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Auctions

# AN ECONOMIC EVALUATION OF AN ELECTRONIC AUCTION FOR ONTARIO SLAUGHTER CATTLE

by Scott Jeffrey  
Karl D. Meilke



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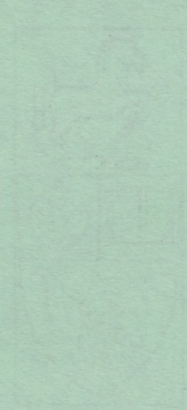
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## Preface

In early 1983 the Ontario Cattlemen's Association appointed a committee to evaluate the economic performance of an electronic auction system used to market slaughter cattle, in Ontario, between February and June 1983. The electronic auction trial was conducted under the supervision of the Electronic Auction Committee of the Ontario Cattlemen's Association, with funding for the trial provided by Agriculture Canada, the Ontario Ministry of Agriculture and Food and the Ontario Cattlemen's Association.

The members of the evaluation committee were Karl Meilke (University of Guelph), Gordon Richardson (Agriculture Canada), Brian Slemko (OMAF) and Bob Gregson (OCA).

This bulletin contains the results of the evaluation of the electronic auction.

The study would have been impossible without the cooperation of a large number of people; particularly the producers, agents and packers who responded to our surveys and provided other needed information. In addition, to the survey participants, and the members of the evaluation committee, the contribution of several individuals who contributed time, guidance and ideas for the study deserve special mention. In particular, Graeme Hedley and Robert Kerr of the OCA; Dan Sideen, Manager of the Electronic auction; and, Dr. Larry Martin, Dr. Tom Funk, Dr. Peter Stonehouse and Dr. Murray MacGregor all from the University of Guelph. The results of this study are, however, the responsibility of the authors and the above individuals are not responsible for any errors or omissions which may appear in the report.

Funds to publish this report were provided by the Ontario Ministry of Agriculture and Food through their research contract with the University of Guelph.

Scott Jeffrey  
Karl Meilke

September 1984

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## CHAPTER 1

## INTRODUCTION

## 1.1 Background

Electronic marketing has, in one form or another, been used in the trading of agricultural products since the early 1960's. Electronic marketing involves the use of a computer system, telephone, or some other form of electronic communications technology to describe and market a product. For products where potential buyers and sellers are spatially dispersed, such as agriculture, this type of marketing has certain theoretical advantages and has been considered as an alternative marketing method for many diverse agricultural products.

One of the earliest uses of electronic marketing in agriculture was a teletype auction for slaughter hogs developed by the Ontario Pork Producers' Marketing Board in 1961. This auction is still in operation and all slaughter hogs in Ontario are marketed through it. Since then, electronic auction systems for various agricultural products have been initiated, mainly in the United States. Most of the systems involve the use of a telephone auction, although several computerized auction systems have been put into practice. Products that have been sold by electronic marketing include hogs, eggs, wool, slaughter lambs, and feeder and slaughter cattle.

Concerned with the economic efficiency of the present beef marketing system in Ontario, the Ontario Cattlemen's Association (OCA)<sup>1/</sup> decided, in early 1981, to look into the possibility of developing an electronic marketing system for slaughter cattle. An OCA committee was set up to formulate a proposal for such a system, their first task being to determine its feasibility and to select a tentative design. After considering the types of electronic marketing designs available, the committee decided that the one most easily adaptable to marketing slaughter cattle was a computerized auction being used in Virginia to market lambs. An altered version of this computer auction was developed to sell slaughter cattle in Ontario.

A feasibility study was then undertaken, using the adapted computer auction to demonstrate electronic marketing to buyers, producers, and commission agents. After viewing the demonstration, the participants filled out questionnaires asking their opinion of the proposed auction. The results were generally favourable. A significant number of producers and buyers indicated that they would use such a system if costs were comparable to marketing channels presently available (Ceschi-Smith et al., p. 26-27). Participants in the study also made recommendations about possible alterations to the proposed design. The feasibility study was

---

1/

The Ontario Cattlemen's Association is the organization officially recognized as representing beef producers in Ontario.

completed in the spring of 1982.

The auction committee took the recommendations into consideration and came up with a formal proposal for a five month trial of an electronic auction system. The proposal was accepted by the OCA and funding was obtained from Agriculture Canada, the Ontario Ministry of Agriculture and Food, as well as the OCA. The fall of 1982 was spent hiring a project manager and obtaining the cooperation of buyers and commission agents for the trial period. The first auction was held on February 7, 1983. The trial ran for four months, concluding at the end of May, 1983, at which time operation of the auction was turned over to a private firm.

## 1.2 Economic Problem

Market performance is considered to have two components; operational efficiency and pricing efficiency. Operational efficiency has been defined in several different ways for both firms and markets (Williams and Stout, p. 121, Kohls and Uhl, p. 38, Shepherd and Futrell, p. 179). For the purposes of this study, however, an operationally efficient marketing system is one which provides a given set of marketing services at the least cost while using the most appropriate technology.

Pricing efficiency, while more complex, is concerned with what product prices represent within and between markets. Hypothetically, to be totally price efficient, a marketing system must be perfectly competitive. Markets of this type have the following six characteristics (Williams and Stout, p. 123).

- 1) Large numbers of buyers and sellers.
- 2) Volumes handled by all individual buyers and sellers are so small in relation to the entire market that each operates as if his actions had no influence whatever on price.
- 3) Absence of artificial restrictions on demand, supply or prices.
- 4) Perfect freedom of firms to enter or leave the industry or market under consideration.
- 5) A perfectly homogeneous commodity or conditions in which price differences among grades or classes of the commodity, as well as among markets, and over time, are equal to necessary cost differences.
- 6) Perfect knowledge of techniques and methods, market demand, available supplies, prices, and factors affecting prices.

Prices of products within perfectly competitive markets accurately

represent demand and supply conditions. Price differences between products reflect differences in quality, location, and time. However, since perfect competition occurs only in theory, totally price efficient marketing systems do not exist. Nonetheless markets can be compared as to the degree to which they meet the criteria for perfect pricing efficiency.

There is concern among people involved in marketing slaughter cattle in Ontario, both producers and non-producers, that the market is not performing as efficiently as it should. A large proportion of the slaughter cattle in Ontario are marketed through auctions. In 1982, approximately 715,000 slaughter cattle (66% of the total) were sold through the Toronto Public Stockyards or community auctions (OCA, May 1983, p. 26). This type of marketing requires a significant amount of handling of the cattle from the time they leave the feedlot until they are slaughtered. They must be loaded and unloaded several times as well as being penned and sorted at the auction yard. Research such as Richards' study of alternative marketing methods for selling slaughter cattle has shown that this is costly in terms of labour and transport when compared to shipping cattle direct from feedlot to packer. Studies by Grandin, and Henning and Thomas have also shown that increased handling of cattle during marketing reduces yields because of tissue shrinkage and carcass damage. These losses represent extra costs to both buyers and sellers.

There is also concern with the pricing efficiency of the present marketing system. Price levels in large markets such as the Ontario Public Stockyards in Toronto may be indicative of the present supply and demand conditions in the slaughter cattle sector. However the same is not necessarily true for smaller country auctions. Representatives from all potential buyers may not attend auctions in locations that are distant from their plants and this can result in less buyer competition, leading to prices which are not representative of actual supply and demand conditions. The same may be true for direct sales of cattle where only one buyer is making an offer to the producer.

There is also the worry that prices do not reflect the actual carcass value of the cattle since cattle marketed through auctions are sold on a liveweight basis where the buyer must make a subjective evaluation of how much the cattle are worth. This evaluation can lead to errors in judging the carcass value of the cattle. If this is true then the market is not operating at a high level of pricing efficiency. Johnson's study looked at previous research that showed buyers do make errors in estimating the carcass value of cattle bought on a liveweight basis. Farmers are therefore not receiving accurate feedback as to the type of steer or heifer most desirable to today's buyer.

It is not clear to what degree these problems exist in the marketing of slaughter cattle. However, it is evident that they do exist. Because of this, there is room for improvement in the structure of the marketing system and possible solutions should be studied.

### 1.3 Research Problem and Objectives

Having defined the economic problem the next step is to find, and evaluate, alternative selling methods to determine if a marketing channel with superior pricing and operational efficiency can be developed. The OCA committee, as mentioned previously, devised a proposal for a five month trial of a computerized auction system. Thus the research problem for this study is to evaluate the new auction system. This will be accomplished by looking at the (a) procedural efficiency, (b) operational efficiency, (c) pricing efficiency, (d) producer participation, and (e) participant and non-participant satisfaction with the electronic auction. These five points are discussed further below.

#### 1.3.1 Procedural Efficiency

Before the computerized auction can be compared to other systems of marketing cattle, it must be determined whether the system works in a practical sense. There are three specific topics to be considered under this general heading:

- 1) Estimated versus Actual Carcass Weights and Grades - The success of any computerized system of selling commodities depends on having an accurate description of the goods being sold as the buyer cannot see them before the sale. If descriptions are not accurate, the buyers may discount their bids to account for this.
- 2) Computer Efficiency - Because the auction is carried out by the use of a computer system, any problems with computer lines or terminals may lead to a negative reaction from potential users despite any other advantages the auction may have. Consequently, the efficiency of the computer package, both hardware and software, should be examined.
- 3) Transfer of Title Process - For any marketing system to succeed it is necessary to have a smooth transfer of the goods in question from the seller to the buyer. For example, delayed payment to the farmer may discourage the use of the system regardless of its potential benefits. It is important, therefore, to look at the efficiency of the title transfer process.

#### 1.3.2 Operational Efficiency

As stated earlier, operational efficiency is an important measure of market performance. A specific objective of this study is to compare the operational efficiency of the electronic auction with other methods of selling cattle. This will be accomplished by calculating the costs of marketing cattle by various selling methods.

#### 1.3.3 Pricing Efficiency

Pricing efficiency is another important measure of market performance. As with operational efficiency, there is no absolute measure of pricing efficiency. However, it is possible to compare marketing systems as to



the degree with which they approximate the conditions of perfect competition stated earlier. For the purposes of this study the electronic auction will be compared with other marketing channels on the basis of 1) price levels net of quality, location and time; 2) buyer competition; 3) bargaining power of participants; and, 4) level of market information available in order to determine if it is more or less price efficient than the alternative channels.

#### 1.3.4 Producer Participation

A specific objective of this study is to determine the type of beef producer attracted to the new auction system. Characteristics of the producers who used the auction will be studied and compared to the general population of Ontario beef producers. Characteristics of the lots of cattle offered for sale on the electronic auction will also be examined.

#### 1.3.5 Participant and Non-Participant Satisfaction

It is important with a new marketing system to get some feedback from participants once they have had some experience using the new system. If the participants in the trial are not satisfied with their experience, the auction likely will not succeed despite any advantages it has. The reactions of all participants, producers, packers and commission agents should therefore be solicited. It is equally important, however, to study the reactions of non-participants, especially producers. Of particular importance are their reasons for not participating in the trial and their opinion, whether changed or unchanged, of the auction following the trial.

Responses from actual and potential users of the auction are necessary to ensure that the marketing system is performing the functions desired by market participants and to ensure that the system is performing them to the participants' satisfaction.

### 1.4 Outline of the Study

Chapter 2 presents a brief description of the alternative selling methods available to Ontario slaughter cattle producers. As well, it describes the electronic auction as it was operated during the four month trial. The results of two research reports that dealt with electronic marketing are also reviewed.

The procedural efficiency of the electronic auction is discussed in Chapter 3. In particular, the efficiency of the cattle description process is analyzed. A discussion of the computer software and the transfer of title process is also provided.

Chapter 4 deals with the operational efficiency of the auction. The electronic auction is compared with direct sales, the OPS, and country auctions in terms of total marketing costs.

Four aspects of pricing efficiency are discussed in Chapter 5. The

electronic auction is compared to alternative systems with respect to price levels, buyer competition, bargaining power, and market information.

Chapter 6 presents an analysis of the participating producers' characteristics as well as the characteristics of the lots themselves. Also, the results of participant and non-participant surveys are presented.

Chapter 7 provides a summary of the analysis including its implications and conclusions with respect to the economic efficiency of the electronic auction.

## CHAPTER 2

AN OVERVIEW OF SELLING METHODS AVAILABLE  
TO ONTARIO BEEF PRODUCERS

## 2.1 Introduction

This chapter has two parts, the first being a brief description of the marketing channels that are presently being utilized by Ontario beef producers. The remainder of the chapter is a description of the OCA's electronic auction plus a discussion of two previous studies that attempted evaluations of electronic exchange systems for agricultural products.

## 2.2 Methods of Marketing Slaughter Cattle in Ontario

There are several options open to beef producers in Ontario for selling their slaughter cattle. As of February, 1983, Ontario beef producers could market slaughter cattle through a) the Ontario Public Stockyards, located in Toronto; b) country auction sales barns; c) direct sales to packers; d) video auction sales, run by the Ontario Livestock Exchange (OLEX); or e) the electronic auction set up by the OCA.

All systems except direct sales involve the cattle being sold by auction. Cattle sold through the Toronto Stockyards and country auctions are viewed by buyers as they are sold. The buyers view a video of the cattle before bidding when cattle are sold through the video auction while a description of the cattle is provided for buyers when using the electronic auction. Direct sales involve a private agreement between one buyer and one seller although more than one buyer may be contacted.

2.2.1 Ontario Public Stockyards

The Ontario Public Stockyards (OPS) is Canada's largest livestock market with respect to volume of livestock sold. It is one of nine markets across Canada that are designated as terminal markets.<sup>1/</sup> The OPS is run by the Stock Yard Board, which is a provincial crown agency. The Board has the responsibility of running the Stock Yards in accordance<sup>2/</sup> with the regulations of the Livestock and Livestock Products Act (1939).

1/

The others are in Montreal, Winnipeg, Regina, Saskatoon, Prince Albert, Edmonton, Calgary and Lethbridge.

2/

Provides for grading of livestock, poultry and products thereof and for regulation of stockyards, livestock exchanges and livestock shippers, etc. (Lane, section 2.21).

The Stock Yard Board licenses selling agencies who operate at the OPS. These agencies represent the producers who are selling livestock at the Stock Yards. Producers consign their livestock through one of these agencies, each of which operates its own sales ring at the OPS. At the present time there are five such commission agents.<sup>1/</sup> The producers are charged commission and yardage fees which cover the costs of selling the livestock as well as penning and sorting and any other services provided.

Buyers are either individuals or representatives of packing firms. In the case of slaughter cattle, buyers representing most major packers in Ontario are present at the slaughter cattle sales in Toronto during the week. The cattle are sold by auction on a liveweight basis with their weight being taken immediately after they are sold.

In Ontario, approximately 37% of all slaughter cattle are sold through the OPS (Table 2.1). It is at present the most frequently used of the five alternative selling methods. This makes it a very important source of market information as the prices generated should come close to reflecting true demand and supply conditions because of the volume traded. Because of this, Toronto prices are quoted in many major newspapers and by electronic media; not only in Ontario, but across Canada.

### 2.2.2 Country Auctions

The development of country auctions for slaughter cattle has come about since the end of the Second World War. It is mainly due to the improved conditions of roads and of livestock trucking (Clarke and Huff). Local auction facilities are privately owned and are regulated by the Livestock Community Sales Act (1970).<sup>2/</sup>

Usually the owner acts as the commission agent and charges a commission fee to cover his costs of handling and selling the livestock. As in Toronto, all types of livestock may be sold depending on demand and supply. However, unlike Toronto, local sales are usually weekly.

The cattle are usually sold in producer lots by auction on a liveweight basis with the buyers knowing the aggregate weight of the lot before the lot is auctioned. If the producer feels that the last bid is not high enough, normally his only option is to bid-in and buy his cattle back. However this usually means he has to truck the cattle home again as well as paying a commission fee which is a costly procedure.

Approximately 30% of slaughter cattle sold in Ontario move through country auctions (Table 2.1). In 1981 there were 64 licensed community

1/

Dunn & Levack Ltd., Gamble & Rogers Ltd., Newton & McConvey Ltd., Richey, Fay & Armstrong Ltd., and United Cooperatives of Ontario.

2/

Provides the authority for regulation of livestock community sales and licensing of operators thereof, (Lane, Section 2.2.0).



