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## THE WILLINGNESS OF CONSUMERS TO PAY FOR ATTRIBUTES OF LAMB

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**A contingent valuation approach has been used to estimate the willingness to pay by consumers for changes in leanness and portion size in lamb loin chops. Over 800 consumers were interviewed at four major shopping centres in Sydney. Consumers were prepared to buy loin chops with more fat cover at a discounted price but were unwilling to offer a premium for chops with a larger area of red meat.**

### *Introduction*

It has long been recognized that the price consumers pay for a product such as lamb depends on the value they place on attributes such as fat cover, meat and fat colour, portion size etc. (Waugh, 1928; Ladd and Suvannunt, 1976; Fischhoff and Furby, 1988, p. 155). There have been a number of studies of the attitudes of Australian consumers to the attributes of lamb (Thatcher and Couchman, 1983; Kingston, 1988; Hopkins and Congram, 1985; Hopkins, Congram and Shorthose, 1985). The findings of these studies seem to be at variance with the typical product of the industry. For example, Hopkins, Congram and Shorthose concluded that: 'more than 75% of consumers favoured cuts from carcasses which had a "GR" fat measurement<sup>1</sup> of between 6 and

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<sup>1</sup> GR fat measurement is the depth of soft tissue at the 12th rib, 110mm from the carcass midline.

10 mm (Fat Class 2) and weighed more than 20 kg'. However most carcasses sold on the domestic market weigh between 14 and 16 kg with a fat score of 3 to 4. Hence retailers often trim carcasses to meet their customers' requirements.

A direct comparison between the Hopkins *et. al.* and the Thatcher and Couchman studies is not possible because fat cover was measured at different sites on the carcass (110 and 45 mm from the midline) but their findings were similar. However Thatcher and Couchman noted few consumers preferred the leanest and largest chops with which they were presented and hence did not have open-ended preferences for leanness and portion size.

In parallel with this apparent anomaly between what consumers claim they require and what is actually produced, is a similar anomaly between retail and farm prices for lamb. Unpublished data from the Homebush livestock markets suggest that fat class 4 lambs receive a premium (in cents per kg carcass weight) over fat class 3 lambs which in turn receive a premium over fat class 2 lambs. A price discount for excessive fat cover only applies to fat class 5 lambs. In the Homebush wholesale (carcass) market there appears to be a premium for fat class 3 lambs over lambs that have either more or less fat cover. Evidence of price differentials for lambs of different size has not yet been documented but seems likely to be difficult to establish.

These apparent anomalies evoke a variety of explanations and prognostications about the future of the lamb industry. Some argue that the inability of the industry to deliver a product attractive to consumers who are now more generally conscious of the role of fat in their diet, is an important explanation of declining lamb consumption. Hopkins and Congram for example, suggested that 'sociological factors such as personal tastes and preferences, family size, age, habits and customs are relatively more important in the determination of meat purchases than are the purely economic factors of income and price'. Producers ask why consumer preferences for a leaner product are not being transmitted by the processing sector in the form of higher farm prices for leaner lambs.

A major weakness of attitudinal studies in which consumers are presented with choices between samples of a product that differ in an attribute of interest, such as fat cover, is that they do not measure the extent to which consumers are prepared to 'trade-off' between price and presence of the attribute. The implication is that leanness, for example, is either of infinite value or of no value, depending on which sample the consumer chooses.

A more accurate estimate of how consumers value the attributes of lamb would greatly assist all sectors of the industry to assess the benefits and costs of using alternative production and processing technologies to alter the supply of these attributes.

The objective in this study was to estimate the willingness to pay by consumers for changes in fat cover and portion size in lamb loin

chops, a retail lamb product which is widely consumed. From past studies, it was expected that consumers would be willing to pay a premium for a leaner lamb chop, or alternatively, offer a discounted price for fatter chops, if they were prepared to buy them at all. This expectation was based on a judgement that many consumers believe that fat is injurious to health. But opposing this are first, personal preferences for fat, which may be related to either culture or habit and second, the opportunity consumers have to trim fat chops in their homes. Whether consumers are likely to pay a premium for a larger lamb chop (an increase in portion size) seems more difficult to predict. While attitudinal studies suggest a preference for larger portion size, this preference may be tempered at the point of sale when consumers realise that for discrete lamb products, such as lamb chops, an increase in portion size entails an increase in the cost of a meal, if the number of chops purchased is unchanged.

