

An Investigation into the Willingness-to-Pay
for Branded Fresh Beef Products in Canada.

by

Evelyn J. Froehlich

A thesis submitted to the Faculty of Graduate Studies
The University of Manitoba
in partial fulfilment of the requirements of the degree of

MASTER OF SCIENCE

Department of Agribusiness and Agricultural Economics
University of Manitoba
Winnipeg

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Abstract

There is currently very little fresh brand name beef sold in grocery stores across Canada. This is in contrast to the United States, where brand name beef is available in nearly every grocery store. The two countries' branded fresh beef selections for consumers have evolved differently for one or more reasons; one potential reason maybe because Canadian consumers are not willing-to-pay a premium for value added beef with a brand name. To date, it has never been formally determined whether Canadian consumers are willing-to-pay for brand name beef. A branded beef product would offer consumers a guaranteed consistent product and other important attributes of a typical brand.

The objective of this thesis is to determine if Canadian consumers are willing-to-pay for brand name beef products. To address this objective, Becker-DeGroot-Marschack experimental auctions were conducted in Canadian grocery stores. In addition an open-ended survey involving a cheap talk script was mailed to further measure willingness-to-pay across Canada.

Several hypothetical brands were created to represent the various types of fresh beef brands currently available in the United States. Data collected from the experimental auction and cheap talk survey were analyzed using limited dependent variable models such as the tobit and double-hurdle models. These models were used to determine whether Canadian consumers were willing-to-pay for brand name beef and to determine which types of consumers were willing-to-pay for the various types of brands.

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Chapter 1: Introduction

Brand names have been appearing on fresh beef products in the United States for nearly thirty years.¹ Despite this, there have been virtually no branded beef products in Canada until relatively recently. Additionally, branded beef selection in Canadian grocery stores is still very limited today.

Brand name products can be very important to consumers. They offer consumers utility for a multitude of reasons. To name a few, brand names offer consumers a reliable, consistent product, they ensure someone is accountable for the product, and they reduce the risks consumers face when purchasing a good or service. Brand names can be used by supply chain members as a means to increase the demand for a product without reducing the product's price. In fact, if demand shifts outwards for a product, the price received by supply chain members theoretically increases as well. Since there are virtually no fresh branded beef products currently available in Canada and there are potentially Canadian consumers interested in this type of product, there may be room for beef supply chain members to fill this market and increase their profits.

However, in order to determine whether branded beef products would be successful in Canada it is necessary to determine Canadian consumers' willingness-to-pay for them. Therefore, the purpose of this study was to assess the willingness-to-pay for branded beef products in Canada. To determine if Canadian consumers were willing-to-pay for branded beef, an experimental auction and an open-ended mail survey with cheap talk were conducted in the last six months of 2006.

¹ For example, the Certified Angus Beef brand was developed in 1978 (Certified Angus Beef).

An experimental auction determines a consumer's willingness to pay for a novel good by having participants bid for the product using real money at the time of the auction as opposed to a hypothetical situation that is simply presented in a survey (Lusk et al., 2001). Experimental auctions have become increasingly popular with agricultural economists because they represent the consumer's true valuation of a good or service.

Cheap talk is a treatment that can be added to virtually any hypothetical valuation methodology in an effort to try to reduce hypothetical bias associated with these methods. Cheap talk informs participants that people tend to overstate their willingness-to-pay in hypothetical valuations and asks them to avoid doing so in their own valuations.

It is important to determine whether there is a willingness-to-pay for these products as compared to generic beef products. This is so because branded beef products would cost producers, packers and retailers more to produce due to the monitoring costs, feed costs, marketing costs and other costs associated with branded food products. Increased feed costs may arise if natural/organic diets are required for the branded beef or additional supplements are required in the cattle's diet, such as vitamin E, to improve tenderness. Therefore, it is crucial that consumers are willing-to-pay the extra premiums that branded products generally entail.

Research conducted in the United States by Felkamp, Schroeder and Lusk (2005) and Lusk and Schroeder (2004) found that American consumers are willing-to-pay more for branded beef products.² This is supported by the availability of branded beef products in American grocery stores and the success of American firms that own the beef brands.³ From all of this it is clear that brand marketing beef has been successful in the United

² Certified Angus Beef brand in particular.

States. An obvious question is then whether brand marketing would be successful in Canada as well. The research in this study is novel, as there have been no studies conducted determining if Canadian consumers are willing-to-pay for branded beef and whether brand marketing beef would be successful in Canada.

This study also adds to the economic, agricultural and marketing research literature because of the use of an open-ended cheap talk mail survey. With the exception of one mail survey with cheap talk conducted by Lusk (2003b), there has been virtually no use of the cheap talk script in a mail survey. Moreover, Lusk (2003b) did not use any non-hypothetical data to which to compare his cheap talk results. This omission prevented Lusk from definitively concluding whether the cheap talk script was effective.

Such knowledge would also aid in improving the alignment of the Canadian beef supply chain. An aligned supply chain would reduce inefficiencies and increase the profitability of supply chain members such as beef producers. The idea is that when a brand is developed, supply chain members must work together for the brand to be successful. In other words, brands essentially give supply chain members the incentive to improve supply chain coordination.

Chapter two discusses branding and why it is important. It continues with a background on the current extent of fresh brand name beef products available in Canadian grocery stores. It was found that there was a very limited selection of fresh branded beef products in Canadian grocery stores when compared with the selection available in the United States (Please see appendix E). Several grocery chains have begun to offer their own branded beef products but there is still considerable room for growth of

³ Examples of these successful brands include Certified Angus Beef, Sterling Silver, Coleman Purely Natural Beef, etc.

new brand name beef products in Canadian supermarkets. Chapter two concludes with reasons for branding discrepancies between Canada and the United States.

An extensive literature review is contained in chapter three on experimental auctions, contingent valuation and cheap talk to give a better understanding of the procedures used in this thesis. Important topics in this chapter include the various types of auction and contingent valuation mechanisms, as well as results from previous experimental auction, contingent valuation and cheap talk studies.

The fourth chapter focuses on theory and describes auction theory, explanatory variable theory and brand name theory. Auction theory centers on the importance of incentive compatibility, while explanatory variable theory shows which consumer variables are important in determining willingness-to-pay for brand name beef products. Brand name theory discusses why brands are important for everyone in the supply chain from the producer through to the consumer.

The fifth chapter describes the brand names that were created for this study and the methods by which data was collected for the experimental auction and open-ended mail survey. It also describes the various costs incurred in the experimental auction and survey treatments as well as the quality of data from each treatment.

Several limited dependent variable models are also described in the fifth chapter and utilized to analyze the data obtained from the experimental auction and survey treatments. The tobit and double hurdle models that were employed to determine willingness-to-pay for brand name beef products are described in detail.

Complete results are presented in chapter six and show that many Canadian consumers are interested in several types of fresh brand name beef products. This chapter

focuses on determining which of the brand name steaks had the highest willingness-to-pay values and which types of consumers were most likely to purchase them. This chapter also draws attention to the similarities and differences in the results between the experimental auction, the open-ended cheap talk survey and the open-ended conventional survey.

The seventh and final chapter is a conclusion chapter that highlights key findings, discusses the results and their implications as well as the limitations of this thesis and areas for future research. It appears from the work at hand that Canadian consumers are interested in fresh brand name beef products and are willing-to-pay non-trivial premiums for them.

Chapter 2: Background

2.1 Introduction

This chapter introduces brands and brand name products and profiles the current extent of branded beef in Canada. The chapter continues with a brief summary of compiled propositions that try to explain why branded beef is less prevalent in Canada than in the United States. These propositions include a discussion on packer and retailer concentration, the Canadian cattle supply, the last generation of packers, trust between the supply chain members, transaction costs and uncertainty, and relevant supply side variables for brand name beef offerings. The chapter finishes by highlighting the fact that the demand side of branded beef in Canada is the most important and least understood consideration faced by the Canadian beef industry. Before beef brand names are developed, there is a need to determine whether Canadian consumers are willing-to-pay for branded beef. The goal of this chapter is to provide the reader a background of branded beef products available in Canada to date, so that the remainder of the thesis remains in context.

2.2 Brands

On the surface, a brand is merely a name, logo, slogan and design associated with a good or a service. However, brands have come to mean so much more to both consumers and producers in our society today. Brands mix a consumer's rational evaluation of the performance of a product with their emotional perception of the brand. They are a signal of product quality to consumers and allow them to mitigate the risks

associated with making purchases. Brands reduce transaction costs and uncertainties that consumers encounter when they are buying a good or service.

Brands are also important to producers and manufacturers of a product. They allow producers to differentiate themselves from the competition, provide an incentive for innovation and are a source of financial return for shareholders (Keller, 2003). Since it is thought that brand names are so important, the researchers turned their focus to the Canadian beef industry to see what kind of fresh beef brands are currently available in Canadian grocery stores.

2.3 Branded Beef in Canada

A review of publications and resources was conducted as well as in depth interviews with representatives of each of the major grocery chains in Canada in the summer of 2005. Every supermarket chain was studied in detail to determine what fresh beef brands were carried in each store. It was also discovered who the grocery stores' major beef suppliers were, the methods by which the beef arrives in store (boxed beef, case-ready, etc.) and the transportation and distribution practices that the supermarket chain uses.

It was found that only a few grocery chains in Canada currently carry any brand name beef products. Thrifty Foods, A&P Canada, Sobeys and Loblaw Companies are currently the only chains that have a few stores that carry brand name beef. These grocery stores that currently carry branded beef products have only recently been introduced. However, many grocery chains in Canada carry different variations of private label beef products. Higher populated areas in Canada have more fresh beef brands to choose from.

A general description of the beef distribution channel from packer to grocery retailer is as follows. Beef is usually shipped from one of the major Canadian packers in the form of boxed beef or case-ready beef to another intermediary such as a case ready plant for further processing or to a wholesale outlet or central distribution centre for a short period of time. Finally, the beef is shipped on a refrigerated truck to each retail outlet.

One difference found between the emergence of beef brands in Canada and the United States is that in the U.S., some of the first beef brands were introduced by producer groups. This was not found to be the case in Canada. In Canada, it was the packers and retailers that have begun to introduce branded beef, not the producers.

For full details and findings on the review of publications and resources of each of the major grocery chains in Canada, please see appendix F.

2.4 Branding Discrepancies between Canada and the United States

After concluding that the availability of fresh brand name beef products is limited in Canada compared to the United States, it is logical to try to deduce reasons for this. On the surface, the United States and Canada appear similar in terms of the beef supply chain. Many of the major packers and supermarkets operate in both countries, and so a discrepancy in brand name offerings might not be expected. This section is a brief summary of propositions compiled that try to explain why brand name beef is more prevalent in the United States than in Canada. Specifically, the following section will discuss the possible impacts of packer and retailer concentration, the Canadian cattle

supply, the last generation of packers, trust between supply chain members, transaction costs and uncertainty, and supply side variables on brand name beef offerings.

2.4.1 Packer and Retailer Concentration

Packer and supermarket concentration may play a role in brand name offerings. Both packer and supermarket concentration in Canada is higher than in the United States. In the United States, the concentration ratio for the top four packers is 83.5% while in Canada, 89% of the market share is held by the top four packers (Hendrickson and Heffernan, 2007; Agriculture and Agri-Food Canada, 2006). Although the difference is seemingly minor, the concentration ratio for Canada may be slightly misleading. For example, the top four plants in British Columbia, Saskatchewan/Manitoba, Ontario and Quebec hold 99%, 100%, 95% and 95% of the market share respectively (Agriculture and Agri-Food Canada, 2006). Thus, the effective concentration ratios are much higher than the national ratio suggests. Another difference not directly obvious from the concentration ratios is the fact that the remaining U.S. packer market share (14.5%) not held by the four largest firms is made up of many small and medium sized packers. In Canada, there are not very many of these small and medium packers that make up the market share not held by the top four packers.

Grocery store concentration is also notably different in Canada than the United States. However, both countries are headed to higher concentration relatively quickly. In the United States, the top *five* food retailers hold 48% of the market share and in Canada, the top *four* firms hold 78% of the food retailing market share (Hendrickson and Heffernan, 2007; National Farmers Union, 2005).

If there are higher market share concentration levels, packers and retailers do not need to differentiate themselves considerably from the competition in order to gain the consumer's business. In other words, they do not need to create brands because, as a group, they provide all the options consumers have and do not have to compete with many other firms for the consumer's business, the consumer will simply purchase what these firms produce. Therefore, it is hypothesized that since there are higher market share concentration levels in Canada, Canadian packers and grocery retailers feel as though they do not need to differentiate themselves as much. Lusk and Cevallos (2004) also suggest that the selection of beef options depends on the competitiveness of the retail market, the market power exerted by retailers, processors and producers, and the cost of vertical integration.

2.4.2 Canadian Cattle Supply

Canadian producers, packers and retailers may have difficulty consistently producing enough cattle that meet the grade standard required for a brand name product because there are not enough cattle produced in Canada at the top grade level. For example, Certified Angus Beef only accepts the top 35% of Angus cattle and Sterling Silver only accepts the top 12% of grain fed cattle. The percentage of top grade cattle in Canada is not significantly different than that in United States; however, the number of cattle produced is much smaller. In addition, generally only 25% of the carcass can be used for branded products (Robb and Rosa, 2004). This is a relatively small pool of beef from which producers may draw. It becomes very difficult to organize a small supply of premium cattle for brand name products (MacLachlan, 2001). A small pool of beef to

draw from leads to problems with consistent supply and availability of the branded product. If the consumers cannot consistently find the product, brand equity and success can dissolve quickly and the brand is in danger of failing.

2.4.3 The Last Generation of Packers

None of the current packers existed when pattern bargaining and replacement workers ruled the world of packers; however, they may have learned some lessons from those who were. When these new large packers (Tyson and Cargill) entered the Canadian meat market instead of integrating forward and branding their products they integrated backwards into feedlots to guarantee a supply of cattle to slaughter (MacLachlan, 2001). Cargill has since developed the Sterling Silver brand. The previous generation of packers (Canada Packers, Burns, and Schneiders), were involved in branding their products at a fairly sophisticated level. However, they had a lot of trouble succeeding with their brand name products because if workers went on strike- pattern bargaining and replacement workers were still alive and well- they quickly lost much of the valuable brand equity they had spent considerable time earning (MacLachlan, 2001). Commodity packers who did not brand their products quickly regained the market share that the packers using brand names had lost. Thus, it did not make economic sense for packers to brand their products when the power of unions was so strong. Although unions are no longer a serious threat to brand names and brand equity, perhaps the new packers learned some valuable lessons from their predecessors: brand equity can be very expensive and time consuming to build and yet may be lost very quickly. Although this may not be the sole

reason that there are fewer branded beef products in Canada than the U.S., it may have played a role in the slow evolution of fresh branded beef products in Canada.

2.4.4 Trust between Supply Chain Members

Historically, it was believed that there was more trust between producers and packers in Canada than in the United States (Schroeder, 2003). This relatively greater level of trust between Canadian producers and packers may have meant that there was less of a need for supply chain members to form alliances and integrate vertically and thus, fewer brand name products. However, Schroeder (2003) observes that the trust level seemed to disintegrate with Canada's first case of BSE and the closure of the border to beef exports. With the closure of the border to beef exports, farm prices dropped to rock bottom levels while there were not equivalent drops in prices at the packer and retail level (i.e. wholesale prices did not decline as well). Some say this led to similar trust issues as those witnessed in the United States between packers and producers.

With lower trust levels between supply chain members, the incentive to form alliances and vertically integrate becomes much stronger. Before the first BSE case hit Canada, trust levels were higher, whereas, now supply chain members desire alliances with signed agreements in order to feel the same level of comfort with the other supply chain members (Schroeder, 2003). With formal alliances in place, it becomes easier to develop and sell brand name beef products. Thus, since beef alliances in the United States have existed for a while, they have had time to develop brand name products. It is expected that an increasing number of alliances will be formed in the next decade with branded beef products as an incentive to form these new alliances more quickly. Branded

products encourage alliances because a higher level of trust is required among supply chain members for the brand to be successful.

2.4.5 Transaction Costs and Uncertainty

The frequency of the formation of new supply chain alliances may be affected by certain types of transaction costs and production uncertainties. In turn, this may affect the prevalence of brand name offerings in Canada. Transaction costs include information costs, negotiation costs, monitoring costs and enforcement costs. Generally, the higher the transaction costs, the greater the incentives to form an alliance, since an alliance reduces the costs of carrying out a transaction.

Uncertainty also affects the formation of alliances and vertical integration. Again, the more uncertain the relationships between supply chain members, the more incentive there is to form alliances and integrate vertically. Brocklebank and Hobbs (2004) provide a thorough discussion of the effects of transaction costs and uncertainty on alliance formation.

2.4.6 Supply Side Variables

Future research may want to investigate how some of the supply side variables affect brand and price selection at the retail level. Some of these variables are: labour costs, unionization rates, energy prices, rents, store sizes, and long term contracts between supply chain members (e.g. packers and retailers). A key question would be to determine if these supply side variables differ between Canada and the United States.

In summary, the limited number of brand name beef products in Canada may be due to one or more of the issues discussed above. Pinpointing the reason for the lack of fresh branded beef offerings would aid supply chain members in determining whether offering brand name products would be profitable at the premiums discussed in later sections of this thesis. On the other hand, regardless of the reasons for the lack of brand name beef in Canadian supermarkets as compared to the U.S., it appears that the industry is moving towards brand name beef no matter how slowly. Brand name beef is available in many restaurants across Canada and it is starting to appear in a few of grocery store chains and regions.

2.4.7 Demand Side

To date, very little is known about the demand side of brand name beef from a Canadian consumer's perspective. Therefore, it must be determined whether there is a willingness-to-pay for branded beef products as compared to generic beef. Thus far, this is the most important, and least understood, consideration in fresh beef branding in Canada. A brand name could offer the consumer any promise in the world but if they are unwilling-to-pay for it, the branding endeavour would be unsuccessful. Several different methods could be used to determine willingness-to-pay for branded beef such as experimental auctions, contingent valuation and cheap talk. This leads to the literature review chapter that describes each of these methods, and highlights relevant findings from previous studies.

Chapter 3: Literature Review

3.1 Introduction

Chapter three presents a review of the literature that complements determining Canadian consumers' willingness-to-pay for brand name beef. There are numerous methods that would be able to address this issue in some type of manner. A few of the most popular methods often employed by agricultural economists were considered in this literature review namely: experimental auctions, contingent valuation and cheap talk. An experimental auction directly elicits a consumer's willingness-to-pay for a product by having consumers bid for several goods with different attributes using real money (Lusk et al., 2001). Contingent valuation examines the choices consumers make when they are presented with a product or service that has varied attributes (Adamowicz et al., 1998; Lusk and Hudson, 2004). Cheap talk may be added to virtually any hypothetical valuation method to try to reduce hypothetical bias associated with these methods. Cheap talk informs participants that people tend to overstate their willingness-to-pay in hypothetical valuations and requests that they avoid doing so in their own valuations.

Therefore, this literature review discusses experimental auctions, contingent valuation and cheap talk in detail. Upon completion of the literature review, the reader should fully understand why each method was chosen. From the outset, it should be noted that a Becker-DeGroot-Marshack (BDM) auction and open-ended surveys, with and without cheap talk, were chosen to elicit Canadian consumers' willingness-to-pay for brand name beef.

3.2 Experimental Auctions

3.2.1 Introduction

Agriculture economists began using experimental auctions to elicit willingness-to-pay relatively recently when contemporary auction mechanisms began to appear. The following section will introduce experimental actions, explain why they are used, and discuss the various formats of experimental auctions that have been developed. Finally, the advantages and disadvantages of experimental auctions are outlined.

3.2.2 Definition of an Experimental Auctions

An experimental auction is a tool that can be used to elicit a participant's private willingness-to-pay values in a truthful manner. Willingness-to-pay is determined by having participants bid for a product or certain attributes, using real money at the time of the auction, as opposed to a hypothetical situation that is simply presented in a survey (Lusk et al., 2001). Experimental auctions have come into favour with agricultural economists because they provide incentives for participants to accurately reveal their true willingness-to-pay (Lusk et al., 2001; Umberger and Feuz, 2004). There are numerous different experimental auction designs available to researchers and in choosing a design it must be ensured that the design is incentive compatible with the particular research question at hand. To be incentive compatible, the mechanism must truthfully reveal the participant's willingness-to-pay. For an auction to be incentive compatible, the participant must have an incentive not to over or understate their bid. If a participant understates their bid, they risk not purchasing a product that is valuable to them. If a

participant overstates their bid, they may be forced to purchase a product for more than it is worth to them (Feldkamp et al., 2005; Umberger and Feuz, 2004). Therefore, the only rational response is for the participant to state their true willingness-to-pay; this is often referred to as the participants' dominant strategy. Often, it can be useful to identify this dominant strategy to participants in order to reduce the time taken to conduct the auction.

3.2.3 Auction mechanisms

Several forms of auction mechanisms have been developed to elicit a consumer's willingness-to-pay. The most popular and widely used mechanisms will be presented, including the the English auction, the Vickrey second price auction, the 5th price auction, Becker-DeGroot-Marschack (BDM) method, and the random n th price auction. Although all of the formats of auction mechanisms attempt to be incentive compatible, the elicited values can vary slightly between mechanisms. The following section describes each of the auction mechanisms briefly. The BDM auction is described in greater detail because it was selected as the auction mechanism for the experimental auction.

3.2.3.1 English auction

The English auction is the most traditional form of auction, however, it is not a widely used approach by agricultural economists for determining the willingness-to-pay for novel products or services.

The English auction begins when the researcher opens the bidding at a low price, and participants bid on the product by stating a higher price or by signaling they are

willing to stay in the auction at a certain price. The auction ends when there is only one participant willing to pay the highest stated bid. The winner must then pay this bid for the product. As in the second price auction, the 5th price auction and the random n th price auction, the English auction allows for market feedback that participants may take into consideration and gives them an opportunity to learn about other participants' bids.

3.2.3.2 Vickrey second price auction

The use of this mechanism introduced by Vickrey (1961) has been cited in numerous articles including Hobbs (2004), Neill et al. (1994) and Melton et al. (1996). It must be conducted using a group where each participant in the experiment submits a sealed bid for the good simultaneously. The second highest bid is posted or announced to the entire group. There is only one winner and it is the highest bidder. The highest bidder however must only pay the second highest price for the good he or she has won (the second highest price represents the market price).

When conducting most types of experimental auctions, one may want to carry out multiple rounds of bidding. Doing so allows for participants to receive market feedback, stabilizes the price over the rounds, and allows for the participants to learn the auction mechanism (Lusk et al., 2001). Usually one of the rounds of multiple bidding is randomly chosen to be binding, that is, participants will only have the opportunity to purchase at most one good and only one good is auctioned off per experiment. This approach aids in eliminating wealth effects and diminishing marginal returns that occur when participants have the potential to 'win' more than one good through multiple bidding rounds (Lusk, Feldkamp and Schroeder, 2004). Wealth effects occur when a participant purchases a

good in one round of an auction and then their demand for a similar good in a subsequent round falls due to a movement along the demand curve. Diminishing marginal returns occurs when a participant gets less utility from each subsequent good or attribute. When analysing the data of multiple bidding rounds Hobbs suggests only using the later bidding rounds because bids have stabilized and any errors due to learning the auction should be smaller and less frequent than in earlier rounds (Hobbs, 2004).

3.2.3.3 Fifth price auction

The fifth price auction is a variation of the Vickrey second price auction and has been used to elicit willingness-to-pay for numerous goods in studies such as Hoffman et al. (1993); Nalley, Hudson, and Parkhurst (2005); and Jaeger et al. (2004). The fifth price auction must be conducted using a group, where each participant simultaneously submits a sealed bid for the good. In this case, the fifth highest bid is the market price and there are four auction winners. The fifth highest bid is posted or announced to the participants and the four highest bidders must pay the fifth highest price.

The rationale behind the fifth price auction is that in second price auctions, participants who are bidding on the low end quickly learn that they will not win an auction and they become disengaged. In contrast, participants who are bidding on the high end quickly learn that they will not lose. The 5th price auction attempts to alleviate this issue by having more winners at a lower market price.

Conducting multiple bidding rounds and drawing for a binding round, as in the second price auction, may be advantageous because wealth effects and diminishing marginal returns are lessened. Fifth price auctions may be chosen over random n th price

auctions because they are less confusing for participants to understand and easier for auction moderators to explain, however, they are also slightly less engaging for low and high end bidders.

3.2.3.4 Random n th price auction

Shogren et al. 2001 introduced the most recent auction mechanism called the random n th price auction. It has since been used in research studies by Feuz et al. (2004) and List (2003).

The random n th price auction is conducted in a group setting, normally in the laboratory. Participants simultaneously submit sealed bids for the good(s) in question, and bids are subsequently rank-ordered from highest to lowest by the experiment moderator. A number is randomly drawn (" n ") from the number of subjects participating in the experiment. The highest $n-1$ bidders are winners in the auction and must purchase the good at a price equal to the n th highest bid. The market price is the n th highest bid that was randomly drawn (Shogren et al., 2001). This approach is analogous to the second price auction, with numerous rounds of bidding and one binding round to stabilize bidding, increase participant learning, and reduce to wealth effects and diminishing marginal returns.

The random n th price auction was designed to combine the best features of the BDM and second price auctions. This form of auction engages all the bidders as does the BDM method and allows for a publicly determined market value and market feedback similar to the second price auction. The explanation of engaging bidders is as follows: when conducting a second price auction, bidders that are much lower or much higher

than the market price are called “off-margin” bidders. These off-margin bidders often become disengaged in the auction, do not take it seriously and thus fail to reveal their true willingness-to-pay. The random n th price auction engages all bidders because when each round has a different n , subjects are not sure whether they are much higher or lower than the average market price. Thus, in every round participants remain engaged and bid their willingness-to-pay truthfully in order to ‘win’ the auction. Because the random n th price auction engages all bidders (even off-margin bidders), the random n th price auction gives a more accurate representation of willingness-to-pay. Engaging all bidders and market feedback are both generally regarded as important features in an experimental auction. Although this auction mechanism engages all bidders and incorporates market feedback, there is one major drawback: it is difficult to explain and confusing for participants. It may also be more difficult for the researcher to control subjects during the auction compared to other auction mechanisms (Jaeger et al., 2004).

3.2.3.5 Becker-DeGroot-Marshack (BDM) method

Becker, DeGroot and Marshack introduced the BDM auction in 1964 as an incentive compatible mechanism to elicit reservation prices in lotteries. The BDM method has also been used quite often in agricultural economics for determining willingness-to-pay in such studies as Lusk et al. (2001); Feldkamp, Schroeder and Lusk (2005); and Lusk and Fox (2003). The BDM method is not a conventional sort of auction because participants do not bid against one another. Participants are presented with the product(s) in question and are asked to submit a bid detailing how much they would pay

for a product with particular attributes. If the bid exceeds some randomly generated price, the participants “win” the product and *must pay* for it. Participants do not pay what they bid; rather, they pay the randomly drawn price. Similar to the other auction formats, BDM participants have the incentive to truthfully reveal their willingness-to-pay. If they overstate their bid they will pay more than the good is worth to them and if they understate their bid, they will lose out on a good that is of good value to them. Thus, it is also best for BDM participants to follow truth telling as their weakly dominant strategy.

The BDM design has several advantages for this research project. First, the approach is easy to explain to participants and it is easy for them to understand relative to other auction designs (Lusk et al., 2001). The BDM auction does not take repeated practice rounds for participants to learn how the auction works. Second, BDM auctions tend to have fewer non-responses and thus less non-response bias than other auction mechanisms and certainly less than contingent valuation (Lusk et al., 2001). The BDM design has fewer non-responses because of ease of participation. Participants do not have to go out of their way on second day and drive to a location where another type of experimental auction would be conducted in a group setting (Feldkamp et al., 2005). In other words, there is less opportunity cost for the participants to partake in the study than in other experimental auction procedures. Response rates are also generally higher than when contingent valuation is used and a mail survey is simply sent out.

The BDM auction mechanism usually does not have to remunerate its participants as much as other auctions for participating since they do not have to go out of their way to participate (Lusk et al., 2001; Feldkamp, Schroeder and Lusk, 2005). In certain

circumstances, remuneration has been shown to have some affect on how participants behave (Lusk, Feldkamp and Schroeder, 2004; Corrigan and Rousu, 2006).

BDM auctions are usually conducted in the field. One could argue that this translates into higher external validity (McDaniel and Gates, 2001). In other words, results from the auction would be more applicable to the real world because participants' decision making process is very similar to that used to make purchase decisions by consumers. Since BDM auctions may be conducted in the field, it is possible to target the population of interest (Lusk et al., 2001), in this case, supermarket meat shoppers. Having the auction in a supermarket allows the researcher to target consumers who are actually doing the meat shopping.

Lusk et al. (2001) argued that zero bidding may be higher in BDM non-laboratory settings because the customer may not be the actual consumer of the good. Zero bidding should not be of significant concern for two reasons: first, it is often the case in the real world that the regular purchaser of beef may not be the consumer. Second, if the auction is conducted solely behind a meat counter; only customers in the meat department will be asked to participate making a few zero bids for the branded steak legitimate. Some customers are genuinely not willing-to-pay anything for a branded beef product.

One of often cited disadvantages of BDM auctions is that there is no market feedback. Market feedback represents a real-world phenomenon that occurs when consumers routinely incorporate posted prices of goods and substitutes into their shopping decisions (Lusk et al., 2001). However, since this BDM auction was conducted behind the meat counter in a grocery store, one could argue the participant was able to see all the posted prices they normally see when grocery shopping and therefore had

sufficient market feedback. Thus, market feedback was not considered a problem and did not threaten the validity of this auction.

The researcher conducting an experimental auction has more control than his counterpart conducting a mail survey. The researcher does not need to wait for data to return from the respondents or incur the time and expense costs included with sending out reminders. In a BDM auction, as soon as the participant has completed the auction- a process which takes only a few minutes- the researcher has the data. Additionally, in a BDM auction, the researcher can ensure that the participant has answered each of the questions, reducing the number of missing observations.

3.2.4 Experimental Auction Design

Numerous details must be taken into account when designing any type of experimental auction. They include endowments, number of attributes/goods, market feedback, homegrown vs. induced values, field vs. laboratory experiments, and general results. Each is discussed in turn, below.

3.2.4.1 Endowments

Procedural differences among different applications of experimental auctions are noticeable when determining the willingness-to-pay for a particular good. In some studies, the participant is endowed with a basic or generic good and is asked how much they would be willing-to-pay to upgrade to a good with a different (usually more desirable) attribute(s). In other studies, participants are not given any good to start with

and the researcher must elicit their full willingness-to-pay for the product. Lusk, Feldkamp, and Schroeder (2004) argue there is an advantage in endowing the participant with the basic good and allowing them to upgrade because it isolates the factor that is actually being studied as opposed to information that is already known about a product. For example, it is assumed that: $\text{branded beef} = \text{generic beef} + \text{value}$, one already knows from retail scanner data how much Canadians are willing-to-pay for the existing selection of generic beef in retail supermarkets. Therefore, it is not necessary to get the participant in the study to elicit the whole value of the generic beef + value (brand); the variable of interest is merely willingness-to-pay for the value (brand). In other words, the goal is to measure the amount Canadian consumers are willing-to-pay for brand name beef and its respective attributes. How much they are willing-to-pay for the generic beef attributes of the good is already known. In a case such as this, Lusk, Feldkamp, and Schroeder (2004) suggest there is an advantage in endowing the subject with the basic or generic steak because it forces the participant to focus on what the research project is trying to measure- how much consumers are willing-to-pay for branded beef- and diminishes outside market influences. Lusk et al. (2001) point out that endowing the participant with a basic good may attract participants- especially in a retail setting- which may be less costly than a monetary endowment. Such endowments have also been shown to influence valuations.

According to results from Lusk, Feldkamp and Schroeder (2004), there are some drawbacks of endowing the subject with a good or monetary value prior to participation in the study depending on the auction mechanism. They found that the effect of endowments on valuations in the English and BDM auctions were not statistically

significant, though the endowment effect in the second price auction was negative and significant on valuations. In other words, the good was valued less when it was already in participants' possession than when they were simply bidding to obtain the entire good. In contrast, the effect of endowment on the random n th price auction was positive and significant, more in line with traditional loss aversion theory. That is, participants valued the good more when it was already in their possession than when they were simply bidding on the good.

Corrigan and Rousu (2006) suggest that when people are given endowments, several things may happen that influence their bids. First, they may suffer from loss aversion theory, as discussed above. Second, they may experience a "top dog" effect. This occurs when participants derive extra utility from being declared a winner of an auction. Finally, participants may feel a "reciprocal obligation" to the researcher. In other words, since the participant was endowed with a good, the participant may feel as though they need to repay the researcher for the good they have received "free" for participating. The top dog effect and reciprocal obligation have the opposite effect of loss aversion theory on willingness-to-pay. However, Corrigan and Rousu (2006) suggest that there may be certain times when endowing the participant with the conventional good may be warranted because not using endowments may introduce bias as well.

One must therefore be cautious when giving endowments or knowledge of endowments to follow the experiment prior to bid elicitation because they may have an effect on willingness-to-pay. However, for the purposes of this study, the researchers concluded that since Lusk, Feldkamp and Schroeder (2004) found that there was no significant endowment effect on willingness-to-pay for the BDM auction, it was

determined that endowing the participant with the generic steak would introduce the least amount of bias. Additionally, Corrigan and Rousu (2006) outlined special circumstances about when it may be appropriate to allow the use of an endowment. These special circumstances fit this research nearly perfectly: a conventional good currently available in every grocery store and a novel good rarely found in Canada.

3.2.4.2 Number of attributes/goods

Lusk, Feldkamp, and Schroeder (2004) observe that the number of attributes/goods analyzed in experimental auctions varies from one to many. For example, one experimental auction could determine the willingness-to-pay between a generic steak and a guaranteed tender brand steak, while another experimental auction could determine the willingness-to-pay between a generic steak, a guaranteed tender brand steak, a natural brand steak, an organic brand steak, etc. One problem with this is that the number of attributes (goods) may affect the valuations of each attribute (good) because of wealth effects and diminishing marginal returns.

Wealth effects occur when participants who win goods reduce their bids in subsequent rounds. This can partially be alleviated by randomly drawing a binding round so participants only have the opportunity to purchase one good. However, there will be diminishing marginal returns for each additional attribute added to the good (Lusk, 2003a). For example, a generic beef roast already has some utility to the consumer. A brand added to the roast may provide more utility. If an attribute is added such that the roast is guaranteed juicy, more utility is added. Still more utility is added if the roast is pre-cooked, even more if the roast is guaranteed tender, and so on. In this example, each

subsequent attribute added to the roast increases the utility to the consumer, but at a diminishing rate. That is, the first attributes are valued more than the subsequent attributes, and the roast, like other economic goods suffers from diminishing marginal returns.

3.2.4.3 Market feedback

Market feedback is an important factor to keep in mind while designing an experimental auction because when consumers are shopping in the real world, they regularly use the posted prices of goods and substitutes to make purchasing decisions (Lusk, 2003a). Market feedback is achieved in the second price auction, English auction, fifth price auction, and random n th price auction, by posting or announcing the market price to the group of participants during the auction. The BDM auction, by contrast, does not have market feedback.