Table 2.1: Route to Market for Cattle Slaughtered in Ontario

	Head	(1982) Percent
Cattle Marketed via Community Auction	321,787	(29.9)
Cattle Marketed via Terminal Market	392,622	(36.5)
Cattle Marketed via Direct Sales	335,686	(31.2)
Cattle Marketed via Listing Service (OLEX)	<u>25,705</u>	(2.4)
Total Supply of Ontario Slaughter Cattle	1,075,800	
Exported to U.S.A.	<u>38,500</u>	
Supply of Ontario Slaughter Cattle Slaughtered Within Province	1,037,300	
Cattle Imported from U.S.A.	70,363	
Cattle Marketed via Truck and Rail from West	<u>31,149</u>	
Total Inspected Slaughter in Ontario	1,138,812	

Source: Ontario Cattlemen's Association, May 1983, p. 26.

sales barns operating across Ontario and about one-half of their sales, in volume terms, were cattle being sold for slaughter (OMAF, 1982).

Although the proportion of cattle marketed in this way is relatively large, there is very little reporting of local cattle prices by the mass media in Ontario. One reason for this could be that although the total cattle marketed through local auctions is high, the number marketed per auction is small relative to the OPS in Toronto.

### 2.2.3 Direct Sales to Packers

This method of selling cattle involves the direct movement of cattle from producers to packers. The producer contacts as many packers as he feels is necessary and solicits bids from each one. He may describe his cattle over the phone or the packer may send a buyer to the feedlot to inspect the cattle. The producer can accept any bid or may reject all bids if he feels they are not high enough. Sales of this sort can be made on a liveweight basis, straight dressed weight basis, or on a dressed weight basis allowing for discounts for poor grades.

There are no commission costs involved in this marketing system. However, prices are not made public except through CANFAX, so valuable market information is not revealed and depending on the number of buyers contacted, this method of selling cattle may not be as competitive as the OPS or country auctions.

In 1981, approximately 31% of Ontario slaughter cattle were sold direct to the packer (Table 2.1). Although this figure is smaller than in other parts of Canada (Clarke and Huff), it represents a significant proportion of all slaughter cattle sold in Ontario.

### 2.2.4 Video Auction<sup>1/</sup>

In 1977, a group of six Bruce County beef producers set up the Ontario Beef Exchange Limited (OBEX). It provides a listing service for selling slaughter cattle.

Producers phone OBEX and indicate that they have cattle to sell. A videotape of the lot to be offered is recorded and made available to interested packers. Buyers then make confidential bids on any or all of the lots that are offered for any particular sale. The packers' bids are then revealed to the producer and he can either accept or reject any of the bids. Sales are held once a week. The basis of sale can be either live or carcass weight. The buyer has to accept delivery within a certain time period or face a penalty.

Since its inception the service has been taken over by OLEX which operates it at the time of this study. Approximately 2.5% of all slaughter

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The operating details for the video auction were taken from Richards' study.

cattle in Ontario are marketed through this system (Table 2.1). Because of the small volume that this system sells, it will not be considered as one of the alternative marketing channels to be compared with the electronic auction. It is mentioned here merely to point out that it is another option for beef producers.

## 2.3 Electronic Auction

### 2.3.1 Description of the Electronic Auction<sup>1/</sup>

As stated in Chapter 1, the electronic auction began operation in February, 1983. During the trial period, the auction was operated by the OCA. All participants in the trial were required to follow the rules and regulations that were set out by the electronic auction management committee (Appendix I).

Producers who were interested in selling cattle on the electronic auction would contact a commission agent. The commission agents were either operators of local country auctions or sales agents at the OPS. The agents would send a representative out to describe the cattle or the producer could describe them if he so desired. The description of the cattle included: a) the number of cattle, b) the sex of the cattle, c) the dominant breed, d) estimated live and carcass weights, e) estimated grades, f) housing and feeding program, g) weighing conditions, and h) bidding basis. The bidding basis could be liveweight, carcass weight or carcass weight with grade discounts. The producer also set a minimum price (reservation price) that he would accept for his cattle.

The agent then entered the description of the cattle into the computer using a terminal in his office. On the day of the auction the buyers were able to view the descriptions of the cattle to be offered. They did not, however, know the producer's reservation price for each lot.

The auction procedure was similar to that for live auctions. The auction for each lot was started at an arbitrary price. This price decreased stepwise until a buyer decided to bid on the lot by pressing the bid button on his terminal. The bidding process was then exactly the same as that for live auctions. When bidding stopped, a message was transmitted to the buyers declaring the lot sold, or cancelled, depending upon whether the reservation price was met.

The buyers were required to accept delivery of cattle within three days and to slaughter the animals within twenty-four hours of delivery. Any disputes between buyers and producers were to be settled using commission agents as neutral arbitrators. The fees for using the auction were split into two parts. The producer was charged a listing fee which

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Most of the material in this section comes from the Proposal for a Five Month Trial of an Electronic Auction for Slaughter Cattle in Ontario, Appendix I.

was to cover the costs of the computer time needed to sell his cattle. The commission agent also charged a commission fee to cover his costs of listing the cattle.

### 2.3.2 Discussion of Recent Research Results

Two recent papers concerning the feasibility of electronic marketing systems for agricultural products were done by Richards, and Henderson and Holder. The results of these two studies are presented here in order to illustrate the potential benefits and costs of electronic marketing.

Richards' study examined alternative methods of marketing slaughter cattle in Ontario and evaluated them on the basis of operational and pricing efficiency. His study dealt with the Ontario Public Stockyards, country auctions, direct-to-packer sales, a video listing service (OBEX), and an electronic teletype auction. The proposed electronic auction was similar to the one used by pork producers in Ontario.

His performance indicator for operational efficiency was total marketing costs. In his cost analysis, Richards compared the five marketing systems on the basis of a) producer transportation costs, b) packer procurement and transportation costs, c) yield and kill efficiency costs, d) intermediary costs, and e) total marketing costs, which was the sum of a) through d).

Richards' study also considered pricing efficiency. However, his analysis was limited to a discussion of the degree to which each alternative selling method satisfied the perfect market conditions.

In his analysis of operational efficiency, Richards concluded that the alternatives ranked, from most to least efficient, as follows:

- 1) electronic teletype auction,
- 2) listing service,
- 3) direct-to-packer sales,
- 4) Ontario Public Stockyards, and
- 5) country auctions (Table 2.2.).

He also felt that with a trend towards decreasing volumes of cattle and increasing inflation, the costs of marketing cattle through the Ontario Public Stockyards and the country auctions would increase at a faster rate than the other three methods.

From his discussion of pricing efficiency, Richards concluded that the listing service and electronic auction have distinct advantages over the other three systems evaluated. His study determined that the Ontario Public Stockyards has the advantage of large weekly volume which provides reliable price information and easy access between buyer and seller. However, both the Stockyards and country auctions have the following disadvantages:

- "i) the degree of pricing accuracy is reduced as a result of the fact that liveweight selling is utilized by



Table 2.2: Estimated Total Marketing Cost (per head basis) of Alternative Marketing Methods for Slaughter Cattle in Ontario, 1977 (20 cattle per lot)

Cost	Country Auction	Ontario Public Stockyards	Direct Sales*	Listing Service*	Electronic Auction*
Producer Transport	2.62	7.73	5.65	5.65	5.65
Intermediary	5.80	4.30	—	2.42	1.25
Packer - Procurement	1.70	1.45	3.00	0.42	0.42
- Transport	6.16	2.16	—	—	—
Kill Efficiency	1.71	1.71	—	—	—
Yield Efficiency	3.90	3.55	—	—	—
Total	\$21.89	\$20.90	\$8.65	\$8.49	\$7.32

Source: Richards, p. 85.

\* These three methods were assumed to minimize yield and kill efficiency costs.

these selling methods; and  
 ii) producer bargaining position is adversely affected because cattle must be shipped prior to being offered."  
 (Richards, p. 113).

Richards' study also discussed the requirements for implementing an electronic auction for slaughter cattle. He stated that in order to successfully operate such an auction it would be necessary to 1) maintain animal identification through the slaughtering process; 2) increase standardization in grading of carcasses through better training of graders; 3) incorporate a procedure to accurately describe the cattle to be sold through the auction; and, 4) have a knowledgeable sales agency in order to provide accurate descriptions, settle buyer-seller disputes, and enforce government regulations with regard to weighing and grading procedures (Richards, p. 116).

A more recent paper by Henderson and Holder also dealt with potential benefits and costs of electronic marketing systems. Based on past commercial or experimental implementation of electronic marketing, they concluded that the benefits can be divided into six categories: 1) improved market information (both to buyers and sellers); 2) marketing efficiency;<sup>1</sup> 3) greater pricing efficiency; 4) increased competition; 5) higher prices; and, 6) more equitable market access.

Along with the potential benefits, Henderson and Holder concluded that there are costs to be considered as well. They divided the costs into four categories.

- (1) Development Costs and Risk - Included in these costs are the costs of developing the necessary computer software and hardware along with the costs of testing and subsequently modifying it until it is acceptable.
- (2) Implementation Costs - Implementation costs are the costs of getting people to use the new system. This includes the process of educating potential users as to the advantages of the system and its operating procedures.
- (3) Operating Costs - These include the actual costs of running the system. The per-unit costs vary, of course, with the technology used, and the volume moving through the system.
- (4) Displacement Costs - Displacement costs refer to implied costs that arise from trade being drawn away from existing marketing channels.

Henderson and Holder concluded that, because of the advantages listed above, electronic marketing will undoubtedly increase in use. They stated, however, that the incurred costs must always be considered when implementing such a system.

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This is equivalent to operational efficiency.

## CHAPTER 3

## PROCEDURAL EFFICIENCY

## 3.1 Introduction

This chapter is devoted to an analysis of the electronic auction's procedural efficiency; that is, its feasibility as a viable alternative to other marketing systems for slaughter cattle. Section 3.2 presents the types and sources of data used in the analysis as well as the general methodology. Section 3.3 presents the analysis of the accuracy with which the animal descriptions were made by producers and listing agents. Section 3.4 is a discussion of the computer efficiency during the four month trial while section 3.5 deals with the effectiveness of the transfer of title process.

## 3.2 Methodology

3.2.1 Estimated versus Actual Carcass Weights and Grades

This section consists of a comparison of the animal descriptions for lots of cattle offered through the electronic auction and the actual weights and grades of these cattle. The descriptions of the cattle were obtained from auction records made available by the OCA. The actual weight and grade information was collected from packers' grading sheets. These were obtained through the cooperation of packers and listing agents.

The analysis involves calculating the number of cattle that were described to be of certain grades and carcass weights for 73 lots of cattle. These were then statistically compared to the actual number of cattle that fell into these grades, or carcass weight ranges, to determine if the descriptions were accurate. In some cases, the listing agent did the describing while in other cases it was the producer. Consequently it is possible to determine whether this had any effect on the accuracy of the description.

3.2.2 Computer Efficiency

Due to the nature of this topic, quantitative measures of the efficiency of the computer hardware and software are not practical. Instead, information was solicited from packers and listing agents, in a survey distributed following the trial period, concerning their experience with the computer system. This, along with information obtained in interviews with the manager of the electronic auction, was used in a qualitative discussion of computer efficiency. Problems encountered by trial participants were identified as well as aspects of the computer system that proved to be effective.

### 3.2.3 Transfer of Title Process

As with computer efficiency, this topic does not lend itself to quantitative analysis. For the purposes of this study, information obtained from phone and mail surveys of trial participants was used to qualitatively discuss the efficiency with which cattle moved from producer to packer using this system. As with the previous section, both advantages and disadvantages of the transfer process were examined.

### 3.3 Estimated versus Actual Carcass Weights and Grades

During the trial, a detailed description of the cattle was entered for each lot offered. As stated in section 1.3.1 it is necessary to have accurate descriptions of the cattle due to the computerized nature of this marketing system. Two of the most important items in the description are estimated carcass weights and grades. In the methodology section of this chapter, it was stated that the analysis to compare weights and grades involved performing statistical tests on the data. Initially, a chi-square test was performed to determine if the distribution of cattle, estimated, and observed to fall into particular carcass weight and grade categories were different. The results are shown in Tables 3.1 and 3.2 and indicate that the two distributions are significantly different. Consequently, it is important to determine in which weight and grade categories the errors occur. To determine this, paired sample t-tests were performed to compare the predicted with the actual number of cattle falling into certain weight and grade categories. This analysis was performed for the overall sample and then separately for producer described and agent described cattle.

The estimation of carcass weights consisted of categorizing each animal into one of six weight ranges (<500 lb., 501-550 lb., 551-700 lb., 701-750 lb., 751-800 lb., and 801 lb.+). To test the accuracy of these descriptions, two separate analyses were used. In the first one, the number of cattle estimated to be in the six weight ranges were compared to the actual numbers. The results of these comparisons are shown in Tables 3.3, 3.4, and 3.5. The weight ranges were then aggregated into three groups (<500 lb., 501-750 lb., and 751 lb.+) and the same t-tests were performed comparing estimated to actual weights. These particular aggregations were chosen because animals above 750 pounds or below 500 pounds were discounted in price. The results of this analysis are shown in Tables 3.6, 3.7 and 3.8.

The results of both the aggregated (three groups) and disaggregated (six groups) analysis indicate that producers and listing agents estimate the number of lightweight cattle (<500 lb.) fairly accurately but are less accurate in their estimation of the heavier cattle (751 lb.+). The results of the analysis for cattle in the 501-750 pound range are mixed. If the cattle in this range are aggregated into one group, the null hypothesis that the estimated and actual means are the same is rejected for both producer and agent described cattle as well as overall. However, if the weights are disaggregated into the three component ranges, the results are somewhat contradictory to those from the aggregate analysis. In the

Table 3.1: Number of Cattle Estimated and Observed in Each of Six Carcass Weight Ranges for 57 Lots Sold Through the Electronic Auction

Carcass Weight Ranges	Estimated Number of Cattle	Actual Number of Cattle	
<500 lb.	23	54	
501-550 lb.	205	183	
551-700 lb.	1558	1383	[ $\chi^2=287.5^*$ ]
701-750 lb.	255	295	
751-800 lb.	62	134	
801 lb. +	21	74	

\* At a 5% level of significance this implies that the distributions are different.

Sources: Electronic Auction Records, Packer Grade Sheets

Table 3.2: Number of Cattle Estimated and Observed in Each of Four Grade Categories for 73 Lots Sold Through the Electronic Auction

Grade	Estimated Number of Cattle	Actual Number of Cattle	
A1-A2	2548	2352	
A3	109	233	[ $\chi^2=1452^*$ ]
A4	1	33	
B,C,D,E	3	43	

\* At a 5% level of significance this implies that the distributions are different.

Sources: Electronic Auction Records, Packer Grade Sheets



Table 3.3: Comparison of Estimated Versus Actual Carcass Weights (Using Six Weight Ranges) For 57 Lots Sold Through the Electronic Auction - Producer and Agent Described

Range	Number of Cattle in Each Range	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a/</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
<500 lb. Estimated ----- Actual	23 ----- 54	-0.54	3.10	-1.32	No
501-550 lb. Estimated ----- Actual	205 ----- 183	0.39	4.25	0.70	No
551-700 lb. Estimated ----- Actual	1558 ----- 1383	3.07	8.68	2.67	Yes
701-750 lb. Estimated ----- Actual	255 ----- 295	-0.70	5.55	-0.95	No
751-800 lb. Estimated ----- Actual	62 ----- 134	-1.26	2.12	-4.50	Yes
801 lb. + Estimated ----- Actual	21 ----- 74	-0.93	1.56	-4.50	Yes

<sup>a/</sup> The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

Table 3.4: Comparison of Estimated Versus Actual Carcass Weights (Using Six Weight Ranges) For 17 Lots Sold Through the Electronic Auction - Producer Described

Weight Range	Number of Cattle in Each Range	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
<500 lb. Estimated ----- Actual	1	-1.24	5.11	-1.00	No
	22				
501-550 lb. Estimated ----- Actual	28	-0.88	1.73	-2.10	No
	43				
551-700 lb. Estimated ----- Actual	403	5.94	7.80	3.14	Yes
	302				
701-750 lb. Estimated ----- Actual	67	-1.71	5.17	-1.36	No
	96				
751-800 lb. Estimated ----- Actual	41	-0.82	2.19	-1.55	No
	55				
801 lb. + Estimated ----- Actual	7	-1.29	1.57	-3.39	Yes
	29				

a/ The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

Table 3.5: Comparison of Estimated Versus Actual Carcass Weights (Using Six Weight Ranges) For 40 Lots Sold Through the Electronic Auction - Agent Described

Weight Range	Number of Cattle in Each Range	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a/</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
<500 lb. Estimated ----- Actual	22	-0.25	1.67	-0.95	No
	32				
501-550 lb. Estimated ----- Actual	177	0.95	4.87	1.20	No
	140				
551-700 lb. Estimated ----- Actual	1155	1.85	9.05	1.29	No
	1081				
701-750 lb. Estimated ----- Actual	188	-0.28	5.42	-0.32	No
	199				
751-800 lb. Estimated ----- Actual	21	-1.45	2.08	-4.41	Yes
	79				
801 lb. + Estimated ----- Actual	14	-0.78	1.55	-3.16	Yes
	45				

a/ The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

Table 3.6: Comparison of Estimated Versus Actual Carcass Weights (Using Three Weight Ranges) For 57 Lots Sold Through the Electronic Auction - Producer and Agent Described

Weight Range	Number of Cattle in Each Range	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a/</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
<500 lb. Estimated	23	-0.54	3.10	-1.32	No
<500 lb. Actual	54				
501-750 lb. Estimated	2018	2.75	3.99	5.21	Yes
501-750 lb. Actual	1861				
751 lb. + Estimated	83	-2.19	2.99	-5.54	Yes
751 lb. + Actual	208				

a/ The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

Table 3.7: Comparison of Estimated Versus Actual Carcass Weights (Using Three Weight Ranges) For 17 Lots Sold Through the Electronic Auction - Producer Described

Weight Range	Number of Cattle in Each Range	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a/</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
<500 lb. Estimated	1	-1.24	5.11	-1.00	No
<500 lb. Actual	22				
501-750 lb. Estimated	498	3.35	5.14	2.69	Yes
501-750 lb. Actual	441				
751 lb. + Estimated	48	-2.12	2.42	-3.61	Yes
751 lb. + Actual	84				

<sup>a/</sup> The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

Table 3.8: Comparison of Estimated Versus Actual Carcass Weights (Using Three Weight Ranges) For 40 Lots Sold Through the Electronic Auction - Agent Described

Weight Range	Number of Cattle in Each Range	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a/</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
<500 lb. Estimated	22	-0.25	1.67	-0.95	No
<500 lb. Actual	32				
501-750 lb. Estimated	1520	2.50	3.44	4.60	Yes
501-750 lb. Actual	1420				
751 lb. + Estimated	35	-2.23	3.33	-4.24	Yes
751 lb. + Actual	124				

a/ The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

extreme case, for agent described cattle, the null hypothesis is rejected for the aggregated weights while the null hypotheses are accepted for all three weight ranges when disaggregated.