### *Methodology*

In a contingent valuation approach, similar to that used by Wohlgenant and Lemieux (1991) in their study of the UK pork industry, consumers were asked their hypothetical willingness to pay for two attributes of lamb chops, leanness and portion size. Contingent valuation is accepted as a methodology for valuing goods which are not traded in a market (Cummings, Brookshire and Schulze, 1986; Mitchell and Carson, 1989). It is most widely applied to valuing unpriced natural resources. A further difficulty in valuing these resources is that they have 'non-use' value or some of the properties of public goods. Because of its hypothetical nature there is a body of research concerned with establishing the reliability and validity of contingent valuation (Bishop and Heberlein, 1978; Loomis, 1989 and 1990; Kealy, Montgomery and Dovidio, 1990). The extent to which the change in the good being valued can be defined and understood by the consumer is an important contributor to the reliability and validity of a contingent valuation study (Fischhoff and Furby, 1988, p. 179-180).

Many of these issues do not arise when valuing the attributes of lamb. Lamb is priced and traded in a market, its attributes have few non-use or public good properties and are well understood and easily recognised by consumers. Hence contingent valuation is an appropriate method for valuing leanness and portion size in lamb chops. While the methodology is appropriate, its reliability still depends on how reliable and accurate are the consumers' responses, which in turn depends on how these responses are elicited.

In this study consumers were interviewed in person rather than by telephone or mail survey. Schulze (forthcoming paper) has pointed out that high response rates make in-person interviews attractive but that a drawback is the extent to which respondents are influenced by interviewers. While acknowledging this potential source of bias, another attraction of in-person interviews is an opportunity for inter-

viewers to assist respondents in understanding exactly what they are being asked to value. In this case, respondents were shown colour photographs of lamb chops which differed by the attributes they were being asked to value.<sup>2</sup>

Another area of methodological choice was the means by which willingness to pay was elicited. The choices were between an 'open-ended' approach in which the maximum amount consumers are willing to pay is elicited through either a single bid or through an iterative bidding procedure, or a 'closed-ended' approach in which consumers are asked whether or not they would pay a specified amount, which is varied across consumers, for the product being valued. Some discussion of these alternatives can be found in Sellar, Chavas and Stoll (1986); Cameron and James (1987); and Loomis (1990). Most recent studies use the latter approach, arguing that it is similar to the situation consumers face in a market and does not burden them with having to value a product which they are often not familiar with. Iterative bidding approaches allow consumers to 'research their preferences'. In this study the open-ended single bid approach was used because it does not prolong the interview and the product was one which the respondents frequently value. Loomis (1990) and Schulze (forthcoming paper) have suggested that this approach is reliable.

In summary, consumers in a personal interview were shown colour photographs of lamb chops with different fat cover and portion size and asked their willingness to pay for these attributes using an open-ended non-iterative bidding procedure.

### *The questionnaire*

In the first part of the questionnaire, information on socio-economic variables likely to influence lamb consumption such as household size, income, participation in the workforce, education and place of birth was collected. Then respondents were asked whether or not they consumed lamb. If not, they were asked for reasons and the interview terminated. If they did consume lamb they were asked for an estimate of how much they consumed and then followed a series of questions designed to elicit how they valued leanness and portion size.