A problem associated with market feedback over multiple rounds of bidding is that bids may become affiliated. In other words, a high market price could influence a lower bidder to bid higher. Despite this, List and Shogren (1999) find that bids that become affiliated have a very small impact on valuations and that the phenomenon only occurs with novel goods. Harrison, Harstad, and Rutstrom (2004) concur and also note that this is a problem especially with novel products. Although the BDM auction does not contain the same type of market feedback as the other auction mechanisms, one could contend that if the BDM experiment were being conducted in the field, in a real retail location, the participant could use posted prices for substitute products as a form of market feedback to aid in formulating willingness-to-pay.

3.2.4.4 Homegrown vs. Induced Values

No matter which type of auction mechanism is employed, the experimenter can choose to elicit homegrown or induced values. Homegrown values are ones which the participant brings with them into the study. Induced values are values that the researcher has assigned to a particular good for a given part of the experiment. Using induced values allows the researcher to control the experiment and allow others to duplicate the experiment (Hudson, 2003).

Using induced values in an experimental auction allows the researcher to test experimental auction theory; however, according to Lusk and Shogren (2007), induced value auctions do not allow researchers to see a participant's value for actual goods and services. Thus, for the purposes of this study, homegrown values will be elicited instead of induced values because it has already been shown that the BDM auction works well in terms of being able to elicit the participants true willingness-to-pay. Conversely, it has not been determined what Canadian consumers are willing-to-pay for brand name beef. Furthermore, according to Lusk and Shogren (2007), using homegrown values in an experimental auction allows the researcher to strike the right balance between the researchers' control over the auction and the external validity of its results.

3.2.4.5 Field vs. Laboratory experiments

When conducting an experimental auction, the researcher must decide whether to conduct the auction in a retail setting or in the laboratory. Lusk and Fox (2003) found that bids in laboratory auctions accurately represented the true willingness-to-pay of the customer. In fact, bids obtained from retail auctions were slightly higher than laboratory

bids after accounting for unengaged bidders. Unengaged bidders are participants who learn that they will not win/lose an auction and as a result become disinterested in the bidding process and fail to reveal their true willingness-to-pay. The authors suggest that conducting field auctions may be advantageous for three reasons: field studies may reduce sample selection bias, less compensation is generally needed for attracting participants, and subjects are comfortable and familiar with the environment the experiment is held in compared to the laboratory setting. Rutstrom (1998) suggests there may be less of an endowment effect associated with high or uneven remuneration given to participants (Lusk and Fox, 2003; Lusk and Hudson, 2004; Rutstrom, 1998). A shortcoming of field experiments that Lusk et al. (2001) suggest is that the researcher has less control in a field setting compared to the laboratory.

3.2.5 General Results from Previous Experimental Auctions

Several results of experimental auction mechanisms are worth noting. Lusk, Feldkamp, and Schroeder (2004) found that the second price auction yielded higher willingness-to-pay results than the English auctions, BDM auctions and random n th price auctions. They also found that the random n th price auction had lower valuations than English and BDM auctions. Shogren et al. (2001) found that random n th price auctions work better for off-margin bidders and second price auctions work better for on-margin bidders.

Gregory and Furby (1987) note that second price auctions will be demand revealing if participants fully understand how the experiment works, and cite Smith (1985). They indicate a common source of confusion occurs when the participant's bid in

a second price auction is not what they actually pay should they win the auction. One would argue that this is also the case with the other forms of experimental auctions in which the subject's bid is not actually the amount paid should they win the auction.

3.3 Contingent Valuation

3.3.1 Introduction

Contingent valuation is the oldest method of determining the stated preferences of a consumer and their willingness to pay for a particular good and its attributes (Holmes and Adamowicz, 2003). Since contingent valuation was first developed, numerous forms have emerged. The most popular see consumers rank, rate or indicate a dichotomous 'yes/no' to an attribute, or choose between alternative attributes of goods. In the following section, the essentials of contingent valuation will be discussed, as well as the evolved formats of contingent valuation, the advantages and disadvantages of contingent valuation, and a detailed discussion of the survey format that is used for determining Canadian consumer's willingness to pay for branded beef.

3.3.2 Definition of Contingent Valuation

Contingent valuation is a popular method used to elicit willingness-to-pay values from consumers. These willingness-to-pay values are referred to as contingent valuations because they are *contingent* upon the establishment of a market for the good or attribute in question (Heberlein and Bishop, 1986). In agribusiness applications, typically a novel product is described in detail and the participant is asked to state hypothetically in

monetary terms how much they would be willing to pay for the good in question or are asked whether they are willing-to-pay a stated amount for the good.

Contingent valuation is consistent with Lancaster's (1966) theory of consumer utility maximization. Lancaster's theory of consumer utility states that utility is derived from the attributes of the good rather than the good itself. Normally a good has multiple attributes and one particular attribute may be possessed by many goods. For example, an attribute of a generic steak is that it is a good source of protein; this is also a characteristic of a branded steak.

When consumers make decisions about what goods to purchase, they evaluate the utility of the attributes of each of the goods and maximize their expected utility by choosing a good with the optimal combination of attributes (Ness and Gerhardy, 1994). Sometimes the consumer must make trade offs to achieve the most important attributes they desire in a good. For example, if a consumer's primary concern is a 'natural' beef product, the consumer must be willing to trade off a low price attribute to obtain the 'natural' beef product. Contingent Valuation is used to determine a consumers most preferred attributes and ultimately most preferred goods.

Contingent valuation may be used to estimate the value of novel goods in the market place, and determine the trade offs between product attributes that consumers hold in their minds (Lusk and Cevallos, 2004). Information gathered from contingent valuation studies may be used to estimate total willingness-to-pay, marginal willingness-to-pay and market shares. Total willingness-to-pay is the total dollar value that the consumer is willing-to-pay for a single unit of a particular good. Marginal willingness-to-pay is the dollar value that the consumer places on an *additional unit* of a good.

3.3.3 Popular Forms of Contingent Valuation

As already mentioned, there are few popular forms of contingent valuation which show up repeatedly in the literature. They are based on ranking, rating, dichotomous choice or choice based. A review of conjoint analysis, dichotomous choice questions, choice experiments/choice based conjoint analysis, and open-ended questionnaires follows. These are the most popular forms of contingent valuation.

3.3.3.1 Conjoint Analysis

In conjoint analysis studies, participants are shown scenarios for a good and the attributes of the good are varied (Adamowicz et al., 1998). These scenarios are developed as combinations of different attributes the good may possess and can take a considerable amount of time for the researcher to develop. Participants must then rank or rate the scenarios by desirability. This approach attempts to understand the participants' responses to the specific scenarios presented (Adamowicz et al., 1998). In ranking conjoint analysis, participants are asked to rank the scenarios presented from most preferred to least preferred. One of the main advantages of the ranking method is that it provides more information about all the scenarios presented and not simply the most preferred choice as presented in a choice experiment (Holmes and Adamowicz, 2003). The basis of rating conjoint analysis is that respondents transform the expected utility derived from a good's attributes into a rating on a scale (Holmes and Adamowicz, 2003). The utilities can then be compared across attributes.

3.3.3.2 Dichotomous Choice Questions

Dichotomous choice questions were one of the first types of contingent valuation and have been recently employed by Cummings, Harrison, and Rutstrom (1995) and Campiche, Holcomb, and Ward (2004), among others. In a dichotomous single-bounded choice question, participants are asked a yes/no question regarding their willingness-to-purchase the good at a stated price. In a dichotomous double-bounded choice question, participants are asked the same question, and if the participant says 'Yes' to the initial question, a second question is posed to the participant to ascertain whether they would purchase the good at a stated higher price. If the participant responded 'No' to the first question, they are asked whether they would purchase the good at a lower stated price (McFadden, 1994; Lusk and Hudson, 2004).

Lusk and Hudson (2004) note several drawbacks of dichotomous choice questions: they are incentive incompatible in a hypothetical setting, responses to the second question in double-bounded questions may depend on the price stated in the first question, and cross-price effects between novel and existing products are not determined, which is an important consideration for many agribusinesses.

3.3.3.3 Choice Experiments or Choice Based Conjoint Analysis

This type of method has been used or discussed by Adamowicz et al. (1998), Louviere et al. (2000) and Nalley et al. (2004), among others. Choice experiments, also commonly referred to as choice based conjoint analysis, is a popular method that differs slightly from traditional contingent valuation in the sense that it is the most realistic for respondents to answer. Choice experiment questions are usually formed in a way that is

similar to how consumers actually make purchasing decisions. In a choice experiment, instead of ranking or rating the goods, participants choose between different goods or bundles of goods and their respective attributes much as they would in an actual retail environment (Adamowicz et al., 1998; Lusk and Hudson, 2004). This approach attempts to identify the participant's preferences among attributes.

Often numerous levels and attributes in the experimental design create far too many scenarios for a single respondent to consider. Factorial or fractional factorial designs can be used to reduce the number of alternatives the participants must evaluate (Haaijer and Wedel, 2001; Louviere, Hensher, and Swait, 2001; Holmes and Adamowicz, 2003). Even if a factorial or fractional design is employed, multiple questions must still be answered by each respondent to ensure validity. Because participants may need to respond to similar questions multiple times to have an accurately designed choice experiment, they may become fatigued when completing the study or learning may affect behaviour (Lusk and Schroeder, 2004; Bradley and Daly, 1994; Johnson and Desvousges, 1997).

Choice experiments are often the preferred type of contingent valuation because not only are they consistent with Lancaster's theory of consumer utility maximization, but they are also based on random utility theory. Louviere, Hensher, and Swait (2001) explain random utility theory in a very comprehensive manner. The utility a consumer attains from a particular good and its attributes is divided into a systematic component that can be explained or observed, and a random (unsystematic) component that cannot be accounted for or explained (Louviere, Hensher, and Swait, 2001). This can be stated as:

$$U_i = V_i + \varepsilon_i \quad (1)$$

where U_i is utility derived from the good, V_i is the systematic component, and ε_i is the random component. Loviere, Hensher, and Swait (2001) contend that randomness arises because the researcher cannot measure the true utility of a good to a participant and instead, must rely on what is elicited in a stated preference study (Louviere, Hensher, and Swait, 2001).

3.3.3.4 Open-Ended Questionnaires

This type of method has been used by agricultural economists such as Neill et al. (1994), Brown et al. (1996) and Loomis et al. (1996), among others. Open-ended surveys are advantageous because one is able to elicit each participant's own home-grown private values without the researcher influencing, biasing or anchoring a participant's bid.⁴ An open-ended survey is also relatively easy for participants to understand, particularly when the researcher is not present to help if difficulty is encountered when completing the questionnaire. This is obviously the case with a mail survey. Another important advantage of open-ended questionnaires relative to other types of contingent valuation formats is that the elicited willingness-to-pay can be considered a continuous variable for empirical purposes thus making analysis more flexible and simple.

One of an open-ended survey's largest disadvantages is that it is not theoretically incentive compatible. However, Neill et al. (1994) found that while open-ended surveys were unable to accurately reveal a respondent's true willingness-to-pay- a disadvantage

⁴ Anchoring occurs when a participant takes one piece of information and relies upon it too heavily when making decisions. If an anchor is set, participants often have a bias toward that number.

common to all contingent valuation methods- they found it was due to hypothetical bias rather than theoretical incentive compatibility of open-ended surveys. In addition, numerous researchers have found that while hypothetical willingness-to-pay from open-ended questions are generally higher than actual willingness-to-pay, it is generally lower than hypothetical dichotomous choice questions (Loomis et al. 1997 and Brown et al. 1996).

Another disadvantage of open-ended questionnaires is that the number of zero bids may be high in comparison to other forms of contingent valuation studies at levels more comparable to experimental auctions. This may occur despite the fact that the participant actually places a positive value on the good. It has been suggested that these may be “protest” bids or simply a way to finish the survey quickly. Another concern with open-ended questions is that a few unreasonably high bids may be realized by a few respondents. These large bids can easily skew mean willingness-to-pay values and distort actual results. This problem may be resolved by removing the excessive outlier bids.

Brown et al. (1996) posit that respondents might have a desire to influence the outcome of a survey and open-ended questions allow a respondent to show a positive attitude towards a good. In the open-ended questions for this thesis for example, the respondents may want to indicate they are willing-to-pay more than they actually would for a natural product because they would like to see the natural product introduced.

3.4 Comparing Experimental Auctions and Contingent Valuation: Advantages and Disadvantages

The main advantage of experimental auctions corresponds to the main weakness of contingent valuation; that is, an experimental auction reveals the consumer's true willingness-to-pay (Lusk et al., 2001) whereas a contingent valuation study may not. Participants in an experimental auction are held responsible for the decisions they make and incorporate the active market of bidding and witnessing market values- in both the laboratory and field settings- into the decisions they make (Lusk, 2003a). Because experimental auctions are non-hypothetical in nature and participants must exchange their own money for the goods in an experimental auction, participants are more likely to carefully consider their decisions and thus more accurately reveal their true willingness-to-pay than when a hypothetical experiment is used (Lusk, Feldkamp, and Schroeder, 2004). All forms of experimental auctions discussed in this literature review are theoretically incentive compatible, which entails each subject follows their dominant strategy and thus, truthfully reveals their willingness-to-pay (Lusk, 2003a).

An additional advantage to experimental auctions is that they are better than contingent valuation at predicting total market shares and sales (Lusk and Cellavos, 2004). In practice, contingent valuation has repeatedly come up with inflated values for total market shares and sales. Experimental auctions also represent willingness-to-pay more accurately than traditional contingent valuation because the latter only gives accurate representations of *marginal* changes in willingness-to-pay while experimental auctions accurately reveal *total* willingness-to-pay (Lusk et al., 2001; Umberger and Feuz, 2004).

Experimental Auctions do have a few drawbacks which may persuade researchers to consider contingent valuation instead of experimental auctions when eliciting willingness-to-pay from consumers. One is that experimental auctions require participants to formulate bids; this is an uncommon practice for most participants especially when shopping for groceries.

Lusk (2003a) suggests that an experimental auction may not be feasible if the intention is to generalize the results to a national population because it would be difficult to conduct enough experimental auctions to meet sample size requirements. In contrast, it is logistically easier and less expensive to conduct enough contingent valuation surveys to account for a national population.

A second potential drawback of experimental auctions is that bids may become truncated because of alternative substitutes not present in the auction that may be available in the real world (Harrison, Harstad, and Rutstrom, 2004). However, is arguably also a drawback of contingent valuation surveys for the same reason.

Contingent valuation is advantageous because nearly any new good, service or scenario can be described, allowing it to be a very versatile tool for eliciting willingness-to-pay (Lusk, 2003a). Participants can be asked to behave how they would in a retail supermarket setting whereas in most experimental auctions, participant's willingness-to-pay values will be influenced depending on where the experiment is held and at what time of the day they are participating (Lusk, 2003a). One can manipulate the attributes of a particular scenario easily to test various explicit hypotheses (Gregory and Furby, 1987; Adamowicz et al., 1998; Lusk and Hudson, 2004; Lusk, Roosen and Fox, 2003).

Similarly, when conducting a contingent valuation survey, the researcher does not need to

obtain a supply of the experimental product to sell as one does in an experimental auction (Gregory and Furby, 1987; Feldkamp, Schroeder and Lusk, 2005).

A disadvantage of contingent valuation is that it often does not allow the participant to see, feel, smell or taste the products they are evaluating. Accordingly, the written description of attributes, goods or scenarios is less complete than most experimental auction profiles. These profiles allow the participant to get a more complete description because along with written explanations, participants also see, feel, smell and even taste goods (Haaijer and Wedel, 2001).

A final issue with contingent valuation- especially choice experiments- cited by DeShazo and Fermo (2002); Swait and Adamowicz (2001); Lusk and Schroeder (2004); and by Lusk (2003a), is that the consistency of responses elicited from participants, in both individual and aggregate choices, depends on the complexity of the choice experiment design. If there is no consistency in the choices that participants have made, the choice experiment is not obtaining the true willingness-to-pay of the participant. This is because the participant would have made different, consistent choices if they had to back up their choices with their own money. This is another type hypothetical bias, arguably the most important disadvantage of contingent valuation.

3.5 Cheap Talk

Cheap talk is a relatively new method embraced by willingness-to-pay researchers that economists began to embrace recently to mitigate the problem of hypothetical bias in hypothetical valuation studies. It involves correcting willingness-to-pay values for hypothetical bias *ex ante* as opposed to *ad hoc ex post* calibrations that have failed to

consistently correct for the problem (List, Margolis, and Shogren, 1998; Fox et al., 1999; Hofer and List, 2004).⁵ Willingness-to-pay values are corrected *ex ante* by informing the participant about the hypothetical bias problem, explaining why it occurs and asking participants to consciously try to avoid the problem. A cheap talk script was included in one treatment of the survey package to address hypothetical bias *ex ante* by educating respondents about the potential problem and thus encouraging respondents to reveal their true willingness-to-pay.

Cheap talk has been shown to be effective in eliminating hypothetical bias in several situations using different kinds of experimental auctions and contingent valuation. Detailed results from previous studies will be discussed in the background section that follows.

List and Gallet (2001) define hypothetical bias as the difference between hypothetical willingness-to-pay (or other statements of value) and actual willingness-to-pay, where actual willingness-to-pay is determined from studies with real economic commitments. It has long been recognized that people generally overstate their true willingness-to-pay in hypothetical situations. Numerous studies including those conducted by, but not limited to, Neill et al. (1994), Fox et al. (1998), and List and Gallet (2001) have consistently found that hypothetical bias is real problem when trying to elicit willingness-to-pay. Thus, similar to List and Gallet (2001), it is assumed here that cash-based estimates are unbiased. An understanding of hypothetical bias is critical to understanding why a particular elicitation method was chosen. The elicitation methods

⁵ *Ex post* calibration methods have attempted, largely unsuccessfully, to remove hypothetical bias from a survey upon its completion. The surveys are calibrated using complicated models or rules of thumb such as the National Oceanic and Atmospheric Administration's "divide by two rule" to try and remove hypothetical bias.

(experimental auction and open-ended survey with and without cheap talk) were chosen to elicit the willingness-to-pay values that most closely represent the participant's true values. If hypothetical bias can be eliminated, it becomes straight forward to represent the consumer's true willingness-to-pay values.

See appendix C for the cheap talk script used in this research. It is very similar to the original script used by Cummings and Taylor (1999) and is identical to the script used by Lusk (2003b). The scripts used in this research and by Lusk (2003b) were modified slightly to accommodate for the different types of question formats. It is important to note that most cheap talk scripts inform participants in some manner that subjects tend to *overstate* their true willingness-to-pay.

Cheap talk is used in an effort to elicit accurate willingness-to-pay values from contingent valuation studies. Hypothetical bias is a problem because it gives researchers inflated willingness-to-pay values from consumers. For example, primary producers, processors, and retailers may decide to produce and/or sell a product based on a contingent valuation study. However, because the subjects did not need to use their own money or fully take into account things such as budgetary constraints, the subjects may have overestimated their true willingness-to-pay. This may have grave financial consequences for economic agents making decisions based upon estimated willingness-to-pay.

Hypothetical bias is not unique to research carried out for the private sector. Valuations of public goods are susceptible to the same types of hypothetical bias problems. Despite the similar problems encountered in valuing public and private goods, the focus of this literature review will remain on private goods.

3.5.1 Cheap Talk Background

The idea behind cheap talk originated with Loomis, Gonzalez-Caban and Gregory (1996), though they neither coined the term nor actually developed cheap talk itself. Using an open-ended survey instrument, they requested the subjects refrain from bidding what they thought to be the fair market value of the good and instead bid as though they were in a real market and actually had the opportunity to buy the good. Additionally, participants were asked to take their budget constraints into consideration when formulating their bid. Despite these efforts, the authors were unable to demonstrate that that these reminders were effective in eliminating hypothetical bias.

Blumenschein et al. (1998) attempted to correct hypothetical bias by asking participants of a dichotomous contingent valuation study how certain they were about their hypothetical purchase decisions. In other words, participants were first asked whether or not they would be willing to purchase a good at a particular price. If the participant responded in the affirmative the participants were then asked how sure they were that they would respond identically if they actually had to purchase the good (probably sure, definitely sure). However, in the end, the researchers were unable to conclude that “definitely sure” responses corresponded with actual purchase decisions.

Cummings and Taylor (1999) introduced cheap talk the way most researchers use it today. It was named after a term from game theory referring to non-binding communication by two or more players prior to a real binding commitment. Most agricultural economists use a version of the cheap talk script nearly identical to the original in hopes of replicating the success of that seminal study.

To conduct their study, Cummings and Taylor (1999) used three treatments of an environmental referendum. The treatments were as follows: i) a real referendum where if the proposition passed, every subject would have to pay a stated amount, ii) a hypothetical referendum where if the proposition passed, hypothetically everyone would have to pay a stated amount, iii) a hypothetical referendum identical to the previous referendum described, with the addition that each subject was given a cheap talk script to read prior to participating in the referendum.

The researchers found that the real referendum and the hypothetical referendum with cheap talk were not statistically different. In addition, they discovered that the hypothetical referendum with cheap talk was significantly lower than the hypothetical referendum without cheap talk.

List (2001a, 2003) extended the applicability of Cummings and Taylor's cheap talk method to a real functioning market as opposed to a classroom setting. He found in two separate studies, involving Vickrey second price auctions and random n th price auctions respectively, that while cheap talk is effective in removing hypothetical bias for non-experienced buyers of the good, hypothetical bias is not effectively removed for experienced buyers. As List (2001a) points out, this may be a serious problem because experienced buyers often play a very important part in determining the value of a good. He notes that cheap talk may be ineffective for experienced or knowledgeable consumers because of how the mind works. Once a consumer has had considerable experience with a good and has formulated a detailed opinion about it, a simple cheap talk script is not going to replace all of the previous knowledge that that consumer has regarding the good.

Aadland and Caplan (2003) were the first researchers to have success reducing hypothetical bias with a shorter cheap talk script. Other studies have attempted to use shortened cheap talk scripts and have come up with disappointing results (Loomis et al., 1996; Poe et al., 2002). Similar to List (2001a), Aadland and Caplan (2003) found that their cheap talk script only worked for certain types of participants.

Lusk (2003b) was one of the first agricultural economists to administer a cheap talk script outside of the laboratory or closely controlled real market setting. His use of cheap talk represents a practical use that researchers outside the academic world could utilize. He used two treatments of a mailed dichotomous choice contingent valuation questionnaire to test whether cheap talk would mitigate hypothetical bias in this type of setting, as well as the closely controlled settings described above. The two treatments were identical save for the fact that one contained a cheap talk script and the other did not. Lusk (2003b) found that the cheap talk script indeed significantly lowered unknowledgeable consumers' willingness-to-pay. However, as List (2001a, 2001b) discovered, willingness-to-pay was not reduced for knowledgeable consumers. It is important to note that since Lusk (2003b) did not conduct a questionnaire treatment involving consumers' real money, it was not possible to verify that hypothetical bias was in fact completely removed. One of the most important conclusions that may be taken from Lusk's (2003b) article is that cheap talk is useful for removing hypothetical bias even when a researcher is not directly involved in encouraging the subject to truthfully reveal their true willingness-to-pay, such as in a mail survey.

Bulte et al. (2005) used a shortened cheap talk script in a stated preference study and found that there was no difference between the cheap talk treatment and a

“consequential” treatment.⁶ The cheap talk script they utilized was similar in length to the script used by Poe et al. (2002). Carlsson et al. (2005a, 2005b) found that willingness-to-pay estimates from a hypothetical choice experiment with cheap talk were not statistically different than those from a choice experiment with real economic consequences for seven of ten attributes tested. Their choice experiments were conducted through a mail survey and their cheap talk script was considerably shorter than the original introduced by Cummings and Taylor (1999). They were also able to conclude that the choice experiment without cheap talk was significantly higher than the other two treatments for most of the attributes.

Aadland and Caplan (2003) conducted a large contingent valuation phone study involving a modified form of cheap talk. They had shorter and longer versions of a cheap talk script; however, the largest difference between this and other studies was that the cheap talk script was formulated to be neutral. Most prior cheap talk scripts used informed participants in some manner that subjects tend to *overstate* their true willingness-to-pay. Aadland and Caplan (2003) instead informed participants that subjects tend to *misstate* their true willingness-to-pay in an attempt to avoid adding “another layer of bias” as past forms of cheap talk have been accused of doing. To their surprise, this modified form of cheap talk seemed to exacerbate the hypothetical bias problem causing participants to bid even higher than the hypothetical treatment without cheap talk. Furthermore, they found that the longer “neutral” cheap talk script made hypothetical bias worse than the shorter “neutral” cheap talk script.

⁶ A consequential treatment means that subjects must be prepared to back up their choices with their own money.

List, Sinha and Taylor (2006) further tested the use of cheap talk in a mail choice experiment survey. The survey asked participants to contribute funds to aid in purchasing a public good. If a specified, pre-determined amount of money was contributed, the public good would be purchased. Additionally, a second study within this article was described regarding a private good. The second study involved a choice experiment with sportscards of varying characteristics at a tradeshow. Both studies involved the use of a cheap talk script and found that, treatments with cheap talk were not statistically different from treatments with real economic commitments. It was also discovered by the authors, that when a choice experiment is used in combination with a hypothetical treatment with cheap talk, participants may become internally inconsistent in their choices. Therefore, List, Sinha and Taylor (2006) cautioned future researchers about employing a choice experiment with cheap talk, especially since it has been previously shown that marginal willingness-to-pay in a choice experiment is not affected by hypothetical bias (Lusk and Schroeder, 2004).

Brown, Ajzen, and Hrubes (2003) used a cheap talk script to determine whether cheap talk would remain effective when payment levels were varied. This was similar to the referendum with the cheap talk Cummings and Taylor (1999) first used that required a payment of \$10 from every subject if the referendum passed. Brown, Ajzen and Hrubes (2003) varied this level of payment from one to eight dollars if the referendum passed. Subjects knew the amount prior to voting in the referendum. They found that cheap talk remained effective in removing hypothetical bias with referendum payments over five dollars. However, they found that cheap-talk proved ineffective for payments that were less than five dollars.

In a similar study, Murphy, Stevens and Weatherhead (2005) conducted a referendum with varying payment levels from three to thirty dollars. The authors in this study found that the cheap talk script was effectively able to remove hypothetical bias for all those treatments with payments over six dollars. The cheap talk script was not able to remove hypothetical bias from those people with the three or six dollar level of payment required if the referendum passed.

Chapter 4: Theory

4.1 Introduction

Chapter four presents the theory upon which experimental auctions, explanatory variables and brand names are based. Therefore, this chapter is comprised of three sections that discuss each of these topics in turn. The first section describes how auction theory is based on the assumption that auctions are incentive compatible. The incentive compatibility of a BDM auction is formally shown in this chapter. The second section discusses economic variable theory and describes the determinants of willingness-to-pay for branded beef. The final section describes brand theory, why brands matter and why they are important to consumers and producers alike. The goal of this chapter is to present a framework for the rational behind the selection of a BDM auction, the explanatory variables and branded products so that the methods described in the subsequent chapter are understood.

4.2 Auction Theory

The most theoretically important concept behind experimental auctions is that they are incentive compatible. The property of incentive compatibility is stressed by nearly every economist who uses or critiques experimental auctions and contingent valuation studies. In the section that follows, incentive compatibility will be discussed and explained. Additionally, it will be shown that experimental auctions are theoretically incentive compatible.

An auction is incentive compatible when auction participants reveal their true willingness-to-pay for the good at the time of bidding. Auctions are incentive compatible

because participants have a weakly dominant strategy to submit a bid equal to their true value of the good. A weakly dominant strategy is one where the participant is at least as well off bidding their true value compared to over bidding or under bidding. In other words, a participant cannot obtain a higher utility by over bidding or under bidding but might get less utility by over bidding or under bidding. This weakly dominant strategy holds true no matter how many bidders are present in the auction or what bidding strategy they follow, the number of participants is irrelevant for the BDM auction because there is only one bidder in each auction. An auction is considered incentive compatible when the price paid by the participant is independent from what they bid. For example, in the BDM auction, the participants' bids do not have any impact on the randomly drawn market price.

Incentive compatibility of the BDM auction is shown using a formal utility maximization framework. Since only one person participates in each BDM auction and in other auction mechanisms other bidders do not affect the participant's weakly dominant strategy, only one bidder's strategy must be considered to show that an auction is incentive compatible (Lusk and Shogren, 2007).⁷

Prior to showing incentive compatibility, it must be assumed that each participant has a privately-held value for the good. This privately held value holds known a distribution. In other words, although the distribution is known, the participant is the only one who knows their true value of the goods. A second assumption is that there is only one divisible good for sale. Another assumption is that each bidder has a well-behaved utility function which conforms to expected utility theory.

⁷ Theoretical incentive compatibility can also be shown for the other auction mechanisms in a similar manner.

Suppose v_i is the value the i th individual places on the good, b_i is that individual's bid for the good, p is the price paid, and U is the individual's utility level where U is increasing in income. If the individual wins the auction by submitting a bid higher than the randomly drawn price in the BDM auction their utility is the value of the good minus the price they paid for the good. Mathematically, this is $U_i(v_i - p)$. If the participant does not win the auction (participant does not submit a bid higher than the randomly drawn price), their value from participating in the auction is normalized to zero (Lusk and Shogren, 2007). When the participant submits their bid, they do not know what the "market price" will be; however, they do have knowledge of its distribution. For example, in the BDM auction conducted for this thesis, participants only knew the price would be between zero and ten dollars. Therefore, the price is essentially a random variable (Lusk and Shogren, 2007). The participant's expectation about the price of the good is represented by the cumulative distribution function $G_i(p)$ and the probability density function $g_i(p)$ where $\underline{p}_i$ is the price if the participant wins and $\overline{p}_i$ is the price if the participant loses the auction. Participants (consumers) want to maximize their expected utility. Thus, as shown by Lusk and Shogren (2007), the participants expected utility function is given by:

$$\begin{aligned}
 E[U_i] &= \int_{\underline{p}_i}^{b_i} U_i(v_i - p) dG_i(p) + \int_{b_i}^{\overline{p}_i} U_i(0) \\
 &= \int_{\underline{p}_i}^{b_i} U_i(v_i - p) g_i(p) dp + \int_{b_i}^{\overline{p}_i} U_i(0).
 \end{aligned} \tag{2}$$

An integral is first evaluated over all bid levels which are higher than the price level. This represents cases where the participant wins the auction. A second integral is evaluated over all bid levels in which the bid is lower than the price level, representing

cases where the participant loses the auction. $U(0)$ is normalized to zero. The bid that maximizes expected utility is found by taking the derivative of (2) with respect to b_i and setting it to zero (Lusk and Shogren, 2007):

$$\frac{\partial E[U_i]}{\partial b_i} = U_i(v_i - b_i)g_i(b_i) = 0. \quad (3)$$

Equation (3) is solved when $b_i = v_i$.⁸ This means that, the participant's expected utility is maximized when they submit a bid equal to their true value. From this, Lusk and Shogren (2007) are careful to point out that this optimal strategy of submitting a bid equal to one's true value is not affected by the participant's risk preferences, the number of bidders, wealth levels or bidding strategies of other participants.

Intuitively, if the participant overbids and submits a bid higher than their true value they could win the auction and have to pay more than the good is worth to them. If the participant underbids and submits a bid that is lower than their true value of the good, the participant could lose the auction and miss out on purchasing a product that is of value to them. Thus, if a participant over or under bids, they risk over paying or missing out on a good deal. This drives participants to submit bids equal to their true value resulting in a theoretically incentive compatible auction mechanism (Lusk and Shogren, 2007).

As an example, suppose a BDM auction participant values a brand name steak \$1.50 more than a generic steak and they are asked to submit a bid detailing the most they would be willing-to-pay to upgrade from the generic steak already in their possession to a steak bearing a brand that represents some desirable attribute. If the participant overbids

⁸ This proof follows Lusk and Shogren (2007) closely, for similar proofs the reader is referred to Irwin et al. (1998), Horowitz (2006) and Milgrom and Weber (1982).

and indicates they would be willing-to-pay \$2.00 to exchange the generic steak for the brand name steak and the randomly drawn price is \$1.75, they will be forced to exchange the steak for \$1.75 when the exchange was only worth \$1.50 to them. Thus, the participant has to pay \$0.25 more than the steak is worth to them. Now suppose that the participant underbids and writes down that the most they would be willing-to-pay to exchange the steaks is \$1.00 and the randomly drawn price turns out to be \$1.10. In this case, the participant would lose out on winning a steak that is of good value to them (their true value was \$1.50 and they would of only had to pay \$1.10). From this, it is clearly visible that the only way for the participant to ensure that they do not lose is if they bid their true value.

It should be noted that even if the participant does not bid their true value, they still may not lose by over or under bidding; they simply *run the risk* of losing. For example, if a participant's true value for the exchange is still \$1.50, but they bid \$2.00, and the randomly drawn market price turns out be \$3.00, the participant would not exchange the generic good for the brand name good even though they over bid. A similar occurrence is possible with underbidding. For example, if the participant wrote down that they would pay \$1.00 for the exchange and \$0.50 was the randomly drawn market price, they would pay \$0.50 for the exchange, the same amount they would have paid had they written down their true value of \$1.50.

Both formal utility maximization framework and intuition support the same conclusion: experimental auctions are theoretically incentive compatible under realistic assumptions. A theoretical discussion of the inclusion of the explanatory variables in the auction and surveys follows.

4.3 Explanatory Variable Theory

Most discussions of a consumer's preference for any good or service begin with a discussion of the utility function. This is because, in theory, it is assumed a consumer's preference relation is summarized by a utility function (Jehle and Reny, 2001). In this study, the respondent's decision of whether to be willing-to-pay for a branded steak is characterised by the utility function:

$$u=u(x_j), \quad (3)$$

where $x_j=[x_1+ x_2+... x_n]$ is a vector of steak attributes for steak j (Lancaster, 1966). The consumer maximizes their utility subject to their budget constraint y and set of prices $p=[p_1+ p_2+... p_n]$ to get the indirect utility function:

$$v(p,y)= \max u(x) \text{ such that } y=px. \quad (4)$$

The indirect utility function $v(p,y)$ gives the consumer's maximum utility, given p and y .

Attention now shifts to demand. Economic theory has long recognized that the determinants of demand for most goods and services are incomes, tastes and preferences, prices of substitutes and complements, expectations, and population (Frank and Parker, 2002). All of these variables have played a part in aiding this study to determine the willingness-to-pay for brand name beef in Canadian supermarkets. Income was included directly as an explanatory variable in the auction and surveys. The extent to which the respondent likes the brand names, the number of times they eat beef per week, and the grade they typically purchase represent the consumer's tastes and preferences.

The other variables (age, gender, education, confidence) included in the auction and surveys are the theoretical determinants of taste and preferences and thus also a theoretically important component of determining willingness-to-pay for branded beef

(Tomlinson, 1998). It is assumed, as economic theory dictates that consumers took the prices of substitutes and complements and future expectations about their income and future price levels into account when formulating bids in the auction or one of the survey treatments. Demand for brand name beef is higher in heavier populated areas because there are more consumers to whom goods and services may be sold. While population was not directly included in this auction or survey because a single consumer does not make up a location's population, it was considered in the determination of how many brand name beef products are currently available in Canada. For example, recall that it was found that there were more brand name beef offerings in the major centres of Toronto and Vancouver than other areas of Canada.