The above differences seem difficult to reconcile. If one considers the makeup of the calculated t-statistic for paired samples, however, a possible reason for the difference emerges. The calculated t-statistic depends upon the mean of the differences between estimated and actual as well as the variation in the data. Large variation in the data leads to smaller t-statistics. A larger variance around the mean of the differences between the estimated and actual numbers was caused by using the disaggregated weight ranges. This at least partially contributed to the difference in the results of the t-tests. The smaller variation in the aggregate data analysis allowed the t-test to be more precise in this case.

The analysis of the estimated versus actual grades was performed in a manner similar to the carcass weight analysis. The number of cattle that were estimated to be A1-A2, A3, A4 and B, C, D or E grades were compared to the actual numbers. The null hypotheses were again that the means of the groups compared were not significantly different.

The resulting analysis shows that for the four groups of grades tested, the number of cattle estimated to be in each grade is significantly different from the actual number of cattle in each grade. These results are consistent for both producer and agent described cattle. The results of the t-tests are shown in Tables 3.9, 3.10 and 3.11.

Assuming that the aggregate analysis for the carcass weights is the more accurate of the two performed, it follows that during the trial, neither carcass weights nor grades were being described with 100% accuracy. However, it could not be expected of producers or listing agents to be totally accurate.

Although people are well trained in estimating live weights of cattle, variables such as the amount of stomach fill or carcass trim during slaughter make it difficult to estimate dressing percentage and carcass weight. Grades are also difficult to estimate while the animal is alive. Factors such as fat thickness and colour, meat colour and amount of muscling all go into the determination of the grade assigned to a steer or heifer (Canada Dept. of Agriculture, p. 4-6). These variables, especially fat and meat colour, are difficult to estimate. It is not surprising, then, that the estimates during the trial were not completely correct.

On average, the descriptions overestimated the number of A1-A2 cattle, per lot, by 7%. The actual proportion of cattle in the 501-700 pound range was overestimated by almost 9%. On several occasions, however, the descriptions, especially with respect to carcass weight estimates were over or underestimated by a great deal more than the average. The estimated and resulting grades or carcass weights for four selected lots are shown in Table 3.12. Although these four lots were extreme cases, they illustrate that the descriptions of a few lots were quite poor. The greatest discrepancies seemed to occur in carcass weight estimates. The results of



Table 3.9: Comparison of Estimated Versus Actual Grades for 73 Lots Sold Through the Electronic Auction - Producer and Agent Combined

Grade	Number of Cattle in Each Grade	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a/</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
A1-A2 Estimated	2548	2.68	3.95	5.80	Yes
A1-A2 Actual	2352				
A3 Estimated	109	-1.70	3.21	-4.51	Yes
A3 Actual	233				
A4 Estimated	1	-0.44	1.08	-3.47	Yes
A4 Actual	33				
B, C, D and E Estimated	3	-0.55	1.14	-4.10	Yes
B, C, D and E Actual	43				

<sup>a/</sup> The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

Table 3.10: Comparison of Estimated Versus Actual Grades for 24 Lots Sold Through the Electronic Auction - Producer Described

Grade	Number of Cattle in Each Grade	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a/</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
A1-A2 Estimated	768	1.75	2.39	3.59	Yes
A1-A2 Actual	726				
A3 Estimated	9	-0.87	1.46	-2.93	Yes
A3 Actual	30				
A4 Estimated	0	-0.13	4.48	-1.37	No
A4 Actual	3				
B,C,D and E Estimated	0	-0.75	1.42	-2.58	Yes
B,C,D and E Actual	18				

a/ The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

Table 3.11: Comparison of Estimated Versus Actual Grades for 49 Lots Sold Through the Electronic Auction - Agent Described

Grade	Number of Cattle in Each Grade	Average Difference Between Estimated and Actual (Per Lot)	Standard Deviation of Differences <sup>a/</sup>	T-Value	Estimated and Actual Different at 5% Level of Significance?
A1-A2 Estimated	1780	3.14	4.47	4.92	Yes
A1-A2 Actual	1626				
A3 Estimated	100	-2.10	3.73	-3.94	Yes
A3 Actual	203				
A4 Estimated	1	-0.59	1.26	-3.30	Yes
A4 Actual	30				
B,C,D and E Estimated	3	-0.45	0.98	-3.21	Yes
B,C,D and E Actual	25				

a/ The standard error of the estimate, used to determine if the difference in the means is statistically different from zero, can be obtained by dividing the reported standard deviation by the square root of the number of observations.

Table 3.12: Estimated and Actual Carcass Weights or Grades for Four Selected Lots

Lot 1: Producer Described Heifers		Lot 3: Agent Described Heifers	
<u>Estimated Weights</u>	<u>Actual Weights</u>	<u>Estimated Grades</u>	<u>Actual Grades</u>
15 501-550 lb.	21 < 500 lb.	23 A1-A2	14 A1-A2
35 551-700 lb.	18 501-550 lb.	2 A3	8 A3
	10 551-700 lb.		3 A4
	1 701-750 lb.		

Lot 2: Producer Described Steers		Lot 4: Agent Described Steers	
<u>Estimated Weights</u>	<u>Actual Weights</u>	<u>Estimated Grades</u>	<u>Actual Grades</u>
39 551-750 lb.	12 551-750 lb.	41 A1-A2	22 A1-A2
2 751-800 lb.	12 751-800 lb.	3 A3	15 A3
	17 801-850 lb.	1 A4	4 A4

Sources: Electronic Auction Records, Packers' Grade Sheets

the analysis showed this to be true.

The difficulty caused by inaccurate grade and weight descriptions is minimized, however, when cattle are sold on a carcass weight and grade basis; assuming that the discounts for overweight and overgraded cattle are appropriate. Nonetheless in surveying packers' attitudes towards the electronic auction many packers stated that the inaccurate descriptions caused them problems. Many packers claimed to have markets for specific carcass grades and weights and little use for cattle that do not fall into those specific categories.

As a result it can be said that this aspect of the electronic auction did not function entirely satisfactorily during the trial, with carcass weights being more of a problem than grades. It is of course, impossible to estimate weights and grades with 100 percent accuracy, and many lots during the trial were described with exceptional accuracy. The number of lots described inaccurately, however, was large enough to cause some concerns. However, other selling methods are not completely efficient with respect to this aspect either. This is especially true for systems where the cattle are sold on a liveweight basis. Johnson's study refers to analysis that demonstrates the error in the estimation of dressing percentage and carcass grades by buyers at live auctions in the U.S. is significant. The results of the analysis indicated that on average, buyers were about 1.5 percentage points away from the true dressing percentage (range of zero to 7.5). As well, the average error in estimating grades was one-third of a grade (range of zero to one and two-thirds grades) (Johnson, p. 43-45). Lots marketed through the OPS or country auctions are undoubtedly prone to errors in description, however, there are no data available from these to compare with the information obtained from the electronic auction.

The data sample used in the analysis of carcass weights and grades was obtained from information provided by packers and agents. Because of this, the weight and grade comparisons did not utilize a randomly drawn sample and this may have biased the results of the analysis. However, the sample was large enough to be representative of the total population of lots marketed through the electronic auction during the trial.

### 3.4 Computer Efficiency

As stated in section 3.2.2, packer and listing agent surveys, as well as interviews with the manager of the electronic auction, were used in obtaining information concerning computer efficiency. This, along with the consideration of information concerning implementation of computer systems was then used in the examination of computer efficiency during the trial.

During the organization of the trial period, one of the decisions that the electronic auction committee had to make concerned the actual computer package to be developed, and the computer lines to be used. It was decided, at that time, to use existing computer lines and to modify an existing computerized cattle auction package in order to save the larger

costs of developing software packages and installing independent computer lines. By using an existing computer system and software package, the committee increased the potential for cost savings through this marketing system. By modifying an existing computer auction package, there was also a reduced chance of problems with the software itself as many possible errors would have been worked out. These considerations helped to make the computer auction more effective during the trial, both in terms of cost and performance.

Through the four months of the trial, there were some problems with the computer. On the day of the first auction, the program for the auction itself was misplaced by the main computer in Chicago. As a result, the auction was not started on time. During the initial part of the trial, some listing agents had difficulty in entering the descriptions of lots to be offered. In some cases, the listings were duplicated. This, however, was mainly a problem of operator inexperience and was corrected as the trial progressed.

There were a few problems with the lines and terminals during the trial. The computer system used phone lines to transmit information. Sometimes packers were unable to log onto the system because of problems with the lines. There were also instances when the terminal would not register a packer's bid during auctions. These two problems caused inconveniences for the packers concerned.

The problems encountered during the trial, however, were isolated ones and infrequent. When asked in a survey about their opinion of the computer's efficiency, the majority of both packers and listing agents felt that the hardware and software were effective. It can be concluded then, that except for a few problems which could be expected in any new system, the level of computer efficiency during the trial was very high.

### 3.5 Transfer of Title Process

In the proposal for the electronic auction trial period, specific rules were established concerning the transfer of cattle from producer to packer. A weighing location was specified by the consignor for all lots offered through the auction. At this weighing location the title of the cattle changed hands. Producers paid for transport up to this point unless otherwise specified. The cattle had to be delivered to the weighing point within three business days of being sold, and the packer was required to slaughter the cattle within twenty-four hours of delivery. Payment for cattle sold on a carcass weight basis had to be transferred from packer to agent by 2:00 p.m. the day after the grading of the animals. The agent was then responsible for paying the producer. If disputes arose between packers and producers, the agents were to act as arbitrators. If this was not effective in solving the problem the electronic auction committee would name an arbitration committee to make a ruling on the dispute.

This system has many potential advantages to both producers and packers. Producers have increased control over their cattle as they remain

on the farm until after they are sold. When buying through this system, packers know the number of cattle to be slaughtered up to three days in advance. As it will be shown in the discussion of operational efficiency, this helps packers minimize kill line inefficiencies. Neither party can unnecessarily delay in the delivery or the slaughtering of the cattle without penalty. Payment is also required within a certain time period. The process, as outlined in the proposal, seems to be effective.

Producers and packers, in post-trial surveys were asked their opinions of the transfer of title process. Almost all of the packers surveyed stated that the process was efficient and that they experienced no problems with it. Of the producers surveyed, 75 percent of those who sold cattle through the auction stated that they were satisfied with the transfer process as it existed during the trial. Many of these producers stated that they received payment promptly and felt that this was an advantage to them. Some producers were not as satisfied, however. Approximately 23 percent of those surveyed who sold cattle were dissatisfied with the transfer process. Their major complaint was that payment was not received promptly. Although there was a specific time period in which packers had to pay the agents, there was no such time period specified for agents paying producers. This appeared to be the only weak point in the transfer of title process. The other aspects of the process seemed to function efficiently.



## CHAPTER 4

## OPERATIONAL EFFICIENCY

## 4.1 Introduction

This chapter considers the operational efficiency of the electronic auction; that is, the effectiveness with which it performs the functions necessary to market cattle from feedlot to slaughter. The first section of this chapter discusses the methodology and data required to analyze the electronic auction's operational efficiency. The rest of the chapter is devoted to a presentation of the analysis and results.

## 4.2 Methodology

Operational efficiency, as explained in Chapter 1, is concerned with providing a given set of services, marketing services in this case, at the lowest feasible cost. In this study, the operational efficiency of the electronic auction was measured by comparing the costs of marketing cattle through the electronic system with the marketing costs of alternative systems. The alternative systems used for comparison were the Ontario Public Stockyards, country auctions, and direct sales to packers.

The first task is to determine the appropriate marketing costs to be considered. In doing this, the costs of all market participants involved from the feedlot to the packer's plant have to be taken into account.

The appropriate costs of all participants in the marketing channels examined are as follows:

A. The Ontario Public Stockyards

## Producer

- commission and yardage fees
- cost of transporting cattle
- losses due to shrinkage<sup>1/</sup> and carcass damage en route to and during the auction

## Commission Firm

- costs of operating the sales ring and providing other services

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1/

Losses due to shrinkage and carcass damage are also referred to as yield efficiency costs.

## Stockyard Company

- costs of owning and operating stockyard facilities

## Packer

- cost of procuring cattle<sup>1/</sup>
- cost of transporting cattle to the plant
- kill efficiency costs<sup>2/</sup>
- losses due to shrinkage and bruising while en route to the plant

B. Country Auction

## Producer

- commission costs
- cost of transporting cattle
- losses due to shrinkage while en route to and during the auction

## Auction Operator

- costs of operating the sales ring
- costs of owning and operating auction facilities

## Packer

- cost of procuring cattle
- cost of transporting cattle to the plant
- kill efficiency costs
- losses due to shrinkage and bruising while en route to the plant

C. Direct Sales

## Producer

- cost of transporting cattle
- losses due to shrinkage and bruising while en route to the plant

1/

This is the cost of hiring buyers to view and bid on cattle.

2/

These are the costs arising from inefficient utilization of kill line capacity due to irregular volumes of available cattle.

### C. Direct Sales

#### Producer

- cost of transporting cattle
- losses due to shrinkage and bruising while en route to the plant

#### Packer

- cost of procuring cattle
- kill efficiency costs

### D. Electronic Auction

#### Producer

- commission and listing fees
- costs of transporting cattle to the plant
- losses due to shrinkage and bruising while en route to the plant

#### Commission Agent

- cost of on-farm description
- cost of listing cattle

#### Electronic Auction Operators

- cost of leasing computer time and equipment

#### Packer

- cost of procuring cattle
- kill efficiency costs

The following assumptions with regard to the above list of costs are made for purposes of analysis:

- 1) Transportation costs, kill efficiency costs and yield efficiency costs are treated as indirect costs; that is, they are associated with a marketing channel and not a particular participant.
- 2) Commission fees, commission firm and auction operator costs, and packer procurement costs are considered to be direct costs; that is, they are associated with a particular participant within each marketing channel.

In his paper on efficiency in agricultural marketing, French describes three general methods of estimating costs for agricultural firms; producers, packers and intermediaries in this case (p. 121). The two

methods most appropriate for this study are a) the descriptive analysis approach, and b) the economic engineering approach. Descriptive analysis involves using actual cost data obtained from firms to estimate average costs for different systems while economic engineering uses input-output relationships to synthesize cost functions. Each method has its advantages and disadvantages, as outlined by French.

For the purposes of this study, the descriptive analysis approach is used. It is chosen over the economic engineering approach because a) it is relatively easy to obtain a number of samples of the cost data required, and b) it uses real costs; that is, these are costs actually incurred by participants as opposed to economic engineering cost estimates which may not represent actual costs.

