Consumer Willingness to Pay a Premium for Halal Goat Meat: A Case from Atlanta, Georgia

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The growth in goat meat demand is attributed to the influx of immigrants from goat-meat-eating countries into the U.S. This paper examines the willingness to pay a premium for halal goat meat. The factors that significantly impact the willingness to pay a premium for halal goat meat in Atlanta include income, current consumption, household size, and marital status. Results suggest that the mean willingness to pay a premium for the halal attribute is 50 cents per pound of goat meat.

Over the past two decades the U.S. has experienced a significant increase in demand for goat meat. This has made the U.S. a net importer of competitively priced goat meat from Australia and New Zealand into major U.S cities such as Atlanta (USDA-FAS 2006). The growth in goat meat demand is attributed to the influx of immigrants from goat-meat-eating countries into the U.S. (Gipson 1999). The fact that goat meat imports from Australia have steadily increased over the years creates difficulty for domestic meat goat producers given the costs involved in producing goats in the U.S. The literature shows that Australians only incur rounding-up costs since most Australian goat meat is produced from feral goats (Gipson 1999). This has forced U.S. meat goat producers to find new or alternative markets through value-added marketing. Atlanta has become of particular interest to both Georgia meat goat producers and goat meat suppliers.

The goat meat market is highly segmented (Nelson et al. 2004; Mclean-Meyinsse 2003). One such segment is the Muslim segment, which prefers halal meat. Halal means "permissible," and it is a preferred method of animal slaughter among Muslims. Muslims are mandated by their religion to consume meat products that are halal. This study focuses on the halal niche market of actual goat meat consumers in the metro Atlanta area. We hypothesize that Muslims will pay a premium price for halal goat meat. This study determines the price premium consumers are willing to pay and the factors that influence willingness to pay for halal goat meat.

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Muslim Consumers

The halal niche market for goat meat is patronized mostly by Muslims. This market is one of the major goat niche markets in the metro Atlanta area. It is believed that the demand for halal goat meat among goat-meat-eating Muslims may be profitable for goat producers. Although there are no exact figures for the Muslim population in Atlanta, the estimated population ranges between 45,000 and 75,000 (al-Farooq Masjid of Atlanta n.d.; Prothero 2002). This study assumes the upper bound of 75,000 in recognition and consideration of the existence of an illegal Muslim population in Atlanta.

Data and Methods

The data used in this report were collected using a survey instrument. Respondents were randomly solicited after Friday prayers at different locations (mosques) for their voluntary participation in the survey. Initially, the mosque intercept method was chosen because of its relatively low cost and flexibility. After discovering that few people were willing to participate in the survey, we conducted the rest of the survey online. Emails were sent to mosques in Atlanta with web pages requesting that imams direct their congregations to the website via a link. The sole qualifier for the survey subjects was that they should be Muslims and eat goat meat. The total number of returned useable questionnaires was 89 from both the on-site survey and online survey. The survey was conducted over three months from late 2006 to early 2007 in the metropolitan Atlanta area.

A multiple bounded model was used to determine the willingness of consumers to pay a premium for

halal goat meat. The multiple bounded model was the appropriate model because it was developed to suit the payment-card format used in the survey to elicit respondents' willingness to pay (Alberini 1995; Cameron and Huppert 1989; Loureiro and Hine 2002). For example, the crucial question was "What premium, if any, would you be willing to pay per pound for halal goat meat, assuming non-halal goat meat priced at $3.00 per pound?" (Premium is defined as the price difference between halal meat and non-halal meat). The following bid intervals were presented to respondents: $0/lb, $0.01–$0.09/lb, $0.10–$0.49/lb, $0.50–$0.99/lb, $1.00–$1.49/lb, $1.50–$2.00/lb, and over $2.00 /lb. Willingness to pay by interval is shown in Table 1.

Following Cameron and Huppert (1989), we assume that the respondent's true willingness to pay falls within an interval defined by lower and upper thresholds t_{li} and t_{ui} of the payment card. The expected willingness to pay, $E(WTP_i \mid x_i)$, is therefore assumed to be some function $g(x_i, \beta)$, for which a linear in-parameters form is computationally convenient. The model is stated as

$$(1)\quad WTP_i = x_i'\beta + \varepsilon_i,$$

where x_i is a vector of explanatory variables corresponding with β coefficients. ε_i is assumed to be normally distributed with mean 0 and standard deviation σ. We can therefore standardize each pair of interval thresholds for WTP and state that

$$(2)\quad \Pr(WTP_i \subseteq (t_{li}, t_{ui})) = \Pr((\log t_{li} - x_i'\beta)/\sigma < z_i < (\log t_{ui} - x_i'\beta)/\sigma)),$$

where z_i is the standard normal random variable. The probability of expressed in Equation 2 can be rewritten as the difference between two standard normal cumulative distribution functions (CDFs):

$$(3)\quad \Pr(WTP_i \subseteq (t_{li}, t_{ui})) = \Phi(z_{ui}) - \Phi(z_{li}).$$

The log-likelihood function can thus be written as

$$(4)\quad \log L = \sum_{i=1}^{n} \log\left[\Phi\left(z_{ui}\right) - \Phi\left(z_{li}\right)\right].$$

The likelihood function was estimated using the LIMDEP software package.