Given the above assumption about utility, steak attributes are separable (Hui, 1999). Therefore, the important variables determining willingness-to-pay can be grouped as follows (Hui, 1999):

$$WTP_j = f(x_j, y_i, r_i(b_i, l_j, d_i, c_i, g_i, a_i, e_i, y_i), s), \quad (5)$$

where i and j subscripts denote individual respondents and individual steaks respectively; WTP is the respondent's willingness-to-pay; x is a vector of steak attributes; y is income; r is tastes and preferences; b is the number of times per week beef is eaten; l is the respondent's preference for the brand; d is the grade the respondent typically purchases; c is the respondent's confidence in selecting beef; g is gender; a is age; e is education; and s is prices of substitutes and complements. This demand equation is used for willingness-to-pay for each of the respective brand name steaks.

The determinants of demand, tastes and preferences have also been included in many previous economic, agribusiness and marketing research studies including but not

limited to Umberger and Feuz (2004); Menkhaus et al. (1992); and Capps (1989).

Although Umberger and Feuz (2004) note that the variables mentioned above are theoretically important variables in economic and market research theory, they found that demographic variables were poor indicators of auction winners and bid levels. Thus, the following section more fully describes the reasons for including each of the variables in this study. Results reported determine whether the theoretically important variables included in this study help explain brand name beef demand and willingness-to-pay.

In the case of brand name beef products, consumer tastes and preferences are represented by the degree to which the respondent likes the brand name, logo and attributes that go along with the steak product. To determine how much the consumer liked the brand name steaks in the auction and surveys, each participant was asked to rate their liking of the brand on a seven point Likert scale. If the consumer gave the brand a higher rating on the Likert scale, it indicated that the consumer had a higher preference for that particular brand. An increase in preference shifts the consumers demand curve outward. This is why the amount that the respondent likes the brand name is important theoretically in determining willingness-to-pay for each of the brand name steaks.

The number of times the respondent eats beef per week and beef grade typically purchased by the consumer also represent consumer tastes and preferences. For example, it may be a consumer's preference to consume beef n times per week and chicken and pork m times per week. Similarly some consumers prefer leaner beef grades such as Canada A and AA, while others prefer the amount of marbling in the Canada AAA grade. As tastes and preferences are theoretical determinants of demand, and number of times

beef is consumed per week and beef grade typically purchased are essentially tastes and preferences, these were included as explanatory variables.

The amount of confidence a consumer has in selecting and purchasing a quality product should affect the consumer's willingness-to-pay for a brand name product because it is a theoretical determinant of tastes and preferences. Consumers with less confidence in their ability to select a quality product are more likely to use aids that signal quality such as brands and branded products. As a result, consumers with less confidence in their ability to assess steak quality at the grocery store are more likely to be willing-to-pay a premium for brand name steaks. Consumers with more confidence in their ability to choose quality steaks at the grocery store are theoretically less likely to be willing-to-pay a premium for brand name steaks.

Gender, education, age and income are important theoretical determinants of tastes and preferences as well (Tomlinson, 1998, Bourdieu, 1984). This is because consumers in different age, education and income categories have different tastes and preferences for various goods and services. Males and females can also have significantly different valuations of various products. Income is a special variable because not only is it a theoretical determinant of tastes and preferences, it is also directly a theoretical determinant of demand and willingness-to-pay.

Agribusinesses, economists and market researchers can segment consumers into groups with similar demographic characteristics. Being able to segment consumers into these groups allows marketers to target consumers who are most likely to purchase the products they are trying to sell. Consumers do not necessarily need to be segmented demographically; they can also be segmented behaviourally, psychographically,

geographically, etc. However, this type of information can be harder and more expensive to extract from consumers and has not been tried and tested in willingness-to-pay, economic and marketing studies to the extent that demographic characteristics have been.

Income and budgetary constraints have been given a lot of coverage throughout economic history as a determinant of demand. In theory, income is thought to shift a consumer's demand curve to the right and exert a significantly positive effect on willingness-to-pay for normal goods. However, in this study branded steaks are considered as luxury items. Thus in theory, only people with higher incomes levels would be willing-to-pay for premium (luxury) products. This generally holds true for big ticket, luxury items such as premium cars or yachts. However, this rule does not always hold true for luxury items that make up a smaller portion of the consumer's budget such as luxury brands of gum or coffee.

The Canada AAA and brand name steaks in this study are thought to be premium offerings in the beef category. This suggests higher income consumers are their target market. However, while meat may make up a high percentage of the food budget, it clearly does not make up a large portion of the typical consumer's overall budget. Therefore, perhaps consumers with lower incomes may be interested in spending a modest amount of extra money to get a luxury item when possible within their budget. For example, it would only cost between one and two dollars for the consumer to upgrade from a Canada AA steak to a Canada AAA steak, while it would cost tens of thousands of dollars for a consumer to upgrade from a Ford Focus to a BMW 3 Series. Indubitably, more consumers could afford the former than the latter, allowing them to enjoy a small amount of luxury if they so desire.

4.4 Brand Theory: Why Brands Matter

Brands are important, powerful and effective because they integrate a consumer's rational evaluation of a product's functional performance with the emotional value of a brand (de Chernatony, 2001). Brands are important to both consumers and producers of products and services. Keller's text, "Strategic Brand Management", offers numerous reasons as to why brands are important to consumers. In economic terms, brands offer consumers utility through product attributes and consistent performance. Brands identify the manufacturer of a product and create accountability for it. The entity responsible for the product depends on the type of brand. For example, the retailer of a product is generally held responsible by the consumer if the product boasts a private label brand. Manufacturers, producers and other supply chain members may also be held responsible for the quality of brand name products.

Consumers face numerous types of risks when purchasing nearly any product or service. These risks include functional, physical, financial, social, psychological and time risk (Keller, 2003; de Chernatony, 2001). Functional risk may occur if the product does not perform in the way that the consumer had expected. Physical risk may occur if the product is physically unsafe or poses some kind of health risk to the consumer or a third party. A financial risk may occur if the consumer pays more than the product is actually worth to them. Social risk may occur if the consumer is embarrassed in front of others as a result of the product. For example, a consumer decides to hold a neighbourhood barbecue and cooks steaks for everyone, that turn out to be tough. Psychological risk can occur if the product affects the mental well-being of the consumer. For example, if a beef consumer were to find out that the beef that they consumed was

treated or killed inhumanely, their mental well being could be affected. Time risk may occur if a product fails to meet a consumer's expectations, there is an opportunity cost of finding a product to replace the disappointing product.

Keller (2003) suggests that brands reduce the risks that consumers face when they purchase a product. de Chernatony (2001) , Keller (2003), and Schroeder (2003) agree that brands have more accountability than generic products and that brands try to mitigate the aforementioned risks associated with purchasing a product. New and unfamiliar, brands however, reduce risk less than tried and trusted brand names.

These risks may arise is due to uncertainty. Brocklebank and Hobbs (2004) outline four different kinds of uncertainty in the context of the relationship between beef producers and processors: information asymmetry, incomplete information, price uncertainty associated with quality variability, and price uncertainty associated with the number of buyers in a market. These types of uncertainties may also be discussed in the context of consumers and brand names as well as those further down the supply chain. Not all of these four types of uncertainty apply to this study; however, only the relevant ones will be discussed.

An information asymmetry arises when one party has more information about the product than another party. This occurs, for example, with cattle production practices. A consumer may purchase a natural beef product, however, only the producer will actually know if the animal has been raised without antibiotics or growth hormones. A branded natural product would assure the consumer that the product has been raised naturally provided there is traceability and this information asymmetry would be rendered more benign. In addition to alleviating some of the risk of information asymmetry, brands also

increase or decrease certain types of transaction costs. For example, brand name products generally have higher monitoring costs because production must be monitored more carefully to ensure that the promises made by the brand name are delivered.

Incomplete information occurs when neither producer nor consumer has total information about the quality of a product. For example, neither the consumer nor the retailer may be able to determine the eating quality of a steak by looking at the beef. A branded product that has followed certain production and processing procedures can alleviate the negative effects of incomplete information. This results in more reliable, consistent eating quality that both the consumer and retailer can rely on. Again, monitoring costs will arise for branded beef products to ensure that proper practices and procedures are being followed.

The two types of price uncertainties due to quality variability and number of buyers do not affect consumers as much as they affect producers as described in Brocklebank and Hobbs (2004) and thus will not be discussed in this section.⁹

Use of brand name products also reduces transaction costs. Specifically, they reduce the search costs of a product for consumers, by indicating that a certain product offers the characteristics they desire (Brocklebank and Hobbs, 2004; Keller, 2003).

Brands are also a tool that consumers can use to distinguish between various products in a product category when they are visually quite similar yet may vary significantly in quality (Bredahl, 2004). For example, two steaks could appear quite similar visually but could be quite different in eating quality due to discrepancies in aging. Brands simplify product decisions through past experiences with the brands.

⁹ For more information on price uncertainties please see Brocklebank and Hobbs (2004): Building Brands: Supply Chain Alliances in the Canadian Beef Industry.

Bredahl (2004) explains that brands are particularly important for food items because food purchasing decisions are made frequently and often under time pressure. A brand is a quick, reliable and predictable summary of product quality that consumers are looking for when making frequent, time pressured decisions.

A branded product allows consumers to portray their own self image or a desired self image to themselves and to the rest of the world (Keller, 2003). Brands also project the user's personalities and beliefs (de Chernatony, 2001). Thus brands are sometimes referred to as symbolic elements. A brand is a signal of quality to consumers whether it is low, medium or high quality (Keller, 2003). Schroeder (2003) reiterates this and states that brands convey value and information to the consumer. Further, consumers perceive branded products as being more reliable, higher quality, and having less of a chance of not performing up to their expectations than products that are not branded.

Bredahl (2004) notes that numerous authors have found that brand names and brand images affect the *perceived* quality a consumer has of the product. Branding can also enhance the customer's experience aesthetically and psychologically (Clifton et al., 2004).

Numerous authors including Bredahl (2004), Brocklebank and Hobbs (2004), Caswell and Padberg (1992), Keller (2003), Nalley et al. (2004), have noted that products and their respective attributes fall into one or more of three product categories: search goods, experience goods and credence goods. Search goods are products in which consumers can evaluate the product quality simply by visually inspecting the product. Experience goods are products consumers must use and experience before the quality is determined. Credence goods are products whose quality consumers may never fully

realize. Brands can be means to communicate to consumers that product quality is guaranteed, especially when a good or its characteristics are experience or credence in nature. For a brand to matter to consumers there must be meaningful differences from other products in the category (Keller, 2003).

Previous research suggests that when a product's quality is difficult to determine in-store, consumers rely more heavily on extrinsic quality cues such as brand, packaging and price (Bredahl, 2004; Zeithaml, 1988). This may be particularly true for beef because its quality is generally very difficult for consumers to determine in-store. This is due to its natural biological variation; therefore, it can be concluded beef is an experience good.

Bredahl (2004) found that brands were more important for consumers less familiar with a product category. However, he also found that experienced consumers also relied heavily upon brands because even they may not have confidence in their ability to accurately judge beef quality prior to consumption. Roosen, Lusk and Fox (2003) found that consumers who are concerned about food safety will likely put more importance on brands. However, in the European Union, beef brands were of less importance than product origin.

Brands serve several roles to product and service providers. They are a means of identifying the manufacturer's product. They allow the manufacturer to legally protect the brand's unique features from potential copycats (Keller, 2003). A brand also allows a manufacturer to project the quality of its products to consumers and gives them a competitive advantage over other firms that do not have brands. This allows them to differentiate themselves from competitors and erect barriers to entry for competing firms

(Keller, 2003; Schroeder, 2003). In addition, brand names give suppliers an incentive to invest in quality and innovation (Bredahl, 2004).

Keller (2003) argues that brands are a source of financial return for manufacturers since investors believe that strong brands result in increased earnings and profits for companies, in turn increasing value to shareholders. In addition, brands create brand loyalty and thus increased returns and higher profits (Schroeder, 2003). Madden, Fehle and Fournier (2006) found empirical evidence that strong brands create higher returns to shareholders and do so with less risk. They found that these results also held when market share and firm size were considered. Finally, brands are also important for government, policy makers and consumer information agencies. If brands are trusted by consumers, mandatory government labeling may not be necessary for many types of products (Roosen, Lusk and Fox, 2003).

Chapter 5: Methods

5.1 Introduction

Chapter five describes the methods in which each component of this thesis was conducted. The chapter can be broken down into four main sections. The first section describes how the brands were developed for this research. The second section describes how the data was collected for the experimental auction and survey, respectively. The third section describes the costs incurred for each of the treatment methods as well as the quality of the data collected. The final section describes the empirical models used to determine willingness-to-pay premiums and their determinants for each of the brands.

5.2 Brand Name Creation

Since there are very few fresh branded beef products currently marketed in Canada (see appendix E) and their recognition is not universal, it was deemed prudent to develop several hypothetical brand name beef products for assessing willingness-to-pay. Each of the hypothetical brand names were created to have similar attributes to the most successful beef brands in the United States. The brand name categories created were intended to represent the following attributes: local/Canadian, tender, natural, and Angus.

A local or Canadian beef product is for consumers who like to buy Canadian products and associate the Canadian “appeal” with quality. Examples of companies who have done this are Tim Hortons, Molson and Maple Leaf. This type of brand would be effective because it appeals to the consumer’s sense of patriotism. The branding literature indicates brands that appeal to consumers’ emotions are more successful than brands that

purely use the brand's quality and physical attributes to sell the product (Mahajan and Wind, 2002). However, this emotional component is very difficult to develop.

Research has shown that for most consumers, the most important eating attribute of beef is tenderness (Lusk et al., 2001). The current Canadian quality grading system is based on the level intramuscular marbling in beef. The more intramuscular marbling, the higher the grade the beef receives. However, Wheeler, Cundriff and Koch (1994) found that intramuscular marbling only accounts for five percent of tenderness in a cut of beef. A tender beef brand would offer a consistently tender beef product every time and the degree of tenderness would not be based on the level of intramuscular marbling or beef grade.

A natural beef product would have no hormones, no antibiotics, be derived from a bovine fed no animal by-products and be raised with stringent animal welfare and environmental practices. This is for consumers who are conscious of how their meat has been produced and desire natural raising practices. This type of brand also appeals to consumer emotions such as nurturing, guilt, caretaker, etc. to some extent.

Angus is a breed of cattle that has traditionally been associated by consumers with quality, flavour, juiciness and tenderness because of its natural marbling. The Angus breed has become very popular in the last couple of years due to promotion of Certified Angus Beef from organizations such as the American Aberdeen Angus Association (AAAA) and the Canadian Angus Association. The AAAA introduced one of the first and most successful brands in the world, Certified Angus Beef. Certified Angus beef is only available in restaurants and a few select grocery stores in Canada. Numerous other Angus brands have been introduced in the United States with success as well. It is

thought that there is also some emotional consumer attachment to the Angus breed. The word Angus likely conjures up feelings of superiority, tradition and the ability to grill a good steak.

To determine brand names for this research, lists of candidates were developed for each category. Five of the most appropriate and best liked names in each category were chosen according to branding literature. A survey was developed and administered to an undergraduate agribusiness class and a graduate agricultural economics class to determine which names the students liked best in each category. In total, 45 students were surveyed to determine the most appropriate name for each category. After reviewing students' choices, Prairie Prime, Tender Grill, Nature's Diamond and Original Angus were selected.

Brand logos were then designed by a professional graphic designer using branding principles. Serif and non-serif fonts were used in the appropriate places. One usually wants a mix of serif and non-serif lettering in a logo (Perry and Wisnom, 2003). Serif is more conservative, sophisticated, elegant, and authoritative in appearance. Sans serif stands out more and is cleaner, simpler, more contemporary and friendly. Upper and lower case letters were also used in appropriate places to ensure that the message came across to the respondent. Capital letters convey strength, power, and authority while lower case letters convey simplicity and approachability. Colours are also important brand elements and must be chosen to convey an appetizing and appealing food product. Red and orange signal something appetizing, blue is relaxing and green is organic and natural.

5.3 Hypothetical Brands

To see the final versions of the brand descriptions and logos of the hypothetical brands created for this study, the reader is referred to appendix B, “steak fact sheet”.¹⁰ Each logo for the hypothetical brands was created by a professional graphic artist. Brand descriptions were based on similar beef brands available in the United States.

5.4 Data Collection

Since there are a number of advantages and disadvantages associated with both experimental auctions and contingent valuation studies, it was decided that utilizing both methods would yield the most comprehensive results and allow conclusions to be drawn as to whether or not Canadian consumers are willing-to-pay more for brand name beef products. Utilizing an experimental auction and survey with cheap talk allows a contribution to be made to the field of experimental economics. Conducting the two methods allowed the researcher to make comparisons among the results. In addition to the BDM auction described above, a corresponding mail survey was sent out to a random sample of Canadians excluding people from Quebec and the territories. Two treatments of this open-ended mail survey were sent out; one with a relatively new experimental treatment called cheap talk and another conventional survey without cheap talk.

For the survey portion of this study, elements were taken from the various contingent valuation methods described in the literature review. Similar to conjoint analysis, scenario type descriptions were formed for participants to evaluate.¹¹ Instead of ranking or rating the scenarios however, participants were asked to state the most they

¹⁰ This fact sheet is also the actual fact sheet participants received.

¹¹ Please see appendix D for a copy of the actual survey instrument sent to the sample.

were willing-to-pay in an open-ended question format. The open-ended question format was ultimately chosen because it was felt that it most closely corresponded with the BDM auction so comparisons could easily be made.

A couple of the major differences between the auction and the survey are as follows: the survey was hypothetical and the BDM auction was not, and the survey's dependent variable was formatted as an open-ended question and thus not theoretically incentive compatible whereas the BDM auction is theoretically incentive compatible. While it is obviously not ideal to have two treatments that are not theoretically incentive compatible and one that is incentive compatible, it was believed that the open-ended survey was the closest in methodology to the BDM auction because similar dependent variable questions are posed in each treatment. Furthermore, Neill et al. (1994) found that results from a hypothetical incentive compatible second-price Vickrey auction yielded nearly identical results to a hypothetical non-incentive compatible open-ended questionnaire. They found that willingness-to-pay was overstated in an open-ended questionnaire due to hypothetical bias and not because open-ended questionnaires are theoretically incentive incompatible. Since second-price Vickrey auctions and BDM auctions are both theoretically incentive compatible it follows from the results of Neill et al. (1994) that the second-price Vickrey and BDM auctions should yield the same results. Additionally, it follows that the only difference between the real BDM auction and the hypothetical open-ended survey should be the hypothetical bias. Thus, if cheap talk corrects for hypothetical bias as expected, there should be no significant difference between the real BDM auction and the hypothetical open-ended survey with cheap talk.

The experimental auction and survey both went through a series of pre-tests before their final versions were devised. The auction procedure outlined in this paper was first conducted using a simulated supermarket meat counter at the University of Manitoba. Students and faculty were asked to participate in the pre-testing of this auction.¹² Necessary changes were implemented to improve the auction after the pre-testing period. After the pre-testing period, the auction was carried out in randomly chosen supermarkets throughout Winnipeg and the surrounding area. After the first thirty participants had conducted the auction, it was determined that no further changes were necessary and these thirty observations would be included with the results.

In a similar fashion, the survey and cheap talk script were pre-tested on students and colleagues at the University of Manitoba. It was determined comprehension issues were non-existent and the survey was mailed in October of 2006. The actual data collection procedure for each of the treatments is outlined in the following two sections.

5.4.1 Experimental Auction

Experimental auctions were conducted in June and July of 2006 in Winnipeg and Selkirk, a town just outside of Winnipeg. These areas were chosen as the locations for the experimental auctions because they were believed to be areas quite representative of the Canadian population. As further reported in the results section, the Manitoban population was not found to differ from the rest of the Canadian population.

¹² Note: this data collected from students and colleagues was not aggregated nor included in any of the final results. This pre-testing phase was only used to ensure the validity of the final BDM auction version, to be sure participants understood the auction, and all the right aspects were included.

A total of 274 people participated in the auctions at seven stores from two major grocery chains, Safeway and Federated Co-op. An average of 39 people participated at each store. Auctions were conducted on weekdays and weekends, and were conducted to represent store hours and thus were conducted at various times during the day, from store opening to meat department closing.

Auctions were conducted near the beef counter in each grocery store. Each customer who approached the meat department was asked to participate in the auction. For participating, each customer was endowed with a 340 gram (~12oz) generic ribeye steak.¹³ Participants would then bid to exchange their generic steak for each of the brand name steaks. Each of the brand name steaks on display were cut from the same ribeye. Endowing each participant with a generic steak allowed the value of the brand to be isolated. Participants were informed that a zero bid meant that they forfeit the chance of winning a value-added product, but any positive bid had a chance of winning. Participants were also informed they would pay only the randomly drawn price which would be less than their bid price if they won the auction. Participants were explained that it was their best interests to not over or underbid to exchange for the steaks.

Prior to bidding on each of the value added steaks, participants were asked to read a two-page fact sheet of promotional material containing information about each of the brand name steaks. Participants were then asked to submit sealed bids of their maximum willingness-to-pay for each of the steaks. Participants were told that they would randomly draw one of the steak names and a random price between zero and ten dollars out of a hat after they submitted their sealed bids. The values between zero and ten dollars were chosen

¹³ Participants were endowed with a generic steak because it was felt that it would be extremely difficult to recruit participants without some kind of incentive.

because one wants to greatly exceed the realistic market price (Feldkamp, Schroeder and Lusk, 2005). One random steak was chosen as binding to prevent diminishing marginal returns. If their bid for the randomly drawn steak exceeded the value of the randomly drawn price for that steak they would exchange their generic steak for that randomly drawn steak and pay the randomly drawn price at the checkout counter.

When the participants completed the auction, they were asked to complete a short questionnaire outlining their beef preferences and demographic characteristics. Auctions took approximately 5-7 minutes for each participant to complete.

5.4.2 Survey¹⁴

A total of 5,100 surveys were mailed out in October, 2006 to a random sample of Canadian consumers excluding Quebec and the three Canadian territories. The survey was designed to be as similar to the BDM auction as possible. This was done in order to determine whether Canadian consumers are willing-to-pay for brand name beef products and whether experimental auctions and surveys can yield similar results. Random addresses were purchased from a reputable mailing list company.

Quebec was excluded for two main reasons. First, mailing the English survey to Quebec residents introduces bias. Those who cannot speak English would not fill out the survey (or fill it out incorrectly due to comprehension issues). Mailing an English survey to the English parts of Quebec would not represent the entire province and thus it would become unclear as to who the surveyed population was. Second, it would introduce bias because a direct translation of the English survey and brands to French would not have

the same meaning in both languages. In other words, entirely new French brands would have had to been created. Further, translating the survey into French would be costly in terms of time and money.

The three territories of Nunavut, the Northwest Territories and the Yukon Territory were excluded because most grocery stores in northern communities only carry frozen beef. Half of the surveys were mailed to residents of Manitoba and the other half to people from across the country. Half were mailed to Manitoba in order to provide a similar number of responses from Manitoba to the number of BDM auction participants.

Five hundred and thirty-four surveys were returned undeliverable and 1,275 surveys were returned completed, yielding a response rate of 27.92%. This is excellent for a survey with a “cold” mailing list. A number of things were done to aid in obtaining this high response rate. First, the University of Manitoba logo was clearly visible throughout the survey package, including on the mail-out envelope, business return envelope, cover letter, information sheet, and survey instrument. Real stamps as opposed to metered postage were also used on the mail-out envelopes to discourage survey recipients from tossing the survey in the garbage before opening the package; sometimes recipients of a mail survey believe they are getting a mass mailing if postage is printed on the envelope or metered.

As previously mentioned, business reply envelopes were included in each recipient’s survey package so that the respondent would not need to use their own stamp and envelope. Each recipient’s name was printed on their cover letter to aid in personalizing the survey package. A Canadian one-dollar coin was taped to the cover

¹⁴ Please see appendices A through D for a copy of the survey cover letter, fact sheet, cheap talk script and survey instrument.

letter of each survey to thank participants for completing and returning the questionnaire. Since a large amount of material was mailed out in each package, the actual survey instrument of the package was printed on green paper to distinguish it. Finally, a reminder postcard was mailed to recipients three weeks following the original survey mailing.

In the cover letter that accompanied the survey, recipients were asked to examine the "Steak Fact Sheet" which described the hypothetical brands. They were also asked to fill out the two page questionnaire and mail it back in the prepaid postage envelope provided. Two separate treatments of the survey were used. The first survey treatment was given in addition to the survey package (cover letter, business reply envelope, steak fact sheet and survey instrument), an information sheet discussing how people tend to overstate their willingness-to-pay for products and services in a hypothetical setting. This information sheet will hereinafter be referred to as a "cheap talk script". This cheap talk script was identical to the one used in Lusk (2003b). This cheap talk script was also nearly identical to the original cheap talk script used by Cummings and Taylor (1999) as well as other cheap talk experiments. The original script had only been modified slightly by Lusk (2003b) to account for a retail environment. Recipients of the cheap talk treatment were asked to read the information sheet (cheap talk script) prior to completing the survey. The cheap talk script simply tells the survey recipient in plain English about the problem of hypothetical bias, discusses why it may occur and requests that the respondent avoid hypothetical bias when completing the survey. The other survey treatment simply received no cheap talk script.

Since a limited number of studies using cheap talk have been employed to date, a control treatment survey was required to determine if there was a significant difference between the survey treatment with cheap talk, the survey treatment without cheap talk and the experimental auction. If no significant difference were found between any of the treatments, all results could be pooled to determine willingness-to-pay for the various beef brands. If there were a significant difference between one or more of the treatments, results from one or both of the survey treatments would need to be calibrated to coordinate with the auction results.

The willingness-to-pay questions used in the survey were also very similar to those used in Lusk (2003b). However, they were modified to be an open-ended question to correspond with the BDM auction. The following is an example of the opened-ended question appearing in both treatments of the survey:

Imagine you are purchasing a ribeye steak in your local grocery store. You can choose between *two* different ribeye steak products. One is a generic ribeye steak with no brand name. The other ribeye steak option is a **Prairie Prime** ribeye steak, with the attributes as described in the above fact sheet.

What is *the most money* you would be willing-to-pay for a **Prairie Prime** ribeye steak *over and above* the price of a generic ribeye steak? \$ _____

An open-ended willingness-to-pay question was chosen as opposed to an alternative type of contingent valuation question because it more closely corresponds to the BDM auction than dichotomous choice questions, rating and ranking questions, or

choice experiment type questions. In addition to the willingness-to-pay questions at the beginning of the survey, recipients were asked the same host of beef preference and demographic characteristic questions as in the experimental auction.

If it were found that the cheap talk treatment yielded the same results as the experimental auction, it could be safe to conclude that in the future, it may suffice to conduct the more cost effective, representative survey as opposed to an expensive experimental auction. The survey also allows researchers to access a broader range of consumers geographically than the auction would.

5.5 Treatment Costs

The following section provides a summary of costs incurred in conducting the experimental auction and both survey treatments. Both survey treatments cost virtually the same amount. The cost per survey was \$3.72 and the cost per auction was \$16.39. The cheap talk treatment cost about \$0.008 more for an extra sheet of paper.

Costs for the survey included stationary, colour printing supplies, printer toner, labels, stamps, business reply charges, logo costs, the monetary incentive and the researcher's time. It should be noted that there were 132 hours of volunteer time that were not included in this cost estimate because it did not cost the project anything. Costs for the experimental auction include the steak incentive for participants, stationary, the researcher's time, logo costs and other miscellaneous supplies related to auction set up. Several items were not included in this cost estimate because the items were lent to the project. These items included a table, two table cloths and a cooler.

Another point to note regarding the costs of each of the treatments is that the survey cost was incurred regardless of whether the survey was completed and returned. With an auction, costs were only incurred if the consumer actually participated. If a consumer declined to participate, virtually no costs were incurred for that consumer. Thus, total costs for the survey must be calculated by multiplying the total number of survey recipients by cost per survey. For the auction, the total number of participants is simply multiplied by cost per auction.

As is seen above, the auction is several times more expensive than the survey. However, the quality of the data elicited from the auction and survey differ substantially. There are trade-offs between conducting an experimental auction and a survey. For example, it is more cost-effective to increase sample size with a survey compared to an experimental auction. This is because generally, there is a lower per unit cost for surveys than for experimental auctions, as shown above. It is also possible to survey a broader geographic area with a survey than an auction. However, the quality of data is better from experimental auctions than surveys. Experimental auctions have been shown to be incentive compatible, while surveys are shown to exhibit hypothetical bias (Lusk et al., 2001; Neill et al., 1994; Umberger and Feuz, 2004). Also, missing responses to certain questions and incomplete surveys are more frequent in mail surveys than in experimental auctions. This is because the researcher has far more control in experimental auctions.

Despite enjoying an excellent response rate for the mail-out survey, the non-response bias is still higher in the survey than in the experimental auction. In other words, most consumers who were asked to participate in the auction participated.

For an experimental auction, the researcher must personally conduct the auctions or someone must be carefully trained to do so. A survey, by contrast, may be easily assembled by untrained workers directed by the researcher.

It should be noted that the experimental auction cost estimates are for auctions conducted in Winnipeg and Selkirk, Manitoba. Conducting an auction in multiple locations would increase costs substantially. This differs considerably from conducting a nationwide survey. There is virtually no increase in cost going from a mail survey sent out to people in a small geographical area to a nationwide survey.

As mentioned previously, numerous tactics were utilized to increase the survey response rate. These tactics substantially increased costs. Not including a Canadian one-dollar coin with every survey would reduce survey costs by \$1 per survey. Using white paper for the survey instead of green would reduce survey costs by \$40 (\$0.008/survey). Not using colour ink would reduce survey costs by \$943 (\$0.18/survey). Using a bulk mail rate for the survey and postcard would reduce stamp costs depending on the bulk mail rate. Not personalizing each survey or signing the researcher's name on the cover letter of each survey would have reduced time costs. Thus, from this one can see that it would be easy to further reduce the cost of conducting a survey. However, as has been shown in previous literature, the response rate would decrease significantly. For more information on mail survey response rates, the reader is referred to James and Bolstein (1990, 1992) and Yammarino, Skinner and Childers (1991).

5.6 Econometric Models

The following information was obtained from each of the respondents through the experimental auction and both survey treatments.¹⁵ Variables were created from this information.

Table 1. A Summary of the Variables Used in this Research

Variable name	Variable definition
WTP for Canada AAA	Willingness-to-pay premium for a Canada AAA steak
WTP for Prairie Prime	Willingness-to-pay premium for a Prairie Prime steak
WTP for Tender Grill	Willingness-to-pay premium for a Tender Grill steak
WTP for Nature's Diamond	Willingness-to-pay premium for a Nature's Diamond steak
WTP for Original Angus	Willingness-to-pay premium for an Original Angus steak
Beef Eaten	The number of times per week beef is eaten in the respondent's household
Grade	The beef grade the respondent typically purchases
Like Prairie Prime	Respondent's preference for the Prairie Prime brand
Like Tender Grill	Respondent's preference for the Tender Grill brand
Like Nature's Diamond	Respondent's preference for the Nature's Diamond brand
Like Original Angus	Respondent's preference for the Original Angus brand
Confidence	Respondent's confidence is in determining steak quality
Cattle	Whether or not the respondent has experience with a cattle farm
Packer	Whether or not the respondent has experience with a packing plant or meat processor (Yes, No)
Gender	The respondent's gender
Age	The respondent's age category
Education	The respondent's education category
Income	The respondent's household income category
House	The number of people in the respondent's household

Summary statistics including the mean, standard deviation and minimum and maximum observations were calculated. In addition, several models were run using data from the experimental auction and two survey treatments. Results of these models

determine what factors affect Canadian consumers' willingness-to-pay for branded beef products. For these models, the number of times per week beef is eaten in the respondent's household, respondent preference for brand name, their confidence in selecting a beef product and their demographic characteristics- gender, age, education and income- were hypothesised as being functions of the respondent's willingness-to-pay for each of the brand name beef products as outlined in the theory chapter. The expected signs are shown in Table 2. Specifically, the models that were most appropriate for answering the research questions were the tobit model and the double hurdle model, discussed below.

Table 2. A Summary of Expected Signs

Variable	Expected sign
WTP for Canada AAA	+
WTP for Prairie Prime	+
WTP for Tender Grill	+
WTP for Nature's Diamond	+
WTP for Original Angus	+
Beef Eaten	?
Like Prairie Prime	+
Like Tender Grill	+
Like Nature's Diamond	+
Like Original Angus	+
Confidence	-
Gender	?
Age	?
Education	?
Income	+

¹⁵ Please see appendix D for a copy of the experimental auction and survey questions.

The dependent variable for the experimental auction and open-ended survey was derived from the willingness-to-pay questions about each of the brand name steaks.¹⁶ The dependent variable in models using data from experimental auctions and open-ended questionnaires is often continuous and censored in nature. That is the case here.

Responses become censored when they are transformed into a single value by respondents due to being above or below a level permitted by the valuation mechanism (Lusk and Shogren, 2007). Various types of censoring can occur; however, the only type of censoring discussed in this thesis is left-censoring, since it is the type of censoring that can occur in this BDM auction and survey treatments.¹⁷ Bids become left-censored when respondents are not permitted to submit a bid lower than zero. In other words, if a respondent would have to be paid to be given a product, their valuation would be negative. However, since zero bids are usually not permitted, the respondent records a zero as their bid.

Ordinary Least Squares (OLS) should not be used in the presence of left-censored observations, because it assumes that observations are continuous and not censored. Using OLS for left censored observations would result in a biased and inconsistent estimator (Amemiya, 1973). The tobit and the double hurdle model have been developed to handle censored data.

¹⁶ Please see the actual survey questions 1-5 in appendix D for an example of the derivation of the dependent variable.

¹⁷ For a full discussion of censoring please see Lusk and Shogren (2007). *Experimental Auctions: Methods and Applications in Economic and Marketing Research*.

5.6.1 The tobit model

The tobit model was developed to account for the fact that latent (unobservable) dependent variables may not necessarily always take on non-negative values and thus may be censored (Tobin, 1958). For example Amemiya (1973) notes, if y_i is the latent dependent variable, y_i^* is the actual observed bid, and participants are not allowed to bid less than zero; then

$$\begin{aligned} y_i &= \begin{cases} y_i^* & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0. \end{cases} \end{aligned} \quad (4)$$

The principle behind the tobit model is simple: it describes the relationship between a latent, non-negative dependent variable y_i and independent variables x_{ij} (Tobin, 1958). This is similar to a simple regression model that describes the relationship between a dependent variable and independent variables. Amemiya (1973) was able to show that the tobit model maximum likelihood estimator is consistent, thus making it a more appropriate choice for censored data than OLS.

5.6.2 The double hurdle model

The double hurdle model is calculated in a two step process and was first suggested by Cragg (1971). He suggested that censored and uncensored bids should not be treated equally since they may be affected differently by the independent variables. In other words, an independent variable may positively affect the probability that the respondent bids zero, but have the opposite effect on observed bids (Lusk and Shogren, 2007). To deal with the issue, Cragg (1971) suggested that first; a binomial probit model is estimated to find the determinants of the independent variables on the probability that

bids will be greater than zero. The second step is a truncated regression of the bids that are greater than zero.