The data used in the cost analysis originate from several sources. Where appropriate, packers, producers, commission firms and cattle transporters were surveyed for their costs or fees. The actual analysis consists of estimating the total marketing cost on a per-head basis for each of the four alternative marketing systems. This total cost is calculated for cattle originating from different regions of Ontario (southern, western, central and eastern Ontario). In some instances different locations of the packers' plants are also taken into account in the estimates. The total marketing costs estimated for each of the alternative systems are then compared to determine the efficiency of the electronic auction system.

#### 4.3 Indirect Costs

It is assumed in this study that costs associated with a marketing system rather than an individual participant are indirect costs. For the slaughter cattle marketing systems considered in this analysis, indirect costs include both producer and packer transportation costs, yield efficiency costs, and kill efficiency costs.

##### 4.3.1 Producer Transport Costs

For all four of the alternative marketing systems, producers are required to transport their cattle. In some cases, the producers transport them to the packer's plant (electronic auction, direct sales). If the cattle move through country auctions or the OPS, however, the producers pay for transporting the cattle only to the auction.

Richards found that transportation costs for cattle are dependent upon a) the size of the load to be transported, and b) the distance the cattle are moved. His analysis showed that the cost per head increases as the distance travelled increases or the load size decreases. For this study, cattle transporters were surveyed to determine the fees that they charge for various load sizes over given distances. This by itself, however, was not sufficient to determine the average cost of transporting cattle from different regions of Ontario. Richards surveyed a large number of beef producers and determined, for each region of Ontario, the average size of

load shipped and the average distance the load travelled for cattle marketed through country auctions, the Ontario Public Stockyards, and direct sales (see Table 4.1).

It was assumed for the cost analysis in this study that the distance travelled, and average size of slaughter cattle lots have not changed since Richards' survey. The information in Table 4.1 was then combined with the information obtained from the cattle transporter survey to obtain the cost of transporting cattle to country auctions, the OPS, and direct sales. The producer transport costs for the electronic auction were collected by surveying producers who used the auction during the trial. The estimated producer transport costs are shown in Table 4.2.

The per-head costs, of course, varied depending upon the marketing channel used. For cattle marketed through country auctions, the producer transport cost was generally less than for the alternative systems because the auctions were relatively close to the producers' farm. The electronic auction transport costs were similar in most cases to costs for shipping direct. The estimated cost of producer transport for direct sales in eastern Ontario was used as the cost for shipping cattle through the electronic auction from that region. This was done because of the insignificant volume sold through the auction from eastern Ontario. It was assumed that if a significant volume of cattle from that region were to be marketed through the auction, the two costs would be approximately the same.

It was noted that the producer transport cost for cattle marketed from central Ontario through the electronic auction was substantially lower than that for cattle sold direct to packers. This difference may have been caused by a) the producers selling through the electronic auction being located closer to the packers' plants than is average for central Ontario, or b) a difference in the location of packers who bought cattle through the electronic auction from those who normally buy cattle direct from central Ontario beef producers. It was not possible to determine from the information available whether one or both of the above factors contributed to the difference in transport costs. When considering the results of the cost analysis for central Ontario, the above factors must be noted and taken into account.

#### 4.3.2 Packer Transport Costs

For three of the four marketing channels analyzed, packers are required to pay transport costs. Cattle bought by direct sales require no transport costs because producers deliver them to the packer's plant. For cattle marketed through the electronic auction, the packer is supposedly responsible for trucking once the cattle are weighed. However during the trial, most producers provided free transport as long as the buyer's plant was within a certain radius of the feedlot. The radius was generally large enough to include plants in Toronto and in the Kitchener-Hamilton area. Any cattle bought during the trial were purchased by firms in these areas, so for this study, the packer transport cost for the electronic auction was assumed to be zero.

Table 4.1: Marketing Practices of Ontario Beef Producers, by Region of Ontario

Region	<u>Country Auction</u>		<u>Ontario Public Stockyards</u>		<u>Direct-to-Packer</u>	
	Average Size of Load	Average Distance Travelled (Miles)	Average Size of Load	Average Distance Travelled (Miles)	Average Size of Load	Average Distance Travelled (Miles)
South	19	28.6	30	140.2	32	125.4
West	13	18.1	20	101.1	24	73.7
Central	9	31.3	12	82.0	33	115.0
East	6	17.0	13	243.4	10	58.8

Source: Richards, p. 44.

Table 4.2: Producer Transport Costs for Alternative Marketing Systems,  
By Region of Ontario, 1983 (per head basis)

Region	Country Auction	Ontario Public Stockyards	Direct Sales	Electronic Auction
South	\$5.06	\$10.07	\$9.00	\$9.07
West	3.69	10.72	7.81	8.25
Central	6.39	9.10	8.69	4.33
East	5.71	17.52	9.29	9.29

Sources: Producer and Cattle Transporter Surveys, OTA.



Packer transport costs for country auctions and the Ontario Public Stockyards were obtained by a survey following the trial. If information on the number of cattle each plant bought through various systems had been available, a weighted average for cattle bought by each method from each region in Ontario could have been estimated. Unfortunately, this information was not available. Instead, a cost based on the location of the auction and the packer's plant was estimated for cattle bought through country auctions. A similar cost was estimated for cattle marketed through the Stockyards based on the location of the packer's plant. The estimated costs are presented in Tables 4.3 and 4.4.

The packer survey results indicated that packers in the Kitchener-Hamilton area do not buy cattle from country auctions in eastern Ontario, while packers in eastern Ontario do not buy cattle from country auctions in southern, western, or central Ontario. Consequently, there were no packer transport costs estimated for these circumstances. It was also assumed that the volume of cattle bought from the OPS by eastern Ontario packers is insignificant and so this transport cost was not estimated.

It was evident that the transport portion of the total marketing cost varied greatly. For cattle bought through the electronic auction or direct sales, the cost was zero. It was also negligible for cattle bought through the OPS by packers located near the Stockyards. The other estimated transport costs ranged from \$1.65 to \$12.10 per head.

Combining the producer and packer transport costs resulted in the OPS and country auctions being higher, in almost all cases, than direct sales or the electronic auction, in terms of total transport costs for cattle originating from the same region. This was mainly attributable to the cattle having to be transported twice. Also the cattle were often travelling a much greater distance than would have been the case if trucked directly to the packer.

#### 4.3.3 Kill Efficiency Costs

Kill efficiency costs are the costs to the packer of holding over cattle at times when his kill line is being fully utilized, or the costs of under-utilizing his kill line. Unfortunately, it was not possible to quantify this cost.

It was possible, though, to compare the four alternative systems as to their potential for minimizing kill efficiency costs. Because of the nature of country auctions and the OPS, packers can not schedule their kill line at full capacity. This is due to irregular volumes moving through these channels. To try and ensure an ample supply of cattle, packers are forced to carry over cattle from one day to the next. This is a costly procedure.

The electronic auction and direct sales to packers reduce this cost. When purchasing cattle through these systems, packers can schedule the volume of cattle moving through their plant three or four days in advance. This eliminates much of the cost associated with kill line inefficiencies.

Table 4.3: Buyer Transport Costs for Country Auctions, By Location of Auction and Plant, 1983 (per head basis)

Auction Location	Plant Location		
	Toronto	Kitchener-Hamilton	Eastern Ontario
South	\$ 8.80	\$5.78	—
West	8.25	6.60	—
Central	7.15	7.70	—
East	12.10	—	\$3.30

Source: Packer Survey

Table 4.4: Buyer Transport Costs for the Ontario Public Stockyards, By Location of Plant, 1983 (per head basis)

Stockyards	Plant Location	
	Toronto (non-Stockyards)	Kitchener-Hamilton
\$0.00	\$1.65	\$4.73

Source: Packer Survey

Richards estimated that kill efficiency costs were approximately \$1.71 per head for cattle purchased through country auctions or the Stockyards in Toronto. He further assumed that the kill efficiency cost for cattle marketed directly or through an electronic auction was zero. For the purposes of this study, it is not assumed that this cost is zero, but that electronic auction and direct sales minimize this cost at some level below the cost for cattle purchased through alternative systems.

#### 4.3.4 Yield Efficiency Costs

Yield efficiency costs are those associated with losses due to tissue shrinkage, bruising and other carcass damage. These costs are considered to be split between the producer and the packer.

As with the case of kill efficiency costs, it is not possible to quantify the losses from shrinkage and carcass damage. Richards estimated the yield efficiency costs for cattle shipped through the Stockyards and country auctions to be \$3.55 and \$3.90 per head, respectively. He further assumed that the cost for cattle marketed direct or through an electronic auction was zero. In this study, each alternative marketing system was examined as to its potential to minimize yield efficiency costs.

Henning and Thomas' study dealt with shrinkage in livestock while in transit. They found that there were two types of shrinkage; that due to stomach fill loss, and actual loss of tissue. The shrinkage of economic importance was the tissue shrinkage. They concluded that time in transit and distance travelled were related to the amount of tissue shrinkage that occurred.

Grandin's study considered bruising and other types of carcass damage. She found that rough treatment during handling and transporting increased the incidence of carcass damage. She concluded that not only was more humane treatment of cattle necessary but that reduced time in transit reduced incidence of carcass damage.

From these two studies it is evident that less handling and transport can lead to lower losses due to shrinkage and carcass damage. Cattle marketed through the electronic auction or direct sales spend the least amount of time in transit between feedlot and slaughter. This minimizes the opportunity for yield losses due to transporting and handling. For this study it is assumed that, although no marketing channel eliminates yield efficiency costs, electronic auction and direct sales minimize these costs.

#### 4.4 Direct Costs

Direct costs, as stated in section 4.2, are costs associated with particular market participants. The direct costs applicable to the marketing of slaughter cattle are commission and yardage fees, intermediary costs, and packer procurement costs.

#### 4.4.1 Commission and Yardage Fees

For the cost analysis producers were assumed to pay commission and yardage fees for the privilege of selling their cattle through all channels except direct sales. These fees covered the intermediaries' costs of operating their facilities so that packers and producers could perform their market functions.

The per head fees for the electronic auction were estimated from surveys of producers who used the auction. Commission fees for country auctions and the OPS were obtained from responses to a survey of commission firms following the auction trial. Commission and yardage fees for the OPS were found to depend upon the number of cattle in the lot. The number of cattle per lot used in this estimation was obtained from the results of Richards' producer survey concerning the average size of lots marketed through the OPS (see Table 4.1). The results of this portion of the analysis are presented in Table 4.5.

It should be noted that the commission and listing fees for the electronic auction were those charged during the trial. After the operation of the electronic auction was turned over to an independent firm, the commission fees were lowered. At the time this study was completed, the commission and listing fees were approximately \$5.00 per head for agent described lots. If the producer described his own cattle, the commission fees were lower.

#### 4.4.2 Intermediary Costs

Intermediary costs include the costs incurred by various commission firms, auction operators, the Stockyards Company, and the electronic auction operators. These costs are, however, basically those that are accounted for by the commission fees discussed above. For the purposes of analysis, therefore, the costs of intermediaries in each system are considered to be equal to commission fees paid by producers.

#### 4.4.3 Packer Procurement Costs

Packer procurement costs are the costs of hiring buyers and sending them to live auctions or, when necessary, to view cattle to be bought direct. The procurement costs for this analysis were obtained from packers through a survey circulated following the trial. The results are presented in Table 4.6.

The costs of buying cattle through country auctions and the Ontario Public Stockyards were found to be substantially higher than the cost of buying through the other two alternatives. This reflects the need to send buyers to the auction in order to buy cattle using these methods. In past studies (Richards, Van Egteren), the packer's costs of purchasing cattle direct were estimated to be higher than those for country or terminal auctions. In all responses to the survey for this study, however, the packers stated that their direct purchasing costs were lower. This may indicate that at the time the other studies were done, packers sent buyers

Table 4.5: Commission and Yardage Fees for Slaughter Cattle,  
By Marketing Practice and Region of Ontario, 1983  
(per head basis)

Region	Country Auction	Ontario Public Stockyards	Electronic Auction
South	\$7.24	\$6.15	\$5.52
West	7.24	6.15	5.56
Central	7.24	6.65	6.31
East	7.24	6.65	5.65

Sources: Producer and Listing Agent Surveys, Richards (p. 44)

Table 4.6: Packer Procurement Costs, By Marketing Practice,  
1983 (per head basis)

Country Auction	Ontario Public Stockyards	Direct Sales	Electronic Auction
\$3.17	\$3.58	\$0.69	\$0.83

Source: Packer Survey

to view the cattle bought direct more often than at present. However, it was not possible to confirm this.

The buying cost for electronic auction purchases was also very low on a per head basis. This was due to packers not needing to view the cattle before purchasing them. As well, the packers did not pay for computer time during the trial.<sup>1/</sup>

#### 4.5 Total Marketing Costs

The component parts of the total marketing cost for each alternative marketing system were discussed in sections 4.3 and 4.4. The remaining analysis consists of putting the parts together in order to obtain the total cost of marketing cattle through each system. The results are presented in Table 4.7. The resulting total costs seem to indicate that direct sales and the electronic auction are more efficient in marketing cattle than country auctions or the OPS. Direct sales are anywhere from \$2.09 to \$6.14 per head less expensive than the electronic auction. This reflects the fact that direct sales do not require a producer commission cost. Total costs for marketing cattle through country auctions or the Stockyards are \$3.65 to \$16.71 per head higher than the corresponding cost for electronic auction sales. This higher cost is due to the combination of higher transport costs and packer procurement costs.

When the results of the discussion concerning kill and yield efficiency costs are taken into account, it is obvious that selling direct is the most operationally efficient of the alternative marketing systems. The electronic auction is, however, almost as efficient as direct sales.<sup>1/</sup> These two systems are clearly superior, in cost terms, to the other systems analyzed.

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1/

With the lowered commission fees since the trial, the electronic auction's operational efficiency, relative to the other marketing channels, should increase.

Table 4.7: Total Marketing Costs for Ontario Slaughter Cattle, By Origin of Cattle, Marketing Practice and Location of Plant, 1983 (per head basis)

Origin of Cattle	Country Auction Location of Plant		Ontario Public Stockyards Location of Plant		Direct Sales	Electronic Auction
	Toronto	Kitchener- Hamilton Eastern Ontario	Stockyards (non-Stockyards)	Toronto Hamilton		
South	\$24.27	\$21.25	\$19.80	\$21.45	\$9.69	\$15.42
West	22.35	20.70	20.45	22.10	8.50	14.64
Central	23.95	24.50	19.33	20.98	9.38	11.47
East	28.22	—	27.75	29.40	9.98	15.77

## CHAPTER 5

## PRICING EFFICIENCY

## 5.1 Introduction

This chapter deals with the pricing efficiency of the electronic auction. Pricing efficiency, as defined in Chapter 1, is impossible to measure on an absolute basis. The only practical procedure is to measure the effectiveness of the electronic auction's price discovery process relative to other marketing systems. The first part of this chapter is a presentation of the methodology and data required to measure the effectiveness of the process in terms of the criteria outlined in section 1.3.3. The results of the pricing efficiency analysis are then presented in the remainder of the chapter.

## 5.2 Methodology

In Chapter 1, pricing efficiency was described as being concerned with the extent to which an individual market exhibits the characteristics of a perfect market. While it is not possible to analyze the different marketing channels with respect to all the properties of perfect markets this study does examine four aspects of pricing efficiency; namely price levels, buyer competition, bargaining power, and market information.

5.2.1 Pricing Efficiency

In order to compare electronic auction prices with the prices received through other marketing channels, prices for A1-A2 steers and heifers in Toronto, as well as similar prices for three local auctions (Talbotville in southern Ontario, and Brussels and Kitchener-Waterloo in western Ontario) were collected from published sources.<sup>1/</sup>

Electronic auction prices were collected from auction records. Because virtually all lots sold on the electronic auction were sold on a carcass weight basis, these prices were not directly comparable to the live auction prices which were on a liveweight basis. However, grading sheets for 43 lots purchased through the electronic auction were obtained through the cooperation of packers and listing agents. From these sheets, effective liveweight prices were calculated which provide estimates of what would have been bid for the cattle had they been sold on a liveweight basis.