By not asking non-consumers to value the lamb chops, a degree of sample selection bias has been introduced if some of the non-consumers would purchase lamb chops if they were leaner or larger. The most common reason for not eating lamb was its smell and flavour (47%) and hence changes in fat cover and portion size are unlikely to

<sup>2</sup> An alternative approach was for the interviewers to verbally describe the changes being valued but this places a greater burden on the respondent to visualise and increases the likelihood of interviewer influence. Another alternative was to show the respondents actual chops but the logistical problems of getting a supply of chops that are always fresh and that only vary by the attributes being valued, are great.

influence consumption by these people. The next largest group of non-consumers (23%) cited health reasons and this is likely to be a concern about red meat in general. Only ten percent of respondents directly cited excessive fat as their reason for not consuming lamb and hence the extent of bias introduced by the sample selection approach used is likely to have been small. This line of reasoning was supported in an econometric test in which Heckman's (1979) two-step estimation procedure to adjust for sample selection bias was used. The adjustment factor (inverse Mills ratio) was not significant.<sup>3</sup>

The survey respondents were shown a laminated sheet of coloured photographs of lamb loin chops (see Appendix 1). Chop A was from a 17 kg carcass with a level of fat cover (estimated to be 5mm at GR site) that put it on the border of fat classes 1 and 2. Respondents were told that it was similar to chops that they normally bought and was currently selling for about \$5.50 per kg. Chop B represented a chop with the same area of red meat as Chop A (estimated to be 13 cm<sup>2</sup>) but with a level of fat cover (estimated to be 12mm at GR site) that put it on the border between fat classes 2 and 3. Chop C represented a chop with the same degree of fat cover as Chop A (estimated to be 9.5mm at the GR site and quite similar to Chop A in the area of fat cover over the loin muscle) but with a larger area of red meat (estimated to be 17 cm<sup>2</sup>). It came from a carcass weighing 23 kg and had enough extra fat cover to make it clearly a fat class 2 chop.

The questions concerning the valuations of Chops B and C were explicitly phrased in such a way that respondents understood that they were being asked to value these chops relative to Chop A whose reference value was \$5.50. In asking respondents to value Chop B, interviewers were expected to point out to respondents that Chop A and B had similar areas of red meat but that they did differ in fat cover. Respondents were then asked how much they would be prepared to pay for Chop B. If respondents said they would not buy chops such as Chop B, then the interviewer pointed out that they could trim fat off the chops at home and asked them again their willingness to pay for Chop B. This prompted response was recorded separately. To avoid the use of emotive language interviewers described the chops as having more or less fat cover rather than as being fatter or leaner.

A similar routine was adopted in valuing Chop C, although in the expectation that it would be unnecessary, there was no provision for a prompted response if respondents chose not to value the chop.

<sup>3</sup> The procedure involved first estimating a Probit model over the whole sample where the dependent variable was zero if the respondent did not consume lamb and one if he did and then testing for the significance of the inverse Mills ratio as an explanatory variable in an OLS model of WTP for Chop B by the sample of lamb consumers. The standard errors of the coefficient estimates were estimated in a manner that corrected for the heteroscedasticity introduced by the inverse Mills ratio. The correction procedure suggested by White was used.

*The sample*

Four major shopping complexes at Bondi Junction, Eastwood, Parramatta and Blacktown were selected as interview sites because their geographical spread and regional drawing power made it highly likely that the sample would be representative of the Sydney metropolitan area. Interviews were conducted on Wednesday morning (9am–1 pm), Thursday evening (5–9 pm), Friday afternoon (1–5 pm) and Saturday morning (9am–1 pm). Interviewers were first year students from the University of Western Sydney, Hawkesbury who attended a training session and who were paid for their time and expenses.

The interviews were conducted near but not inside retail meat outlets in the shopping complexes. Those people who were under the age of eighteen, who were heavily laden with shopping or children or obviously in a rush, and those who volunteered themselves for interview were not selected for interview. On completing an interview, the interviewer approached the next eligible person to walk past him and if that person refused to participate, the next person of the same sex was approached.

*Results*

The survey was conducted from November 31 until December 3, 1990 and 821 questionnaires were returned. Respondents who did not completely answer all questions were excluded. The only exception to this was for respondents who were unwilling to provide income information. There were 103 respondents in this situation and they have been assigned the average income class, \$35,000–\$49,999, of the remaining 681 respondents.<sup>4</sup> A total of 37 respondents have been excluded which is about 5 percent of the original sample. Of those excluded, 13 did not consume lamb and 11 were also unwilling to provide income data. Hence the analysis is conducted over 784 respondents of whom 128 do not consume lamb and were not asked to value the different chops.