5.6.3 The binomial probit model and the truncated regression model

A binomial probit model is used to estimate the probability that a respondent's bid will be greater than zero. In other words, it is necessary to model the probability that a respondent bids some positive value versus bidding zero. The truncated regression model is used to regress the determinants of the positively observed dependent variable, y^* .

Lusk and Shogren, (2007) describe how the choice is made between the tobit and double hurdle models. In order to determine which estimation method is most appropriate with respect to the observations, a likelihood ratio statistic should be calculated as follows:

$$LR = -2[\ln LF_{\text{Tobit}} - \ln LF_{\text{Binomial Probit}} - \ln LF_{\text{Truncated Regression}}] \quad (5)$$

where LR is the likelihood ratio and LF is a likelihood function. The null hypothesis is that the tobit is the correct specification. The tobit model is rejected in favour of the double hurdle model if the calculated likelihood ratio statistic is greater than the chi-squared critical value. The degrees of freedom for the chi-squared critical value are the number of independent variables.

Probit, logit and tobit models, among others, employ Maximum Likelihood Estimation (MLE). MLE selects the parameter estimates that give the highest probability or likelihood of getting the observed data (Aldrich and Nelson, 1984).

The likelihood function for the tobit model should be (Lusk and Shogren, 2007):

$$LF = \prod_{i=1}^N \left(\frac{1}{\sigma} \phi \left(\frac{y_i - X_i \beta}{\sigma} \right) \right)^{UC_i} \Phi \left(\frac{-X_i \beta}{\sigma} \right)^{LC_i}, \quad (6)$$

where, LF is the likelihood function, UC_i are the uncensored observations, LC_i are the left censored observations, ϕ is the standard normal density function, Φ is the cumulative standard normal distribution function, y_i are the observed bids, X_i are the independent variables, β is a vector of coefficients and σ is the standard deviation of the independent variables.

The joint likelihood function for the simple double hurdle model (a combination of the probit and truncated regression) should be (Lusk and Shogren, 2007):

$$LF = \prod_{i=1}^N \Phi(-X_i \beta_1)^{(1-t_i)} \left(\Phi(X_i \beta_1) \left[\frac{1}{\sigma} \phi \left(\frac{y_i - X_i \beta_2}{\sigma} \right) / \Phi \left(\frac{X_i \beta_2}{\sigma} \right) \right] \right)^{t_i}. \quad (7)$$

Note that, $t_i=1$ when $y>0$ and $t_i=0$ when $y=0$. It should be noted that because there are two hurdles, there are two separate vectors of coefficients, β_1 and β_2 . Econometric models were estimated using the QLIM procedure in SAS. Model code is given in Appendix F.

Chapter 6: Results

6.1 Introduction

This chapter presents the results obtained from the data analysis based on the theory and methods chapters. First, a series of non-parametric tests are conducted that verify respondents are drawn from a single population. Second, summary statistics including the mean, standard deviation and minimum and maximum values are given for each variable. Third, tobit and double hurdle model results are presented, accompanied by a complete discussion and graphical representation. Finally, the similarities and differences are shown and described between each of the treatment methods.

6.2 Mann-Whitney U tests

To confirm that respondents from different provinces were drawn from equal probability distributions, several Mann-Whitney U tests (also called the Mann-Whitney-Wilcoxon test) were conducted for both survey treatments. These tests were conducted to verify that respondents from different provinces were drawn from a single population. The null hypothesis in for each test was that there was no significant difference between the Manitoba sample and that from each of the other provinces.

Each of the Mann-Whitney U tests confirmed that the sample was drawn from a single population. Thus, it could be concluded that there were no statistical differences between the Manitoban and Canadian respondents. This allows the data to be combined from each of the provinces together instead of only being able to conduct analysis on one province at a time.

6.3 Summary statistics

Tables 3 through 5 show the summary statistics for the experimental auction and both survey treatments. The mean, standard deviation, minimum and maximum values are given for each of the variables. Additionally, the number of observations is given for each variable.

Table 3. Summary Statistics of Selected Variables, Experimental Auction Data

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
WTP for Canada AAA	1.12	1.08	0	7.99	274
WTP for Prairie Prime	1.20	1.25	0	10.00	271
WTP for Tender Grill	1.32	1.15	0	7.00	274
WTP for Nature's Diamond	1.31	1.43	0	10.00	272
WTP for Original Angus	1.31	1.30	0	10.00	273
Beef Eaten	2.50	1.45	0	14	273
Grade	2.48	1.13	1	4	274
Like Prairie Prime	1.54	1.17	-3	3	268
Like Tender Grill	1.71	1.24	-3	3	268
Like Nature's Diamond	1.18	1.54	-3	3	270
Like Original Angus	1.73	1.25	-3	3	268
Confidence	1.43	1.41	-3	3	274
Cattle	1.62	0.49	1	2	274
Packer	1.72	0.45	1	2	274
Gender	1.41	0.49	1	2	274
Age	5.01	1.51	1	8	274
Education	3.00	1.38	1	6	272
Income	2.51	1.08	1	5	253
House	2.69	1.28	1	7	274

Table 4. Summary Statistics of Selected Variables, Cheap Talk Survey Data

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
WTP for Canada AAA	1.43	1.55	0	8.00	605
WTP for Prairie Prime	1.41	1.50	0	9.00	597
WTP for Tender Grill	1.43	1.64	0	12.49	603
WTP for Nature's Diamond	1.58	1.70	0	10.00	601
WTP for Original Angus	1.64	1.65	0	10.00	594
Beef Eaten	2.07	1.25	0	10	649
Grade	2.69	1.24	1	4	646
Like Prairie Prime	1.37	1.34	-3	3	606
Like Tender Grill	1.29	1.38	-3	3	604
Like Nature's Diamond	0.71	1.68	-3	3	601
Like Original Angus	1.62	1.38	-3	3	607
Confidence	1.07	1.52	-3	3	639
Cattle	1.63	0.48	1	2	655
Packer	1.82	0.38	1	2	656
Gender	1.58	0.49	1	2	651
Age	4.64	1.35	2	8	655
Education	3.72	1.47	1	6	649
Income	3.03	1.19	1	5	623
House	2.92	1.40	1	16	654

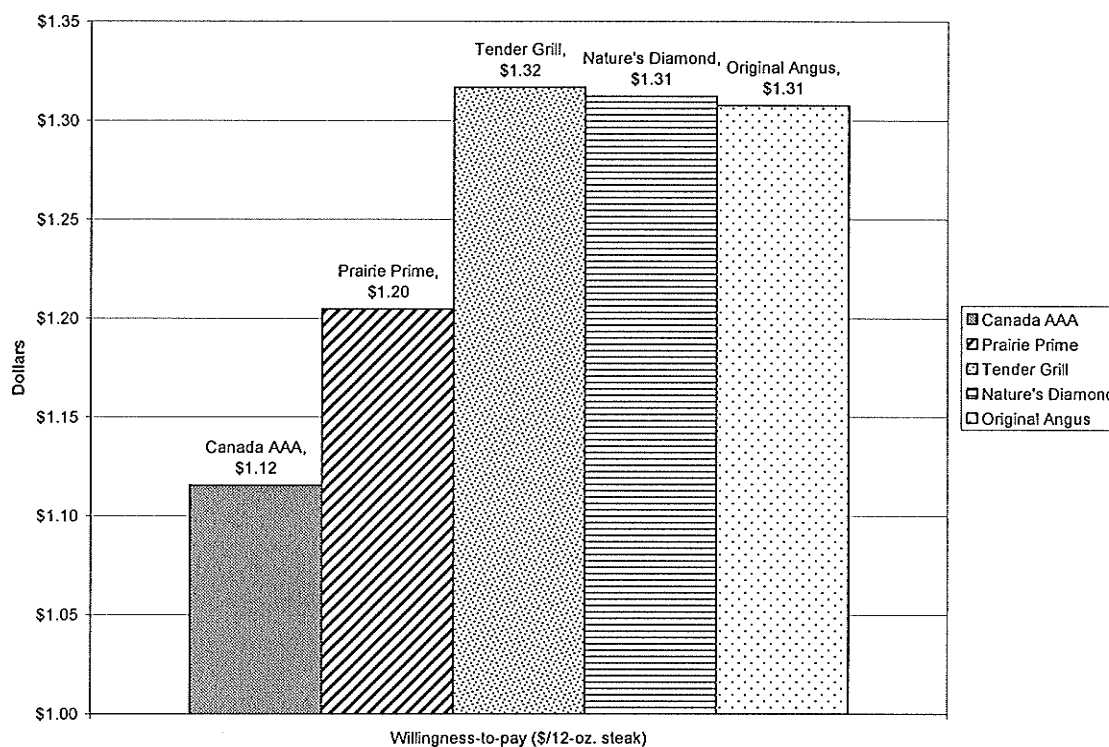
The average age of participants was between 35 and 54. Most participants had at least some college or university. Average household income of participants was between \$30,000 and \$90,000.

Table 5. Summary Statistics of Selected Variables, Conventional Survey Data

Variable	Mean	Std. Dev.	Min.	Max.	Obs.
WTP for Canada AAA	1.47	1.49	0	11.51	565
WTP for Prairie Prime	1.48	1.49	0	10.50	561
WTP for Tender Grill	1.57	1.53	0	12.75	566
WTP for Nature's Diamond	1.77	1.88	0	12.00	566
WTP for Original Angus	1.81	1.72	0	11.51	564
Beef Eaten	2.15	1.33	0	14	605
Grade	2.59	1.25	1	4	593
Like Prairie Prime	1.43	1.28	-3	3	558
Like Tender Grill	1.46	1.39	-3	3	563
Like Nature's Diamond	0.58	1.78	-3	3	560
Like Original Angus	1.71	1.40	-3	3	567
Confidence	0.99	1.61	-3	3	587
Cattle	1.59	0.49	1	2	613
Packer	1.81	0.39	1	2	612
Gender	1.59	0.49	1	2	607
Age	4.66	1.36	1	8	612
Education	3.67	1.47	1	6	606
Income	3.02	1.23	1	5	578
House	2.92	1.34	1	10	612

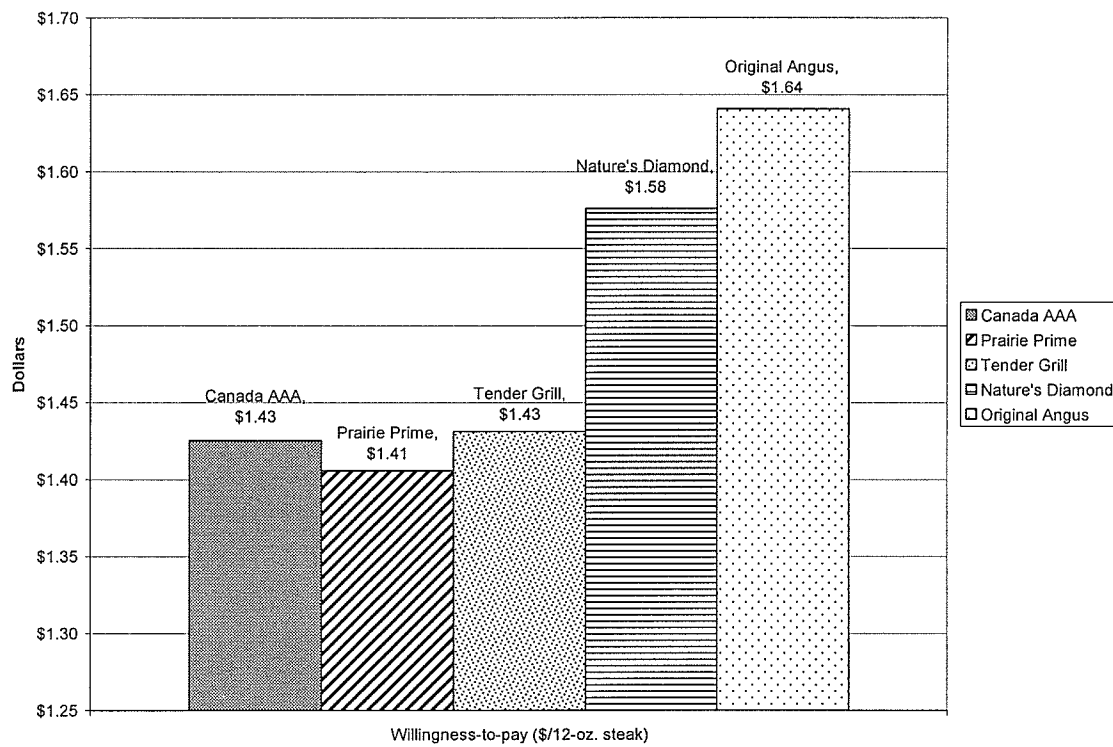
The Tender Grill steak had the highest average willingness-to-pay in the experimental auction, only one cent higher than Nature's Diamond and Original Angus. However, the Original Angus and Nature's Diamond steaks had the highest average willingness-to-pay values in the survey treatments followed distantly by Tender Grill.

Figure 1. Mean Consumer Willingness-to-pay Premiums for Canada AAA, Prairie Prime, Tender Grill, Nature's Diamond and Original Angus, Experimental Auction Data



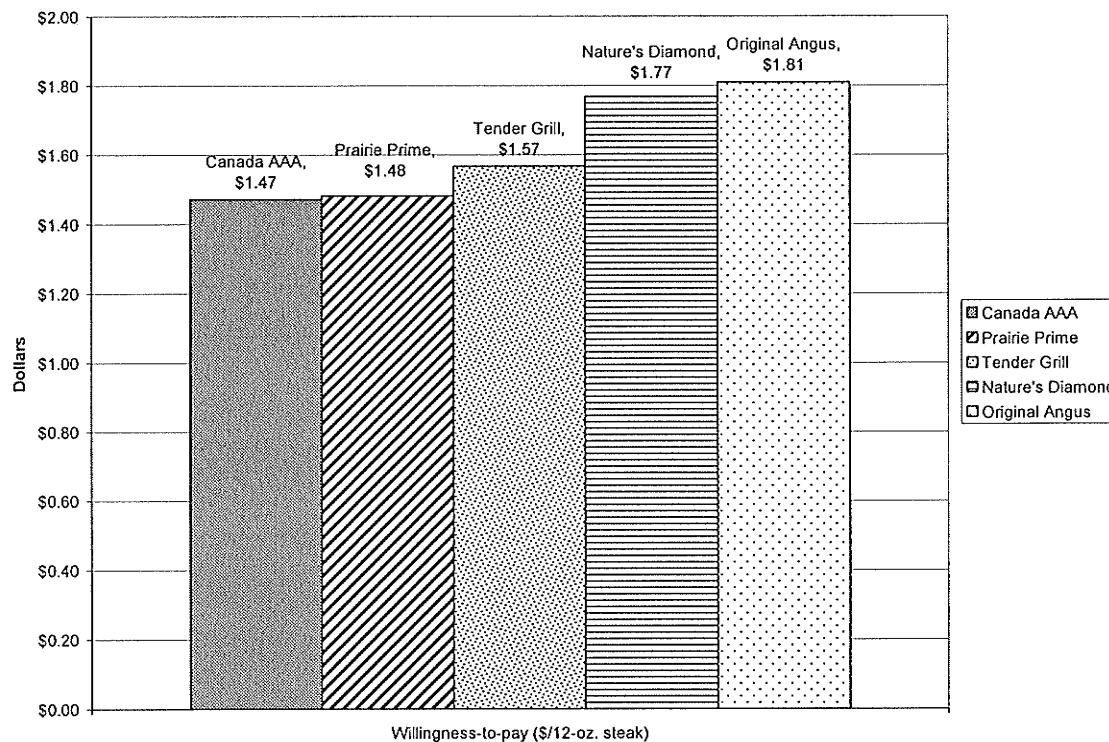
Figures one through three complement the summary statistics and show average willingness-to-pay values for all of the value added steaks tested in the experimental auction, cheap talk survey and conventional survey, respectively.

Figure 2. Mean Consumer Willingness-to-pay Premiums for Canada AAA, Prairie Prime, Tender Grill, Nature's Diamond and Original Angus, Cheap Talk Survey Data



As expected, the Canada AAA steak had the lowest mean willingness-to-pay in the experimental auction. However, this was not the case for the cheap talk and conventional surveys. In both survey treatments, the Canada AAA steak had a mean willingness-to-pay either equal to or higher than that of the Prairie Prime and Tender Grill steaks. This may suggest that the development of these brands is not warranted, given the additional costs associated with the development, production and selling of these brand names.

Figure 3. Mean Consumer Willingness-to-pay Premiums for Canada AAA, Prairie Prime, Tender Grill, Nature's Diamond and Original Angus, Conventional Survey Data



6.4 Mean consumer willingness-to-pay

It is interesting to note that the average willingness-to-pay for each of the brand name steaks was lowest in the experimental auction, followed by the cheap talk survey and finally the conventional survey. These results are also clearly visible from Figures 4 through 8.

Table 6. Mean Willingness-to-Pay by Treatment Method

Steak	Experimental Auction (\$/steak)	Cheap Talk Survey (\$/steak)	Conventional Survey (\$/steak)
Canada AAA	1.116	1.425 ^a	1.472 ^{a,d}
Prairie Prime	1.205	1.406 ^a	1.481 ^{a,d}
Tender Grill	1.317	1.431 ^c	1.567 ^{a,d}
Nature's Diamond	1.312	1.576 ^a	1.767 ^{a,e}
Original Angus	1.308	1.641 ^a	1.810 ^{a,e}

^a indicates significantly different from the experimental auction at $\alpha = 0.05$

^b indicates significantly different from the experimental auction at $\alpha = 0.10$

^c indicates not significantly different from the experimental auction

^d indicates not significantly different from the cheap talk survey

^e indicates significantly different from the cheap talk survey at $\alpha = 0.10$

To determine if the three treatments were statistically different from each other, a series of t-tests were conducted. The results of these t-tests are shown in Table 6. It compares the respondents' mean willingness-to-pay for each of the brands in each of the treatments. It was found that the Canada AAA, Prairie Prime, Nature's Diamond and Original Angus steaks in the cheap talk survey treatment were all valued significantly higher than their experimental auction counterparts. Only the Tender Grill was not valued significantly higher than in the experimental auction.

Figure 4. Mean Consumer Willingness-to-pay Premiums for Canada AAA

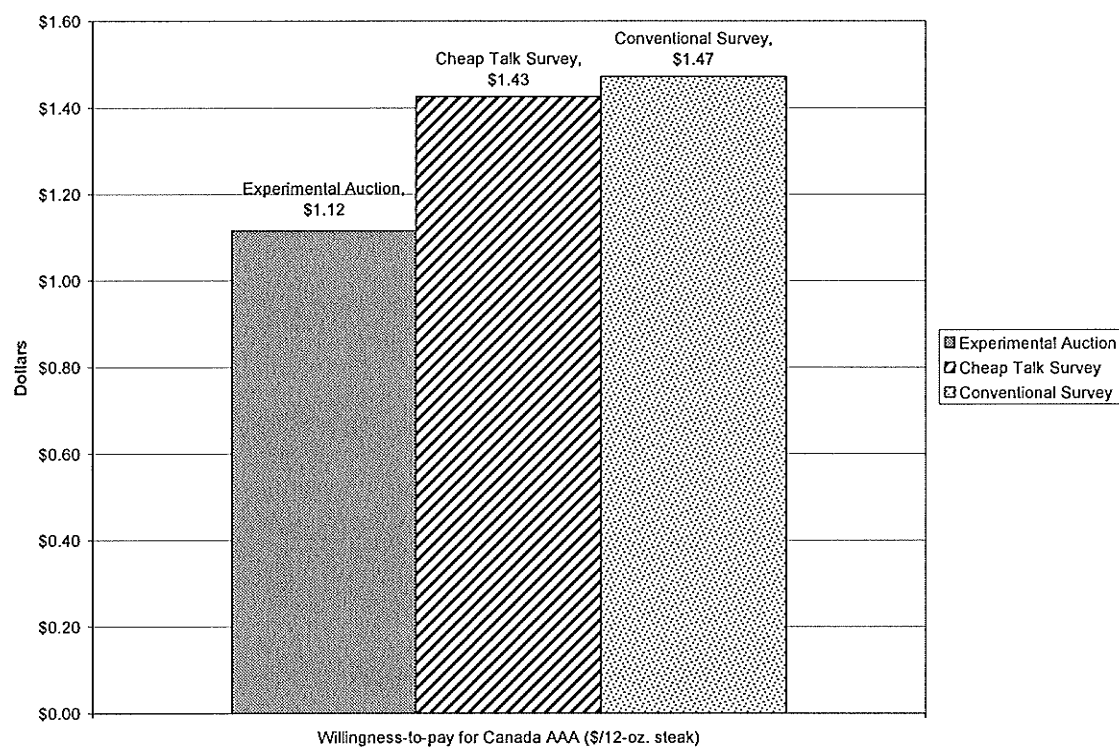


Figure 5. Mean Consumer Willingness-to-pay Premiums for Prairie Prime

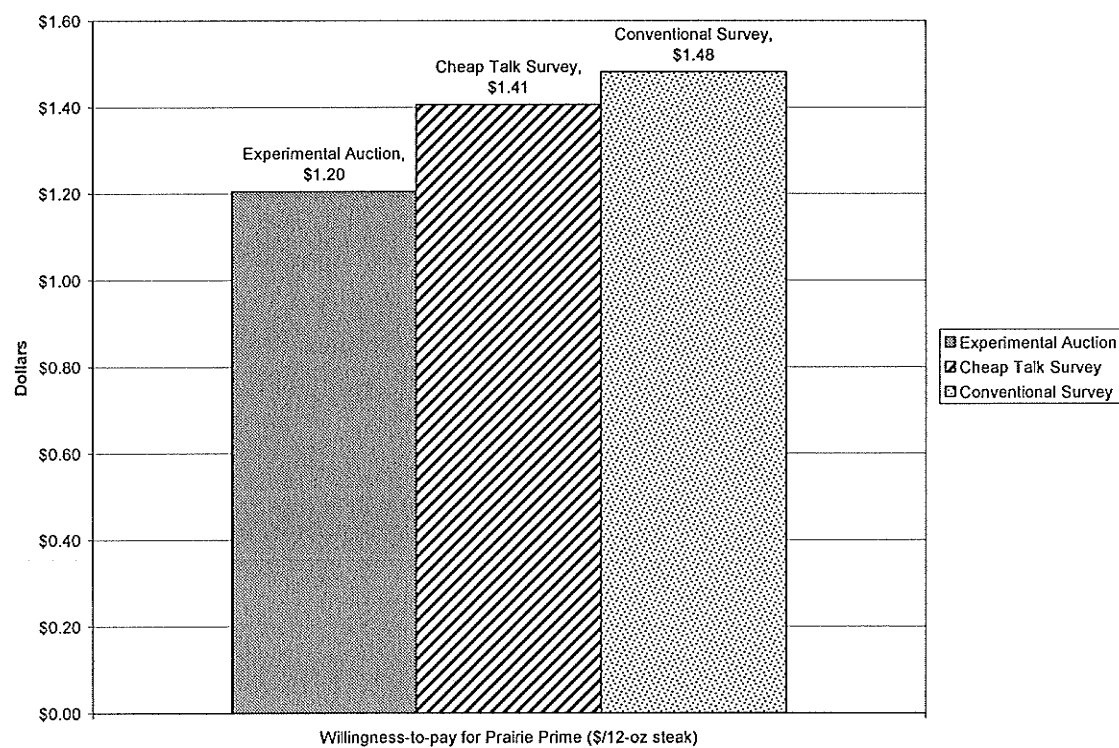


Figure 6. Mean Consumer Willingness-to-pay Premiums for Tender Grill

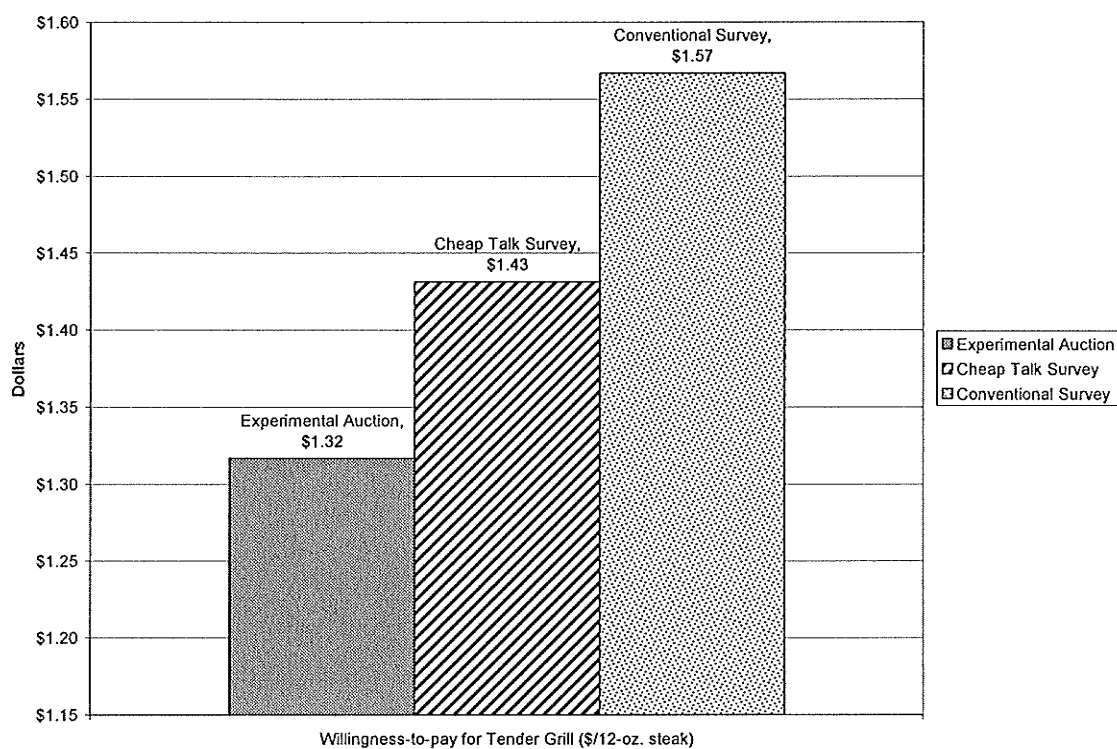


Figure 7. Mean Consumer Willingness-to-pay Premiums for Nature's Diamond

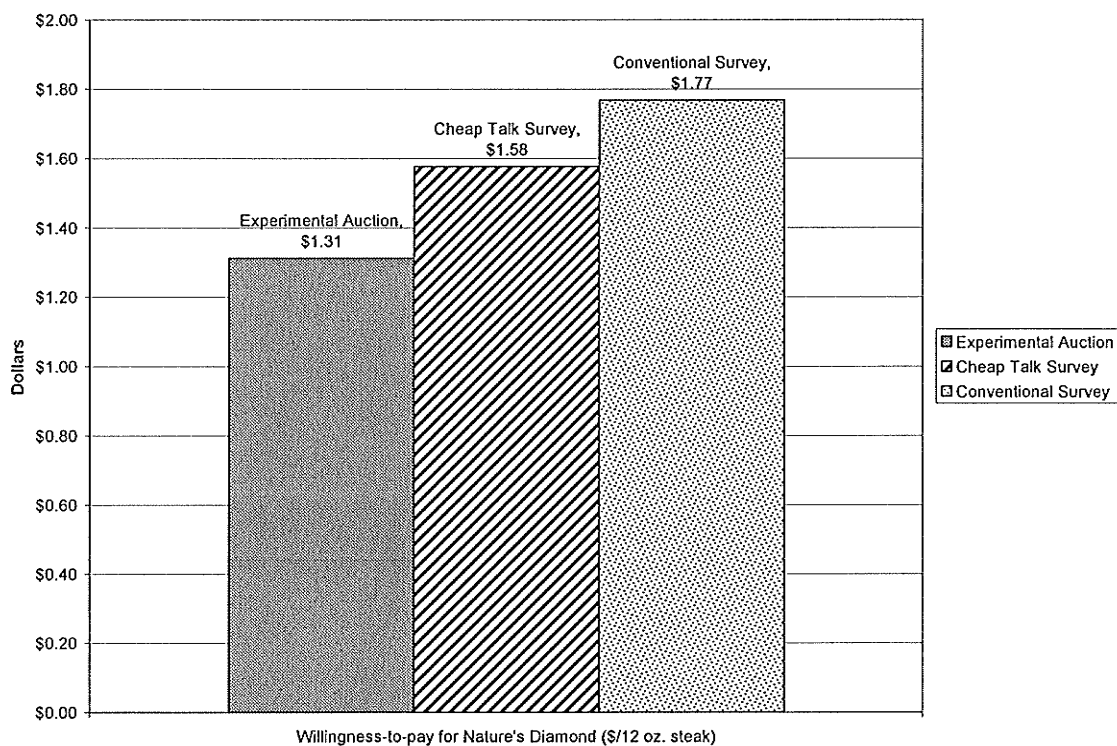
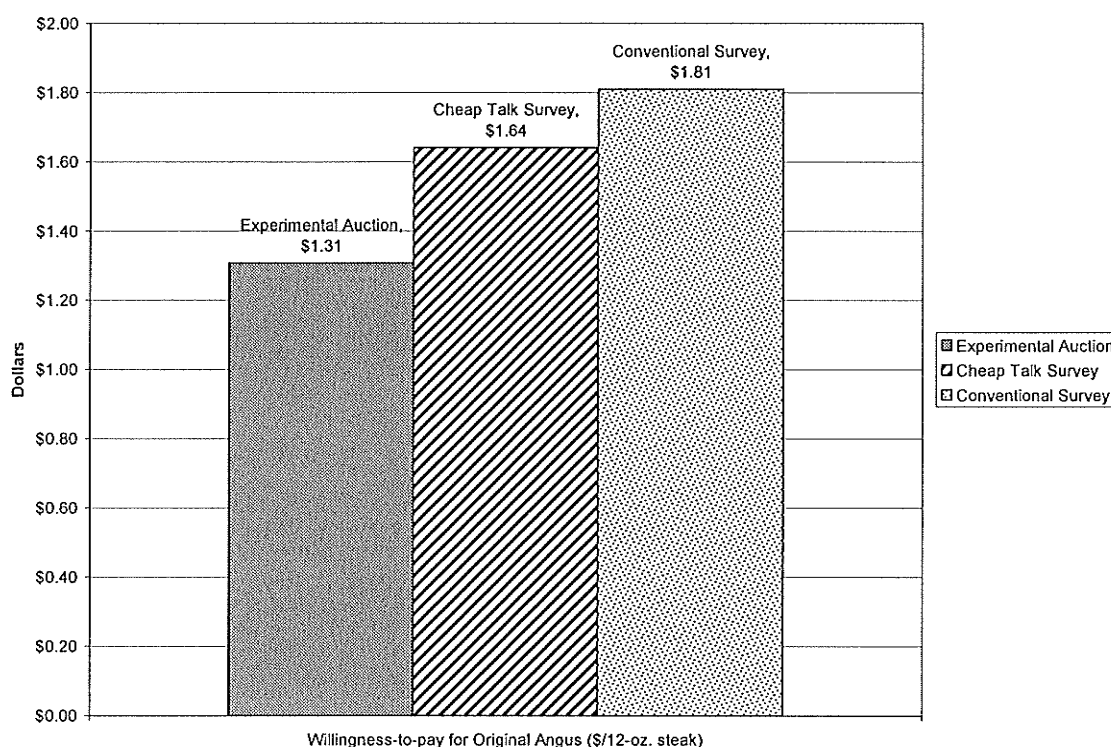


Figure 8. Mean Consumer Willingness-to-pay Premiums for Original Angus



As expected, the Canada AAA, Prairie Prime and Tender Grill steaks from the conventional survey treatment were found to be valued statistically higher than in the experimental auction. However, they were not statistically different from their cheap talk equivalents. The Nature's Diamond and Original Angus steaks were also found to be valued statistically higher than their experimental auction counterparts. However, they were also valued statistically higher than the same steaks in the cheap talk treatment. Therefore, from these results it is fair to conclude that bids from the open-ended cheap talk survey were generally not statistically equivalent to the BDM experimental auction.

Table 7 shows the mean willingness-to-pay for each of the brand name steaks for the experimental auction in addition to the percentage that the cheap talk and conventional surveys were higher than the experimental auction. For example, the Nature's Diamond steak is 20.12% and 34.68% higher in the cheap talk and conventional

surveys, respectively, than in the experimental auction. On average, bids from the cheap talk survey were approximately 20% higher than the experimental auction and bids from the conventional survey were approximately 30% higher than the experimental auction. Thus, although the cheap talk survey was able to reduce hypothetical bias, it was not completely eliminated.

Table 7. Comparison of Premiums by Treatment Method, Percentage Increase

Steak	Experimental Auction (EA) (\$/steak)	Increase in Cheap Talk Bid over EA (\$/steak)	Increase in Conventional Bid over EA (\$/steak)
Canada AAA	1.12	27.77%	31.90%
Prairie Prime	1.21	16.68%	22.90%
Tender Grill	1.32	8.65%	18.98%
Nature's Diamond	1.31	20.12%	34.68%
Original Angus	1.31	25.46%	38.38%
Average		19.74%	29.37%

One more item should be noted from Table 7. As observed by previous researchers, there was no consistent level of hypothetical bias. Hypothetical bias in the conventional survey ranged from 18.98% to 38.38% and from 8.65% to 27.77% in the cheap talk survey. Therefore, it would be rather difficult in practice to devise a general calibration method for all steak and beef products, and even more difficult for all products and services in general.

6.5 Statistical differences between brand name and Canada AAA steaks

Producers, packers and retailers would only benefit from the development and sale of brand name beef products to Canadian consumers if they were willing-to-pay more for these brand name products than existing products in the market place. An example of an existing product is a Canada AAA steak. A series of paired samples t-tests were conducted to determine if the proposed brand name products could extract premiums over the equivalent Canada AAA steaks. Essentially, these paired samples t-tests enabled the researchers to determine if the brand name steaks were valued significantly higher than the Canada AAA steak. Results can be seen in table 8.

Table 8. Test Results for WTP Equivalence, By Treatment

Steak	Experimental Auction (t-statistic)	Cheap Talk Survey (t-statistic)	Conventional Survey (t-statistic)
Prairie Prime	-1.664*	-0.354	0.065
Tender Grill	-3.745**	0.317	1.748*
Nature's Diamond	-2.841**	-2.572**	-4.033**
Original Angus	-3.409**	-4.552**	-6.363**

*indicates significantly different from the AAA steak at $\alpha=0.10$

**indicates significantly different from the AAA steak at $\alpha=0.05$

Results were relatively consistent across treatment methods: in all three elicitation treatments, the Nature's Diamond and Original Angus steaks were valued significantly higher than the Canada AAA steak. Thus, if it could be determined that the beef for these

brands could be produced economically given the range of premiums observed, they could potentially generate higher profits than those realized by the Canada AAA beef.