All prices were then adjusted to be net of producer transport. This adjustment varied depending upon the selling method and the region of

1/

The Toronto prices were obtained from the Toronto Globe and Mail, while country auction prices were obtained from the Western Ontario Farmer.



origin for the cattle. The transport costs used in the adjustment were obtained from the cost analysis estimates in section 4.3.1. Because few cattle from eastern Ontario were purchased through the auction, this region was not included in the analysis. For each region, mean electronic steer and heifer prices were compared to the high, low, and mean price levels in Toronto over the period February 7, 1983 to April 30, 1983.<sup>1/</sup> As well, returns to electronic auction users in southern Ontario were compared to mean prices for steers and heifers sold through Talbotville, while a similar analysis was performed for western Ontario using Brussels and Kitchener-Waterloo prices.<sup>2/</sup>

Tables 5.1 through 5.6 contain the data used for the price comparisons. Several deficiencies in the data are immediately apparent. First, electronic auction sales were held on Mondays and Wednesdays while sales at the OPS are held Tuesday through Friday. Consequently, prices received on the electronic auction on Mondays were compared to Tuesday OPS prices. Second, matching sale prices from the country auctions, where in two cases sales were held only once a week, was even more difficult than for the OPS. In some cases prices separated by two trading days were compared. Third, since cattle were not sold on the electronic auction every sale day and since data on carcass weights, needed to convert the prices to a liveweight basis, were not available for every lot, the number of usable price observations was quite limited. A maximum of 16 steer price and 8 heifer price quotations were available. Because of the limited number of comparable prices for heifers sold through the electronic auction, and Talbotville in Southern Ontario, and Brussels in Western Ontario no formal price comparisons were attempted. Fourth, the mean prices reported for the electronic auction were based in all cases on less than five lots of cattle and in many cases on only one lot of cattle (see Appendix III). Finally, while there are numerous deficiencies in the data there is little reason to suspect that any systematic bias has been introduced into the price analysis.

#### 5.2.2 Buyer Competition, Bargaining Power and Market Information

Buyer competition, bargaining power and market information are three separate aspects of pricing efficiency. They are similar, however, in that it is difficult to quantify the performance of marketing systems with respect to each one. In this study, then, the analysis of each of these aspects consists of a qualitative discussion. The electronic auction and three alternative marketing systems (the Ontario Stockyards, country auctions, and direct sales) are compared on the basis of their potential to exhibit the above three indicators of pricing efficiency as they were

1/

The mean price for Toronto and country auctions referred to here was actually a median price, as it was calculated by taking the mid-point between the quoted high and low prices.

2/

The electronic auction prices used for comparison in this analysis were true mean prices. is the structure of each system.

Table 5.1: Data for Southern Ontario Steer Price Comparisons

Electronic Auction		Ontario Public Stockyards					Country Auction Talbotville <sup>b/</sup>	
Day of Sale <sup>a/</sup>	Price (\$/cwt)	Day of Sale <sup>a/</sup>	Low Price (\$/cwt)	Mean Price (\$/cwt)	High Price (\$/cwt)	Day of Sale <sup>a/</sup>	Price (\$/cwt)	
01	80.33	02	77.08	78.58	80.08	—	—	
03	77.11	03	76.08	78.08	80.08	—	—	
06	77.65	07	75.08	76.83	78.58	05	78.54	
11	77.56	10	74.08	75.83	77.58	10	80.04	
13	77.74	13	74.08	75.83	77.58	—	—	
16	81.05	17	76.58	78.58	80.58	15	80.54	
18	79.35	18	76.08	78.08	80.58	—	—	
21	80.48	22	75.08	77.08	79.08	—	—	
23	77.58	23	75.08	77.08	79.08	25	81.29	
28	76.42	28	76.08	77.83	79.58	30	80.04	
36	80.09	37	77.08	78.83	80.58	35	81.54	
38	80.04	38	77.08	78.83	80.58	—	—	
41	80.70	42	79.08	80.83	82.58	40	81.54	
46	82.42	47	81.08	83.08	85.08	45	86.54	
48	85.81	48	82.08	83.83	85.58	50	86.04	
58	82.77	58	81.08	82.83	84.58	60	84.04	
Average	79.82		77.05	78.88	80.71		82.02	

a/ See Appendix III for dates corresponding to codes.

b/ Talbotville sales prices are quoted for the Friday of each week although sales are actually held on Saturdays.

Table 5.2: Data for Central Ontario Steer Price Comparisons

Electronic Auction		Ontario Public Stockyards			
Day of Sale <sup>a/</sup>	(\$/cwt)	Day of Sale <sup>a/</sup>	Low Price (\$/cwt)	Mean Price (\$/cwt)	High Price (\$/cwt)
01	80.77	02	77.17	78.67	80.17
03	77.55	03	76.17	78.17	80.17
06	78.09	07	75.17	76.92	78.67
11	78.00	10	74.17	75.92	77.67
13	78.18	13	74.17	75.92	77.67
16	81.49	17	76.67	78.67	80.67
18	79.79	18	76.17	78.17	80.17
21	80.92	22	75.17	77.17	79.17
23	78.02	23	75.17	77.17	79.17
28	76.86	28	76.17	77.92	79.67
36	80.53	37	77.17	78.92	80.67
38	80.48	38	77.17	78.92	80.67
41	81.14	42	79.17	80.92	82.67
46	82.86	47	81.17	83.17	85.17
48	86.25	49	82.17	83.92	85.67
58	83.21	58	81.17	82.92	84.67
Average	80.26		77.14	78.97	80.80

<sup>a/</sup> See Appendix III for dates corresponding to codes.

Table 5.3: Data for Western Ontario Steer Price Comparisons

Electronic Auction		Ontario Public Stockyards						Country Auctions	
								K-W	Brussels
Day of Sale <sup>a/</sup>	Price (\$/cwt)	Day of Sale <sup>a/</sup>	Low Price (\$/cwt)	Mean Price (\$/cwt)	High Price (\$/cwt)	Day of Sale <sup>a/</sup>	Price (\$/cwt)	Day of Sale <sup>a/</sup>	Price (\$/cwt)
01	80.41	02	77.03	78.53	80.03	02	78.84	—	—
03	77.19	03	76.03	78.03	80.03	04	77.86	—	—
06	77.73	07	75.03	76.78	78.53	07	77.79	05	77.16
11	77.64	10	71.03	74.28	77.53	12	76.16	10	76.66
13	77.82	13	74.03	75.78	77.53	14	75.66	—	—
16	81.13	17	76.53	78.53	80.53	—	—	15	79.66
18	79.43	18	76.03	78.03	80.03	—	—	—	50
21	80.56	22	75.03	77.03	79.03	22	75.66	—	—
23	77.66	23	75.03	77.03	79.03	24	77.46	25	79.66
28	76.50	28	76.03	77.78	79.53	29	76.66	30	78.66
36	80.17	37	77.03	78.78	80.53	37	77.84	35	79.66
38	80.12	38	77.03	78.78	80.53	39	75.54	—	—
41	80.78	42	79.07	80.78	82.53	42	81.41	40	81.16
46	82.50	47	81.03	83.03	85.03	47	84.56	45	84.16
48	85.89	48	82.03	83.78	85.53	49	83.66	50	84.16
58	82.85	58	81.03	82.78	84.53	59	82.41	60	83.66
Average	79.90		76.81	78.73	80.66		78.68		80.46

a/ See Appendix III for dates corresponding to codes.

Table 5.4: Data for Southern Ontario Heifer Price Comparisons

Electronic Auction		Ontario Public Stockyards					Country Auction Talbotville <sup>b/</sup>	
Day of Sale <sup>a/</sup>	Price (\$/cwt)	Day of Sale <sup>a/</sup>	Low Price (\$/cwt)	Mean Price (\$/cwt)	High Price (\$/cwt)	Day of Sale <sup>a/</sup>	Price (\$/cwt)	
01	76.06	02	72.08	74.58	77.08	—	—	
03	73.69	03	72.08	74.58	77.08	05	78.04	
13	76.38	13	69.08	71.08	73.08	—	—	
16	77.52	17	70.08	72.58	75.08	15	80.29	
18	75.82	18	70.08	72.58	75.08	—	—	
21	78.92	22	70.08	72.58	75.08	—	—	
31	78.96	32	70.08	72.58	75.08	30	78.54	
48	77.83	48	76.08	78.08	80.08	50	86.04	
Average	76.90		71.21	73.58	75.96		80.73	

a/ See Appendix III for dates corresponding to codes.

b/ Talbotville sales prices are quoted for the Friday of each week although sales are actually held on Saturdays.

Table 5.5: Data For Central Ontario Heifer Price Comparisons

Electronic Auction		Ontario Public Stockyards				
Day of Sale <sup>a/</sup>	Price (\$/cwt)	Day of Sale <sup>a/</sup>	Low Price (\$/cwt)	Mean Price (\$/cwt)	High Price (\$/cwt)	
01	76.50	02	72.17	74.67	77.17	
03	74.13	03	72.17	74.67	77.17	
13	76.82	13	69.17	71.17	73.17	
16	77.96	17	70.17	72.67	75.17	
18	76.29	18	70.17	72.67	75.17	
21	79.36	22	70.17	72.67	75.17	
31	79.40	32	70.17	72.67	75.17	
48	78.27	48	76.17	78.17	80.17	
Average	77.34		72.07	74.18	76.30	

<sup>a/</sup> See Appendix III for dates corresponding to codes.

Table 5.6: Data for Western Ontario Heifer Price Comparisons

Electronic Auction	Ontario Public Stockyards					Country Auctions	
	Day of Sale <sup>a/</sup>	Low Price (\$/cwt)	Mean Price (\$/cwt)	High Price (\$/cwt)	Day of Sale <sup>a/</sup>	K-W	Brussels
01	02	72.03	74.53	77.03	02	75.96	—
03	03	72.03	74.53	77.03	04	73.16	72.16
13	13	69.03	71.03	73.03	12	74.41	—
16	17	70.03	72.53	75.03	14	72.16	73.66 <sup>53</sup>
18	18	70.03	72.53	75.03	—	—	—
21	22	70.03	72.53	75.03	22	74.66	—
31	32	70.03	72.53	75.03	32	73.29	76.16
48	48	76.03	78.03	80.03	49	79.66	78.66
Average		71.16	73.53	75.91		74.56	75.16

a/ See Appendix III for dates corresponding to codes.

described for perfect markets. The basis of comparison used in all cases is the structure of each system.

### 5.3 Price Levels

As stated in section 5.2.1, this section examines the prices, net of transport, received by producers who sold through the electronic auction during the trial. These prices are compared statistically to similar prices (also adjusted for transportation) for cattle marketed through the OPS. In addition, electronic auction prices for southern and western Ontario producers are compared to prices received through the country auctions mentioned in section 5.2.1.

In order to test for differences in the level of prices, and the trend in prices, from the electronic auction and other selling methods a dummy variable approach is used. An example serves to illustrate this approach. In order to compare the prices received for steers on the electronic auction with the low price quote for steers from the OPS the price data are first pooled. After pooling the dependent variable (P) is a (2nx1) price vector (n equals 16 in this case) consisting of n price observations from the electronic auction followed by n observations for OPS prices. The independent variables are Trend, a (2nx1) vector equal to one for the first sale date and n for the nth sale date, and D a (2nx1) vector equal to zero for the observations representing the OPS prices and one for the observations representing the electronic auction prices. An interaction term (D\*Trend) is also included in the regression. The resulting equation (5.1) has four terms on the right-hand side.

$$5.1 \quad P = \alpha_0 + \alpha_1 D + \beta_0 \text{Trend} + \beta_1 (D * \text{Trend})$$

The regression results can be interpreted in the following manner: (1) if  $\beta_1 = 0$  and  $\alpha_1 = 0$  both the trend and level of prices on the electronic auction and OPS are the same; (2) if  $\beta_1 = 0$  and  $\alpha_1 > 0$  or  $\alpha_1 < 0$  the trend in price is the same but the electronic auction prices are, respectively, higher or lower than the OPS prices; (3) if  $\beta_1 < 0$  or  $\beta_1 > 0$  and  $\alpha_1 = 0$  the trend in electronic auction prices is, respectively, greater than or less than the trend in OPS prices but the price level is the same; (4) if  $\beta_1 < 0$  or  $\beta_1 > 0$  and  $\alpha_1 < 0$  or  $\alpha_1 > 0$  both the trend and level in prices are different as indicated by the inequalities.

It was found, in examining the results of the t-tests (Tables 5.7 to 5.12), that the trends in the electronic auction prices were not significantly different from the trends in corresponding Toronto and country auction prices. This was consistent for both steers and heifers, in all regions examined. Consequently, all of the equations were re-estimated excluding the interaction term (D\*Trend). This has the effect of constraining the trend in the electronic auction prices, and the prices with which they are compared, to be the same. All discussions with regard to price levels are based on the equations which omit the interaction term.



Table 5.7: Price Comparisons for Southern Ontario Steers by Marketing Channel<sup>a/</sup>

Electronic Auction Prices Compared With	Intercept	Intercept Dummy (D)	Trend	Trend*D	R <sup>2</sup>
Toronto (low)	73.64 (76.86)	3.30 (2.44)	0.40 (4.04)	-0.06 (-0.45)	0.62
Toronto (low)	73.91 (99.87)	2.77 (4.35)	0.36 (5.35)		0.62
Toronto (average)	75.45 (79.33)	1.49 (1.11)	0.40 (4.09)	-0.06 (-0.46)	0.52
Toronto (average)	75.73 (103.04)	0.94 (1.48)	0.37 (5.40)		0.52
Toronto (high)	77.27 (81.52)	-0.32 (-0.24)	0.40 (4.12)	-0.07 (-0.47)	0.52
Toronto (high)	77.54 (105.87)	-0.88 (-1.40)	0.37 (5.43)		0.52
Talbotville	77.89 (64.73)	-1.81 (-1.06)	0.75 (3.87)	-0.0002 (-0.0008)	0.68
Talbotville	77.89 (85.63)	-1.81 (-2.37)	0.75 (5.64)		0.68

Table 5.8: Price Comparisons for Central Ontario Steers<sup>a/</sup>

Electronic Auction Prices Compared With	Intercept	Intercept Dummy (D)	Trend	Trend*D	R <sup>2</sup>
Toronto (low)	73.73 (76.96)	3.65 (2.69)	0.40 (4.04)	-0.06 (-0.44)	0.65
Toronto (low)	73.99 (100.00)	3.12 (4.89)	0.36 (5.34)		0.64
Toronto (average)	75.54 (79.42)	1.83 (1.37)	0.40 (4.09)	-0.06 (-0.46)	0.54
Toronto (average)	75.82 (103.16)	1.29 (2.04)	0.37 (5.40)		0.53
Toronto (high)	77.36 (81.62)	0.03 (0.02)	0.40 (4.12)	-0.06 (-0.48)	0.51
Toronto (high)	77.64 (106.00)	-0.53 (-0.86)	0.37 (5.43)		0.51

a/ T-values are given in parentheses below the estimated coefficients.

Table 5.9: Price Comparisons for Western Ontario Steers, by Marketing Channel<sup>a/</sup>

Electronic Auction Prices Compared With	Intercept	Intercept Dummy (D)	Trend	Trend*D	R <sup>2</sup>
Toronto (low)	73.07 (70.83)	3.96 (2.71)	0.44 (4.12)	-0.10 (-0.68)	0.62
Toronto (low)	73.50 (91.81)	3.09 (4.48)	0.39 (5.21)		0.62
Toronto (average)	75.14 (76.67)	1.88 (1.36)	0.42 (4.17)	-0.08 (-0.58)	0.53
Toronto (average)	75.50 (99.47)	1.17 (1.78)	0.38 (5.37)		0.52
Toronto (high)	77.22 (81.47)	-0.19 (-0.14)	0.40 (4.12)	-0.06 (-0.48)	0.52
Toronto (high)	77.50 (105.80)	-0.76 (-1.20)	0.37 (5.43)		0.52
Kitchener-Waterloo	75.17 (59.69)	1.35 (1.78)	0.47 (3.17)	-0.03 (-0.12)	0.47
Kitchener-Waterloo	75.26 (77.95)	1.17 (1.41)	0.46 (4.44)		0.46
Brussels	75.83 (68.27)	0.33 (0.21)	0.84 (4.70)	-0.09 (-0.37)	0.71
Brussels	76.08 (90.24)	-0.17 (-0.24)	0.80 (6.46)		0.71

a/ T-values are given in parentheses below the estimated coefficients.

Table 5.10: Price Comparisons for Southern Ontario Heifers<sup>a/</sup>

Electronic Auction Prices Compared With	Intercept	Intercept Dummy(D)	Trend	Trend*D	R <sup>2</sup>
Toronto (low)	70.08 (47.85)	4.42 (2.14)	0.25 (0.86)	0.28 (0.67)	0.77
Toronto (low)	69.45 (62.34)	5.69 (6.18)	0.39 (1.94)		0.76
Toronto (average)	72.56 (50.69)	1.94 (0.96)	0.23 (0.80)	0.30 (0.76)	0.59
Toronto (average)	71.87 (65.73)	3.31 (3.67)	0.38 (1.92)		0.57
Toronto (high)	75.04 (53.21)	-0.53 (-0.27)	0.20 (0.72)	0.33 (0.83)	0.30
Toronto (high)	74.30 (68.67)	0.94 (1.05)	0.36 (1.88)		0.26

a/ T-values are given in parentheses below the estimated coefficients.