The data on household size were transformed to a measure of the number of adult equivalents by weighting the number of children by one half. Lamb consumption data were collected as the number of meals per week or per month of a range of lamb products consumed by the household. This estimate of the frequency of consumption was transformed into an estimate of total quantity consumed

<sup>4</sup> The information which respondents did not provide and which was the basis for their exclusion, and the numbers involved were as follows:

Education	6
Sex (would you believe?)	4
Workforce participation	7
Lamb consumption	10
Willingness to pay estimates	8
Mis-coded responses	2

per month by adjusting for the amount of lamb per serving or per unit and the number of adult equivalents in the household using information from Food Technology in Australia (1987,39(5):202-207). The average monthly consumption of lamb per respondent family was 7.73 kg with a standard deviation of 6.73 kg. This is equivalent to an annual consumption per capita of 31.29 kg (std. dev. 26.8) which is larger than the forecast average consumption of lamb per head of total population in Australia of 23.1 kg in 1990 (ABARE, 1989, p. 36).

The socio-economic data collected as part of the survey show that the characteristics of the sample population were reasonably similar to population characteristics found in Census data. Hence it was concluded that the sample was representative of the Sydney metropolitan area. Also the lamb consuming and non-consuming groups within the sample have similar characteristics. Average income for both groups fell within the \$35,000-\$49,999 class and the average number of adult equivalents per household was 2.72 and 2.83 for the non-consumers and consumers respectively.

The average prices, their standard deviations and the number of respondents for questions about the willingness to pay for Chops B and C can be found in Table 1. In reading this table recall that the suggested price for Chop A was \$5.50. The sample is classified in a number of ways in the table. First, non-consumers of lamb have been excluded. Second, respondents have been classified as to whether they were immediately forthcoming with a valuation for Chop B or had to be prompted. Third, they have been classified for both Chops B and C, by whether they offered price premiums or discounts relative to Chop A.

Of the 656 respondents who consume lamb, 102 would not buy Chop B at any price which means that the distribution of the willingness to pay for Chop B is truncated (censored) at a price of zero. Some people would have to be paid to consume Chop B. By using a simple average of the responses, even if zero price responses are included, the willingness to pay for Chop B is being overestimated. The econometric analysis required for an unbiased estimate of willingness to pay is discussed below.

Of the 554 respondents who were prepared to pay some positive price for Chop B, only 75, 14%, had to be prompted to express their willingness to pay. Prompted responses were found to be not significantly different from non-prompted responses using a two stage procedure suggested by Heckman (1978).<sup>5</sup> Hence these two responses have been combined. Seven consumers would have actually paid a

<sup>5</sup> For the sample of lamb consumers a Probit model was estimated in which the dependent variable was whether or not the respondent was prompted for a WTP for Chop B and the explanatory variables were those used in the WTP models. The series of projected probabilities of whether or not the respondent was prompted was then used as an instrumental variable in the Tobit model of WTP for Chop B and the significance of its coefficient assessed.



premium for Chop B over Chop A. The average willingness to pay for Chop B by all 656 consumers was \$3.34.

TABLE 1  
*Willingness to Pay Estimates from  
Survey Respondents*

	Number	Average \$	Std. Dev. \$
<i>CHOP B</i>			
Non-prompted response	479	4.11	0.87
Prompted response	75	2.99	1.02
Combined response	554	3.96	0.97
Zero price response	102		
Premium over Chop A	7	6.35	0.47
Discount below Chop A	649	3.31	1.67
Average (including zero price)	656	3.34	1.69
<i>CHOP C</i>			
Premium over Chop A	531	5.86	0.45
Discount below Chop A	125	4.33	0.81
Average response	656	5.57	0.80

With respect to Chop C, 531 consumers were prepared to pay at least as much as the base price, \$5.50, for this chop (their average price was \$5.86), but 125 would only take this chop at a discount from the price of Chop A (their average price was \$4.33). Hence the overall willingness to pay for Chop C was \$5.58, which is unlikely to be significantly different from \$5.50. This raises the question as to whether there are groups of consumers who value portion size differently. The larger group may offer some premium for portion size. The second group discounts the larger chop, perhaps because of concern about the cost of a meal. Another explanation for the discount may be that respondents ignored the advice of the interviewer to disregard the small but discernible difference in fat cover between the two chops. Note that the distribution of willingness to pay for Chop C is not truncated.