The Tender Grill brand was valued as significantly different from the Canada AAA steak in the experimental auction at $\alpha=0.05$ and significantly different in the conventional survey at $\alpha=0.10$. However, it was not statistically different from the Canada AAA steak in the cheap talk survey. This suggests that there is interest in this type of brand; however, caution should be taken when developing this guaranteed tender brand. If it costs considerably more than the Canada AAA beef to produce and sell, there is a risk it may not generate any higher profits than Canada AAA beef. Therefore, further research is required to determine whether Canadian consumers are consistently willing-to-pay more for this brand. This research may want to concentrate on the affects of varying advertising levels on willingness-to-pay for the Tender Grill steak.

The Prairie Prime steak was valued significantly different from the Canada AAA steak at $\alpha=0.10$ in the experimental auction. In the cheap talk and conventional surveys the Prairie Prime steak was not valued significantly differently from the Canada AAA steak. This suggests extreme caution should be exercised by beef supply chain participants if this type of brand is developed and sold at a higher cost than the Canada AAA steak. Evidence from the three elicitation mechanisms indicates that Canadian consumers do not value this type of steak brand higher than the Canada AAA steak. However, if this type of steak costs the equivalent or less than the Canada AAA to produce and sell, similar profits may be realized with this type of regional brand.

Additionally, this type of regional brand actually has the power to elicit strong emotional ties between the consumer and the brand (de Chernatony, 2001). These types

of regional brands have the potential to become some of the most successful brands because they tend to stir up sentiments such as patriotism. Consumers are generally willing-to-pay more for a brand when it elicits these types of feelings. However, it generally takes time and money to develop these types of emotional ties between the consumer and the brand. Therefore, while this brand has the potential to become extremely successful, it likely has the highest amount of risk associated with its development compared to the other brands due to its relatively low valuation in each of the elicitation mechanisms.

6.6 Mean Willingness-to-Pay Premiums by Demographic Variable

Figure 9 depicts mean willingness-to-pay premiums for each of the brands broken down by gender for the cheap talk survey. One observation of particular interest is that for females, the brand with the highest mean willingness-to-pay was Nature's Diamond, whereas for males it was Original Angus. Another observation worth noting is that in general, males had higher mean willingness-to-pay values for each brand name and Canada AAA steaks with the exception of Nature's Diamond.

Figure 9. Mean WTP Premiums for Females and Males, Cheap Talk Survey

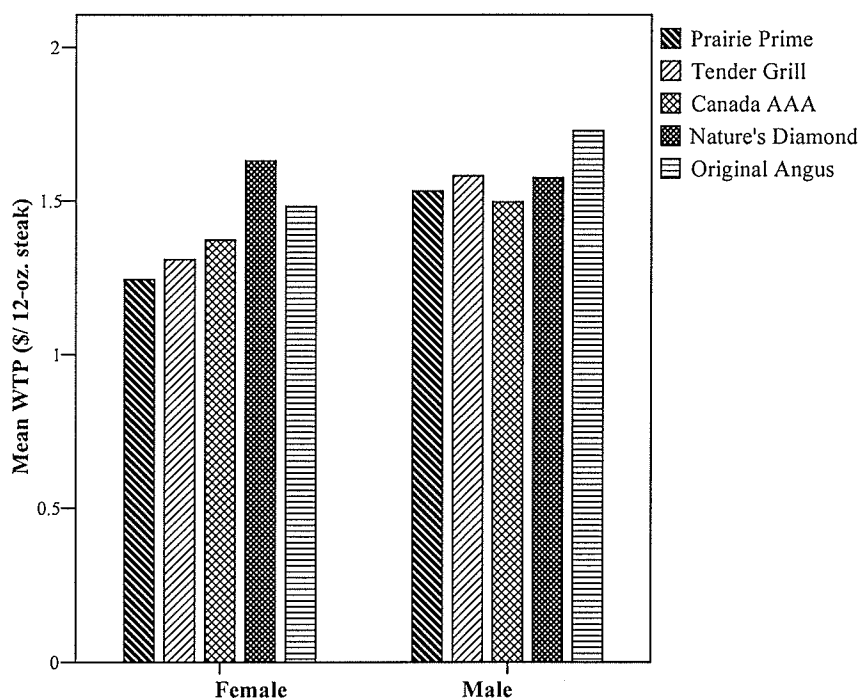


Figure 10. Mean WTP Premiums for Canadian Provinces, Cheap Talk Survey

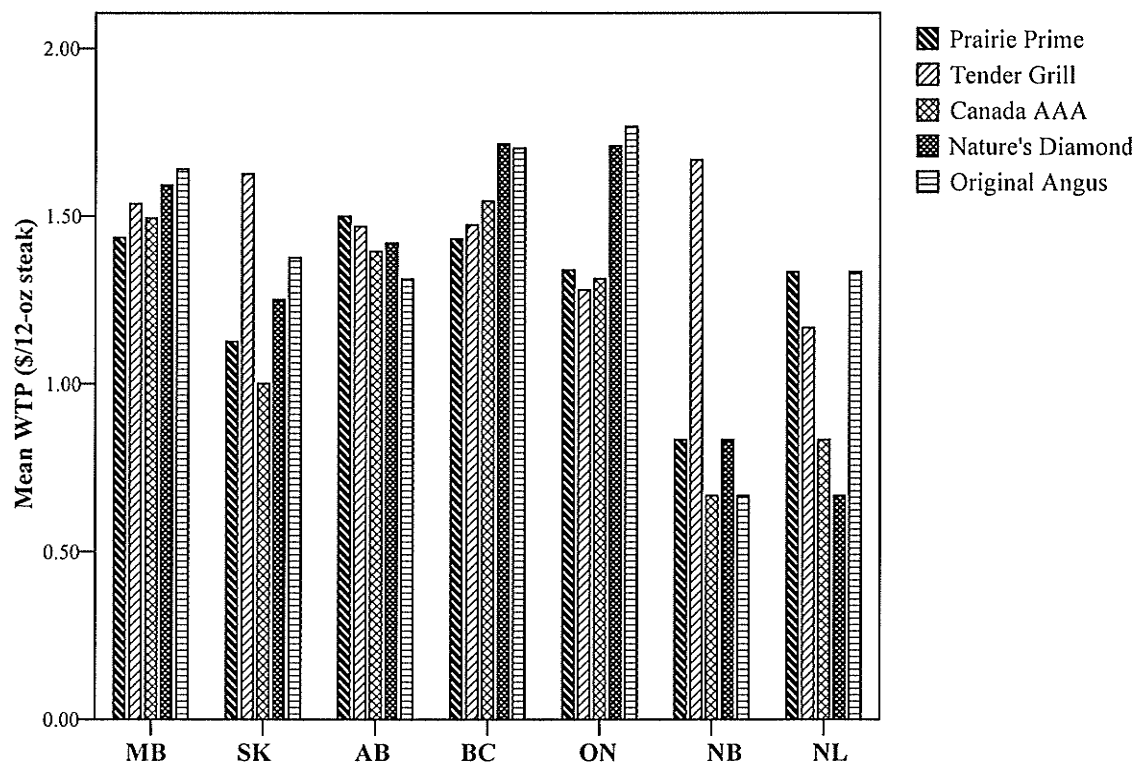


Figure 10 depicts mean willingness-to-pay premiums for each of the steaks broken down by province for the cheap talk survey. It should be noted that there was a considerable amount of variation in the number of observations for each province. Manitoba accounted for about half of the number of total observations and Saskatchewan, New Brunswick and Newfoundland had only a handful of observations each.

Manitoban, British Columbian and Ontarian respondents had highest mean willingness-to-pay premiums for the Original Angus and Nature's Diamond brands. Interestingly, Prairie Prime and Tender Grill were valued most by those from Alberta, with Original Angus lagging far behind. Saskatchewan, New Brunswick and Newfoundland have too few observations to make any concrete observations.

Figure 11. Mean WTP Premiums for Education Categories, Cheap Talk Survey

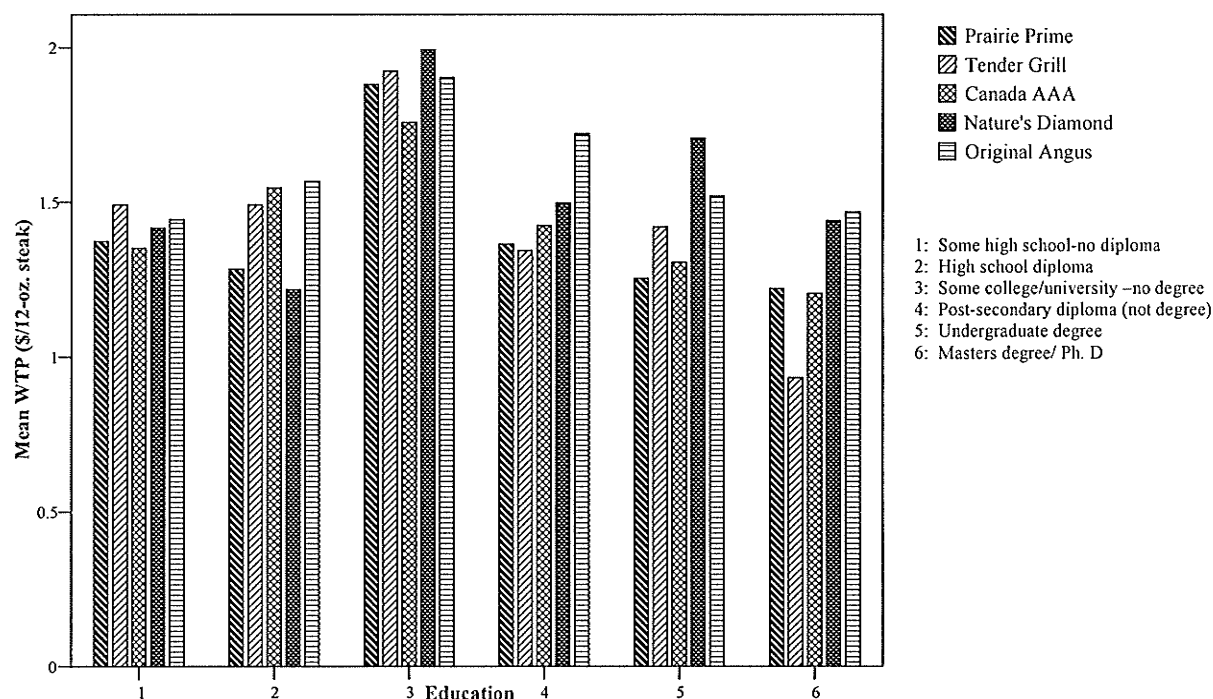


Figure 11 shows mean willingness-to-pay premiums for each of the steaks with respect to levels of education in the cheap talk survey. Two things are worth noting. First, those with some college or university but no degree had the highest mean willingness-to-pay for each brand of steaks as well as the Canada AAA steak. Second, those people with a Master's degree or PhD had the lowest mean willingness-to-pay for each of the steaks with the exception of Nature's Diamond. This suggests marketing should not be directed towards the most educated people unless it is for Nature's Diamond.

Figure 12. Mean WTP Premiums for Age Categories, Cheap Talk Survey

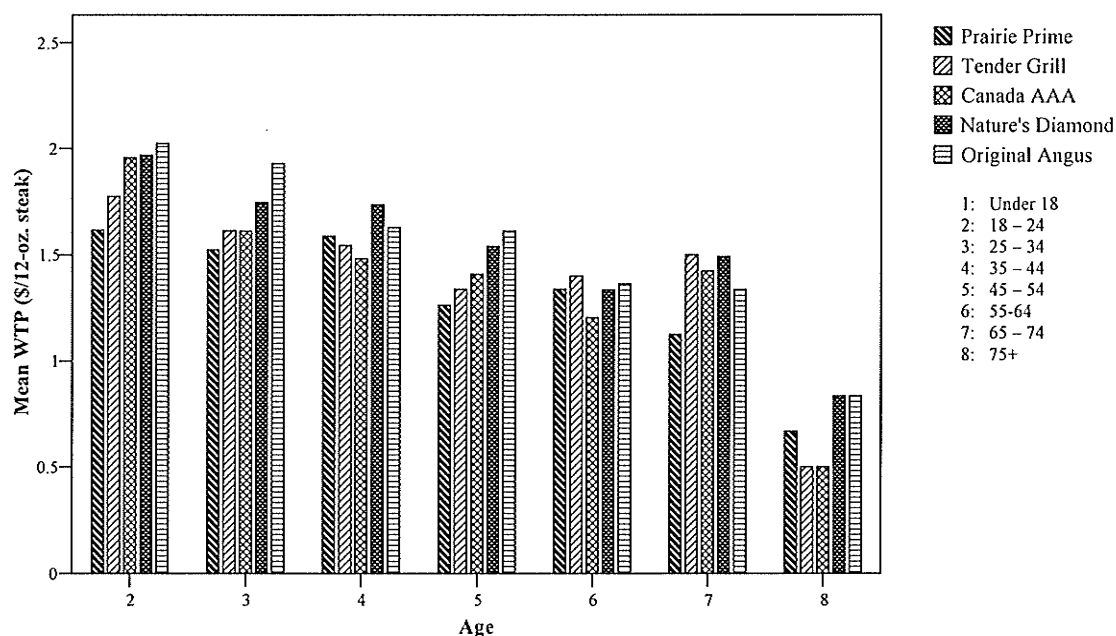


Figure 12 depicts mean willingness-to-pay premiums for each of the brands with respect to age categories for the cheap talk survey. It is of considerable interest that mean willingness-to-pay values declined as the age categories progressed resulting in the 18-24, and 75+ categories having the highest and lowest mean willingness-to-pay premiums for each of the brands and Canada AAA, respectively. This left each of the remaining categories somewhere in the middle. Thus, marketing efforts for brand name beef should be generally focused on younger consumers.

Figure 13. Mean WTP Premiums for Income Categories, Cheap Talk Survey

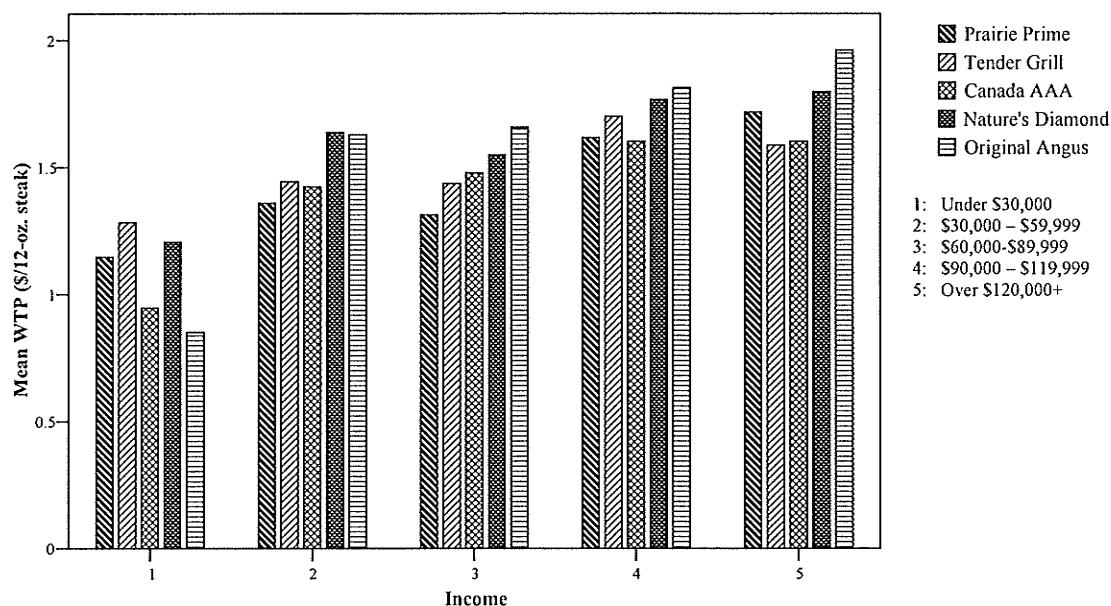


Figure 13 shows mean willingness-to-pay premiums for each brand, broken down across income categories. The figure shows a slight increase in mean willingness-to-pay premiums with increasing incomes. However, this is clearly not universally the case for each of the brands or categories. For example, respondents in the \$30,000-\$59,999 income category had a higher mean willingness-to-pay for Prairie Prime and Nature's Diamond than the \$60,000-\$89,999 income category.

Figure 14. Mean WTP Premiums for Beef Grade Categories, Cheap Talk Survey

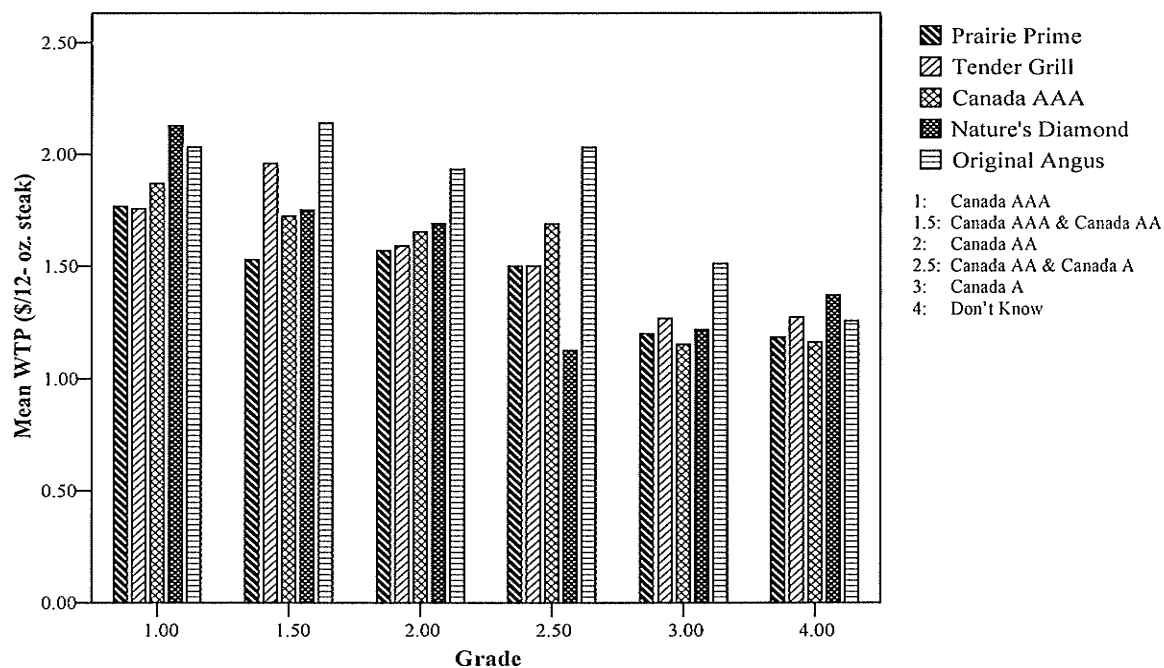


Figure 14 shows mean willingness-to-pay premiums for each of the steaks with respect to the grades of beef the respondent typically purchases. People who did not know which grade of beef they typically purchased, typically purchased Canada A, or a combination of Canada A & AA were generally not willing-to-pay much more for brand name or Canada AAA steaks. Respondents whom typically purchased Canada AAA or a combination of Canada AAA & AA were generally more likely to be willing-to-pay more for brand name and Canada AAA steaks.

Figure 15. Mean WTP Premiums for Confidence Levels, Cheap Talk Survey

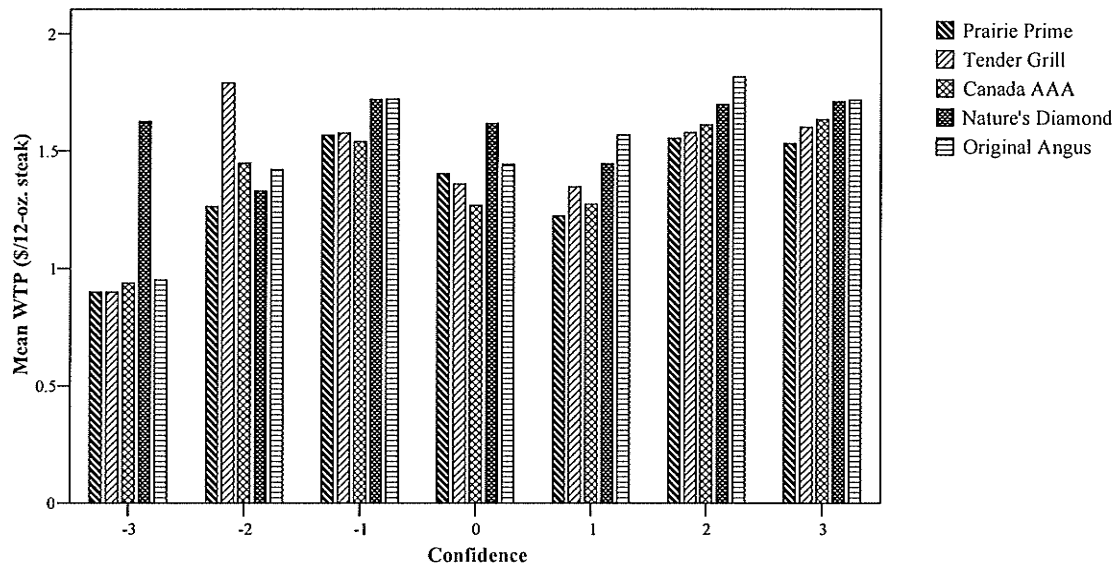


Figure 15 shows mean willingness-to-pay premiums for each steak with respect to seven confidence levels. Two things stand out in this figure. First, willingness-to-pay premiums are very low for those with a -3 confidence level, with the exception of Nature's Diamond. A potential explanation for this is that respondents with this -3 confidence level had low confidence because of the use of hormones, antibiotics, non-vegetarian by-products and animal welfare issues normally associated with cattle production. Thus, this type of respondent was only willing-to-pay more for brands such as Nature's Diamond that are produced with no hormones, antibiotics, etc. The second notable item about this figure is from respondents with a confidence level of -2. Respondents with a confidence level of -2 had a higher mean willingness-to-pay for Tender Grill than for all the other steaks. Perhaps this is because respondents with a confidence level of -2 were not confident in beef because they felt that the eating quality of steak from the grocery store is not good enough and that steaks from the grocery store

are tough. This resulted in these respondents having higher willingness-to-pay premiums for brands such as Tender Grill.

Figures 9 through 15 were only formulated for the cheap talk survey. These were intended to be representative of the other treatments as well. These same figures for the experimental auction and conventional survey were not included to reduce redundancy.

6.7 Premium Distributions for the Experimental Auction

Figures 16 through 19 illustrate the distribution of premiums for each of the brands over Canada AAA for the experimental auction. From these it is visible that there is a portion of consumers willing-to-pay more for each of the brand name steaks over the Canada AAA steak. However, the most common valuation from participants was an equal willingness-to-pay between the Canada AAA and brand name steaks. From these graphs it is also clear that a portion of respondents valued the branded steaks less than the Canada AAA steak. This is somewhat counterintuitive for some of the brands. For example, the Prairie Prime brand offers the consumer the same attributes as the Canada AAA in addition to several additional attributes and yet is valued lower by some. This may be explained by one of three things: first, it is possible that the respondent did not fully read the fact sheet detailing each of the brands and their attributes. This is not much different than what occurs in the real world, where consumers are exposed to product advertising they can disregard if they choose. A fact sheet was used here as a proxy for informative advertising, and it is possible that some of the experimental auction participants chose to pay it no heed. A second possibility is that the respondent actually believes that the brand is a negative attribute, thus making the Prairie Prime steak the less

desirable product. A final possibility is that the consumer merely evaluated the steak on a visual basis and discounted all other information. Because beef is a biological product, no two steaks will look identical. A consumer may simply like or dislike the look of a steak and choose one steak over another for that reason, without taking the attributes of a particular brand into consideration.

Figure 16. Experimental Auction Premiums Consumers were Willing-to-pay for Prairie Prime over Canada AAA

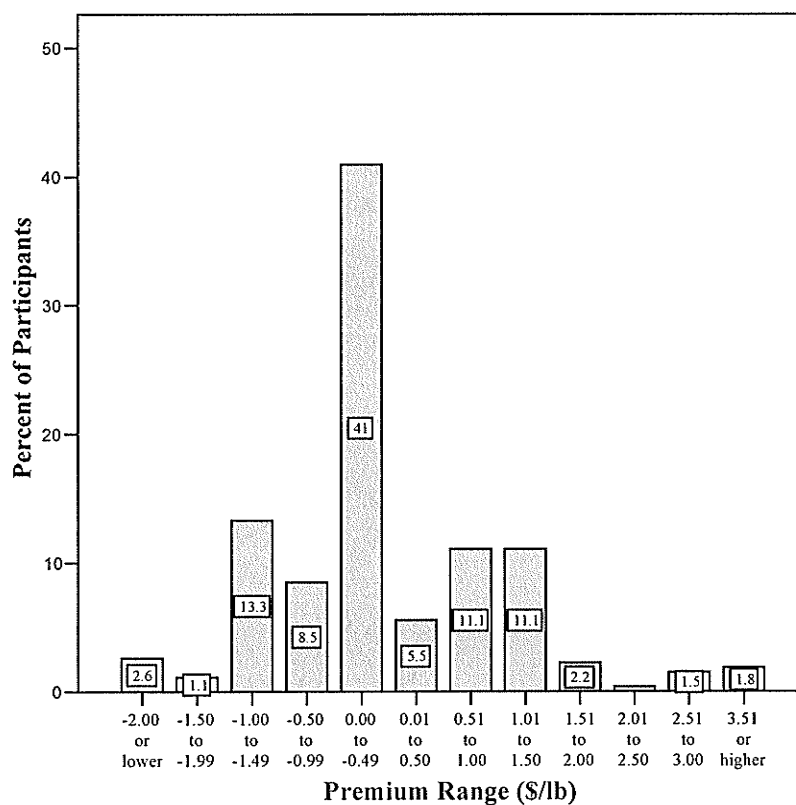


Figure 16 shows nearly 28% of participants were willing-to-pay \$0.51 or more for the Prairie Prime steak over the Canada AAA steak. However, two-thirds of participants were not willing-to-pay any premium for the Prairie Prime steak over the Canada AAA steak. This illustrates that there is a small niche market interested in a regional brand such as Prairie Prime.

Figure 17. Experimental Auction Premiums Consumers were Willing-to-pay for Tender Grill over Canada AAA

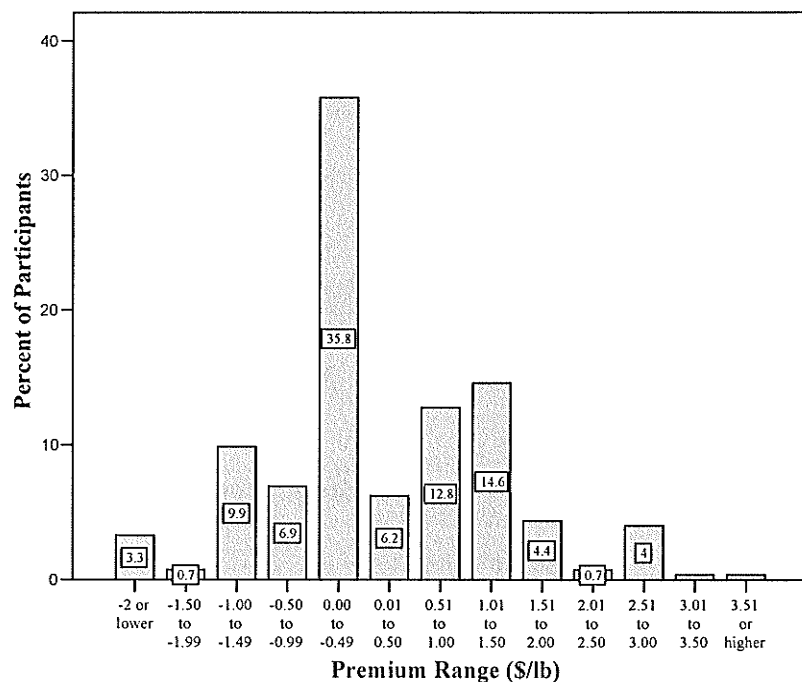


Figure 17 shows nearly 37.2% of participants were willing-to-pay \$0.51 or more for the Tender Grill steak over the Canada AAA steak. However, over half of participants were not willing-to-pay any premium for the Tender Grill steak over the Canada AAA steak. This demonstrates that there is a decent sized proportion of consumers interested in a guaranteed tender brand such as Tender Grill.

Figure 18. Experimental Auction Premiums Consumers were Willing-to-pay for Original Angus over Canada AAA

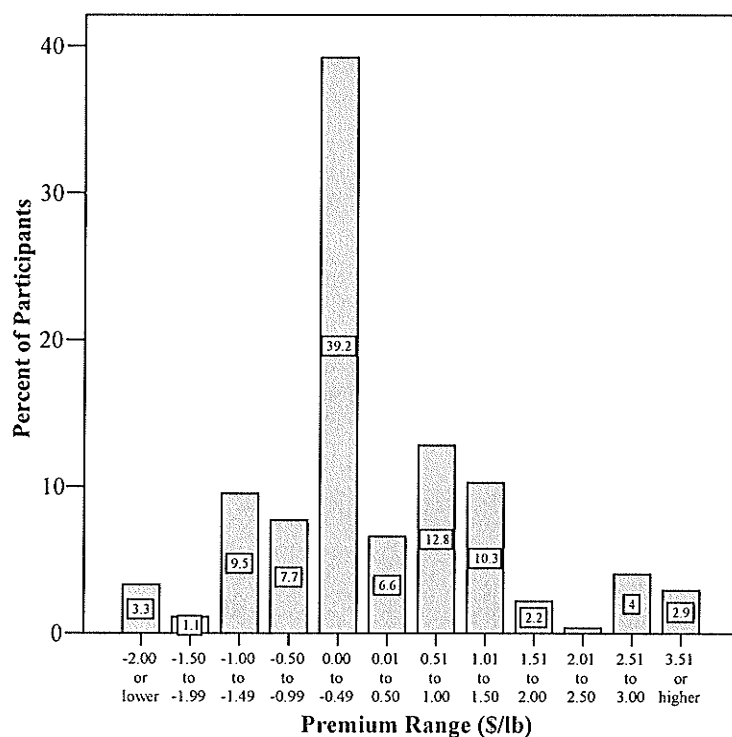


Figure 18 shows nearly 32.6% of participants were willing-to-pay \$0.51 or more for the Original Angus steak over the Canada AAA steak. However, 60.8% of participants were not willing-to-pay any premium for the Original Angus steak over the Canada AAA steak showing that over half of respondents did not value the Original Angus steak higher than the Canada AAA steak.

Figure 19. Experimental Auction Premiums Consumers were Willing-to-pay for Nature's Diamond over Canada AAA

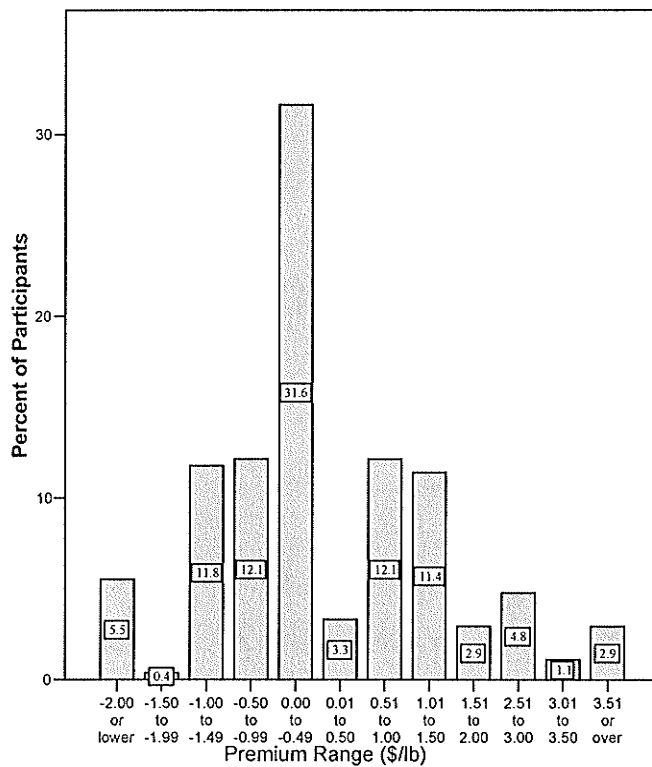
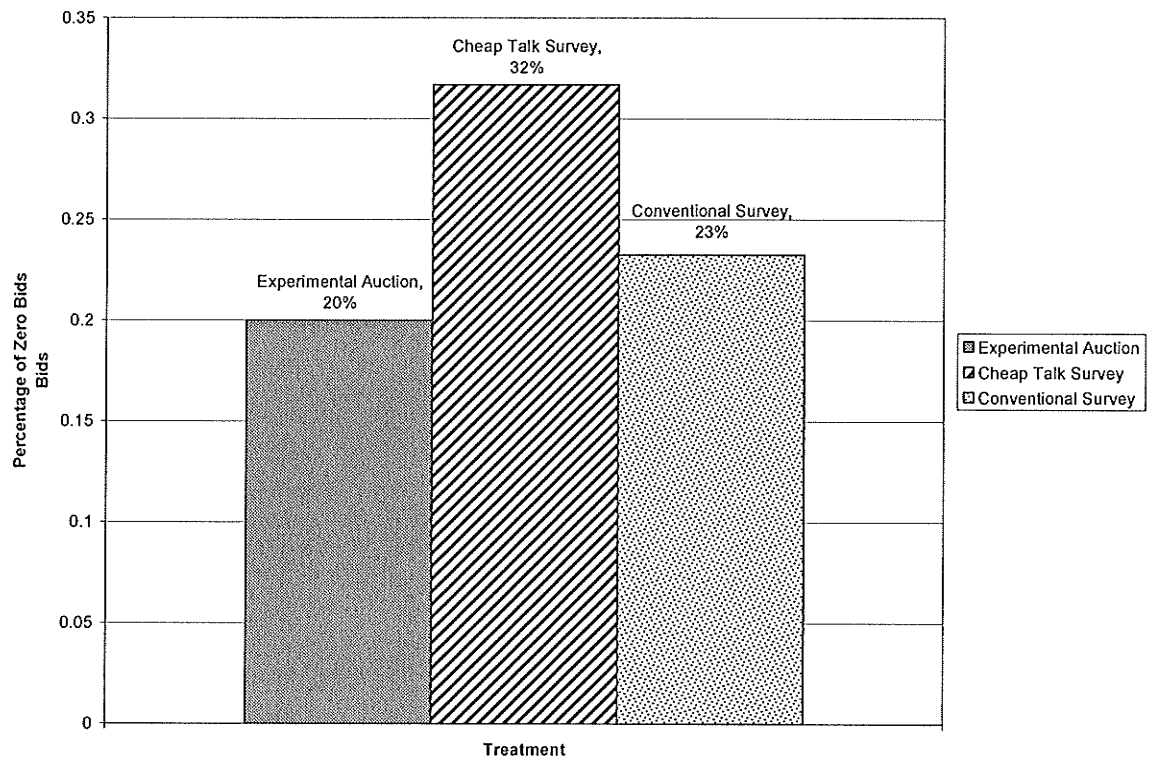


Figure 19 shows nearly 35.2% of participants were willing-to-pay \$0.51 or more for the Nature's Diamond steak over the Canada AAA steak. Similar premium distributions were obtained for the cheap talk and conventional surveys, however for the interest of space, only the experimental auction premium distribution graphs have been discussed.