Table 5.11: Price Comparisons for Western Ontario Heifers, by Marketing Channel<sup>a/</sup>

Electronic Auction Prices Compared With	Intercept	Intercept Dummy (D)	Trend	Trend*D	R <sup>2</sup>
Toronto (low)	70.03 (47.86)	4.56 (2.20)	0.25 (0.86)	0.28 (0.69)	0.78
Toronto (low)	69.40 (62.35)	5.83 (6.33)	0.39 (1.94)		0.77
Toronto (average)	72.51 (50.71)	2.07 (1.03)	0.23 (0.80)	0.31 (0.76)	0.60
Toronto (average)	71.82 (65.74)	3.45 (3.82)	0.38 (1.92)		0.58
Toronto (high)	74.99 (53.24)	-0.41 (-0.20)	0.20 (0.72)	0.32 (0.83)	0.32
Toronto (high)	74.25 (68.68)	1.08 (1.20)	0.36 (1.88)		0.28
Kitchener-Waterloo	73.10 (42.79)	1.41 (0.58)	0.41 (1.08)	0.24 (0.45)	0.47
Kitchener-Waterloo	72.61 (56.98)	2.37 (2.28)	0.53 (2.06)		0.46

a/ T-values given in parentheses below the estimated coefficients.

Table 5.12: Price Comparisons for Central Ontario Heifers<sup>a/</sup>

Electronic Auction Prices Compared With	Intercept	Intercept Dummy (D)	Trend	Trend*D	R <sup>2</sup>
Toronto (low)	70.17 (47.96)	4.78 (2.30)	0.25 (0.86)	0.28 (0.69)	0.79
Toronto (low)	69.53 (62.47)	6.05 (6.57)	0.39 (1.95)		0.78
Toronto (average)	72.65 (50.80)	2.29 (1.13)	0.23 (0.80)	0.30 (0.76)	0.62
Toronto (average)	71.96 (65.87)	3.67 (4.07)	0.38 (1.92)		0.61
Toronto (high)	75.13 (53.33)	-0.19 (-0.09)	0.20 (0.72)	0.33 (0.84)	0.34
Toronto (high)	74.39 (68.81)	1.29 (1.45)	0.37 (1.88)		0.30

<sup>a/</sup> T-values are given in parentheses below the estimated coefficients.

In looking at price levels the analysis for steer prices showed that electronic auction prices were higher than Toronto low prices in all regions, at a 5 percent level of significance; higher than average Toronto prices in the Western and Central regions, at a 10 percent level of significance; and, not significantly different from Toronto average prices in Southern Ontario or Toronto high prices in any region. Electronic auction prices were lower than the average price at Talbotville and not significantly different from prices at Kitchener-Waterloo or Brussels.

The results of the analysis for heifer prices were quite consistent. In all regions, electronic auction prices were significantly higher, at a 5 percent level of significance, than Toronto low and average prices but not significantly different from Toronto high prices. Electronic auction prices were significantly higher than heifer prices at the country auction.

In considering the results of the price analysis, a number of factors should be kept in mind. These include a) the data sample for the electronic auction was small, especially for heifer prices; b) the quality of cattle sold through the electronic auction, on average, may have been different than that for cattle sold through other methods; and c) the published prices used in the analysis only include ranges of prices and not how many were sold at each price within that range. The mean calculated for these prices was therefore not a true weighted average.

As a result of these three factors, it is difficult to draw clear-cut conclusions. Specifically, it is impossible to state with certainty that electronic auction prices were higher than prices for similar cattle sold through alternative systems. Clearly, however, there is little evidence to suggest that prices on the electronic auction were not at least as good as prices obtained from other methods of marketing cattle during the trial, and considerable evidence that prices ranged between the OPS mean and high price quote.

#### 5.4 Buyer Competition

Buyer competition, in the context of pricing efficiency, refers to the competitiveness with which the bidding process takes place when slaughter cattle are marketed. Effective buyer competition is desirable in a marketing system because it increases the potential for prices to reflect true market conditions. It is, however, difficult to quantitatively measure this aspect. Large numbers of buyers and bidders may enhance competition but do not ensure it.<sup>1/</sup> Only two bidders are required to have an effective auction. The analysis of buyer competition in this study consists of examining the structure of the bidding system for each marketing channel to determine its potential for effective buyer competition.

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In this study, buyers and bidders were not considered to be one and the same. A bidder was defined to be a person or firm who actually bids on a particular lot of cattle. A buyer was defined to be a potential bidder.

Of the four marketing systems examined, only direct sales do not involve an actual auction. When utilizing direct sales, producers phone packers and solicit bids on the cattle in question. Usually only a few packers are contacted, and in many cases, the producer sells regularly to one packer and does not contact any other potential buyers.

The other systems involve a number of buyers bidding on the cattle. Terminal and country auctions utilize a live auction where buyers travel to the auction and view the cattle while bidding on them. The electronic auction involves packers bidding through computer terminals in their offices. The bidders cannot, therefore, see who they are bidding against. They only know, for any given auction, what the highest bid is, and whether they have the high bid or not. The number of buyers present at sales and the number of bidders per lot for electronic, terminal, and country auctions was collected from electronic auction records, and listing agent surveys. As well, the number of bids per lot for the electronic auction was also collected. This information is presented in Tables 5.13 and 5.14.

The above discussion seems to indicate that direct sales may be at a disadvantage to the other systems. Because of the small number of packers contacted relative to other marketing channels, the potential for effective competition in this system is reduced. When comparing the three systems utilizing auctions, however, the differences in the numbers of buyers and bidders is slight. It should be noted that this applies only for new listings on the electronic auction. During the trial, if a lot did not sell the first time it was listed on the electronic auction, the bidding was not as competitive if it was relisted. This is shown in Tables 5.13 and 5.14, where the new and old listing are compared in terms of bidders and bids per lot.

The most distinct difference between the auction systems is the impersonal nature of the electronic auction's bidding process. The impersonality of the bidding gives this marketing channel a potential advantage. In theory, the uncertainty of not knowing who the competition is during an auction may result in more aggressive bidding on this system.

It is impossible to state with certainty that one system is more competitive than another. It seems, however, that the electronic auction has the potential to be as competitive, if not more competitive, than alternative marketing channels.

## 5.5 Bargaining Power

As with buyer competition, bargaining power is a difficult topic to quantify. Bargaining power is defined to be a form of market power denoting the relative strength of buyers and sellers in influencing the terms of exchange in a transaction (Kohls and Uhl, p. 584).

As defined, bargaining power relates to both buyers and sellers. It was assumed, however, that the packers, who are the buyers in the marketing of slaughter cattle, have the same bargaining power regardless of the



Table 5.13: Average Number of Buyers Present at Slaughter Cattle Auctions and Average Number of Bidders on Lots for Electronic Auction, Country Auctions, and Ontario Public Stockyards, 1983

	Electronic Auction	Country Auctions	OPS
Buyers - Average	7	12*	8
- Range	2-11	7-18*	6-16
	<u>New</u>	<u>Listing</u>	<u>Old</u>
Bidders - Average	3	1.5	4
- Range	0-6	0-4	3-7

\* These figures were taken from the results of the listing agent survey. They may include local abattoirs as well as major packers.

Source: Auction Records and Agent Survey

Table 5.14: Average Number of Bids per Lot for Cattle Offered Through the Electronic Auction for New and Old Listings, 1983

	New Listings	Old Listings
Bids - Average	6	3
- Range	0-21	0-15

Source: Auction Records

marketing system used. They are free to bid on any or all lots, and if the price is too high, they are not required to bid at all. The examination in this study, then, deals with the bargaining power of producers. For this analysis, the measure of a producer's bargaining power is assumed to be the amount of control he has over his cattle during their sale; that is, the ease with which he can reject the highest bid if unsatisfactory.

When marketing cattle through the OPS or country auctions, producers are required to transport the animals some distance before actually selling them. If dissatisfied with the highest bid, their only recourse is to bid-in and buy back their cattle. When exercising this option at the OPS producers can hold the cattle over until the next day, or sell them direct to a packer located near the Stockyards. If a producer buys back his cattle at a country auction, however, he must transport them back to the feedlot. Taking into account commission fees, and transport costs to and from the auction, this option is expensive to exercise.

Conversely, producers who sell through the electronic auction or directly to a packer have greater control over their cattle. Because of the nature of the bidding in direct sales, the producer does not have to accept a bid if it is not high enough. The reserve bid in the electronic auction system has the same effect. In both systems, the cattle do not leave the feedlot until they are sold.

It is possible to conclude that the electronic auction gives beef producers as much bargaining power as selling direct to packers. In addition, it gives them more bargaining power than either terminal or country auctions.

## 5.6 Market Information

In this section, the four alternative marketing channels are compared on the basis of their ability to provide participants, specifically producers, with accurate information concerning their cattle and the cattle market in general. This includes information concerning the quality of a producer's cattle and what the cattle are actually worth at the time they are sold.

On the individual producer level, direct sales provide good information on the carcass value of cattle if sold on a dressed weight basis. Grading sheets give information on carcass weights and yields of cattle. Because prices paid through this system are known only to the producer and packer, however, valuable information concerning carcass weight prices is lost.

Prices paid through country auctions and the Ontario Public Stockyards are published in various forms of mass media. This is a valuable source of price information but the quoted prices are on a liveweight basis. Because of the nature of these auctions, producers are unaware of what the carcass of their animals is worth as they do not receive grading sheets. These systems, therefore, are not effective in informing producers as to the true

quality of their cattle.

When compared to the other systems, the electronic auction has much potential in the area of providing market information. Producers selling on a carcass weight basis receive feedback as to the quality and actual value of their cattle through grading sheets. With significant volume marketed through the system, the auction could be a valuable source of carcass weight prices for beef producers in general. This information is not available at the present time from any significant marketing channel. It is possible to conclude, then, that the electronic auction has the potential to be an effective source of market information in the future.

## CHAPTER 6

PRODUCER PARTICIPATION AND REACTION OF PARTICIPANTS  
AND NON-PARTICIPANTS TO THE AUCTION TRIAL

## 6.1 Introduction

This chapter addresses two separate subjects. Characteristics of producers who used the electronic auction during the trial as well as characteristics of the lots themselves are examined in the first part of the chapter. The rest of the chapter deals with the reaction of participating producers, packers, and listing agents to the auction, during the trial, as well as the reaction of Ontario beef producers who did not participate in the trial.

## 6.2 Methodology

The first section of the chapter deals with the participating producers and the lots they offered. Characteristics of the producers who used the auction during the trial are compared to those of Ontario beef producers who are potential users of the auction. The characteristics examined in this comparison include the age of producers, size and location of their operations, and their marketing practices. Included in this section as well is an examination of the electronic auction lots themselves. The number of cattle marketed through the auction in comparison to the total number marketed in Ontario over the same period is one characteristic examined. Other aspects include the number of lots listed and sold, the size of the lots offered, the basis of sale, and the amount of co-mingling during the trial.<sup>1/</sup>

The data for this segment of the chapter are obtained from several sources. Electronic auction records and various sources of agricultural statistics are used in the analysis of the auction lots. Phone surveys of producers who participated in the trial as well as producers who did not were conducted to obtain the information used in the examination of producer characteristics.

The rest of the chapter is devoted to presenting the results of phone and mail surveys performed following the trial. All participating producers, packers, and listing agents were invited to comment on the degree of satisfaction or dissatisfaction that they experienced while using

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Producers shipping under six head of cattle through the auction at any one time are required to combine their cattle with another producer's lot before they can be sold. This is referred to as co-mingling.

the auction.<sup>1/</sup> Their opinions on various specific aspects of the auction such as computer efficiency (discussed earlier) and the concept of setting reserve bids were also solicited. Producers and packers were also asked if they intended to continue utilizing the electronic auction after the conclusion of the trial.

Producer surveys were conducted by using telephone interviews. Questionnaires were mailed to the participating agents and packers. The agents were asked to mail back the completed surveys while the packers' responses were obtained, where possible, through phone interviews.

Along with participating producers, it was important to survey non-participating beef producers to determine their attitudes towards the auction. Specifically, they were asked about their awareness and understanding of the auction, their reasons for not using it, possible improvements to make it more appealing, and the possibility of them using it in the future. It was not possible to survey all Ontario beef producers so a sampling procedure was required. It was decided to survey only producers who were potential users of the auction. For the purposes of the survey, potential users were defined to be beef producers who market at least 75 head of cattle per year and ship them in lots of 10 head or more. Names of producers were obtained from agricultural representatives whose counties have a significant amount of beef production. They were asked to provide names and phone numbers of producers in their county who met the above qualifications. These names were combined into a single list and a random sample was drawn. As with the participating producers, these surveys were conducted by telephone.

When the results of both producer surveys were analyzed, the answers to various questions were cross-tabulated to determine if any relationship existed between survey responses and producer characteristics. Characteristics considered in the cross-tabulation included location of operation, size of operation, major marketing method, and age of producer. Any significant relationships are reported in the discussion below.

### 6.3 Characteristics of Participating Producers and Electronic Auction Lots

As stated earlier, this section examines the characteristics of participating producers, relative to all Ontario beef producers, and the characteristics of the lots of cattle offered through the auction. When looking at producer characteristics, the auction participants are compared to the population of potential auction users in Ontario.

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<sup>1/</sup>

Only producers who participated in the trial before the OCA announced that the auction was to be operated commercially were surveyed. It was felt that the attitudes of producers who used the auction subsequently may have been biased.

### 6.3.1 Age of Producer

The majority of producers, both participants and non-participants, were 40 to 59 years old (see Table 6.1). Although the percentage of producers in each age range differed slightly between the two groups surveyed, chi-square test results indicated that the two groups were not significantly different in terms of age; that is there was no relationship between age and use of the auction. There was therefore no reason to believe that the age of producer had a significant impact on participation in the trial.

### 6.3.2 Size of Operation

Because of the large number of small beef producers in Ontario, the herd size of beef producers participating in the electronic auction trial was much higher than the Ontario average. On average, beef producers who used the electronic auction marketed 797 cattle per year, and 43 head per lot. In 1981, the average beef producer in Ontario marketed 81 cattle (OMAF, 1982).

When the participating producers were compared to the sample of non-participating potential auction users, the difference was much smaller. For the non-participants surveyed, the average number of cattle marketed per year was 557. They marketed cattle, on average, in lots of 32 head. The number and percentage of producers marketing different numbers of cattle are presented in Tables 6.2 and 6.3.

It is clear from the average and the ranges in Table 6.2, that participating producers were slightly larger than non-participants. Over 51% of participating producers marketed at least 500 cattle in 1982 while only 25% of non-participants did. Approximately 67% of non-participating potential users marketed 101-500 cattle in 1982. As well, the size of the loads shipped by participating producers was slightly larger than those for non-participants. In both groups, however, the largest proportion of producers shipped lots ranging between 36-50 head.

### 6.3.3 Location of Operation

The majority of participating producers were located west of Toronto, either in southern or western Ontario (see Table 6.4). In general, this was representative of potential auction users. Over 90% of beef producers in Ontario who marketed at least 33 slaughter cattle in 1981, were located in those two regions. In addition, of producers who marketed at least 78 head of slaughter cattle in 1981, 30% were located in southern Ontario, and 65.5% were located in western Ontario (OMAF, 1982). It was not surprising, therefore, that such a large proportion of participants were from those two regions.

### 6.3.4 Marketing Practices of Participants

As shown in Table 6.5, the majority of participating producers utilize the OPS as their principal marketing channel for slaughter cattle. This

Table 6.1: Age of Participating Producers and Non-Participating Potential Auction Users

Age (Years)	Participants		Non-Participants	
	No.	%	No.	%
19-39	23	36	42	32
40-59	32	51	79	60
60+	<u>8</u>	<u>13</u>	<u>10</u>	<u>8</u>
	63	100	131	100

Chi-Square = 2.10\*

\* This implies no relationship between age and usage of the auction at a 5% level of significance.