### *Econometric Analysis*

The main objective was to estimate the discount and premium that consumers claim to be prepared to pay for Chops B and C relative to Chop A. Because many consumers were unwilling to purchase Chop B at any price, the distribution of prices for this chop is truncated at zero. When the dependent variable is truncated, parameter estimates from ordinary least squares regression are biased and inconsistent. An

unbiased estimate of the expected discount was provided by the Tobit estimator. The model for the price premium for Chop C was estimated using OLS.

Another objective was to explain the price differentials in terms of socio-economic information collected during the survey. An explanation for the observed price differentials was sought in differences in household income, nationality or birthplace, education, age, place of residence, sex of respondent, household size and household consumption of lamb. With the exception of lamb consumption and household size, all these variables were measured categorically and were represented by dummy variables associated with the intercept term.

Economic theory does not provide a clear indication about the way in which these variables will influence price differentials for leaner and larger chops. Forming expectations about the signs associated with these variables is also made difficult by the close association between variables such as income, education, and place of residence. Despite these misgivings, the discount for the fatter chop was expected to be larger for women, the elderly, the better educated, and those with higher incomes. It was even less clear which sections of the population were likely to pay a premium for larger chops. Perhaps those with higher incomes might offer a premium but the elderly might not. Certainly there can be no presumption that a classification of the sample that explains the discount associated with the fatter chop will be equally successful in explaining the premium associated with the larger chop.

All the categories (dummy variables) available from the survey for each variable are defined in Table 2. The dependent variables were the willingness to pay for Chop B and for Chop C. Many of the dummy variables in the full models were not statistically significant either because the classification used does not help in explaining the price offered or because of collinearity problems within and between classifications.<sup>6</sup> Dummy variables for a particular variable such as education, which appeared from their standard deviations to be similar in magnitude, were combined. A likelihood ratio test was used to determine whether these restrictions significantly reduced the models' explanatory powers.<sup>7</sup>

<sup>6</sup> To reduce problems of multicollinearity, the income, age, and education variables were converted to continuous variables by assigning each category its mid-point value. This approach did not yield any improvement in the explanatory power of the models and was abandoned.

<sup>7</sup> The likelihood ratio test statistic is the negative of twice the difference between the log likelihood value for the restricted model and that for the unrestricted model and follows a  $\chi^2$  distribution with degrees of freedom equal to the number of restrictions imposed.

**TABLE 2**  
*Definition of Variables Used in Econometric Analysis*

Variable	Range	Name <sup>a</sup>
Income:	\$	
	0 – 14,999	Y1
	15,000 – 24,999	Y1
	25,000 – 34,999	Y2
	35,000 – 49,999	Y2
	50,000 – 64,999	Y2
	> 65,000	Y2
Place of birth:	Australia	BP1
	Asia	BP1
	Middle East	BP1
	Southern Europe	BP1
	Eastern Europe	BP1
	Northern Europe	BP1
	Africa	BP1
	North America	BP1
	South America	BP1
	UK/Ireland	BP2
Education:	Tertiary	ED1
	Technical	ED1
	Higher School Certificate	ED1
	School Certificate	ED1
	Some high school	ED2
	Primary only	ED2
Age:	18–24	AGE1
	25–34	AGE1
	35–44	AGE1
	45–54	AGE1
	> 54	AGE2
Location:	Blacktown	L1
	Parramatta	L1
	Eastwood	L2
	Bondi	L2
Sex:	female	SEX1
	male	SEX2

<sup>a</sup> The full range of categorical variables available is presented here but the names are for the restricted models in which categories have been combined.