Figure 20. Percentage of Zero Bids in each Treatment



One difference to note between the premium distributions of the other treatments is the number of zero bids. Figure 20 shows the percentage of zero bids in the experimental auction, cheap talk survey and conventional survey. The experimental auction, cheap talk survey and conventional survey had 20%, 32% and 23% zero bids in each of their respective treatments. It was expected that the experimental auction and cheap talk survey would have similar percentages of respondents bidding zero and a smaller percentage of respondents from the conventional survey bidding zero. Thus, it was slightly unexpected to find that the cheap talk survey had a higher percentage of respondents bidding zero than the experimental auction. An explanation for the higher occurrence of zero bids in the cheap talk survey is that since the cheap talk script informs participants that people often bid too high, they become more likely not to bid anything.

6.8 Tobit and Double Hurdle results

The econometric results for each treatment elicitation method will be discussed in the following section. As noted above, the factors hypothesized to affect willingness-to-pay for each of the steaks are: the number of times the respondent eats beef per week, how much the respondent likes the brand name, the respondent's confidence in determining steak quality at the grocery store, gender, age, income and education. All of these independent variables will be discussed in turn.

For every steak and each treatment, both the tobit and double hurdle models were run for model selection purposes. Using the likelihood ratio statistic as previously discussed, it was determined which model was most appropriate for each steak. Thus, a total of fifteen likelihood ratio tests- one for each brand and Canada AAA for each treatment- were conducted. Thirteen of the fifteen tests rejected the tobit model in favor of the double hurdle model. Tables 9, 10 and 11 show which model was appropriate for each steak. The tobit model is denoted by an "a" and the double hurdle model is denoted by a "b" in tables 9, 10 and 11. The Tender Grill steak in the experimental auction and conventional survey treatments as well as the Canada AAA steak in the cheap talk survey treatment failed to reject the appropriateness of the tobit model. The remainder of the steaks in each of the treatments rejected the tobit model in favor of the double hurdle model.

A statistically significant variable is denoted by a single asterisk at the 0.10 level and by a double asterisk at the 0.05 level. Tables 9, 10 and 11 (tables are compiled by treatment method) will be discussed in turn followed by some similarities between the treatment methods. Finally, each brand name steak will be compared by treatment

method to get a complete portrait of Canadian consumers' willingness-to-pay for brand name beef.

6.8.1 Tobit/Double Hurdle results for the Experimental Auction

Table 9. Experimental Auction Results, Tobit and Double Hurdle Models

	AAA ^a	Prairie Prime ^a	Tender Grill ^b	Original Angus ^a	Nature's Diamond ^a
Intercept (std. err.)	0.222 (0.740)	-0.687 (1.052)	0.850* (0.446)	-0.710 (0.702)	-3.341* (1.753)
Beef Eaten (std. err.)	0.190** (0.082)	0.104 (0.108)	0.124** (0.059)	0.240** (0.091)	0.057 (0.159)
Like Name (std. err.)	n/a n/a	0.341** (0.141)	0.259** (0.061)	0.236** (0.106)	0.387** (0.146)
Confidence (std. err.)	-0.102 (0.072)	-0.257** (0.108)	-0.113* (0.059)	-0.102 (0.083)	-0.271** (0.136)
Gender (std. err.)	0.176 (0.186)	0.726** (0.262)	0.214 (0.149)	0.582** (0.207)	0.132 (0.357)
Age (std. err.)	-0.109 (0.093)	-0.162 (0.140)	-0.069 (0.054)	-0.180* (0.093)	0.036 (0.176)
Income (std. err.)	0.201** (0.093)	0.012 (0.153)	0.015 (0.064)	0.142 (0.113)	0.058 (0.229)
Education (std. err.)	0.008 (0.080)	0.162 (0.168)	-0.070 (0.054)	0.085 (0.079)	0.764** (0.361)

** indicates significance at $\alpha = 0.05$

* indicates significance at $\alpha = 0.10$

^a indicates the tobit model was rejected in favour of double hurdle model

^b indicates the tobit model was not rejected

For the BDM experimental auction, the number of times per week a respondent consumes beef at home positively affected willingness-to-pay for each of the brand names; however, its effects were only significant for the Canada AAA, Tender Grill and Original Angus steaks. Hence, the more often the respondent consumed beef at home, the more likely they were willing-to-pay more for those respective brands.

The strength of the respondent's preference for brand and logo also had a positive, significant effect on the amount the respondent was willing-to-pay for each of the brand name steaks. It appears as though developing a likeable brand name and logo is important in marketing a new beef product to Canadian consumers. For example, liking the brand name was measured on a seven point Likert scale; thus a one-point increase in the amount the respondents like, for example, the Nature's Diamond brand name, increases their willingness-to-pay by \$0.39 for that steak versus the generic steak.

A respondent's confidence level in determining steak quality at the grocery store was also an important factor in determining the respondent's willingness-to-pay for value added steak. As expected, the more confident the respondent was in determining steak quality at the grocery store (again as measured on a seven point Likert scale), the less they were willing-to-pay for brand name steak. This was expected because in theory, brands are used by consumers as guides for quality. If there is a brand listed on a product, it means that someone is accountable for the quality of that product. Thus, if experienced quality is not up to expectations, the producer/manufacturer/retailer may be held accountable for the product inadequacy. Therefore, if a consumer is fairly unsure about steak quality in a retail setting, they are more willing-to-pay for a brand name that is a good indicator of steak quality. While a one-point increase in confidence led to a

decrease in the amount the respondent was willing-to-pay for each of the brands, it was only a significant decrease for the Prairie Prime, Tender Grill and Nature's Diamond brands. For example, a one-point increase in confidence of store quality of beef led to a \$0.26 decrease in willingness-to-pay for the Prairie Prime steak.

Interestingly, male respondents were willing-to-pay more for each of the steaks than female respondents. Male respondents seem to be more interested in the attributes brand name steaks offer. Thus, brand name steaks should be targeted towards male shoppers where possible. The problem with this is that more often than not, the female member of the household still does most of the grocery shopping. For example, in the experimental auction, 59% of shoppers were female. Thus, advertising campaigns may want to persuade males to encourage their female partners to purchase brand name steaks.

For nearly every steak, age had a negative impact on the respondent's willingness-to-pay for brand name steaks. In other words, the older the respondent, the less likely they were to pay more for the value added steaks. For example, each unit increase in reported age category resulted in a \$0.18 decrease in the respondent's willingness-to-pay for the Original Angus steak. The only case for which this did not hold true was for the Nature's Diamond. For Nature's Diamond, the older the respondent, the more likely they were willing-to-pay slightly more for the steak. However, the only steak for which age had a statistically significant impact was the Original Angus steak. Since most results were not significant, not much importance should be attached to them. However, because their signs were all relatively consistent, it was worth noting.

Income had a positive effect on willingness-to-pay as expected; however, it only had a significant effect on willingness-to-pay for the Canada AAA steak (a one-unit

increase in income category resulted in a \$0.20 increase in their willingness-to-pay for the Canada AAA steak). Thus, as these results suggest, since beef does not make up a large portion of the consumer's budget, they may be willing- to-pay extra in order to obtain a premium steak, regardless of their income.

For the most part, education did not statistically increase or decrease the amount that consumers were willing-to-pay for the brand name steaks. Nevertheless, education was statistically important for the Nature's Diamond brand. A one-unit increase in the respondent's education level resulted in a drastic 76 cent increase in the willingness-to-pay for the Nature's Diamond steak.

6.8.2 Tobit/Double Hurdle results for the Cheap Talk Survey

Table 10. Cheap Talk Survey Results, Tobit and Double Hurdle Models

	AAA ^b	Prairie Prime ^a	Tender Grill ^a	Original Angus ^a	Nature's Diamond ^a
Intercept (std. err.)	1.013* (0.588)	-0.537 (1.293)	2.459 (1.620)	1.342 (1.738)	2.677** (1.065)
Beef Eaten (std. err.)	0.099 (0.071)	0.062 (0.098)	0.026 (0.110)	-0.180 (0.125)	-0.106 (0.101)
Like Name (std. err.)	n/a n/a	0.035 (0.094)	0.031 (0.117)	0.597** (0.144)	0.343** (0.079)
Confidence (std. err.)	0.103* (0.058)	-0.080 (0.079)	-0.109 (0.093)	0.035 (0.097)	0.064 (0.078)
Gender (std. err.)	0.165 (0.175)	0.033 (0.258)	-0.015 (0.299)	0.258 (0.297)	-0.160 (0.244)
Age (std. err.)	-0.221** (0.073)	0.032 (0.170)	-0.453** (0.227)	-0.116 (0.248)	-0.241 (0.152)
Income (std. err.)	0.261** (0.077)	0.593** (0.203)	0.578** (0.205)	0.099 (0.201)	0.428** (0.145)
Education (std. err.)	-0.089 (0.071)	-0.162 (0.125)	-0.323** (0.138)	-0.267 (0.171)	-0.240** (0.106)

** indicates significance at $\alpha = 0.05$

* indicates significance at $\alpha = 0.10$

^a indicates the tobit model was rejected in favour of double hurdle model

^b indicates the tobit model was not rejected

Results from models using data from the cheap talk survey are shown in Table 10.

While the number of times beef was typically consumed in the respondent's household

had a significantly positive effect on willingness-to-pay for several of the brands in the

experimental auction, it did not have any statistical significance on any of the steaks in the cheap talk survey.

The degree to which the respondents liked the brand names was again significant for several of the brands. The more the respondent liked the brand and logo, the more they were willing-to-pay to exchange their generic steak for the brand name steak. The Original Angus and Nature's Diamond steaks extracted \$0.60 and \$0.34 premiums respectively with each one-point increase in their liking as rated by the seven point Likert scale.

Confidence in grocery store steak quality did not play as important a role in explaining the willingness-to-pay valuations for the value added steaks in the cheap talk survey as it did in the experimental auction. However, theoretically, one would expect less confidence to result in higher willingness-to-pay for brand names. Although the effects of gender were not statistically significant determinants of steak willingness-to-pay, the signs associated with each estimate provide some interesting information. For several of the steaks, if the respondent was male, they were willing-to-pay more for the brand name steak. However, if the respondent was female, they were more likely to pay more for the Nature's Diamond steak than their male counterparts, all other things being equal.

Using the cheap talk data, it was found that with each unit increase in income category, respondents were willing-to-pay more the value added steaks. These results were statistically significant for the Canada AAA, Prairie Prime, Tender Grill and Nature's Diamond steaks. It is interesting to note that the only brand for which these

parameters were not significant was the Original Angus steak, suggesting that consumers may be willing-to-pay more for this steak no matter what their income.

The effect of education on willingness-to-pay for each of the brands in the cheap talk survey contrasted quite strikingly with the results of the educational impact in the experimental auction. Results from the cheap talk survey suggest that with a one-unit increase in the educational category, there is a decrease in the respondent's willingness-to-pay for each of the value added steaks. For example, willingness-to-pay falls by \$0.32 and \$0.24 for the Tender Grill and Nature's Diamond steaks respectively for each one-point increase in the respondent's education level. This is obviously quite different from the 76 cent increase the Nature's Diamond steak saw in the experimental auction with a one-point increase in education level.

6.8.3 Tobit/Double Hurdle results for the Conventional Survey

Table 11. Conventional Survey Results, Tobit and Double Hurdle Models

	AAA ^a	Prairie Prime ^a	Tender Grill ^b	Original Angus ^a	Nature's Diamond ^a
Intercept (std. err.)	-1.524 (1.536)	0.103 (1.741)	1.683** (0.528)	-0.194 (1.583)	-3.125 (2.336)
Beef Eaten (std. err.)	-0.021 (0.102)	-0.236* (0.138)	-0.124* (0.067)	-0.114 (0.116)	0.194 (0.119)
Like Name (std. err.)	n/a n/a	0.117 (0.144)	0.423** (0.065)	0.599** (0.167)	0.516** (0.127)
Confidence (std. err.)	0.188* (0.102)	0.152 (0.106)	0.057 (0.055)	0.035 (0.102)	0.012 (0.122)
Gender (std. err.)	0.036 (0.298)	0.216 (0.338)	0.440** (0.174)	-0.027 (0.311)	-0.092 (0.394)
Age (std. err.)	-0.021 (0.228)	0.044 (0.290)	-0.307** (0.069)	-0.199 (0.222)	0.110 (0.255)
Income (std. err.)	0.493** (0.232)	-0.198 (0.232)	-0.001 (0.073)	0.310 (0.205)	0.196 (0.230)
Education (std. err.)	0.066 (0.187)	0.202 (0.250)	-0.007 (0.063)	0.055 (0.152)	0.559** (0.266)

** indicates significance at $\alpha = 0.05$

* indicates significance at $\alpha = 0.10$

^a indicates the tobit model was rejected in favour of double hurdle model

^b indicates the tobit model was not rejected

Results from models using data from the conventional survey are shown in Table 11. The more often respondents to the conventional survey ate beef per week, the less they were willing-to-pay for the brand name steaks. This result was statistically

significant for the Prairie Prime and Tender grill steaks at the ten per cent level. This was perhaps one of the most interesting findings of this study because of the sign reversal that occurred from the experimental auction. Because of this result, marketers may not want to focus on the number of times per week the consumer eats beef as a determinant of their target market.

Again, the degree to which the respondent liked the brand name affected the amount the respondent was willing-to-pay for each brand. The results were statistically significant for the Tender Grill, Original Angus and Nature's Diamond steaks. A one-point increase in the Likert scale rating that the respondent assigned to the steak resulted in a higher respective willingness-to-pay. For example, if the respondent liked the Original Angus name, a one-point increase in the Likert scale rating resulted in the respondent being willing-to-pay 60 cents more for that particular steak.

Rather than a lack of confidence resulting in increased willingness-to-pay for brand name steak, the presence of confidence in grocery store steak quality increased the willingness-to-pay for brand name steak in the conventional survey treatment. Thus, the respondent's confidence in grocery store steak quality again had the opposite effect that it had in the experimental auction, but a similar effect to that of the cheap talk survey. However, similar to the cheap talk survey results, confidence was only significant for the Canada AAA steak in the conventional survey treatment.

Once again, males were generally more likely to be willing-to-pay more for the brand name steaks, although this effect was only significant for the Tender Grill steak. Similar to the cheap talk survey, females were more willing-to-pay extra for the Nature's Diamond steak than their male counterparts.

There were mixed results regarding the effect of income upon willingness-to-pay for each of the value added steaks in the conventional survey. A one-point increase in the respondent's income category again resulted in a significant increase in their willingness-to-pay for the Canada AAA steak of \$0.49. Increases in income resulted in decreased willingness-to-pay values for the Prairie Prime and Tender Grill steaks and increased willingness-to-pay values for the Original Angus and Nature's Diamond steaks; however, none of these results were significant.

The effect of education on willingness-to-pay was only positive and significant for the Nature's Diamond brand, where a one-point increase in education category resulted in a 56 cent increase in willingness-to-pay. These results are commensurate with the increase in willingness-to-pay seen in the experimental auction for the Nature's Diamond brand, but opposite to those witnessed in the cheap talk survey. The remaining value added steaks did not realize large or significant impacts on willingness-to-pay in terms of education.

6.9 Similarities and Differences between the Treatment Methods

Tables 12 through 16 compare the econometric results by each individual brand name and the three elicitation mechanisms. Figures 4 through 8 showed mean willingness-to-pay premiums for each of the brand name and Canada AAA steaks with respect to the experimental auction, cheap talk survey and conventional survey respectively. From these figures it could be seen that the experimental auction consistently had the lowest mean willingness-to-pay for each of the brand name steaks as well as the Canada AAA steak. The cheap talk survey consistently had the second-lowest

mean willingness-to-pay for each of the brand name and Canada AAA steaks. The conventional survey consistently gave us the highest mean willingness-to-pay for each of the brand name and Canada AAA steaks. These results were somewhat expected; however, it was thought that the cheap talk survey mean willingness-to-pay might be closer to that of the experimental auction. The following section will take each value added steak and analyze the results for that steak between the different treatment methods.

6.9.1 Canada AAA

For the Canada AAA steak (Table 12), income was an important determinant of willingness-to-pay across the board. A one-unit increase in income category of respondents resulted in an increase in willingness-to-pay for the Canada AAA steak.

Table 12. Canada AAA Results, Tobit and Double Hurdle Models

	Experimental Auction ^a	Cheap Talk Survey ^b	Conventional Survey ^a
Intercept	0.222	1.013*	-1.524
(std. err.)	(0.740)	(0.588)	(1.536)
Beef Eaten	0.190**	0.099	-0.021
(std. err.)	(0.082)	(0.071)	(0.102)
Confidence	-0.102**	0.103*	0.188*
(std. err.)	(0.072)	(0.058)	(0.102)
Gender	0.176	0.165	0.036
(std. err.)	(0.186)	(0.175)	(0.298)
Age	-0.109	-0.221**	-0.021
(std. err.)	(0.093)	(0.073)	(0.228)
Income	0.201**	0.261**	0.493**
(std. err.)	(0.093)	(0.077)	(0.232)
Education	0.008	-0.089	0.066
(std. err.)	(0.080)	(0.071)	(0.187)

** indicates significance at $\alpha = 0.05$

* indicates significance at $\alpha = 0.10$

^a indicates the tobit model was rejected in favour of double hurdle model

^b indicates the tobit model was not rejected

Age was also a factor in determining willingness-to-pay for the Canada AAA steak. Although it was only a significant factor in the cheap talk survey, age exhibited a

negative sign in all three treatment methods. This is a clear indication that marketers should not include older Canadians in their target market.

It appears that the number of times a respondent eats beef in a week either has a positive or non-existent impact on their willingness-to-pay for Canada AAA steaks. This may suggest that frequent beef eaters are more willing-to-pay for Canada AAA steaks.

Confidence had a positive and significant impact on willingness-to-pay for the Canada AAA steak for both survey treatments, but an opposite and insignificant effect on willingness-to-pay in the experimental auction. Education appeared to have minimal effects on the respondent's willingness-to-pay for the Canada AAA steak. Thus, marketers should not focus on the education levels of their target market for the Canada AAA steak.

6.9.2 Prairie Prime

Prairie Prime (Table 13) was the only brand name steak tested that did not have at least one or two explanatory variables that were significant over the treatment methods.

Table 13. Prairie Prime Results, Tobit and Double Hurdle Models

	Experimental Auction ^a	Cheap Talk Survey ^a	Conventional Survey ^a
Intercept (std. err.)	-0.687 (1.052)	-0.537 (1.293)	0.103 (1.741)
Beef Eaten (std. err.)	0.104 (0.108)	0.062 (0.098)	-0.236* (0.138)
Like Name (std. err.)	0.341** 0.141	0.035 (0.094)	0.117 (0.144)
Confidence (std. err.)	-0.257** (0.108)	-0.080 (0.079)	0.152 (0.106)
Gender (std. err.)	0.726** (0.262)	0.033 (0.258)	0.216 (0.338)
Age (std. err.)	-0.162 (0.140)	0.032 (0.170)	0.044 (0.290)
Income (std. err.)	0.012 (0.153)	0.593** (0.203)	-0.198 (0.232)
Education (std. err.)	0.162 (0.168)	-0.162 (0.125)	0.202 (0.250)

** indicates significance at $\alpha = 0.05$

* indicates significance at $\alpha = 0.10$

^a indicates the tobit model was rejected in favour of double hurdle model

^b indicates the tobit model was not rejected

Frequency of beef consumed was only significant (and negative) in the conventional survey. The amount that the respondent liked the brand and logo was only significant in the experimental auction. Confidence was also only significant in the experimental auction and the variable actually changed signs in the conventional survey.

Gender only had a significant impact on willingness-to-pay for the Prairie Prime steak in the experimental auction. However, male respondents were willing-to-pay more for the Prairie Prime steak consistently across treatment methods even though it was not significant for the survey treatments.

Age and education were not significant determinants of willingness-to-pay, nor did they have consistent signs across treatment methods. Income was also an inconsistent determinant of willingness-to-pay for the Prairie Prime steak; it was positive and significant in the cheap talk survey, insignificant for the other two treatments, and negative in the conventional survey treatment.

6.9.3 Tender Grill

The econometric results for the Tender Grill steak (Table 14) were fairly consistent across treatment methods for nearly every variable. The frequency of beef consumed variable as an exception. In the experimental auction, each additional time the respondent consumed beef in a week added 12 cents to their willingness-to-pay for the Tender Grill steak. Conversely, in the conventional survey, each additional time respondents consumed beef their willingness-to-pay for the Tender Grill steak decreased by 12 cents. The cheap talk survey results fall somewhere in the middle of the two extremes witnessed in the experimental auction and conventional survey.

Table 14. Tender Grill Results, Tobit and Double Hurdle Models

	Experimental Auction ^b	Cheap Talk Survey ^a	Conventional Survey ^b
Intercept (std. err.)	0.850* (0.446)	2.459 (1.620)	1.683** (0.528)
Beef Eaten (std. err.)	0.124** (0.059)	0.026 (0.110)	-0.124* (0.067)
Like Name (std. err.)	0.259** (0.061)	0.031 (0.117)	0.423** (0.065)
Confidence (std. err.)	-0.113* (0.059)	-0.109 (0.093)	0.057 (0.055)
Gender (std. err.)	0.214 (0.149)	-0.015 (0.299)	0.440** (0.174)
Age (std. err.)	-0.069 (0.054)	-0.453** (0.227)	-0.307** (0.069)
Income (std. err.)	0.015 (0.064)	0.578** (0.205)	-0.001 (0.073)
Education (std. err.)	-0.070 (0.054)	-0.323** (0.138)	-0.007 (0.063)

** indicates significance at $\alpha = 0.05$

* indicates significance at $\alpha = 0.10$

^a indicates the tobit model was rejected in favour of double hurdle model

^b indicates the tobit model was not rejected

The degree to which the respondent liked the Tender Grill brand and logo positively affected their willingness-to-pay for the brand and was statistically significant in the experimental auction and conventional survey treatments. Generally speaking, if the respondent had higher confidence in steak quality from the grocery store, they had a

lower willingness-to-pay for the Tender Grill steak. In the experimental auction and conventional survey, males were more willing-to-pay extra for the Tender Grill steak than females. The cheap talk survey results regarding gender were so small and insignificant that they should not be viewed as contradictions to the other two treatment methods. Older and more educated respondents were less likely to be willing-to-pay extra for the Tender Grill steak brand. Marketers of a Tender Grill type brand should target younger, less educated Canadians with higher incomes.

6.9.4 Original Angus

Consistently, the degree to which the respondent liked the Original Angus brand and logo was the most important independent variable in determining the respondent's willingness-to-pay for the Original Angus steak (Table 15). In fact, the amount the respondent liked the name was the only variable that was significant in both survey treatments. A one-point increase in the respondent's Likert scale ranking of the name led to a 24 cent increase in the willingness-to-pay in the experimental auction and a 60 cent increase in willingness-to-pay for both survey treatments.

Table 15. Original Angus Results, Tobit and Double Hurdle Models

	Experimental Auction ^a	Cheap Talk Survey ^a	Conventional Survey ^a
Intercept (std. err.)	-0.710 (0.702)	1.342 (1.738)	-0.194 (1.583)
Beef Eaten (std. err.)	0.240** (0.091)	-0.180 (0.125)	-0.114 (0.116)
Like Name (std. err.)	0.236** (0.106)	0.597** (0.144)	0.599** (0.167)
Confidence (std. err.)	-0.102 (0.083)	0.035 (0.097)	0.035 (0.102)
Gender (std. err.)	0.582** (0.207)	0.258 (0.297)	-0.027 (0.311)
Age (std. err.)	-0.180* (0.093)	-0.116 (0.248)	-0.199 (0.222)
Income (std. err.)	0.142 (0.113)	0.099 (0.201)	0.310 (0.205)
Education (std. err.)	0.085 (0.079)	-0.267 (0.171)	0.055 (0.152)

** indicates significance at $\alpha = 0.05$

* indicates significance at $\alpha = 0.10$

^a indicates the tobit model was rejected in favour of double hurdle model

^b indicates the tobit model was not rejected

The number of times the respondent ate beef per week, gender and age were also significant factors in determining willingness-to-pay for the Original Angus steak in the experimental auction. Although these variables were not significant in determining willingness-to-pay for the survey treatments, age and gender had the same signs attached

to them as they did in the experimental auction. For example, if the respondent was male, they were willing-to-pay 58 cents and 26 cents more for the Original Angus steak in the experimental auction and cheap talk survey, respectively. An interesting result to note, however, is the change in sign that occurred on beef eaten for both survey treatments from the experimental auction. While the negative sign observed in the survey treatments was not significant, it leads to some questions, such as the reason behind the number of times beef eaten per week increased willingness-to-pay in the experimental auction yet decreased willingness-to-pay in the survey treatments. There is also a question as to whether it was the treatment method that led to these discrepancies.

Although results for confidence and income were not significant determinants of willingness-to-pay for any of the treatment methods for the Original Angus steak, income affected willingness-to-pay positively in each treatment method with no sign reversals. This suggests that respondents in higher income categories may be willing-to-pay more for the Original Angus steak, although not unequivocally.

6.9.5 Nature's Diamond

The degree to which the respondent liked the Nature's Diamond brand, as well as the respondent's education level, were significant determinants of willingness-to-pay for the Nature's Diamond steak (Table 16) in each survey treatment. A one-point increase in the Likert scale rating a respondent gave to the Nature's Diamond brand resulted in \$0.39, \$0.34 and \$0.52 increases in willingness-to-pay for the Nature's Diamond steak in the experimental auction, cheap talk survey and conventional survey, respectively. For two out of the three treatments (experimental auction and conventional survey), a one-

unit increase in the education level of the respondent led to an increase in their willingness-to-pay for the Nature's Diamond steak.

Table 16. Nature's Diamond Results, Tobit and Double Hurdle Models

	Experimental Auction ^a	Cheap Talk Survey ^a	Conventional Survey ^a
Intercept (std. err.)	-3.341* (1.753)	2.677** (1.065)	-3.125 (2.336)
Beef Eaten (std. err.)	0.057 (0.159)	-0.106 (0.101)	0.194 (0.119)
Like Name (std. err.)	0.387** (0.146)	0.343** (0.079)	0.516** (0.127)
Confidence (std. err.)	-0.271** (0.136)	0.064 (0.078)	0.012 (0.122)
Gender (std. err.)	0.132 (0.357)	-0.160 (0.244)	-0.092 (0.394)
Age (std. err.)	0.036 (0.176)	-0.241 (0.152)	0.110 (0.255)
Income (std. err.)	0.058 (0.229)	0.428** (0.145)	0.196 (0.230)
Education (std. err.)	0.764** (0.361)	-0.240** (0.106)	0.559** (0.266)

** indicates significance at $\alpha = 0.05$

* indicates significance at $\alpha = 0.10$

^a indicates the tobit model was rejected in favour of double hurdle model

^b indicates the tobit model was not rejected

The number of times the respondents ate beef per week, gender and age essentially had no noticeable or consistent impact on the willingness-to-pay for Nature's

Diamond. This is in contrast to some of the other brand name steaks where these variables have been significant determinants of willingness-to-pay. Confidence was only a significant variable in determining willingness-to-pay for the Nature's Diamond steak in the experimental auction. The more confident the respondent was in determining steak quality at the grocery store, the less they were willing-to-pay for the Nature's Diamond steak. Income was a significant variable in the cheap talk survey treatment, however, remained consistently positive in sign across all treatments.

Chapter 7: Discussion and Conclusions

7.1 Introduction

This chapter presents the conclusions that can be drawn from this work about the Canadian beef industry and Canadian consumers' willingness-to-pay for branded beef. It also consists of a discussion of the results presented in chapter six and their implications to the Canadian beef industry. This research is important because it was found that certain groups of Canadian consumers were willing-to-pay non-trivial premiums for branded beef products. It was expected that consumers would be willing-to-pay these non-trivial premiums because of all the benefits brands offer as shown in the brand theory section outlining why brands matter. Further, it is an important result that Canadian consumers were willing-to-pay significant premiums for brand name beef because each beef supply chain member has the potential to make money. After conclusions, discussion and implications, the limitations of the study are presented as well as recommended areas for future research.

7.3 Conclusions

There are currently fewer fresh brand name beef products available in Canadian supermarkets compared to supermarkets in the United States. Canadian consumers are more likely to find fresh brand name products in major centres such as Toronto and Vancouver. A few of retail grocery chains have begun to develop their own private label fresh beef products.

Grocery store and packer concentration is higher in Canada than in the United States; the top four grocery chains and packers in Canada make up a larger portion of the

market share than do their American counterparts. However, concentration levels in both industries in Canada and the United States have continued to rise in recent years.

Many different value elicitation mechanisms can be used to elicit willingness-to-pay values from consumers. The selected method can have statistically significant effects on results, and therefore researchers must choose a method carefully. Auction mechanisms, endowments, market feedback, hypothetical bias, and the number of goods and attributes are all important considerations when designing an experimental auction or contingent valuation study. Each of these factors can have a considerable impact on elicited willingness-to-pay values.

The BDM experimental auction was shown to be theoretically incentive compatible, therefore allowing it to accurately reveal willingness-to-pay. The theoretical determinants of willingness-to-pay and demand for brand name steaks were shown to be the prices of substitutes and complements, income, population and tastes and preferences. Numerous factors in this study theoretically determined tastes and preferences including age, gender, and education. The brand theory section showed that brand names are theoretically important for consumers, producers and firms.

The cost per experimental auction was much higher than the cost per survey. However, the quality of the data obtained from the experimental auction is also considerably higher than the quality of data obtained from the survey, regardless of whether or not a cheap talk script was included.

Tobit and double hurdle models were determined to be the preferred limited dependent variable models when working with panel data censored from the left. These models were used to determine whether Canadian consumers were willing-to-pay for

brand name beef. It was found that Canadian consumers were willing-to-pay significant premiums for brand name beef products and their respective attributes. Each of the willingness-to-pay elicitation mechanisms found positive premiums ranging from \$1.12 for the Canada AAA steak to \$1.32 for the Tender Grill steak in the experimental auction and \$1.41 for the Prairie Prime steak to \$1.64 for the Original Angus steak in the survey with cheap talk. The experimental auction is considered to have the most reliable, accurate and valid results compared to the survey treatments. Therefore, it was found as brand theory suggested, brands are important, powerful and effective for fresh beef sold in Canadian grocery stores. Clearly the beef brands presented in this thesis offered consumers utility through product attributes.

The magnitude of willingness-to-pay premiums depends on the selected elicitation method. The experimental auction consistently had the lowest average willingness-to-pay premiums and, as expected, it was found that the conventional survey had the highest average willingness-to-pay values. The conventional survey results were on average thirty percent higher than the experimental auction results. The cheap talk script was able to remove some but not all of the hypothetical bias found in the open-ended survey. The survey with cheap talk was still twenty percent higher on average than the experimental auction.

Original Angus, Nature's Diamond, Tender Grill and their respective attributes were found to be the most popular brands in each of the mechanisms. Original Angus and Nature's Diamond were the brands with the highest mean willingness-to-pay premiums in both survey treatments and nearly tied for the highest in the auction results. The Tender Grill steak had the highest average willingness-to-pay value in the experimental

auction, closely followed by the Nature's Diamond and Original Angus steaks. Canadian consumers are shown to be very interested in the Angus breed, natural characteristics and a tender steak.

Several preference and demographic characteristics were found to be important determinants of willingness-to-pay. If the respondent liked the brand they were more likely to be willing-to-pay for that particular branded steak. Age had a negative impact on willingness-to-pay for each of the value added steaks. The higher the age category the respondent fell into, the less likely they would be willing-to-pay for the brand name steaks. Gender was also found to play an important role in determining willingness-to-pay for some of the steaks. Several other variables also impacted willingness-to-pay for the brand name steaks but were not consistently significant for each steak.

7.2 Discussion/Implications

The following section includes further discussion and observations from the results of the experimental auction and cheap talk survey in addition to the implications that these results have for the Canadian beef industry.

As shown in the preceding section, several factors consistently had a statistically significant effect on willingness-to-pay for each of the steaks. For example, if the respondent liked the brand name, they were willing-to-pay more for that particular steak. If the respondent was male, he was generally willing-to-pay more for the brand name product than a female respondent. The respondent's age had a significantly negative effect on willingness-to-pay for the brand name steaks. The older the respondent, the less they were willing-to-pay for the branded products. Finally, a fairly consistent result was

that the higher the respondent's income, the more they were willing-to-pay for brand name beef. Therefore, industry participants interested in developing, producing and selling branded beef should focus on a target market of consumers consisting of young males with higher incomes.

Recall from the above econometric and graphical analysis that the Tender Grill steak had the highest mean willingness-to-pay in the experimental auction, while it was the Original Angus and Nature's Diamond steaks that fetched the highest average willingness-to-pay bids in both survey treatments. In the experimental auction, participants were able to ask the researcher questions regarding each of the brands. The researcher responded to the participants' questions with standardized answers ensuring each participant got the same information. It is possible that the discrepancies between the most popular brands in the different treatments arose because survey respondents were not able to ask questions about each of the brand name steaks.

Most of the questions regarding the brands in the experimental auction about the Tender Grill brand. Many participants wanted to be sure that the tenderness did not arise from chemical additives or wanted to know how the steak was guaranteed to be tender. It is possible that the participants who asked for additional information for one or more of the brands modified their opinion in favour of the Tender Grill steak in the experimental auction. This suggests that the Tender Grill brand could be just as or more successful than the other steak brands with additional promotion and advertising campaigns targeted towards consumers. Therefore, if beef supply chain members consider developing and selling a guaranteed tender beef brand, they should take into account the supplementary advertising and educational costs this type of brand may require to ensure its success.

Another interesting note from the results of the three treatments is that 30% of auction participants, 42% of cheap talk respondents and 39% of conventional survey respondents did not know what grade of beef they typically purchase. Similar results were witnessed in a study conducted by Lusk et al. (1999). These results are rather surprising considering grade is supposed to be an indication from the beef industry to consumers about the quality. Since a considerable number of consumers do not appear to be responding to the quality signals beef grades are intended to deliver, the beef industry needs to consider delivering other kinds of quality signals such as brand name products.

As was revealed above, although cheap talk was able to reduce hypothetical bias from 30% to 20% on average, it was not able to completely mitigate it. One hypothesis regarding why cheap talk was unable to completely eliminate hypothetical bias is that cheap talk does not have a significant effect on willingness-to-pay because beef is a food item that many people have regular experience with and considerable knowledge about. In other words, since beef and meat are bought relatively frequently (compared to sports cards, used on List (2001a) for example), people have considerable experience with meat prices. Further, as evidenced by other studies, cheap talk does not have a significant effect on experienced consumers, possibly due to their well-formed opinions (List, 2001a).

Another possible reason cheap talk did not completely mitigate hypothetical bias is that some respondents simply may not have taken the time to read it or taken it seriously. The respondents may not have done this because there was no researcher telling them to do so as there has been in most previous studies involving cheap talk.

Future researchers seeking to determine willingness-to-pay for a good or service but who are limited by monetary/geographical constraints to conducting a mail/telephone survey should consider including the long version of the cheap talk script in their survey package. It does not add any significant cost to the survey and may encourage recipients to take the survey more seriously. Furthermore, inclusion of the cheap talk script did not reduce the response rate in the mail survey despite the additional page each respondent was asked to read.