Model Specification and Variable Definition

Willingness to pay a premium for halal goat meat was estimated using Equation 1:

$$(5)\quad WTP_i = \beta_0 + \beta_1 \text{Posths} + \beta_2 \text{Income1} + \beta_3 \text{Male} + \beta_4 \text{Age1} + \beta_5 \text{Yus1} + \beta_6 \text{Fresh} + \beta_7 \text{Cons} + \beta_8 \text{Hshld} + \beta_9 \text{Married} + \varepsilon_i,$$

where *Posths* is a dummy variable that equals 1 if a consumer's education level is higher than

Table 1. Distribution of WTP for Halal Goat Meat (%).

Interval	WTP for halal goat meat
WTP = 0	31.46
WTP between $0.01–$0.09/lb	12.36
WTP between $0.10–$0.49/lb	7.87
WTP between $0.50–$0.99/lb	10.11
WTP between $1.00–$1.49/lb	14.61
WTP between $1.50–$2.00/lb	6.74
WTP over $2.00/lb	16.85

high school, *Income1* represents income less than $50,000, *Male* is a dummy variable that equals 1 if the respondent is male, *Age1* is a dummy variable representing a respondent less than 35 years old, and *Yus1* is a dummy variable that captures the number of years (ten years or less) the respondent has been in the U.S. *Fresh* is a subjective importance of fresh goat meat over frozen goat meat, *Cons* represents a continuous variable that reflects the amount (pounds) of goat meat consumed per month, *Hshld* is a continuous variable representing the consumer's household size, and Married is a dummy variable that equals 1 if the respondent is married. Summary statistics of the relevant variables are shown in Table 2.

Results

The results of the multiple bounded probit model are presented in Table 3. According to the results, *INCOME1* and *HSHLD* variables are both significant at the one percent level and *CONS* and *MARRIED* variables are significant at the ten percent level. Education, gender, age, years in the U.S., and preference for freshness of goat meat are not significant.

An income below $50,000 (INCOME1*)* seems to have a negative effect on willingness to pay a premium for halal goat meat. Specifically, consumers earning less than $50,000 are willing to pay a premium of 1.06 cents less than are those earning $50,000 and over. In addition, the sign of the monthly consumption (CONS) variable is positive and significant. The positive sign means that for each one-pound increase in monthly consumption of halal goat meat, the consumer is willing to pay a premium of 0.02 cents per pound.

The variable *HSHLD* is negative, implying that respondents are willing to pay an average of 0.31 cents less as the family size increases. This makes intuitive sense and is in accordance with Goktolga and Gunduz (2006). The marital status of the consumer (MARRIED) seems to have positive effect on willingness to pay a premium for halal goat meat, but the impact (0.001 cents) is very negligible.

Mean WTP for the halal attribute was estimated using the model results reported in Table 2. According to our results, the halal attribute carries a potential premium of about 50 cents per pound of goat meat in the larger Atlanta area. This finding can be used by stakeholders in the goat industry to earn a price premium through halal slaughter.

Conclusions

This paper examines consumer willingness to pay a premium for halal goat meat. Georgia meat goat producers are looking for new ways to profitably market their goats. A sample of 89 consumers was interviewed in Metro Atlanta and analyzed using the multiple bounded probit model that is more appropriate for payment card data. The variables that significantly impact the willingness to pay a premium for halal goat meat in Atlanta include income, current consumption, household size, and marital status. Mean willingness to pay a premium for the halal attribute is 50 cents per pound of goat meat. This finding can be useful to Georgia meat goat producers who are looking for new and alternative ways to remain competitive in the goat industry. For further studies, it may be necessary to conduct a statewide survey to determine whether these findings can be generalized.

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Table 2. Socio-Demographic Characteristics of the Sample.

Variable	Description	Mean	Standard dev.
POSTHSl	Highest level of education completed: = 1 if education is higher than high school; 0 otherwise	0.934	0.249
INCOME1	Household income level: = 1 if household income is less than $50,000; 0 otherwise	0.521	0.505
YUS1	Number of years in U.S.: = 1 if respondent has been in the U.S. for 10 years or less; 0 otherwise	0.586	0.497
MALE	Gender = 1 if respondent is male; 0 otherwise	0.750	0.435
AGE1	Age of consumer: = 1 if respondent's age is less than 35 years; 0 otherwise	0.460	0.503
FRESH	Fresh meat: Likert scale from 1–5	1.839	0.860
HSHOLD	Number of people in the household	3.826	1.638
CONS	Number of pounds/month	17.283	15.279
MARRIED	Marital status = 1 if respondent is married; 0 otherwise	0.476	0.502

Table 3. Willingness to Pay a Premium for Halal Goat Meat.

Variable	Coefficient	P-values
Constant	5.245***	0.000
POSTHS	–0.0007	0.310
INCOME1	–1.058***	0.002
MALE	0.298	0.513
AGE1	0.233	0.462
YUS1	–0.141	0.662
FRESH	–0.209	0.265
CONS	0.016*	0.082
HSHLD	–0.313***	0.004
MARRIED	0.001*	0.081
Sigma	0.866***	0.000
Log Likelihood	–85.899	

* significant at 0.10 level. ** significant at the 0.05 level. *** significant at the 0.01 level.

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