The restricted models are presented in Table 3. The restrictions imposed mean that the constant term in each model can be interpreted as the price offered by a woman less than 54 years old, living in Blacktown or Parramatta, with education qualifications at least as high as the School Certificate, born anywhere but the United Kingdom or Ireland and whose household income is less than \$25,000. In each model there are intercept dummy variables for households earning more than \$25,000, Y2, for those born in the United Kingdom or Ireland, BP2, for those who went to primary school and only some secondary school, ED2, for those older than 54, AGE2, for those who live in Eastwood or Bondi, L2, and for men, SEX2. The lamb consumption and household size variables were also omitted because they were contributing little to the explanatory power of the model. The discount for Chop B offered by the categories represented by the constant term, \$1.20, is calculated by subtracting the constant term, \$4.30, from \$5.50. The discount offered by other categories is calculated by reversing the sign on the dummy variable coefficient and adding this to \$1.20. The premium for Chop C is found by subtracting \$5.50 from the constant term and adding the coefficients associated with the dummy variables.

TABLE 3  
*Restricted Models of Price Differentials*

Parameter	CHOP B		CHOP C	
	TOBIT Estimator <sup>a</sup>		OLS Estimator	
	Estimate	t-statistic	Estimate	t-statistic
CONSTANT	4.30 (0.44)	14.40	5.32	42.9
Y2	-0.37 (-0.04)	-1.79	0.14	1.60
BP2	-0.48 (-0.05)	-2.66	-0.02	-0.25
ED1	-0.33 (-0.03)	-1.52	0.09	1.01
AGE2	-1.00 (-0.10)	-4.89	-0.07	-0.79
L1	-0.63 (-0.06)	-4.10	0.10	1.51
SEX2	0.33 (0.03)	2.15	0.07	1.09
LOG L'HOOD	-1272.37		-782.00	

<sup>a</sup> The marginal effects of a change in explanatory variables are in parentheses.

Looking first at the models explaining the price for the fatter chop, the log likelihood test statistic was 19.34 which is less than the critical value of 35.17 at the five percent level for 23 degrees of freedom. Hence the null hypothesis that the coefficients for the restricted dummy variables and for lamb consumption and household size are zero, was not rejected. The estimated expected willingness to pay for Chop B from the estimated uncensored distribution was \$3.21 which is less than the simple average over all respondents (including those who offered a zero price) of \$3.34. This result was expected because the method of simple averaging assigns a zero price to those who refuse to buy Chop B, whereas the Tobit estimator corrects for this incidental truncation bias by recognising that these people may have to be paid to consume Chop B, that is, their offer price is negative. The unbiased estimate of the uncensored mean was obtained by multiplying the estimated regression coefficients by the values of the explanatory variables and summing (Greene 1990, p. 727).

These results support the view that consumers do significantly discount Chop B which is one fat class higher than Chop A. Recall that Chop A is representative of chops generally available to consumers at retail. As expected women with higher household incomes and higher education discounted an increase in fat more than the others. The only group identified by nationality that valued fat cover differently from other groups was that from the United Kingdom and Ireland. Willingness to pay also depended on whether the respondent lived in the western or eastern part of Sydney. This location variable might reflect the influence of some unidentified factor other than the categories already included. Part of the discount can be attributed to the value placed by consumers on not having to trim fat from the chops but this factor is unlikely to explain the total discount (unless the opportunity cost of time spent in meal preparation is high). Perhaps consumers also value naturally lean, untrimmed chops.

There was little evidence that consumers were willing to pay a premium for chops of larger portion size, such as Chop C. In neither the restricted nor unrestricted models was the constant term significantly different from \$5.50. The only variable in the unrestricted model offering any explanation of the behaviour of the price premium was location. The log likelihood test statistic was 14, well below the critical value of 35.17. While the descriptive statistics for the sample indicated that it would be difficult to establish a premium for larger portion size over the whole sample, there seemed to be a group of consumers that was willing to pay a premium and another group who discounted the larger chop. These groups could not be identified from the socio-economic information collected in this survey.