There is no denying the fact in a global economy, Canadian producers may want to shift their focus from being low cost providers of beef to producers of quality beef and focus on product differentiation and brand marketing. Because of our global economy, Canadian producers will lose if they are trying to sell beef based on low costs of production; countries like Argentina, Brazil and Mexico will win. However, quality, product differentiation and brand marketing are a battle Canadian producers can win if they start focusing on these initiatives. Not only would these brands be successful in Canada- it has been shown that there is a demand for brand name beef products and Canadian consumers are willing-to-pay for them- but also they may be successful in the United States and overseas. Using the results of this research for guidance, Canadian producers could develop their own brand name products for the Canadian market, and produce beef for some of the beef brands sold in the United States. They could also begin to market natural and organic brands to places like Europe, Japan and South Korea where consumers seem to be interested in these types of products. All of these initiatives would require greater levels of coordination by Canadian beef supply chain members, but it would make those members more profitable and sustainable into the future. It should be

noted, however, that this does not mean that all Canadian beef should be sold as branded beef. Rather, it is merely suggesting that some attention should be given to the matter, and that the industry should start focusing on producing high quality beef.

7.4 Limitations

Similar to most experimental auctions, the auction in this study was only conducted in one region due to the high cost per observation. It is very expensive and time consuming to conduct experimental auctions in large geographical regions. The auction would have had more representative results of the Canadian population if auctions had been conducted from coast to coast. However, it is important to note that the results from the Manitoban survey respondents did not differ significantly from the results of the survey respondents from the rest of Canada. Therefore, it is not unreasonable to assume that the results from the Manitoba auction would not have differed significantly from a Canadian auction.

Even though many in-store experimental auctions have only included one grocery chain or store location in their studies and this study included two chains at multiple locations, it would have been interesting to include one or two more Canada wide grocery chains such as Loblaws (The Real Canadian Super Store) and/or Sobeys. These chains may have generated data that would have led to slightly different conclusions if different types of consumers shop at their stores.

The researchers conducting this study felt very confident that the stores included were representative of the grocery store offerings in Manitoba. The Safeway stores were located in all areas of the city attracting many different types of clientele. Some of the

Safeway locations had been recently remodelled, and thus are viewed as upscale stores with premium product offerings. Other Safeway stores were older and had smaller, more economical product selections for customer bases that generally would not support some of the premium product offerings. The Federated Co-op locations represented low to midrange-style stores with clean locations, friendly staff and moderate product offerings and prices. Thus, while more grocery chains would have been ideal, the same number of Safeway and Federated Co-op stores would have been used to conduct the experimental auction, making the costs, response rate and accuracy higher for the experimental auction.

As discussed in the methods section, Quebec and the three territories were excluded from the sample of Canadians who received the survey. Including consumers from these areas of Canada would have made the survey results more representative of Canadian consumers; thus, not including these consumers is a limitation. They were excluded because it was felt that their inclusion would have added more bias and cost to the survey. A major reason for this is because of the brand name component of the steak products for which researchers were determining willingness-to-pay values. An English brand name could mean nothing to a francophone consumer and a direct translation of an English brand name to French is infeasible. Thus, entirely new brand names would have had to be created for Quebec residents. This would have entailed developing an extensive list of French brand names as was done with the English brand names, testing them on subjects to determine the most appropriate names, paying another graphic designer to create the new logos, and finding someone to do all the language translation required for all the survey materials. This would have resulted in significantly higher

monetary and time requirements. It is also a limitation that consumers from the three territories were excluded from the sampling frame of the survey. However, many grocery stores in northern communities do not carry fresh beef products anyways and distribution becomes very difficult.

Although the surveys were pre-tested prior to their actual mailing, they were only pre-tested on university students.¹⁸ When responses from the actual survey started being received, it became clear that a small percentage of respondents did not understand how to fill out the willingness-to-pay dependent variable question. These people were generally from the oldest two categories (65-74 and 75+) and those with less education than a high school diploma. Therefore, another limitation of the survey was that some responses had missing information, especially with respondents from certain age and education categories.

The reader may have noted the high response rate that the survey received and then noted a discrepancy with respect to the number of observations recorded in the summary statistic tables (Tables 2, 3 and 4). In other words, there was significant missing information for many variables from many survey respondents. This is due to respondents not filling out each survey questions on their survey. For example, 1,275 surveys were returned in total, 659 from the cheap talk survey and 616 from the conventional survey. However, the tobit and double hurdle models require that each variable included in the model is available and not missing. In other words, if one variable is missing from a respondent's response, that respondent cannot be included in

¹⁸ The experimental auction was also pre-tested on staff and students from the University of Manitoba. No comprehension issues were encountered in the actual auctions at the supermarkets; this may be because the researcher was able to work with each participant one-on-one.

the double hurdle or tobit models. Therefore, in the tobit and double hurdle models there were only from 479-562 observations available for use, depending on the steak.

There are several possible reasons for the missing information on some of the respondents' surveys. These reasons include; question comprehension issues as discussed previously, mere oversight, or that the respondent felt that the answer to the question was a private matter. For example, the willingness-to-pay questions may not have been filled out by several respondents due to comprehension issues, and the income question may not have been filled out by many respondents because they were shy or felt income was a private matter. This is not an abnormal occurrence in surveys of this kind and some missing information is expected. Another interesting note regarding these missing responses is that there were a lot fewer missing observations in the experimental auction. This is because there is a lot more control in experimental auctions, and the researcher can ask respondents to fill out missing questions before they turn in their responses, thus representing yet another advantage of BDM auctions.

7.5 Recommendations for future research

Future research could focus on determining whether it is feasible for producers to get together and produce a reliable, consistent supply of brand name beef products in order to guarantee packers, processors and retailers a year round supply of their products. In other words, future research could be directed at the question of how a producer group could set up a brand like the ones discussed in this study and get to a point where they can have their branded product marketed commercially. There is a question as to whether it is possible for producers to guarantee a supply of high quality beef that meets the brand

name's standards. Future researchers should consider interviewing some of the founders of the major American beef brands such as Certified Angus Beef to learn how they first started out and were able to guarantee a consistent supply of their product and get in with packers and retailers.

Another potential focus of future work is developing actual brand name beef products in conjunction with beef supply chain members, especially producer groups. This would necessitate developing business and marketing plans, and formulating alliances that allow producers to see their brand name products slaughtered in federally/provincially inspected facilities and sold in major grocery chains. In return, producers would guarantee these packers, processors and grocery chains a reliable, consistent supply.

Future research could investigate the appropriateness of including random effects in the tobit and double hurdle models. This data, like most experimental auctions and many surveys, might be considered as panel data. Each participant/respondent submitted bids for several different steaks thus making this data panel data. More specifically, the auction and surveys gave us two-dimensional panel data. The first dimension is individual effects and the second dimension is good specific effects. For example, in the BDM auction, 274 participants submitted bids for five different steaks. Therefore, as Lusk and Shogren (2007) demonstrate, individual i 's bid for the j th steak is given by:

$$\text{bid}_{ij} = \eta + \alpha_i + \lambda_j + \beta X_{ij} + \varepsilon_{ij}, \quad (7)$$

where η is an overall constant, α_i are individual-specific effects, λ_j are steak-specific effects, β is a vector of parameters, X_{ij} is a matrix of independent variables, and ε_{ij} is the error term.

The individual-specific effects and good-specific effects can be incorporated using two different approaches; the fixed-effects approach and the random-effects approach. If $\alpha_i = \alpha$ and $\lambda_j = 0$ for all j , no individual specific or good specific effects exist.

In the fixed effects approach, each individual is assigned a dummy variable giving each individual a different intercept (Kennedy, 2004). The random effects approach also gives each individual a unique intercept; however, the intercept is interpreted in a different way (Kennedy, 2004). The random effects approach assumes the intercepts are drawn from a random distribution and thus resulting in an overall intercept. The Hausman test tests the appropriateness of these models determining if the random effects, fixed effects or neither model is correct. Including random/fixed effects in the models reported here would likely refine the results slightly; however, signs and statistical significance of parameters would not be expected to change.

The results from the experimental auction and survey suggested that many Canadian consumers are willing-to-pay for certain kinds of brand name beef products. Unfortunately, time and budgetary constraints did not allow researchers to survey Quebecers. A future study could concentrate on determining Quebec consumers' willingness-to-pay for fresh brand name beef products since they are a large concentrated market in Canada. Prior to conducting a similar willingness-to-pay study in Quebec, it should be noted that results did not differ significantly from province to province. For example, there was no significant difference in willingness-to-pay values observed by Manitoban consumers and say Ontario or Albertan consumers.

An important future research endeavour would be to determine how much it costs to produce each of the brand name products that Canadian consumers were willing-to-pay

extra for. Lusk et al. (1999), estimated production costs and break-even premiums for guaranteed tender beef tested by the Warner-Bratzler shear force test using an assumed hot carcass weight of 700 pounds estimated by Shackelford et al. (1996). They estimated that the break-even premium for guaranteed tender steaks would be \$0.11 per pound. This estimate takes into consideration that only sirloin, short loin, and flank cuts could be marketed as guaranteed tender and that only approximately 29 percent of cattle would fall into this guaranteed tender category. For further details on these calculations the reader is referred to Lusk et al. (1999). Furthermore, this break-even premium does not include the increased advertising, promotion, retail slotting fees, etc. associated with brand name products. Thus, a detailed cost analysis is still needed to calculate the costs and break-even premiums associated with producing, processing, advertising and selling fresh brand name beef products in Canada for not only the guaranteed tender brand but also the natural and Angus brands.

More research is needed to determine the applicability of cheap talk in mail surveys as well as other types of contingent valuation methods. Mixed results have been observed on the effectiveness of cheap talk depending on how it was used in contingent valuation studies involving hypothetical bias. It would also be helpful to know how results for the various types of experimental auctions correspond with cheap talk results from different kinds of hypothetical valuation methods (choice experiments, open-ended questionnaires, dichotomous choice questionnaires, hypothetical auctions, etc.). This would help formally conclude when and for what types of goods cheap talk is appropriate to use.

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Appendices:

Appendix A: Cover Letter

Dear Jane Doe,

Researchers at the University of Manitoba are interested in your household's preference for five steaks that grocery stores in Canada are considering selling. The purpose of this research is to assess the demand for branded beef in Canada. We are conducting a questionnaire that will take five minutes of your time. Would the person who conducts the majority of the household shopping please read the enclosed material and complete the short questionnaire.

Your voluntary participation by completing the enclosed **confidential** questionnaire is critical to the success of our study. It is confidential because there is no way for us to link a returned survey to any participant.

First, we would like you to take a minute to examine the "Steak Fact Sheet" which describes several types of beef steaks. Secondly, please read the "Questionnaire Information Sheet" enclosed. Lastly, please fill out the two page questionnaire and mail it back to us in the prepaid postage envelop provided, but do not put your return address on the envelop to ensure confidentiality.

If you wish to obtain a copy of the results or have any question about the questionnaire, I can be reached at (204) 474-9827. Interested respondents will be able to review the aggregated responses at CanFax Research Services (www.canfax.ca).

This study has been approved by the Joint-Faculty Research Ethics Board of the University of Manitoba, and any complaints can be reported to the Ethics Secretariat at (204) 474-7122.

Please accept the \$1 dollar we have enclosed with this letter a token of our appreciation for completing our questionnaire.

Thank you very much for your time,

Dr. Jared G. Carlberg

Appendix B: Steak Fact Sheet

Steak Fact Sheet

Generic

Generic beef in supermarkets is usually graded "Canada A" or "Canada AA."

Canada AAA

Canada's second highest beef grade. Only 2% of beef production in Canada is higher than AAA.

Original Angus



ORIGINAL ANGUS

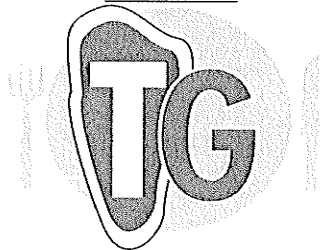
Original Angus beef is Canada's premiere Angus product. Only Canada Prime and the top 33% of Canada AAA black and red Angus cattle qualify to be branded as Original Angus.

Original Angus beef is always flavourful, juicy and tender because of its high standards. Angus cattle are always evaluated by independent government agents, not by in-house graders or plant employees, to ensure that only the best red and black Angus cattle become Original Angus beef.

Because the integrity of Original Angus beef is so important, Original Angus beef is monitored all the way from producers, to packers and distributors, to supermarkets by the non-profit Canadian Angus Association.

Original Angus is grain fed, aged 14 days and Angus in origin so you can always expect consistent quality when you choose Original Angus beef.

Tender Grill



TENDER GRILL

Tender Grill beef is guaranteed tender every single time because tenderness is what consumers like you are demanding.

Tender Grill beef is the only beef in Canada tested using Warner-Bratzler shear force values so you get guaranteed perfectly tender beef every time.

Tender Grill is grain fed and aged 21 days to ensure the utmost in tenderness, juiciness and flavour.

"Every Tender Grill beef product comes with a double your money back guarantee so if you are not happy with the tenderness of Tender Grill we'll double your money back".

Prairie Prime



Prairie Prime

CANADIAN BEEF

Prairie Prime is Canada's premium beef offering.

"For a taste that is truly Canadian choose Prairie Prime every time".

Cattle were born and raised in the Canadian prairies to certify you get consistent premium beef every time.

All beef branded as Prairie Prime is graded at least Canada AAA or higher to ensure you enjoy some of the most flavourful, tender and juicy beef in the world.

Cattle are grain fed and aged 14 days so you get that premium prairie taste every time.

"For Beef as Beautiful as a Prairie Sunset Choose Prairie Prime".

Nature's Diamond Natural Beef



- No added hormones
- No antibiotics
- Cattle are fed an ALL VEGETARIAN diet
 - No animal by-products
 - All feed tested to be free of chemical residues
- Pasture fed from birth to 15 months
- Grain fed 120 days to ensure tender beef
- Animal welfare practices are followed to ensure
 - Low stress
 - Friendly animal surroundings
 - Clean water
 - Natural feed
- Environmental practices are followed to respect land

Appendix C: Cheap Talk Script

Please read the following information before answering the survey questions. In a moment, we are going to ask you a couple of questions about your willingness-to-pay for different beef brand names in a grocery store setting. However, before you answer these questions, we would like you to read the following information.

In a recent study, several different groups of people were asked whether they would purchase a new food product similar to the one you are about to be asked about. This purchase was hypothetical for these people, as it will be for you. No one actually had to pay money when they indicated a particular preference. The results of this study were that over 80% of people said they would buy the new food. However, when a grocery store actually put the *same* new food on their shelf, *but* where payment was real and people *really* did have to pay money if they decided to purchase the new food, the results were that only 43% of people *actually* bought the new food. That's quite a difference isn't it?

We call this "hypothetical bias." Hypothetical bias is the difference that we continually see in the way people respond to hypothetical purchase questions as compared to real situations.

How can we get people to think about their purchase decision in a hypothetical question like they think in a grocery store, where if they decide to purchase a food they will really have to pay money? How do we get them to think about what it means to really dig into their pocket and pay money, if in fact they really aren't going to have to do it?

Let me tell you why I think that we continually see this hypothetical bias, why people behave differently in a hypothetical setting than they do when they are actually in a grocery store. I think that when we say that we will purchase a new food at a particular price in a hypothetical survey we respond according to our best guess of what the food is really worth in the grocery store. But, when we are really in the grocery store, and we would actually have to spend our money if we decide to purchase the food, we think in a different way: if I spend money on this, that's money I don't have to spend on other things. We shop in a way that takes into account the limited amount of money we have. This is just my opinion, of course, but it's what I think may be going on in hypothetical survey questions.

So if I were in your shoes, I would ask myself: If I were really shopping in the grocery store and I had to pay \$X more if I decided to buy a Prairie Prime ribeye steak: do I really want to spend my money this way? If I really did, I would write down \$X more; if I didn't, I would write down less than \$X or even \$0, but a value that equaled my true value.

In any case, I ask you to respond to *each* of the following purchase questions just *exactly* as you would if you were really in a grocery store and were going to face the consequences of your decision: which is to pay money if you decide to buy a food. Please keep this in mind when answering the next few questions.

Appendix D: Questionnaire (Page 1 of 2):

For questions 1-5, please assume that each ribeye steak is 12oz (340g).

For your reference, a 12oz (340g) generic ribeye steak sells for about **\$8.49** in a typical grocery store.

1. Imagine you are purchasing a ribeye steak in your local grocery store. You can choose between *two* different ribeye steak products. One is a generic ribeye steak with no brand name. The other ribeye steak option is a **Prairie Prime** ribeye steak, with the attributes as described in the above fact sheet.

What is *the most money* you would be willing-to-pay for a **Prairie Prime** ribeye steak *over and above* the price of a generic ribeye steak? \$ _____

Example: If I were willing-to-pay **\$X** for the Prairie Prime ribeye steak over and above the price of the generic ribeye steak for a total of $\$8.49 + \X , I would write down **\$X** in the blank space provided, not the total amount.

Write \$0 if you would not be willing-to-pay anything above the price of the generic ribeye steak.

2. Imagine you are purchasing a ribeye steak in your local grocery store. You can choose between *two* different ribeye steak products. One is a generic ribeye steak with no brand name. The other ribeye steak option is a **Tender Grill** ribeye steak, with the attributes as described in the above fact sheet.

What is *the most money* you would be willing-to-pay for a **Tender Grill** ribeye steak *over and above* the price of a generic ribeye steak? \$ _____

3. Imagine you are purchasing a ribeye steak in your local grocery store. You can choose between *two* different ribeye steak products. One is a generic ribeye steak with no brand name. The other ribeye steak option is a **Canada AAA** ribeye steak, with the attributes as described in the above fact sheet.

What is *the most money* you would be willing-to-pay for a **Canada AAA** ribeye steak *over and above* the price of a generic ribeye steak? \$ _____

4. Imagine you are purchasing a ribeye steak in your local grocery store. You can choose between *two* different ribeye steak products. One is a generic ribeye steak with no brand name. The other ribeye steak option is a **Nature's Diamond** ribeye steak, with the attributes as described in the above fact sheet.

What is *the most money* you would be willing-to-pay for a **Nature's Diamond** ribeye steak *over and above* the price of a generic ribeye steak? \$ _____

5. Imagine you are purchasing a ribeye steak in your local grocery store. You can choose between *two* different ribeye steak products. One is a generic ribeye steak with no brand name. The other ribeye steak option is a **Original Angus** ribeye steak, with the attributes as described in the above fact sheet.

What is *the most money* you would be willing-to-pay for a **Original Angus** ribeye steak *over and above* the price of a generic ribeye steak? \$ _____

Questionnaire (Page 2 of 2):

6. Number of times you eat *beef at home* per week: _____ Times per week

7. What grade of beef do you typically purchase?

_____ Canada AAA _____ Canada AA _____ Canada A _____ Don't Know

8. How do you like the following brand names for the steaks? (Please keep in mind that none of these brands are available in any grocery stores and nobody has heard of them before)

	Strongly Dislike					Strongly Like	
	-3	-2	-1	0	1	2	3
Prairie Prime	-3	-2	-1	0	1	2	3
Tender Grill	-3	-2	-1	0	1	2	3
Nature's Diamond	-3	-2	-1	0	1	2	3
Original Angus	-3	-2	-1	0	1	2	3

9. How confident are you in determining steak quality when you choose a steak at the grocery store?

Very Unconfident						Very Confident	
-3	-2	-1	0	1	2	3	

10. Gender:

_____ Female _____ Male

11. Age:

_____ Under 18 _____ 18 – 24 _____ 25 – 34
_____ 35 – 44 _____ 45 – 54 _____ 55-64
_____ 65 – 74 _____ 75+

12. Highest level of education:

_____ Some high school-no diploma _____ High school diploma _____ Some college/university –no degree _____ Post-secondary diploma (not degree) _____ Undergraduate degree _____ Masters degree/Ph. D

13. Household Income level:

_____ Under \$30,000 _____ \$30,000 – \$59,999 _____ \$60,000-\$89,999
_____ \$90,000 – \$119,999 _____ Over \$120,000+

14. Number of people living in your household *including yourself*: _____ Person(s)

15. Which grocery store (or chain) do you typically shop at? _____

16. Which province do you live in? _____

Please Check Yes or No for questions 17-18.

17. Have you, your immediate family or close friends ever raised cattle or worked on a farm with cattle? _____ Yes _____ No

18. Have you, your immediate family or close friends ever worked at a meat packing plant or a meat processor? _____ Yes _____ No

Thank-you for taking the time to complete our questionnaire, your time is greatly appreciated!

Appendix E: Branded Beef in Canada

A review of publications and resources was conducted as well as in depth interviews with representatives of each of the major grocery chains in Canada in the summer of 2005. The purpose of this section is to build a comprehensive portrait of the branded beef currently available in Canadian supermarkets and to illustrate the beef brands and supply chain alliances that grocery chains utilize. This section is a combination of findings from the review of publications and the in-depth interviews with supermarkets' beef procurement management. A brief overview of each supermarket chain is given including their major banners and the beef brands carried in each store. Also discussed will be the chain's suppliers of beef, the methods by which the beef arrives in store (boxed beef, case-ready, etc.) and the transportation and distribution practices that the supermarket chain uses. After each grocery chain is outlined, overall observations will be noted and implications of findings will be discussed.

Co-op Atlantic

Co-op Atlantic is a co-operative that sells grocery, agricultural, general merchandise and petroleum products in different types of retail outlets for each category of product across Atlantic Canada (Co-op Atlantic). For the purposes of this thesis, only the grocery store locations and beef will be discussed. Co-op Atlantic has two grocery banners with stores in each of the four Atlantic Provinces and Quebec. The predominant banner, with over 75 locations, is simply named Co-op. This format of store is entitled by the co-operative as a Conventional Consumer Co-op. Co-op Atlantic's other banner is entitled Co-op Basics with approximately 30 locations. Co-op Basics is a discount grocery store offering nearly all of the items that a conventional grocery store offers, but

at lower prices. Co-op Basics is able to sell at lower prices because they keep costs and service to a minimum and negotiate with suppliers.

Decisions about what beef and beef brands will be in each store are made on a chain wide basis and each store within each banner gets the same beef brands. All stores within the Co-op Atlantic chain carry the Atlantic Tender Beef Classic brand as their only branded beef product. The product is marketed by Co-op Atlantic and sold *exclusively* through Co-op and Co-op Basics grocery stores across Atlantic Canada and Quebec. Co-op Atlantic's branded beef program includes cooking directions and a "Tenderness or Double Your Money Back" guarantee. All muscle cuts of beef are branded using the Atlantic Tender Beef Classic brand in every Co-op Atlantic store. All ground beef sold through Co-op Atlantic is sold as generic; no ground beef is branded as Atlantic Tender Beef Classic. Some stew meat is also simply generic; however, boneless stew is branded Atlantic Tender Beef Classic.

Atlantic Tender Beef Classic is brand owned by producer co-operative Atlantic Beef Products Inc. in Albany, PEI. Cattle must be raised in Atlantic Canada and require a vitamin E supplement (Toma and Bouma, 2002). However, the amount of beef raised in Atlantic Canada is insufficient to cover Co-op Atlantic's needs for beef. Co-op Atlantic first buys all the beef raised in Atlantic Canada available and then must buy about 30-40% of their beef from Better Beef in Guelph Ontario (personal interview with Co-op Atlantic). The only beef that is accepted is graded Canada AA or Canada AAA and has a specific aging period and weight requirements so that the size of the cuts meet consumer demand.

The producers in this alliance began using a packer in Atlantic Canada which was subsequently bought by Maple Leaf and transformed into a plant that solely slaughtered hogs. The alliance then began using Better Beef in Guelph as their packer (Toma and Bouma, 2002). They shipped live cattle to Better Beef, and Better Beef would send cattle back to Atlantic Canada as boxed beef. This cost producers a lot of money in transportation charges and has since motivated the alliance to build their own packing plant in PEI called Atlantic Beef. Having their own plant ensures that producers receive huge savings in the form of less transportation costs to Ontario (Co-op Atlantic). Partners in the plant are the government of Prince Edward Island and Co-op Atlantic (Government of Prince Edward Island).

The recent Canadian BSE crisis often left Canadian consumers wondering why beef was still the same price in-store when producers were getting significantly less money for their cattle. In an interview with the meat department of Co-op Atlantic, a beef buyer noted that despite the Canadian BSE crisis the price of beef did not decline from their packers. On the very seldom occurrence when the price of beef from packers did decline, Co-op Atlantic bought this beef and passed the savings onto consumers. When these savings were offered at Co-op Atlantic stores, the beef buyer indicated that they went through huge amounts of beef very rapidly. The beef buyer finally indicated that if someone was making money off of the BSE crisis it was not Co-op Atlantic.

Suppliers

Ground Beef

Since all of the ground beef sold at Co-op Atlantic stores is generic, ground beef may come from any packer. Co-op Atlantic gets most of their ground beef from Better

Beef, Cargill, Lakeside, XL and a very small amount from Atlantic Beef. They order their ground beef from the packer with the lowest price (they also have normal quality and grade requirements).

Muscle Cuts

Co-op Atlantic purchases all of the muscle cuts that Atlantic Beef can supply which works out to approximately 60-70% of all muscle cuts that Co-op Atlantic requires for their grocery locations across Atlantic Canada and Quebec. When Co-op Atlantic needs supplementary beef for the Atlantic Tender Beef Classic brand, they purchase beef from Better Beef in Guelph Ontario. All beef for the Atlantic Tender Beef Classic brand purchased from Better Beef must follow all of the same specific feed regime and protocols (except for origin) as beef raised in Atlantic Canada. Co-op Atlantic usually requires additional beef for muscle cuts that are in the feature business (the weekly flyer) and for ground beef. Co-op Atlantic demands far more ground beef than Atlantic Beef can supply.

Beef Arrivals

Ground beef arrives at Co-op Atlantic stores in fresh tubes or chubs and is packaged and priced in each store. No ground beef in either Co-op Atlantic banner is case-ready. All of the stores in the Conventional Consumer Co-ops banner and about five Co-op Basics still currently get boxed beef in and have meat cutters in each store.

Currently most of the stores in the Co-op Basics banner (all but five) get in case-ready beef; however, only muscle cuts are case-ready. All of the case-ready beef comes on traditional foam trays and over-wrap packaging. Ground beef is still packaged and priced in-store. At the present time, Co-op Atlantic has two small provincially inspected

case-ready cutting facilities located in Moncton, New Brunswick and Cape Breton, Nova Scotia. Since both case-ready cutting facilities are only provincially inspected as opposed to federally inspected, the Atlantic Tender Beef Classic packaged at these plants may only be sold within their respective provincial borders. Co-op Atlantic would like to build either more provincially inspected case-ready plants in the other Atlantic Provinces or have their Moncton plant converted into a federally inspected facility. Moncton is the preferred site for a federally inspected case-ready cutting plant because it is the hub of the Maritimes and beef can be most easily and efficiently distributed to Co-op Atlantic stores throughout the Maritimes and Quebec. Also during the forward looking portion of the Co-op Atlantic meat department interview, it was suggested that all of the Co-op Atlantic stores are moving towards case-ready beef and eventually all of the stores would carry Atlantic Tender Beef Classic as case-ready beef.

Transportation and Distribution

An independent trucking company is hired by Co-op Atlantic and although this trucking company is independent, it only works for Co-op Atlantic and has the Co-op logo on its trucks. This trucking company picks up beef from the packers and delivers it to central warehouses in Cape Breton and Moncton in the same locations as the case-ready cutting facilities. At the warehouses, beef is either made into case-ready products in the neighbouring plants or simply stored as boxed beef. From the warehouses beef is trucked by the same trucking company to individual Co-op Atlantic stores across the Maritimes and Quebec.

Federated Co-op

Federated Co-op has retail locations from western Ontario all the way west to British Columbia with approximately 300 retail locations. Included in all of these retail locations are grocery stores that carry beef products (Federated Co-op). Generally each store within Federated Co-op has its own somewhat unique store name, however each of these supermarkets still falls under the same Federated Co-op procurement procedures for beef and beef products.

Decisions about what beef will be carried in Federated Co-op stores are made on a chain wide basis. The closest thing to branding that one could call Federated Co-op's beef is a private label brand. All of Federated Co-op's muscle cuts of beef are "Guaranteed Gold" Western Canadian Beef that has been aged 14 days. The beef is 100% guaranteed by Federated Co-op. Thus, if a consumer is not satisfied completely with their beef, Federated Co-op will take appropriate action to ensure that the unsatisfied customer is satisfied. While muscle cuts are branded as Guaranteed Gold Western Canadian Beef, ground beef has a generic label. Calgary Co-op is an example of one of Federated Co-op's subsidiaries consisting of 20 locations in Calgary and the surrounding area. Calgary Co-op is unique from all the of Federated Co-ops in the sense that in addition to carrying Federated Co-op's Guaranteed Gold beef brand, they also exclusively carry another private label beef brand entitled "Alberta AAA Tender Beef" aged 21 days (Calgary Co-op).

Suppliers

Ground beef and beef muscle cuts are both mainly supplied to Federated Co-op by XL Foods in Calgary. Approximately 90% of all fresh beef comes from XL Foods

Calgary. Federated Co-op also purchases a small amount of fresh beef from provincially inspected plants and Cargill. The Vantage Foods case-ready plant in Winnipeg supplies Federated Co-op with some frozen beef on occasion as well.

Beef Arrivals

Both ground beef and muscle cuts arrive at each Co-op location as boxed beef. Minced beef is all ground in-store and muscle cuts are cut from the boxed beef and wrapped in each store by full service meat cutters.

Transportation and Distribution

Beef is picked up by an independent refrigerated trucking company, VersaCold, at the packer that supplies Federated Co-op (usually XL Foods in Calgary). The refrigerated trucks (sometimes referred to as reefers) distribute beef to Federated Co-op's warehouses in Winnipeg, Edmonton, Calgary and Saskatoon. Beef is not stored at these warehouses for any period of time; it is simply cross-docked. In other words, when beef arrives at these warehouses, it is quickly reconfigured onto other refrigerated trucks with other meat and food products (dairy, eggs, etc.) going to individual Co-op stores across the region.

Thrifty Foods

Thrifty Foods is a grocery chain in British Columbia with most of its stores located on Vancouver Island and a few stores on British Columbia's mainland (Thrifty Foods). On Vancouver Island, Thrifty Foods has over 40% of grocery market share. All stores within the chain fall under the same Thrifty Foods name.

All beef procurement decisions are made on a chain wide basis and all Thrifty Foods stores carry the same brands of fresh beef. Thrifty Foods carries two main brands of beef in their stores. Exclusive to Thrifty Foods are “Alex Campbell Signature Series Sterling Silver Beef” and “Alex Campbell Signature Series Traditional Beef.” Alex Campbell Signature Series Sterling Silver Beef is the store’s own private label brand co-branded with Cargill’s Sterling Silver brand. Alex Campbell Signature Series Sterling Silver Beef grades in the top third of the Canada AAA beef and is aged 21 days for maximum tenderness. Muscle cuts and regular trim lean ground beef are available in the Alex Campbell Signature Series Sterling Silver Beef brand.

Alex Campbell Signature Series Traditional Beef is the store’s own private label natural beef product. The cattle that this beef comes from are not given antibiotics, or growth hormones, are fed no animal by-products, are traceable and practice environmental stewardship. Muscle cuts as well as some types of ground beef are available in the Alex Campbell Signature Series Traditional Beef.

Thrifty Foods carries a small amount of generic ground beef in each of its stores for ground beef with fat percentages where branding is not possible.

Suppliers

Most of the beef sold at Thrifty Foods is Alex Campbell Signature Series Sterling Silver Beef and therefore most beef is supplied by Cargill (approximately 80-90% of beef comes from Cargill). No beef comes from the Lakeside (Tyson Foods) or XL packing plants. Thrifty Foods prefers conducting business with Cargill, citing that Cargill has an excellent food safety record. Before any beef leaves the Cargill plant, core samples are taken from each load of beef to test for e-coli. Beef may only leave Cargill when tests

come back negative for e-coli. Even if the beef is not branded, all ground beef (except the natural brand) comes from Cargill.

Beef for the Alex Campbell Signature Series Traditional Beef brand used to come solely from Ranchers Beef in the United States due to the lack of a natural beef supplier in Canada. Now Thrifty Foods is getting some of their beef for their natural beef brand from a packing plant slaughtering cattle in Innisfail, Alberta (personal interview with Thrifty Foods).

Beef Arrivals

Thrifty Foods does not carry any case-ready beef. Each Thrifty Foods store gets ground beef in chubs or tubes of various weights ranging from 10-20lbs. Muscle cuts of beef arrive in each store as boxed beef and an in-store meat cutter cuts, wraps and labels each piece of beef. All but a couple of the Thrifty Foods stores have service cases where the meat cutter is up front interacting with customers as well as cutting beef. The stores with meat cutters remaining in the back are slowly being renovated and meat cutters are being moved up front to modern service cases.

Transportation and Distribution

Cargill delivers beef to an outside distribution centre for Thrifty Foods that performs multiple services for them including storing, aging and delivering beef to each Thrifty Foods store location.

Overwaitea Food Group (OFG)

The Overwaitea Food Group is a grocery retailer operating over 100 stores in Alberta and British Columbia. They sell under the banners Overwaitea Foods, Save-On-Foods, Cooper's Foods, Price Smart Foods, Bulkley Valley and Urban Fare.

Decisions about what beef and beef brands will be carried in each store are by and large made on a company wide basis. All OFG stores only carry the chain's own private label "Western Family" beef with the exception of the one Urban Fare store. Urban Fare carries a small amount of Certified Angus Beef; however, they are the only store within the OFG chain to carry another fresh beef brand in addition to the Western Family brand. None of the OFG stores carry any generic beef whatsoever; all beef has the Western Family private label.

Suppliers

The OFG buys its ground beef from the major packers in Canada, most frequently Cargill. The OFG purchases their muscle cuts of beef directly from major packers across Canada based on price and quality specifications. They do not buy from any particular packer. The OFG employs Vantage Foods in Chilliwack to cut, weigh, package and label the majority of beef for OFG into case-ready products. Although Vantage Foods is carrying out all of the case-ready operations, they do none of the beef purchasing. Both beef purchasing and beef procurement is conducted by the OFG.

Beef Arrivals

Most of the fresh beef comes as case-ready beef to all the OFG stores. OFG stores do however still employ meat cutters for those customers who would like a specific cut or size of cut at most of their stores. Therefore, they must receive some boxed beef or slice

ready beef in addition to the case-ready beef they receive from Vantage Foods in Chilliwack.

Transportation and Distribution

Although the OFG would not disclose exactly how their distribution channel works, since nearly all of their beef is case-ready, it cannot be warehoused for any considerable length of time. With this in mind, there are only a few options for distribution. Beef must be either picked up or delivered to each individual store directly from the Vantage Foods case-ready plant via refrigerated trucks (e.g. VersaCold¹⁹) or quickly cross-docked at warehouses in British Columbia and Alberta and immediately sent to each grocery store.

