and sign of the differences between the intercept and the respective individual dummy class. The T statistics were presented here for the sake of completeness,

Table 1. Average Prices of Sheep for the Different Times of the Day

Time of sale	Sample size	Mean price per	
		Head	Kg
Early morning	29	55.93	2.51
Mid-morning	104	58.46	2.61
Mid-day	61	58.93	2.60
Early afternoon	19	57.58	2.61
Mid-afternoon	26	57.69	2.61
Late afternoon	25	59.48	2.73

although it was understood that it was of little value when the F tests show no overall statistical significance.

The results were not unexpected, given the dominant type of traders who offer sheep on the survey days, resident urban traders. These traders reside in towns and feed their animals until they are sold. Being in no hurry to leave the market place, the time of sale of the day is not expected to affect their selling prices. It is thought that buyers generally think that price declines as the time of the day progresses, as sellers would prefer to get rid of their animals and leave the market place. However, empirical evidences suggest that price does not change with time of the day when majority of the sellers are urban resident traders. Hence, it makes no price difference to buy a sheep at any time during a market day dominated by resident urban traders. It is not known whether buyers differentiate resident urban traders from itinerant traders.

Table 2. Estimated Parameters (main effects) of Price Per Kg Equation for Sholla Market

Parameter	Estimate	Pr >  T
Intercept	2.7322	0.0001
Time		
Early morning	- 0.2248	0.1321
Mid-morning	- 0.1208	0.3206
Mid-day	- 0.1247	0.3372
Early afternoon	- 0.1251	0.4517
Mid-afternoon	- 0.1204	0.4310

Overall mean price per kg = 2.6103

F value = 0.46

Pr > F = 0.8080

Since data was collected on market days when resident traders were dominant it is not known whether the result would remain unchanged when the proportion of itinerant traders increases.

Table 3. Estimated Parameters (main effects) of Price Per head Equation For Sholla Market

Parameter	Estimate	Pr >  T
Intercept	59.4800	0.0001
Time		
Early morning	- 3.5490	0.3707
Mid-morning	- 1.0185	0.7528
Mid-day	- 0.5456	0.8742
Early afternoon	- 1.9010	0.6672
Mid-afternoon	- 1.7877	0.6602

Overall mean price per kg = 58.25

F value = 0.23

Pr > F = 0.9484

#### 4. SUMMARY AND CONCLUSION

Sheep market and traders surveys were undertaken in nine key Central Highlands markets in 1989. Data relating to animal and market characteristics were recorded. Analysis of data pertaining to time of day of sale reveals that resident urban traders' prices were not affected by the time of day of sale. This suggests that it makes no difference to buy a sheep at any time of the day as long as the market is dominated by resident urban traders. It is desirable to inquire if the results would remain unchanged when the market is attended by large number of itinerant traders too.

#### NOTES

- <sup>1</sup> Exchanged at a fixed rate of 2.07 Birr for a US\$ during the survey period.

#### REFERENCES

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