Source: Producer Survey

Table 6.2: Number of Cattle Marketed per Year by Participating Producers and Non-Participating Potential Auction Users, 1982

Cattle Marketed per Year	Participants		Non-Participants	
	No.	%	No.	%
≤50	4	6.5	4	3.1
51-100	6	9.7	6	4.6
101-200	6	9.7	33	25.4
201-500	14	22.6	55	42.3
501-1000	18	29.0	18	13.8
1001-2000	9	14.5	9	6.9
2000+	<u>5</u>	<u>8.1</u>	<u>5</u>	<u>3.8</u>
	62	100	130	100

Source: Producer Survey

Table 6.3: Average Size of Lots Marketed by Participating Producers and Non-Participating Potential Auction Users, 1982

Cattle Sold Per Lot	<u>Participants</u>		<u>Non-Participants</u>	
	No.	%	No.	%
≤10	0	0.0	5	3.8
11-15	9	14.8	34	26.2
16-25	12	19.7	24	18.5
26-35	8	13.1	23	17.7
36-50	29	47.5	38	29.2
51-75	1	1.6	3	2.3
76+	<u>2</u>	<u>3.3</u>	<u>3</u>	<u>2.3</u>
	61	100	130	100

Source: Producer Survey

Table 6.4: Number and Percentage of Participating Producers and Ontario Beef Producers Located in Southern, Western, Central and Eastern Ontario<sup>a/</sup>

Region	<u>Participants</u>		<u>Non-Participants</u>	
	No.	%	No.	%
South	31	39.7	461	27.4
West	34	43.6	1090	64.8
Central	9	11.5	94	5.6
East	<u>4</u>	<u>5.1</u>	<u>38</u>	<u>2.3</u>
	78	100	1683	100

<sup>a/</sup> Limited to those beef producers who ship at least 33 head of cattle per year.

Sources: Electronic Auction Records, OMAF, 1982.



was followed by direct sales, video sales, and country auctions.

When compared to the sample of non-participants the differences in the marketing methods between the two groups became apparent. The most obvious difference occurred in the proportion of producers using video sales as their major selling method. Whereas over 17% of participating producers gave this method as their principal marketing channel, only 2.3% of non-participants did. As a result, the proportion of participants utilizing the other three methods were lower than for non-participants. It was not significantly lower for producers utilizing the OPS (36.5% to 38.9%) but the proportion of participants who used direct sales or country auctions was significantly lower than for non-participating producers.

In addition to the principal method of marketing used, the number of methods each producer used was also examined. The results from participant and non-participant surveys are presented in Table 6.6. The majority of participating producers utilize only one system. This was similar to the results of the non-participant survey. There was a slightly larger proportion of auction users who stated that they utilize three or four of the alternative systems than for non-participants (9.5% to 4.6%). The differences between the two groups, however, are not statistically significant.

#### 6.3.5 Characteristics of Electronic Auction Lots

During the four month trial period, 151 lots were offered by the 78 participating producers, of which 102 lots were sold. The majority of the lots marketed through the auction were sold on the first listing. As indicated in section 5.4, packers were more reluctant to bid actively on re-listed lots and so many of these lots were not sold. The average size of the lots was 34 head; 101 of the lots consisted of steers while 50 were heifers. The 102 lots sold contained 3581 cattle in total. As of June 4, 1983, 419,000 cattle had been slaughtered in federally or provincially inspected plants in Ontario (Agriculture Canada, 1983). Thus, the volume of cattle sold through the electronic auction represented slightly less than 1% of the total slaughter.

Of the 151 lots offered during the trial, 138 (91%) were offered on a carcass weight and grade basis, 7 (5%) were offered on a straight carcass weight basis while 6 (4%) were offered on a liveweight basis. The liveweight lots were all offered early in the trial period and through their lack of bidding packers indicated that they were not prepared to buy cattle through this system on a liveweight basis. Specifically, only one lot offered on a liveweight basis during the trial was sold.

Producers whose lots consisted of under six head were required to co-mingle their cattle with another producer's cattle before being sold through the electronic auction. The size of the lots offered during the trial varied between 12 and 50 head. Thus, no lots were co-mingled during the trial.

Table 6.5: Principal Marketing Methods of Participating Producers and Non-Participating Potential Auction Users

Marketing Method	<u>Participants</u>		<u>Non-Participants</u>	
	No.	%	No.	%
Toronto Stockyards	23	36.5	51	38.9
Country Auctions	10	15.9	27	20.6
Direct Sales	19	30.1	50	38.6
Video Sales	<u>11</u>	<u>17.5</u>	<u>3</u>	<u>2.3</u>
	63	100	131	100

Chi-Square = 14.90\*

\* This implies that the two distributions are significantly different.

Source: Producer Survey

Table 6.6: Number of Methods Used to Market Cattle by Participating Producers and Non-Participating Potential Auction Users

Number of Methods	<u>Participants</u>		<u>Non-Participants</u>	
	No.	%	No.	%
1	47	74.6	98	74.8
2	10	15.9	27	20.6
3	5	7.9	6	4.6
4	<u>1</u>	<u>1.6</u>	<u>0</u>	<u>0.0</u>
	63	100	131	100

Source: Producer Survey

#### 6.4 Participant Reaction to the Auction Trial

This section of the chapter examines the results of producer, packer, and listing agent surveys that were distributed following the auction trial.<sup>1/</sup> In this survey, the participants were asked about their satisfaction or dissatisfaction with the auction as well as possible improvements and potential future use. Of the 67 producers who used the auction before the announcement of the sale of the electronic auction, 63 were surveyed. Of 11 meat packers who actively participated in the trial 8 completed surveys, while 6 of 13 participating agents completed the survey.

##### 6.4.1 General Level of Satisfaction with the Auction

All three groups of trial participants were asked about their general level of satisfaction given their experience with the auction. The results of this question for each group are presented in Table 6.7.

Table 6.7 Participant Satisfaction, Dissatisfaction or Indifference with Respect to Their Experience Using the Auction

	<u>Producer</u>		<u>Packer</u>		<u>Agent</u>	
	No.	%	No.	%	No.	%
Satisfied	38	60.3	4	50.0	2	33.3
Dissatisfied	16	25.4	1	12.5	2	33.3
Indifferent	9	14.3	3	37.5	2	33.3
	63	100	8	100	6	100

Sources: Producer, Packer, Agent Surveys.

The majority of producers were satisfied with their experience during the trial. Various satisfied producers stated that they received good prices or had good bargaining power with this system. Some producers also felt that the costs were reasonable and the auction was competitive in terms of packer participation. Most of the satisfied producers (35 of 38) sold cattle through the auction.

<sup>1/</sup>

The actual surveys used are presented in Appendix II.

Of the 16 dissatisfied producers, 10 did not sell the lots they offered. This was the most common reason given for being dissatisfied. Other reasons given for being dissatisfied included feeling that the agents hindered the trial, and perceiving the electronic auction to be ineffective for selling cattle on a liveweight basis.

While only 1 of 8 packers interviewed indicated dissatisfaction with the auction trial, only 4 packers were satisfied. When comments were made concerning the overall trial, they were generally negative and included references to such things as unreasonable producer reserve bids, improper description of cattle, variability in volumes offered, and limited selection in the types of cattle offered. These comments were generally made by the 50% of the packers who were dissatisfied or indifferent.

As shown in Table 6.7, only 2 of 6 listing agents were satisfied with their experience using the auction. The other 4 agents stated that they were dissatisfied or indifferent for reasons such as lack of producer participation, fluctuation in auction prices, lack of enough information to sell cattle (description given was not enough), and a dislike for the work necessary to list the cattle.

#### 6.4.2 Producer Reaction to Specific Aspects of the Auction

Participating producers were asked to comment on their feelings about various aspects of the auction, given their experience during the trial. Specifically, they were asked about the services provided by the listing agents, the opportunity to set a reserve bid on their cattle, and the level of the commission fee charged by listing agents. Producers who sold cattle through the auction were also asked to comment on the transfer of title process, and the resulting grades and yields of their cattle. The results of these questions are presented in Table 6.8.

The vast majority of participating producers, when asked about the services provided by the listing agents, were satisfied with agent performance. Reasons for being satisfied with this aspect included the fact that agents aided producers in setting reserve bids, and in describing the cattle being listed. Only 9 of 63 producers were dissatisfied with agent performance. The main reasons given for being dissatisfied were that agents discouraged producers from participating, and agents set their commission fees too high for the services that they provided.

Of the producers surveyed who sold cattle through the electronic auction, 75% (33 of 44) were satisfied with the transfer of title process. This particular aspect referred to the ease with which title of the cattle transferred from producer to packer and the promptness with which payment was received. Of the 33 satisfied producers, 18 specifically stated that payment was prompt and that was why they were satisfied. The majority of dissatisfied producers (6 of 10) gave lack of promptness in receiving payment as their major reason for dissatisfaction. One possible reason for the discrepancy in the promptness of payment was that agents, once receiving payment from the packers, were not required to transfer this money to the producer within a certain period of time.

Table 6.8: Producer Satisfaction, Dissatisfaction or Indifference with Respect to Specific Aspects of the Electronic Auction

	Agent Service		Transfer of Title		Reserve Bid		Commission Fee		Resulting Grades	
	No.	%	No.	%	No.	%	No.	%	No.	%
Satisfied	51	81.0	33	75.0	52	82.5	28	44.4	34	77.3
Dissatisfied	9	14.3	10	22.7	6	9.5	26	41.3	7	15.9
Indifferent	<u>3</u>	<u>4.8</u>	<u>1</u>	<u>2.3</u>	<u>5</u>	<u>8.0</u>	<u>9</u>	<u>14.3</u>	<u>3</u>	<u>6.8</u>
	63	100	44*	100	63	100	63	100	44*	100

\* Producers who did not sell cattle through the auction were not asked to comment on these aspects.

Source: Producer Survey

Participating producers were also asked for their reaction to being able to set reserve bids for their cattle. A large majority of producers were satisfied with this aspect of the auction. Increased bargaining power was the reason most often given for being satisfied. A larger proportion of producers who utilize video and direct sales (55% and 47%) gave this reason than did OPS and country auction users (35% and 40%). Of the 6 producers dissatisfied with setting reserve bids, all were dissatisfied or indifferent with respect to their overall experience with the auction. The main reason given for being dissatisfied was the inflexibility of the reserve bid. It should be noted that, during the trial, this aspect of the auction was changed to make it more flexible by allowing producers to accept the high bid even if it was below the reserve bid.

When asked about the level of the commission fee, the producers were mixed in their answers. The number of satisfied and dissatisfied producers were nearly equal. Of the satisfied producers, 8 felt that the commission fee was lower than selling through country auctions or the OPS. Some of the producers (5) felt that it was about the same as they normally paid. Of the 26 dissatisfied producers, 23 stated that the commission fee was higher than usual. About one-half of these were direct shippers while one-third utilized the OPS as their major marketing channel.

Producers who sold cattle through the auction were also asked if they were satisfied with the resulting grades and yields of their cattle. The majority of those surveyed were satisfied. Of the 10 producers who were dissatisfied or indifferent, the most prevalent reasons given were mistrust of packers, and actual grades and yields not meeting expectations. Except for the level of the commission fee, then, producers were generally satisfied with the various aspects of the auction.

#### 6.4.3 Packer Reaction to Specific Aspects of the Auction

The packers were also asked, in the survey, to comment on the degree of satisfaction or dissatisfaction that they had with respect to specific aspects of the auction. The results are presented in Tables 6.9 and 6.10.

When asked about the bidding system, the majority of packers were satisfied given their experience during the trial.<sup>1/</sup> One comment by dissatisfied packers was that they did not like bidding against unknown competitors.

Of the 8 packers who responded to the survey, only 2 were satisfied with the concept of having producers set reserve bids. The majority of packers were dissatisfied or indifferent. Their major complaint was that the reserve bids during the trial were not in line with market conditions.

1/

This refers to the actual bidding process as well as the impersonal nature of the bidding. During the trial, an auction would begin by step-wise decreasing the price until someone bid. The bidding was then similar to other cattle auctions where the price increases until bidding stops.

Table 6.9: Packer Satisfaction, Dissatisfaction or Indifference with Respect to Specific Aspects of the Electronic Auction

	<u>Bidding System</u>		<u>Reserve Bid</u>		<u>Transfer of Title</u>	
	No.	%	No.	%	No.	%
Satisfied	5	62.5	2	25.0	5	83.3
Dissatisfied	3	37.5	3	37.5	0	0.0
Indifferent	<u>0</u>	<u>0.0</u>	<u>3</u>	<u>37.5</u>	<u>1</u>	<u>16.7</u>
	8	100	8	100	6*	100

\* Not all packers responded to this question as they did not all purchase cattle through this system.

Source: Packer Survey

Table 6.10: Accuracy of Cattle Descriptions as Perceived by Packers

	No.	%
Generally Reliable	1	20.0
Generally Unreliable	0	0.0
Mixed	<u>4</u>	<u>80.0</u>
	5*	100

\* Not all packers responded to this question.

Source: Packer Survey

Electronic auction records were examined to try and determine if the packers' complaints were justified.

The data used were obtained from the auction records where there were lots of steers or heifers sold and not sold, and where producer reserve bids were available. The prices of lots that sold were compared to the reserve bids of those lots that did not sell for any given auction. The results for auctions that fit the above requirements are presented in Table 6.11. It should be noted that this table is based on information from a small proportion of the total number of auctions conducted during the trial. It can be seen from the information provided in Table 6.11 that in a few cases, the packers' complaints may be justified. In most cases, however, the reserve bids of unsold lots are not unreasonable, given the prices of lots that sold on that day. It should be kept in mind that one of the roles of a reserve bid is to keep from selling cattle when prices are temporarily depressed. If market prices are trending downward, however, reserve prices will need to be adjusted to reflect the trend.

The packers were generally satisfied with the transfer of title process, as outlined in section 6.4.2. No problems were experienced by any of the responding packers in this area.

It was found in Chapter 3 that estimated grades and weights during the auction trial were statistically different from the actual grades and weights.

It was found in Chapter 3 that estimated grades and weights during the auction trial were statistically different from the actual grades and weights. Packers were asked whether they felt the descriptions were reliable. As shown in Table 6.10, most of the respondents stated that the descriptions were sometimes accurate and sometimes not. When asked if this was a problem for them, the packers stated that it was, despite grade and weight discounts. The greatest concern of packers was that they have a demand for a specific type of beef, and if the cattle they buy are not of that type, the packer may have difficulty marketing them.

#### 6.4.4 Participant Perception of Auction Prices

Trial participants were asked a question concerning the level of prices bid for cattle through the electronic auction. Producers were asked to compare the auction prices to prices received through their normal selling method. Packers were asked to compare prices paid for cattle bought through the electronic auction to prices paid through other systems that they use. Agents were asked to compare auction prices to cattle prices received through other marketing channels in general. The results are presented in Table 6.12.

The results of the producer survey show that the participating producers were split in the perception of auction prices. Approximately one-half of the surveyed producers felt that the prices were the same as those they would have otherwise received. The numbers stating that prices were higher or lower were approximately equal. There was no discernible



Table 6.11: Comparison of Prices for Lots that Sold Through the Electronic Auction with Producer Reserve Bids for Lots that Did Not Sell (5 Auctions for Steers, 4 Auctions for Heifers)

STEERS						
	<u>Prices for Sold Lots</u>			<u>Reserve Bids for Unsold Lots</u>		
	High	Mean	Low	High	Mean	Low
Feb. 7	137.25	135.67	134.50	137.00	136.75	136.00
Feb. 9	137.50	136.81	135.75	138.75	137.25	136.00
Feb. 14	135.00	135.00	135.00	134.25	134.25	134.25
Mar. 2	137.25	136.44	136.00	138.00	136.08	130.00
Mar. 7	136.50	135.88	135.25	136.00	131.50	127.00

HEIFERS						
	<u>Prices for Sold Lots</u>			<u>Reserve Bids for Unsold Lots</u>		
	High	Mean	Low	High	Mean	Low
Feb. 9	135.25	134.67	134.25	135.00	134.67	134.00
Feb. 14	130.75	130.75	130.75	134.50	133.69	132.50
Mar. 2	134.00	134.00	134.00	133.50	133.50	133.50
Mar. 7	134.50	134.50	134.50	134.00	134.00	134.00

Source: Auction Records

relationship between the answer to this question, and the producer's normal marketing channel.

The packers, when asked about prices, felt that the electronic auction prices during the trial were about the same as prices paid through other systems. This was consistent for cattle purchased at the OPS, country auctions, or through direct sales. This is indicated in Table 6.12 which shows a majority of packers indicating prices were the same.

Agents were also asked about the level of prices received by producers during the trial. Some of the agents felt that the prices were higher and some lower, however, the majority of agents who responded to the survey, felt that prices were lower than those for cattle marketed through other channels. This result was contrary, for whatever reason, to the results of the packer and producer surveys.

#### 6.4.5 Participant Perception of Auction Costs

Participating producers and packers were asked to compare their costs of selling or purchasing cattle through the electronic auction to their costs for alternative systems. Specifically, producers compared electronic auction costs to their normal selling method, while packers compared the electronic auction to the OPS, country auctions, and direct purchases from producers. The results are presented in Table 6.13.

Slightly more than one-third of producers who were surveyed felt that electronic auction costs were similar to those for their normal selling method. Approximately equal numbers of producers stated that the electronic auction costs were higher or lower than costs of marketing cattle through their normal method. The perception of electronic auction costs being higher was a more common answer among those producers who utilized direct sales or country auctions than for the total survey sample. This reflected the fact that producers who normally shipped direct were now required to pay commission fees, and country auction users were required to ship their cattle further than they normally did.