A&P Canada

The Great Atlantic and Pacific Tea Company (A&P) was one of the two major grocery retailers with a presence in Canada that began in the United States. On July 19, 2005 Metro Inc. announced its acquisition plans for A&P Canada and on August 15, 2005 the deal was subsequently finalized and A&P Canada became a wholly owned subsidiary of Metro Inc. The Competition Bureau of Canada approved the transaction with no conditions, making Metro Inc. the second largest retailer in Canada's two largest markets - Ontario and Quebec - and aided in obtaining a strengthened third grocery retail position for all of Canada. For the remainder of this section, A&P Canada will be written about as though it is still a distinct company from Metro Inc. because all procurement and marketing decisions are still completely distinct.

Despite not having a Canada wide geographical presence, A&P Canada holds 21% of the market share²⁰ and the number two position in the grocery marketplace in Ontario and the greater Toronto area, which were both high-growth regions of the country's grocery industry in 2005. A&P Canada conducts business through the banners A&P, Dominion, Food Basics, The Barn and Ultra Food & Drug, with over 236 locations across Ontario. The banners fall into two different categories: A&P, Dominion, The Barn and Ultra Food & Drug are the chain's conventional "fresh" stores (A&P). The Food Basics banner is a big box or discount type store.

Decisions about what beef and beef brands A&P Canada banners will stock are still made by A&P on a chain wide basis, although the conventional "fresh" stores and discount stores have different decisions made for them regarding the beef that will be stocked. A&P Canada and Metro Inc. still currently have distinct beef procurement practices and there are no plans for them to change in the near future. However, management indicates that to exploit the synergies of the two chains' beef procurement strategies, procurement will likely converge to best practices overtime, regardless of whether they are A&P's or Metro's strategy (personal interview with A&P Canada).

The conventional "fresh" stores (A&P, Dominion, The Barn and Ultra Food & Drug) all have the same beef procurement decisions made for them and they all carry nearly the same beef and beef brands. Different decisions are made for A&P Canada's discount stores about what types of beef they are to carry. All of the A&P Canada banners, regardless if they are conventional or discount, carry A&P's private label brand

¹⁹ See this article for information on VersaCold

http://refrigeratedtrans.com/mag/transportation_versacold_offers_transportation/

²⁰ Acquisition of A&P Canada by Metro Inc.

http://www.metro.ca/client/fr/corporatif/Investor_Presentation_FINAL.pdf

of beef “Beef Beyond Belief”. Approximately 30 of the conventional stores with service cases carry the Certified Angus Beef brand.

Beef Arrivals

Beef arrives in each supermarket in different packaging depending on the format of the store.

Conventional “fresh” stores

Ground beef arrives at conventional stores in bulk as a course grind. The course grind is ground again into a fine grind, packaged and labeled in-store. Muscle cuts arrive as primals of beef (not boxed beef) in conventional stores. All conventional stores have an in-store meat cutter to disassemble the primal, package and label muscle cuts as Beef Beyond Belief. As previously mentioned, Certified Angus Beef is only sold in about 30 stores which have service cases with a butcher up front. Certified Angus Beef also arrives as a full primal or subprimal and must be cut and packaged like the private label Beef Beyond Belief by the meat cutter.

Discount Food Basics stores

Both ground beef and muscle cuts of beef arrive at Food Basics as case-ready and no meat cutters are available in-store if customers have special requests for a certain cut of beef.

Suppliers

Food Basics gets all of their beef, ground and muscle, from Better Beef’s case-ready plant Watson Foods in Guelph Ontario. The conventional banners also primarily get their beef from Better Beef, however, they also get some from St. Helen’s Meat Packers in Toronto. Better Beef, Cargill and Lakeside (Tyson Foods) have licenses to

process Certified Angus Beef, however A&P gets most of their Certified Angus Beef from Better Beef.

A&P Canada reportedly has a very good relationship with Better Beef and although they are their primary supplier of beef they do not have a formal contract with them for muscle cuts, ground beef or even case-ready beef. The absence of a contract between a case-ready plant and a retailer is quite uncommon in the Canadian case-ready market place. Usually case-ready plants require that they have a committed retailer to purchase their case-ready products because of the huge amount of fixed costs associated with operating a case-ready plant. With no formal contract specifying the amount of beef that must be purchased from the plant each year, many problems could arise. For example, the retailer may relatively easily quit using the plant, leaving the processor with high fixed costs and no volume of business, thus making operating a case-ready plant very risky.

Transportation and Distribution

Beef is delivered by the packer to one of A&P's five strategically placed cold storage distribution centres in Ontario, where beef may be stored for a couple of days. Deliveries to each store from distribution centres are made every day, and beef may be shipped along with the rest of the refrigerated groceries when it is needed.

Metro Inc.

Metro Inc. is the second largest grocery retailer in Quebec behind only Loblaw Companies Inc. and its banners. Metro Inc. also recently became the second largest grocery retailer in Ontario when it acquired A&P Canada. Not only does Metro now

operate under all of its traditional Metro, Metro Plus, Loeb, Loeb Plus, and Super C banner stores, A&P Canada is now a wholly owned subsidiary of Metro Inc. and they operate under all of their banners as well. Since the A&P Canada subsidiary banner has already been discussed, this section will focus on the Metro, Metro Plus, Loeb, Loeb Plus, and Super C banner stores and their beef brands and procurement strategies. The Metro Inc. banners fall into similar categories as the A&P Canada banners. That is, Metro, Metro Plus, Loeb, Loeb Plus with 281 locations combined are all conventional “fresh” grocery stores, whereas Super C is a big box or discount grocery banner with about 62 stores (Metro Inc.).

Decisions about what beef brands are available in Metro Inc banners are a marketing and development decision. In other words, if the marketing department decides to implement a new brand, they simply do it. All Loeb and Metro banners sell the same beef brands whereas Super C sells slightly different meat products.

Metro and Loeb banners carry Metro Inc.’s own private label beef brand “Red Grill”. Both ground beef and muscle cuts of beef are available in the private label brand Red Grill in Metro and Loeb stores. Red Grill is made from Canada AAA grade beef. Metro and Loeb stores also carry generic ground beef and muscle cuts and Super C only carries generic ground beef and muscle cuts. The generic beef that all Metro Inc. supermarkets carry is graded Canada AA and has ¼ inch trim specifications for muscle cuts.

Beef Arrivals

Although Red Grill comes in both ground beef and muscle cuts, only the Red Grill ground beef is case-ready. Metro outsources the processing of its private label case-

ready meats to Jean Guy Soucy Inc., a case-ready plant near St. Jean-Sur-Richelieu, Quebec (Pelton, 2002). Red Grill muscle cuts arrive in each Metro and Loeb store as boxed beef and are disassembled, packaged and labeled by the meat department. Generic muscle cuts also arrive as boxed beef which must be cut, placed on trays, wrapped and priced. Generic ground beef arrives differently at the supermarket than its Red Grill counterpart. Boxed and bagged frozen trims of generic beef arrive at each store and must be ground, packaged and priced in-store. Normally each store within the Metro Inc. chain has its own meat cutter to process beef as only a small amount is case-ready.

Suppliers

Unlike its new subsidiary, Metro Inc. is not loyal to any particular packer and purchases its beef on certain price and quality specifications. Some of the major packers Metro Inc. purchases beef from include Cargill, XL, Lakeside and Swift & Co. in the United States.

Transportation and Distribution

From the packers, beef is typically distributed to a Merit Beef distribution centre. An example of the distribution process is as follows: when beef comes through Cargill it is sometimes delivered by train to a train station in Quebec. A van picks this beef up from the train station and delivers it to one of the Merit Beef distribution centres. There are two of these meat and frozen foods distribution centres located in Montreal and Quebec City. From these distribution centres beef is delivered by Metro's own refrigerated trucks to each store. This Merit Beef distribution division also possesses a meat processing facility producing cold-cuts and smoked-pork products (Pelton, 2002). It is stated on

Metro Inc.'s website that this makes Metro the only food distributor that processes some of their own meat at their own facility (Metro Inc.).

Sobeys

The Sobeys chain is reporting over 12 billion dollars in sales for 2005 making them the second largest food retailer in Canada, with locations spanning from coast to coast and over 1300 grocery stores (Sobeys). The Sobeys chain started in Nova Scotia in 1907 and still has its corporate head offices located in Stellarton, Nova Scotia. Sobeys has numerous banners and a few of the major ones are Sobeys, Garden Market IGA, IGA, Food Town, Thrifty Foods, Price Chopper, Needs, Sobeys Express, Foodland, Lawtons, IGA extra, Bonichoix, Les Marchés Tradition and Commisso's.

Due to the enormity of the chain, beef procurement decisions (as well as other decisions) are made on a regional basis. The Sobeys chain is divided into four regions; namely, Western Canada, Ontario, Quebec and Atlantic regions. For the remainder of this Sobeys section, Sobeys' operations will be discussed on a regional basis, as beef brands and procurement decisions are different depending on which region of Canada a store is located.

Sobeys Atlantic

The main Sobeys banners in the Atlantic Canada region are Sobeys, Needs, Price Chopper, Foodland, Lawtons and Cash & Carry (Sobeys). All the Sobeys stores and banners in Atlantic Canada carry the same beef and beef brands. In their Atlantic stores, Sobeys carries their own retailer branded beef called "Canadian Select Beef" as well as packer Cargill's premium beef brand Sterling Silver.

Beef Arrivals

Ground beef arrives as tubes of beef in each store where it must be packaged and labeled in-store. All muscle cuts of beef arrive in-store as boxed beef that must be cut, placed on a foam tray, over wrapped, priced and labelled accordingly. Each store in Atlantic Canada within the Sobeys chain has their own meat cutter to process tubes of ground beef and boxed beef.

Suppliers

Most of the Atlantic region's ground beef and boxed beef comes from Cargill. They also get a very small amount from the other major packers namely Lakeside, XL and Better Beef.

Transportation and Distribution

Beef is normally delivered by their beef supplier (usually Cargill) to Sobeys' distribution centres. Since none of the beef is case-ready there is no need for cross-docking; that is, beef may be stored in distribution centres for longer periods of time (within reason) until the beef is needed at retail locations.

Sobeys West

The major Sobeys banners located in the West region include Sobeys, Western Cellars and IGA. The western Sobeys' banners all carry generic Canada AA and Canada AAA grade beef. In late summer of 2005, Cargill's premium beef brand, Sterling Silver beef was introduced to all the western Canadian Sobeys stores in addition to the generic beef selection. Both ground beef and muscle cuts are available in the Sterling Silver brand.

Beef Arrivals

Ground beef arrives as tubes from the major packers. Generally muscle cuts arrive at each western store as boxed beef and meat cutters must prepare the beef for the meat cases. Normally each western store has its own meat cutter but there has been a shortage of cutters in the last few years. Currently there are about five or six Sobeys stores in the west that receive case-ready beef from Vantage Foods in Winnipeg because they could not find meat cutters for their store.

Suppliers

Both ground beef and boxed beef come from Lakeside, Cargill and XL the major packers in western Canada. Case-ready ground beef and muscle cuts are supplied to five or six Sobeys stores that do not have a meat cutter from Vantage Foods in Winnipeg.

Transportation and Distribution

Beef is transported from the packers to warehouses for cross-docking by an independent trucking company.

Sobeys Quebec

There are currently four Sobeys' banners represented in Quebec although none of them are the actual "Sobeys" banner. The banners are IGA, IGA extra, Marché Bonichoix and Les Marchés Traditions. Decisions are made in the same fashion for each of the four Quebec banners about what beef and beef brands to carry in every store. Sobeys Quebec stores used to only carry Canada A and Canada AA commodity or generic beef. They have since introduced their own private label Canada AAA beef program. The brand is called "Boeuf Gourmet" which translates into "Gourmet Beef."

Beef Arrivals

All beef for the Boeuf Gourmet brand is from Cargill and arrives in-store as Cargill's Northridge Farms brand in the form of primals for muscle cuts and tubes of ground beef. Beef is subsequently re-branded in-store to Boeuf Gourmet when beef is cut or reground, weighed, packaged and labelled for the meat case. Beef is branded as Boeuf Gourmet as opposed to Northridge Farms because the Northridge Farms brand name means nothing to Quebec people, especially since it is in English.

Although nearly all of the Northridge Farm beef arrives as primals or in tubes of ground beef, a small amount of case-ready beef is shipped to the stores as well. Sobeys Quebec buys tubes of Northridge Farms beef and employs a third party processor named Distributions Marc Boivin to process case ready AAA beef patties and AAA lean ground beef.

The rest of the beef that the Quebec banners carry is all commodity or generic beef and is graded Canada A and Canada AA. This beef also arrives as primals and tubes of beef for the in-store meat cutters to further disassemble, weigh, package and label.

Suppliers

As previously mentioned, all of the beef for Boeuf Gourmet comes from Cargill as Sobeys Quebec and Cargill have a contract for this beef.

About thirty percent of the beef cuts sold in the Quebec banners are referred to as French cuts (these are still graded Canada A and Canada AA) and are not typically available in the rest of Canada. Examples of the more common French cuts are tournedos, rôti de palettie and chateaubriand. These cuts come from both western Canada and the

United States. The rest of their generic beef also comes from similar sources as the rest of their beef.

Transportation and Distribution

Beef is delivered by the packer and goes through a distribution centre where all medium cuts are aged for a minimum of fourteen days. End cuts of beef are not aged for any length of time; they are typically first in first out.

Sobeys Ontario

It comes as no surprise that the Sobeys Ontario region has the most complex inner workings of beef distribution, beef branding strategies and alliances of all the Sobeys regions. Sobeys has several banners in Ontario including IGA, Foodland, Sobeys, Comisso's and Price Chopper. Each of the banners falls into one of three distinct strategies for beef procurement and branding. Each of the beef procurement strategies are in line with the overall strategy for all other categories of food within the banner.

The Price Chopper banner is an urban discount type of grocery supermarket that offers the most popular brands and the store's own private label brands at low prices. All of Price Chopper's beef including muscle cuts and grinds are sold as generic. Since it is a discount chain, management does not feel as though it would be effective to brand their beef at these stores, because they do not feel as though the price conscious customers of these stores are willing to pay more for a branded product. Virtually all muscle cuts of beef and ground beef sold at Price Chopper arrives in-store as case-ready beef from Better Beef's Watson Foods in Guelph Ontario.

IGA and Foodland fall into the same second main beef procurement strategy. Both of these stores carry only the "Ontario Tender" brand of beef. All beef is from

Ontario and grades as the higher end of Canada AA or the lower end of Canada AAA beef.

Sobeys and Commisso's fall under a duplex beef program nearly identical to the program in the Atlantic Sobeys region. They carry their own private label retail brand, "Canadian Select Beef", as their everyday brand. They also carry Cargill's Sterling Silver brand as their premium brand.

Beef Arrivals

As previously mentioned, most fresh beef that arrives at Price Chopper is case-ready. All of the other Sobeys banners in Ontario (IGA, Foodland, Sobeys, Commisso's) normally get in block ready boxed beef and tubes of ground beef where an in-store meat cutter cuts/regrinds, weighs, packages and labels beef for the meat case.

Suppliers

Price Chopper has a contract with Better Beef's Watson Foods to produce all of their case-ready beef. Occasionally if there is high demand for certain beef products, such as when beef is advertised in the feature flyer, Price Chopper gets some boxed beef or tubes of ground beef from Lakeside and cuts/regrinds, weighs and packages beef in store.

Ontario Tender beef mainly comes from either Better Beef or St. Helen's Meat Packers and is distributed through Lumsden, a wholesaler subsidiary of Sobeys with retail distribution centres in Whitby, Milton and Brantford Ontario. Since Sterling Silver is Cargill's brand, all of the Sobeys and Commisso's stores must get their beef for the Sterling Silver brand from Cargill as per their contract.

Transportation and Distribution

Fresh case-ready beef is delivered by Watson Foods directly to each Price Chopper location. All of the boxed beef and tubes of beef are delivered by the packers to a distribution centre where it may be warehoused for a period of time. Sobeys then uses its own trucks to deliver boxed beef and tubed ground beef to its individual stores and banners.

Safeway

Safeway is a U.S. based chain with a subsidiary in Canada appropriately named Canada Safeway. Canada Safeway has approximately 219 stores in Canada. Stores are located in British Columbia, Alberta, Saskatchewan, Manitoba and a few in Ontario no further east than Thunder Bay.

Operations within Canada Safeway are divided into three regions. British Columbia is a distinct region, Alberta is another region, and Saskatchewan, Manitoba and Northern Ontario together form the last region. Beef procurement and branding decisions are made on a region by region basis although there are some threads of commonality amongst all the regions.

Currently all of the stores carry mainly generic beef with the exception of a few stores that carry some of Safeway's own premium private label beef, Rancher's Reserve. At time of writing, Rancher's Reserve was slated to be launched at all Canada Safeway stores. When this launch is complete all Canada Safeway stores will carry both generic beef and the premium Rancher's Reserve beef brand.

Beef Arrivals

Depending on the region and type of fresh beef, the manner in which fresh beef arrives in-store varies. In all three Canadian regions, ground beef arrives in-store in the case-ready format. Only muscle cuts will be branded as the Rancher's Reserve brand; all ground beef will remain generic.

In the Saskatchewan, Manitoba and Northern Ontario region generic muscle cuts arrive in each store as case-ready beef. In the few stores with service cases that currently sell Rancher's Reserve beef, beef arrives slice-ready from Vantage Foods in Winnipeg. When Rancher's Reserve is introduced in every Canada Safeway store it will all arrive in-store in the case-ready format in every region.

In the Alberta and British Columbia regions, muscle cuts arrive as boxed beef that must be cut and prepared for the meat case in-store and thus the stores all generally have meat cutters. When Rancher's Reserve is introduced in Alberta and B.C. it will all also be case-ready. Cargill in High River, Alberta, slaughters the beef and sends sides of beef to Lucerne who will then process case-ready Rancher's Reserve beef for the Alberta and B.C. regions. Vantage Foods will be producing the case-ready Rancher's Reserve brand for the Manitoba, Saskatchewan and Ontario regions.

Suppliers

All fresh beef for the Saskatchewan, Manitoba and Northern Ontario regions comes from Lucerne, Cargill or XL and all goes through and is processed at Vantage Foods by a third party case-ready processor in Winnipeg. All fresh beef for the Alberta and B.C. regions is currently direct from Lucerne. Lucerne primarily gets all of their beef from XL as sides of beef. When the Rancher's Reserve brand is introduced, all beef for

the Rancher's Reserve brand must be purchased from Cargill. Although Safeway owns the rights to the brand, Cargill is also tied to the brand and Safeway has a volume contract with Cargill to produce Rancher's Reserve beef.

Transportation and Distribution

Beef from Vantage Foods is distributed directly to Winnipeg stores. Beef from Vantage Foods destined for country Safeway stores, Ontario or Saskatchewan stores is cross-docked at a warehouse and bundled with other refrigerated goods. Beef prepared at Lucerne Foods destined for the Alberta and B.C. regions is cross-docked at warehouses before they are delivered to each store. Beef deliveries are made to stores daily. Safeway uses both their own trailers and third party trucks dedicated only to Safeway.

The North West Company

The North West Company has roots that date back to 1668 and today provides northern and rural communities with grocery services and other retail merchandise. The North West Company has a few banners in Canada that sell some form of beef whether it is fresh, frozen, processed or some combination of the three. The banners in Canada selling beef are Northern, Northmart and Giant Tiger (The North West Company). Northern and Northmart have some stores within their respective banners that sell fresh, frozen and processed beef and other stores that just sell frozen and processed beef. All of the Giant Tiger locations only sell frozen and processed beef. The North West Company also has a banner in Alaska called Alaska Value Centre, but as these are American stores, they will not be discussed in this section.

Decisions about what beef, whether it be fresh or frozen, branded or unbranded are made on a chain wide basis. The North West Company has developed their own private label brands and beef sells using the names of two of these private labels. Best Northern Value is an everyday value, discount private label brand. Exclusive Selections is also the company's own private label brand, however it is a premium quality brand compared to Best Northern Value.

Beef Arrival

Between the banners Northern and Northmart, there are fifty-five locations that sell fresh beef and have full fresh meat departments and meat cutters. The stores that sell fresh beef get in boxed beef for muscle cuts and tubes of ground beef for regrinding. Beef is further processed, packaged, priced and branded in-store.

Ninety stores, including stores in the banners Northern, Northmart and Giant Tiger only sell frozen and processed beef. The stores that only sell frozen and processed beef get their beef in ready for the meat case. In other words, their beef is frozen case-ready beef. This frozen case-ready beef includes everything from steaks to burgers.

Suppliers

Beef is purchased from the major Canadian packers, case-ready plants and brokers based on cost and quality specifications. The major Canadian packers they buy beef from are Cargill, Lakeside, XL and Better Beef. They also get some frozen case-ready beef from Vantage Foods and buy a significant amount of beef from brokers such as Preferred Meats. All of the beef they get from XL and Better Beef is frozen and case-ready.

Transportation and Distribution

All beef and pork is bought and distributed by Crescent Multi Foods, a wholesaler and distributor subsidiary of The North West Company. Fresh beef is shipped to a warehouse in Winnipeg called the Winnipeg Logistic Service Centre. Dry goods are normally stored here for a period of time, however, fresh beef is simply cross-docked and shipped to each individual store. Frozen and processed beef may be warehoused for a period of time at a third party warehouse called Westco. Both fresh and frozen beef is transported from its warehouse/distribution centre by either a third party refrigerated trucking company or by one of North West's own trucks.

Costco

Costco is a U.S. based membership wholesale store chain with approximately 63 warehouses across Canada. All customers of Costco, whether businesses or personal, must purchase a membership to shop at Costco. Costco sells national brand and private label products generally in larger portions at low prices. Costco has an extensive private label program named Kirkland Signature. Many products sold in Costco stores are branded with the Kirkland Signature brand (Costco).

Costco was the only major retailer in Canada that would not comment on their beef procurement practices or brands. Thus, in order to obtain the information required for this component of research, Costco's meat cases were personally surveyed. It was found that all ground beef and muscle cuts that Costco sold had the Kirkland Signature name atop the price, grade and weight information sticker. Whether one can call this a true private label or not is up to the reader's discretion.

As Costco is a wholesale store, they generally sold meat in larger quantities than the traditional Canadian grocery store. Most beef was sold using conventional packaging (beef placed on a foam tray and overwrapped with PVC wrap). All of this beef is cut and packaged in-store; it is not case-ready. Costco did test market case-ready beef in their Montreal stores according to “The Market for Case Ready Beef”, however, they have since reverted to cutting and packaging their own beef in-store because beef sales declined after the introduction of case-ready beef (Saskatchewan Agriculture). Costco also sells large vacuum sealed subprimal cuts of beef. Consumers buy these large subprimals and must cut them into steaks and roasts themselves. These large, vacuumed sealed subprimals also only had the one sticker with price, grade, weight information and the Kirkland name printed directly on the label.

It is very difficult to determine exactly how beef procurement and distribution takes place within the Costco chain without actually talking to beef procurers. However, after studying distribution channels of all the other chains, it has become clear that Costco’s beef procurement could not be dramatically different. Beef would come from the major Canadian packers, possibly some from the northern U.S. packers and either be shipped directly to each wholesale outlet or stored for a short period of time at a central distribution centre before finally making its way to each outlet.

Loblaws Companies Limited

Loblaws is the largest grocery retailer in Canada with nearly 1600 corporate, franchised and associated stores from coast to coast. In addition to the corporate, franchised and associated stores, Loblaws supplies 6,669 independent accounts with food

and merchandise. Loblaw's will take in just under 27 billion dollars in sales in 2005, making it more than twice as big as the second largest competitor Sobeys (Loblaw Companies Ltd.). Loblaw's has the largest private label program in Canada with the brands Presidents Choice and No Name.

Loblaw Companies' major banners include Atlantic SaveEasy, Atlantic Superstore, Extra Foods, Fortinos, Loblaw's, Lucky Dollar Foods, Maxi, No Frills, Provigo, The Real Canadian Superstore, The Real Canadian Wholesale Club, Shop Easy Foods, SuperValu, Valu-mart, Your Independent Grocer and Zehrs Markets. Generally, individual banners within Loblaw Companies are contained within a concentrated geographical area of Canada. For example, the Loblaw's and No Frills banners are only located in Ontario, Provigo is only in Quebec and The Real Canadian Superstore was only located in western Canada until recently when it made its debut in Ontario.

Decisions about what beef and beef brands will be carried in each Loblaw store are first made on a national basis. Additional decisions then trickle down and are made on a banner by banner basis. Further micro decisions about what kind of beef to carry in each store are also made on a store by store basis depending on what kind of consumer market they are located in.

Loblaw company stores and banners carry a few different beef brands depending on the banner, location, and store's market. Beef brands that may be found in some of the stores are Certified Angus Beef, President's Choice Angus Beef, President's Choice Organics and President's Choice. Every store across Canada gets a base, non-branded commodity beef product that is graded Canada AA or higher everywhere except the Atlantic provinces, where their non-branded base is graded Canada AAA. Some stores

also carry President's Choice branded ground chuck and ground round. It should be made clear that many stores currently only carry the non-branded commodity beef product.

Certified Angus Beef is sold at some stores that have service cases as their premium beef product. Other stores sell a Canada AAA non-branded product as their premium beef. New to the market is President's Choice Angus Beef. It is planned that President's Choice Angus Beef will soon be available at each retail outlet. The President's Choice Organics beef brand is only available at certain stores within certain banners depending on the surrounding consumer market.

Beef Arrival

Ontario and Quebec

Cargill has two case-ready plants located in Toronto, Ontario and Chambly, Quebec. All of the Loblaw Companies' stores in Ontario and Quebec are supplied with case-ready ground beef and case-ready muscle cuts from these processing plants. Nearly all of the fresh beef for Ontario and Quebec stores, branded or otherwise, is from these two case ready plants. Most of these Ontario and Quebec stores, not including No Frills and Maxi (because they are discount banners), employ at least one meat cutter so long as they have a service case. The meat cutter cuts and packages a small amount of boxed beef that arrives in store for special customer orders.

Atlantic and Western Canada

Although Atlantic Canada and Western Canada are at opposite ends of the country, beef for the Loblaw banner stores in these two regions all arrives similarly. All beef in the Atlantic and Western regions arrives as boxed beef and/or as large tubes of ground beef. The beef must be ground and/or re-ground, packaged and labelled in-store.

All muscle cuts arrive as boxed beef in the Atlantic and Western regions. The subprimals must be disassembled and packaged in-store. All of these stores have their own meat cutters to fill the store's meat cases. This is distinct from the Quebec and Ontario regions where most of the beef arrives as case-ready.

Correspondence with Loblaw's meat procurement management indicated that President's Choice beef must be produced centrally at Cargill's case-ready facilities. From this it is unclear whether President's Choice beef is available outside of Ontario and Quebec.

Suppliers

As mentioned above, Cargill's two case-ready plants in Toronto and Chambly supply most of the fresh beef for all of the Ontario and Quebec stores. Some beef for the case-ready plants is slaughtered by St. Helen's Meat Packers. The No Frills banner in Ontario receives case-ready beef from Better Beef in Guelph. Loblaw's gets tubes of ground beef for some of its stores from Better Beef and Cargill. For Atlantic and Western stores, boxed beef comes from the major packers, however management revealed no specific packers. Certified Angus Beef is purchased from Swift & Co. in the United States.

Transportation and Distribution

The physical transportation and distribution of beef takes place in a variety of ways. Loblaw's has their own fleet of reefers and generally likes to pick up most of the product themselves when they are able to. When it is not possible for Loblaw's to pick up some of the fresh beef, it is delivered by the processor/packer. Some fresh beef goes directly from the case-ready facilities in Ontario and Quebec to store. Other beef will go

from the processor/packer through distribution centres before finally making its way to each individual store.

Observations from the Supermarkets in Canada

Certified Angus Beef was the first major beef brand developed in the United States in 1978. Its success spurred the major branded beef revolution in the United States over the past decade. Over forty brands are now recognized by the USDA and there are many other private brands as well (Allen, 2005). The preceding sections demonstrate that the Canadian beef industry is at the initial stages of a brand revolution of its own. The Canadian beef industry today appears to mirror the beef industry of the United States ten years ago. The supermarkets in Canada that currently carry branded beef products have only very recently been introduced. Over the next decade branded beef will likely become more common as in American supermarkets. Higher populated areas in Canada have more beef brands to choose from. It should be noted that private label brands generally do not offer the same kind of attributes and level of utility as a national brand offers and therefore should not be regarded in the same manner. Included below is a table of the brands currently available in Canada. Please note that the majority of the brands are private label in nature.

Table 17. Beef Brands Available at Canadian Grocery Retailers

Retail Chain	Banners	Brand Name	Type	Quality
Co-op Atlantic	All	Atlantic Tender Beef Classic	Private Label	AA or Higher
Federated Co-op	All	Guaranteed Gold Western Canadian Beef	Private Label	Not Specified
Thrifty Foods	All	Alex Campbell Signature Series Sterling Silver Beef	Private Label/ Packer Brand	AAA
Thrifty Foods	All	Alex Campbell Signature Series Traditional Beef	Private Label	Not Specified
Overwaitea Food Group	All	Western Family	Private Label	Not Specified
Overwaitea Food Group	Urban Fare	Certified Angus Beef	National Brand	AAA or Higher
A&P Canada	All	Beef Beyond Belief	Private Label	Not Specified
A&P Canada	Several Conventional Stores	Certified Angus Beef	National Brand	AAA or Higher
Metro Inc.	Metro and Loeb	Red Grill/ Grill Rouge	Private Label	AAA
Sobeys	All Atlantic Stores	Canadian Select Beef	Private Label	Not Specified
Sobeys	All Atlantic Stores, Sobeys, Commisso's	Sterling Silver	Packer Brand	AAA or higher
Sobeys	All Quebec Stores	Boeuf Gourmet/ Gourmet Beef	Private Label	AAA

Sobeys	IGA and Foodland	Ontario Tender	Private Label	AA or AAA
Safeway	A Few Stores	Rancher's Reserve	Private Label	Not Specified
The North West Company	All	Northern Value	Private Label	Discount
The North West Company	All	Exclusive Selections	Private Label	Not Specified
Costco	All	Kirkland Signature	Private Label	Not Specified
Loblaw Companies Ltd.	A Few Stores	Certified Angus Beef	National Brand	AAA or Higher
Loblaw Companies Ltd.	Some Stores	President's Choice Angus Beef,	Private Label	Not Specified
Loblaw Companies Ltd.	Some Stores	President's Choice Organics	Private Label	Not Specified

There is one major difference between the emergence of brands in Canada and brands in the United States a decade ago. In the early days of branded beef in the United States some of the major beef brands were spearheaded by producer groups (e.g. American Angus Association developed Certified Angus Beef). The early emergence of nationally branded beef products in the United States has cued retailers and packers operating in Canada to develop their own brands and become established before other groups (producer groups, other packers, other retailers) establish their brands. By establishing their brands first these packers and retailers will have first mover advantage.

Case-ready beef is usually used for the lower end beef products of a store and for discount grocery banners. There are a few exceptions to this, namely Metro that uses

case-ready beef only for their premium beef offering and banners that have nearly all converted to case-ready beef (Loblaws banners in Ontario and Quebec, and Safeway in the Ontario, Manitoba and Saskatchewan regions). Most grocery chains are coming out with very soon or have already come out with their own private-label beef brands.

There are very few producer-organized beef brands in Canada compared to the United States. This may be due to the fact that producer groups developed beef brands before the major packers and retailers in the United States. In Canada, it was the packers and retailers that have begun to introduce branded beef, not producers. Retailers have an incentive to develop their own brand because then they do not have to purchase all of their beef from a single packer. Packers also have strong incentives to develop their own beef brands. If a packer develops a brand and a retailer adopts it, the retailers must then buy all of their beef from that packer. Producers have an incentive to develop their own brand as well. However, since they have less market power, their incentive to develop a brand is different, because they cannot garner all value added profits for themselves without building capital intensive packing plants and retail outlets as packers and retailers can when they develop their own brands. If producers develop their own brands they will be able to control a larger share of the profits from the value adding process by using licensing agreements and alliances with other supply chain members for the use of their brand.

Implications

With packers and retailers in Canada introducing new beef brands at a steady pace, if it is found that Canadian consumers are willing-to-pay for branded beef products, producers should quickly get involved with branded alliances and programs. There is a first mover advantage for those who are the first to introduce branded beef products as was seen in the United States with Certified Angus Beef products.

It may seem this section suggests that producers should be told to immediately develop or become involved with a beef brand to capitalize on the first mover advantage. However, the cart should not be put before the horse. It must be determined whether Canadian consumers are actually willing to pay for branded beef, so that major packers and retailers are not simply introducing these brands into the Canadian market place because it has been shown that American consumers are willing to pay for branded beef.

Summary

When a Canadian consumer goes to their local supermarket to purchase beef, for they have traditionally had three characteristics to think about: quantity, cut and grade. Recently, a few beef brands have been introduced into select supermarkets in certain regions of Canada. More brands will likely be introduced if beef supply chain members not presently involved with branded beef see that it is successful in Canada.

This section has assessed the status of beef brands in supermarkets across Canada. It provides some of the information needed to aid in aligning producers with the rest of the Canadian beef supply chain. Producer groups who want to become involved with

branded beef alliances must fully understand how beef branding alliances currently work downstream before they can develop their own brand or participate in an existing brand.

A detailed description of the alliances between grocery chains and packers was conducted. A concise summary about each major supermarket chain was given, detailing their major banners, beef brands carried, suppliers of beef, how beef arrives and transportation and distribution practices. This section finished with observations and implications. Major observations were: the differences in the emergence of branded beef in Canada compared to the United States, case-ready beef trends, private label retail beef brands emerging in Canada and the few producer brands in Canada. Implications suggest that it is in fact important to determine if Canadian consumers are willing to pay for branded beef. If they are, producers need to act swiftly to capitalize on first mover advantage.

Appendix F: SAS Code

```
DATA ONE;
INFILE 'C:EADATAPP.CSV' DELIMITER = ',' ;
INPUT WTP BEAT LIKEPP CNFD GEND AGE EDU INC;
PPPRBT = 0;
IF WTP > 0 THEN PPPRBT = 1;
PROC MEANS DATA=ONE NMISS;
RUN;
/*PROC PRINT DATA=ONE;
RUN;
PROC REG DATA=ONE;
    MODEL WTP = BEAT GRADE LIKEPP CNFD GENDDUM AGE EDU INC EDU;
RUN;*/
/*step 1: binary probit model to get log-likelihood*/
PROC QLIM DATA = ONE;
    MODEL PPPRBT = BEAT LIKEPP CNFD GEND AGE INC EDU / TYPE =
BPROBIT;
    ENDOGENOUS DISCRETE=(PPPRBT 0 1);
    HETERO AGE INC EDU;
RUN;
/*step 2: censored tobit model to get log-likelihood*/
PROC QLIM DATA=ONE;
    MODEL WTP = BEAT LIKEPP CNFD GEND AGE INC EDU / TYPE = TOBIT;
    ENDOGENOUS WTP;
    HETERO AGE INC EDU;
RUN;
/*step 3: truncated tobit model to get log-likelihood*/
PROC QLIM DATA=ONE;
    MODEL WTP = BEAT LIKEPP CNFD GEND AGE INC EDU / TYPE = TOBIT;
    ENDOGENOUS TRUNCATED= (WTP);
    HETERO AGE INC EDU;
RUN;
QUIT;<br>
```