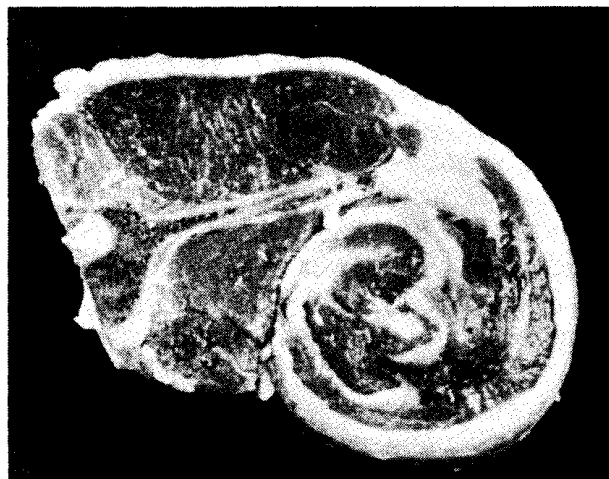
### *Concluding Comments*

A contingent valuation approach has been used to value changes in two important attributes of lamb loin chops — fat cover and area of red meat. Attitudinal studies had suggested that consumers preferred leaner, larger chops to those generally available at retail (although there were limits to the range over which this preference held). The objective of the research reported here has been to measure the strength of these preferences in terms of the willingness to pay for changes in these attributes on the part of consumers. Over 800 consumers were surveyed at four large shopping centres in Sydney. Colour photographs of lamb chops differing in fat cover and area of red meat were used to focus the attention of consumers on the changes in these attributes that they were being asked to value. In general consumers appeared willing and able to value the chops in a manner consistent with the objectives of the study.

There were 655 respondents who consumed lamb and provided an estimate of their willingness to pay for the chops they were asked to value. Because 101 respondents were unwilling to purchase the chop with more fat cover, the distribution of responses was truncated and a Tobit estimator was used to derive a consistent estimate of the expected price for this chop. When lamb chops from a 17 kg carcass, fat class 2, are selling for \$5.50 per kg, the expected discount for a fat class 3 chop with the same area of red meat is \$2.29 per kg, a factor of about one half. The extent of the discount was sensitive to only a few of the socio-economic variables examined. If respondents were over 55, were from the UK or Ireland, were from the Western suburbs or were men, then their willingness to pay differed from the rest of the sample.

It was not possible to identify a significant price premium for chops with an area of red meat larger than presently provided by lamb carcasses of 17 kg. There was a large group of consumers who did offer a premium but there was a smaller group who discounted the larger chop. These groups could not be identified by the socio-economic variables collected during this survey.

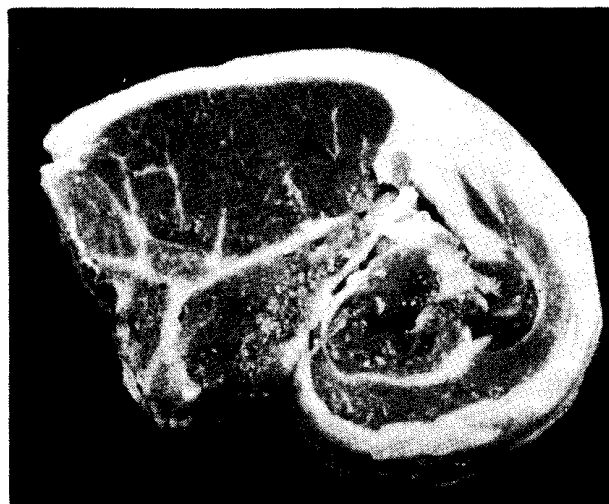
This study has focussed on consumers. The implications these findings have for farm lamb prices cannot be derived by simply subtracting some constant cost of processing. Processors may value these two attributes of lamb differently to consumers. Lean lambs may incur higher costs of quality deterioration, offsetting the premium offered by consumers. Larger lambs have lower processing costs per kilogram because slaughtering charges are on a per head basis and hence may attract a premium price at the farm, even though consumers appear reluctant to offer a significant premium. A further avenue for research would be to develop a model of the lamb industry which allows the impacts on the farm of shifts in consumer or processor demand to be assessed.



*CHOP A*



*CHOP B*



*CHOP C*

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