Packers, in general, felt that electronic auction costs were lower than the costs of purchasing cattle through the OPS or country auctions. This was a result of not having to send buyers out to view cattle at the auctions. The packers also felt that electronic auction costs were comparable to the costs of purchasing cattle direct.

#### 6.4.6 Suggested Improvements

Packers and listing agents were specifically asked if they had any suggestions for improvements to the auction. In addition, agents were asked why they felt more producers did not participate in the trial.

The listing agents gave no suggested improvements for the auction. When asked about the degree of producer participation, however, the agents suggested several reasons why it was not greater. The reasons given were that producers prefer to sell their cattle in front of the buyers,

Table 6.12: Perception of Electronic Auction Prices as Compared to Other Marketing Channels by Trial Participants

Compared to:	<u>Producer</u>		<u>Packer</u>				<u>Agent</u>			
	Normal Selling Method		OPS		Country Auction		Direct		Other Channels	
	No.	%	No.	%	No.	%	No.	%	No.	%
Higher	17	28.3	0	0.0	1	20.0	0	0.0	1	25.0
Lower	14	23.3	1	20.0	0	0.0	0	0.0	3	75.0
Same	<u>29</u>	<u>48.3</u>	<u>4</u>	<u>80.0</u>	<u>4</u>	<u>80.0</u>	<u>6</u>	<u>100.0</u>	<u>0</u>	<u>0.0</u>
	60	100	5	100	5	100	6	100	4	100

Sources: Producer, Packer, Agent Surveys

Table 6.13: Packer and Producer Perception of Costs for Buying or Selling Cattle Through the Electronic Auction as Compared to Other Marketing Channels

Compared to:	<u>Producer</u>		<u>Packer</u>					
	Normal Selling Method		OPS		Country Auction		Direct	
	No.	%	No.	%	No.	%	No.	%
Significantly Less	4	6.6	2	28.6	2	25.0	0	0.0
Slightly Less	13	21.3	4	57.1	6	75.0	2	25.0
Same	22	36.1	1	14.3	0	0.0	6	75.0
Slightly More	16	26.2	0	0.0	0	0.0	0	0.0
Significantly More	<u>6</u>	<u>9.8</u>	<u>0</u>	<u>0.0</u>	<u>0</u>	<u>0.0</u>	<u>0</u>	<u>0.0</u>
	61	100	7	100	8	100	8	100

Sources: Producer, Packer Surveys

producers are not interested in the system, or do not trust the system.

Conversely, packers suggested several improvements. Many were based on their previously discussed comments. Better descriptions of cattle, more reasonable reserve bids by producers or eliminating them altogether, and encouraging producers to increase volume were all suggested. One packer suggested that the trucking mentioned by producers<sup>1/</sup> should allow for transporting cattle to Ottawa, and not just to Toronto.

#### 6.4.7 Future Use by Trial Participants

Participating producers and packers were asked about the possibility of future use of the electronic auction. In both cases, the majority of participants indicated that they would at least consider using it in the future.

Approximately 80% (50 of 63) of the participating producers surveyed said that they would continue to use it as a method of marketing their cattle. These producers indicated that they like setting reserve bids, the auction is more competitive than their normal selling method, the cost of the system is reasonable, and the prices received are good. Of the producers who indicated that they would not use the auction in the future, or were unsure, the most prevalent reason given was satisfaction with their present method of marketing.

All 8 of the packers responding to the survey indicated that they would continue to use the auction as a means of purchasing cattle. This was conditional on the auction being comparable to other systems costwise, and the type of cattle offered fitting the packers' needs.

#### 6.5 Non-Participant Reaction to the Auction Trial

This section looks at the results from a survey of beef producers who did not participate in the electronic auction trial. This survey asked producers about their awareness and understanding of the electronic auction. As well, possible improvements were solicited and the producers were asked about future use of the auction. The producers contacted were, in general, very responsive to the survey. Although a number of producers were too small with respect to their size of operation to be considered potential users, only 4 producers declined the opportunity to comment on the electronic auction. In total, 131 producers who qualified as potential users were surveyed.

##### 6.5.1 Awareness and Understanding of the Auction

Of the 131 producers surveyed, all were aware of the OCA's electronic auction. As well, most of the producers surveyed indicated that they had

<sup>1/</sup>

This allowance for transport by producers is discussed in the analysis of packer transport costs in Chapter 4.

at least some understanding of the process involved in listing and selling cattle through this system. The majority (73%) felt that they had a good understanding, while 24% of the producers had a partial understanding. Only 3% of the non-participating producers felt that they did not understand the auction at all.

#### 6.5.2 Producer Reasoning for not Participating in the Trial

Non-participating producers were asked whether they had considered using the auction, and the reasons why they had not. Almost one-half of the producers (57 of 131) indicated that they had at least considered using the auction.

The reasons given for not participating, by producers who considered using the auction, included no cattle being ready and the system being too costly. Some of the producers who had not considered using the system stated they were satisfied with their present system, or that their lots were too small or not uniform in makeup. Other reasons given for not participating included mistrust of the agents, auction prices not being high enough, and uncertainty concerning the auction's future.

#### 6.5.3 Suggested Improvements

Producers who indicated that they had a good understanding of the electronic auction were asked if they had any suggested improvements that would make the system more appealing to them. Of the 96 producers asked, approximately one-half (40) suggested improvements. The most common response was to lower commission fees. Other producers suggested that the electronic auction operators make it easier to sell cattle on a liveweight basis, or in small lots. Producers also suggested that the reserve bids be made more flexible so that the cattle may be sold if the high bid is close to the reserve price. Some of these features such as co-mingling and more flexible reserve bids were in fact available during the trial.

#### 6.5.4 Possible Future Use by Non-Participants

The non-participating producers were asked about the possibility of future use of the electronic system. Of the 131 producers surveyed, 90 (69%) indicated that they would consider using the auction while 31 (24%) said that they would not. The most prevalent reason given for possible future use was a desire to have options for marketing cattle. Other reasons given were increased competitiveness and lowered costs of the auction, as well as good bargaining power and prices. The reasons given by producers for not using the auction included satisfaction with their present method of marketing, no interest in the new system, and having lots that are too small or mixed in composition.

## CHAPTER 7

## SUMMARY AND CONCLUSIONS

## 7.1 Summary

As a result of concern, by producers, with regard to the efficiency of available marketing channels for slaughter cattle, the OCA developed a computerized auction system. A test of the auction was organized, and a trial was conducted from February until the end of May, 1983 at which time it was taken over by an independent firm to operate commercially.

The purpose of this study was to evaluate, in economic terms, the efficiency with which the auction operated during the four month trial. Specifically, the electronic auction was evaluated in terms of: 1) procedural efficiency; 2) operational efficiency; 3) pricing efficiency; 4) producer participation; and, 5) participant and non-participant reaction to the auction during the trial period.

The procedural efficiency of the auction was evaluated using three criteria. They were the accuracy of cattle descriptions, computer efficiency, and the effectiveness of the transfer of title process. Data were collected from auction records, meat packers, and listing agents in order to statistically compare the estimated carcass weights and grades of cattle listed through the auction to the actual weights and grades. The analysis of computer efficiency was concerned with evaluating the performance of the computer hardware and software used in the auction trial. Packers and listing agents, in surveys conducted following the trial, were asked to comment on the effectiveness of the computer system. The results from the surveys, as well as information obtained in interviews with the electronic auction manager, were used in the discussion of this topic. The transfer of title process involved the ease with which the title of cattle changed hands, and the promptness of payment. Information was obtained from participating producers and packers concerning their reaction to the electronic auction's transfer of title process. This information was then used in a discussion of the efficiency of the process.

The operational efficiency of the electronic auction was evaluated by comparing its total marketing costs to similar costs for cattle marketed through the OPS, country auctions, and direct sales. Total marketing costs were defined to include producer and packer transport costs, producer commission fees, packer procurement costs, intermediary costs, and kill and yield efficiency costs. In order to estimate total marketing costs for each system, the descriptive analysis approach was used; that is, actual cost data were obtained to estimate average costs for the different systems. Information from producers, packers, cattle transporters, and commission agents was obtained concerning their costs or fees. The data were then used, taking into account marketing and purchasing practices of producers and packers, to estimate the total cost of marketing cattle through alternative systems. The costs were adjusted for origin of cattle,

and location of the packers. The analysis of kill and yield efficiency costs was limited to a discussion of the potential that each alternative system has to minimize costs arising from kill line inefficiencies and carcass damage.

The analysis of pricing efficiency involved comparing the electronic auction to alternative marketing channels in terms of price levels, buyer competition, producer bargaining power, and market information. Published prices over a three month period for the OPS, and country auctions were statistically compared to effective liveweight prices for cattle sold through the electronic auction. The prices were adjusted for producer transport costs using the estimates from the cost analysis.

The electronic auction was compared to the OPS, country auctions, and direct sales with regards to buyer competition, producer bargaining power, and market information. The four marketing channels were analyzed as to the potential for each system to provide these aspects as they are found in perfect markets. The structure of each system was used as the basis for comparison.

Characteristics of participating producers and the lots that they offered were examined using data from producer surveys and electronic auction records. Where possible, these characteristics were compared to those of the general population of potential electronic auction users in Ontario.

Participating producers, packers, and agents were asked, in surveys conducted following the trial, to comment on the electronic auction in general and certain specific aspects of the auction. Possible improvements and potential future use were two other topics included in the survey. Non-participating producers were also surveyed. They were asked questions concerning their awareness and understanding of the auction, their reasons for not using it, possible improvements, and potential future use. The results of these surveys were tabulated and presented.

## 7.2 Results of the Study

### 7.2.1 Procedural Efficiency

From the discussion in Chapter 3, it can be concluded that the computer hardware and software, as well as the transfer of title process operated efficiently during the four month trial. There were a few problems experienced by participants but generally, these aspects of the auction were performed effectively.

The same cannot be said, however, for the descriptions of lots offered through the auction. The weights and grades in the descriptions given by producers or agents were found to be significantly different from the actual weights and grades. While many lots were described accurately, some descriptions were very inaccurate. In addition, the packers felt that these inaccuracies were a problem for them even though discounts were

applied to undergrade cattle. As a result, it can be said that this aspect of the auction was not totally effective during the trial.

As stated in Chapter 3, however, other marketing systems also have errors in carcass weight and grade estimation associated with them. Because of this the electronic auction's inaccuracies may not put it at a disadvantage when compared to alternative marketing channels.

### 7.2.2 Operational Efficiency

1) **Producer Transport Costs** - Producer transport costs for marketing cattle through the electronic auction are approximately the same as those for marketing them by direct sales. These costs are higher than those for country auctions, and lower than the transport costs for the OPS.

2) **Packer Transport Costs** - Packers are not required to transport cattle bought through direct sales or the electronic auction so their transport costs when using these methods are zero. In general, transport costs for cattle bought at country auctions are higher than similar costs for cattle bought at the OPS.

3) **Kill and Yield Efficiency Costs** - These costs were not estimated quantitatively. It was assumed, based on the discussion in sections 4.3.3 and 4.3.4, that the electronic auction and direct sales minimize these costs at some level below the costs for country auctions and the OPS.

4) **Commission Fees** - Direct sales, because of the lack of intermediaries, have no commission fees associated with them. Of the other three systems, electronic auction commission and listing fees are lower, on a per head basis, than the fees for either country auctions, or the OPS.

5) **Intermediary Costs** - It was assumed that the costs incurred by intermediaries were accounted for by the commission fees that they charged. The actual costs of the intermediaries, therefore, were not estimated.

6) **Packer Procurement Costs** - Direct sales have the lowest packer procurement costs but the cost of buying cattle through the electronic auction is only slightly higher. These costs are much lower than those estimated for the OPS or country auctions. This reflects the ability of packers to buy cattle without viewing them through the first two marketing channels.

7) **Total Marketing Costs** - When all the above costs are taken into account, it appears that direct sales have the lowest marketing costs of the four systems considered in the analysis. In general, these costs are 40-50% lower than electronic auction costs. The total marketing costs for the electronic auction, are however, lower than for the OPS or country auctions. OPS costs are 30-70% higher while country auction costs are 40-60% higher depending upon the region of origin for the cattle and the location of the packer's plant.



### 7.2.3 Pricing Efficiency

1) Price Levels - There were several limitations which had to be considered when examining the results of the price analysis. These limitations were discussed in section 5.3. Taking into account these factors, the analysis indicated that returns to the producer marketing cattle through the electronic auction, were at least as good as those for cattle marketed through the OPS or country auctions during the trial. This was consistent for southern, western, and central Ontario producers. It was not possible to analyze markets in eastern Ontario.

2) Buyer Competition - From the discussion on buyer competition in section 5.4, it is concluded that the electronic auction is at least as competitive as the OPS or country auctions. In addition, the electronic auction is probably more competitive than direct sales. Taking into account the impersonal nature of the bidding process, this new system has the potential to be more competitive than all three alternatives.

3) Bargaining Power - It is concluded from the discussion in section 5.5, that the electronic auction and direct sales give producers more bargaining power than either the OPS or country auctions.

4) Market Information - At the present time, all alternatives considered in this discussion provide producers with some market information. The electronic auction, however, has the potential to be at least as effective, and probably more effective in providing market information to producers than the OPS, country auctions, or direct sales.

### 7.2.4 Producer Participation

The analysis of producers' ages and locations indicates that there were no significant differences, in age of producer or location of operation, between producers who used the auction and those potential users who did not. The majority of participating producers were 40-59 years of age, and were located in western or southern Ontario. The size of participants' operations, on average, was higher than for beef producers in general. Participants were also slightly larger, in terms of size of operation, than potential auction users. Marketing practices were also different. A higher proportion of auction users market the majority of their cattle through video sales than do potential users in general. Conversely, a lower proportion of trial participants utilize country auctions or direct sales than do potential users.

Almost 3600 cattle were sold through the electronic auction during the trial. This represented about 1% of the total cattle slaughter in Ontario over that time period. Most of the lots listed or sold through the electronic auction were offered on a carcass weight and grade basis. No lots were co-mingled during the trial.

### 7.2.5 Participant and Non-Participant Reaction

1) Producer Reaction - The majority of producers were satisfied with

the electronic auction. In addition, producers were satisfied with the individual aspects (agent service, transfer of title process, setting reserve bids, resulting yields and grades) except for the level of the commission fee. The producers were evenly split in their reaction to this aspect. About one-half of participating producers felt that auction prices were the same as they would have otherwise received for their cattle. The other half were evenly split between perceiving electronic auction prices to be higher or lower. Slightly more than one-third of producers felt that their costs of using the electronic auction were the same as for their usual marketing method. The rest were evenly divided between thinking that electronic auction costs were higher or lower. A large majority of participating producers said that they would continue to use the auction in the future.

2) Packer Reaction - Packer reaction to the trial was mixed. Only one half of the packers who responded to the survey were satisfied with the auction. In addition, packers stated that unreliable descriptions of cattle were a problem. They also felt that many of the producer reserve bids during the trial were unreasonable. Conversely, they felt that the bidding system, in general, was effective, and experienced no problems with the transfer of title process. The packers felt that electronic auction prices were similar to prices paid for cattle bought through other systems. They also perceived electronic auction costs to be lower than the costs of buying cattle through the OPS or country auctions, and equal to direct purchasing costs. All responding packers stated that they would continue to use the electronic auction to purchase cattle.

3) Agent Reaction - Agent reaction to the trial was also mixed. In general, the responding agents were evenly split in their reaction to the electronic auction trial. Agents felt that electronic auction prices were lower than prices received by producers through other channels.

4) Non-Participant Reaction - Potential users of the electronic auction, who did not participate in the trial, seemed to be aware of the new system and to have at least a partial understanding of how it works. Almost one-half of the surveyed producers indicated that they had considered using the auction and gave various reasons, outlined in section 6.5.2, for not using it. When asked about possible future use, almost 70% of the producers indicated that they would consider using the auction.

### 7.3 Conclusions and Implications of the Study

The conclusions of this study are listed below.

- 1) Except for the problem concerning inaccurate descriptions of cattle, the electronic auction seems to be a procedurally efficient marketing method.
- 2) The electronic auction is a more operationally efficient system for marketing cattle than either the OPS or country auctions. It is less efficient, in terms of marketing costs, than direct sales, however.

- 3) In terms of pricing efficiency, the electronic auction is at least as efficient as the alternative marketing systems in all aspects examined. With increased volume marketed through the system, it would have the potential to be more efficient.
- 4) Producer reaction to the auction trial was generally favourable. Packer and agent reactions were mixed. Producers and packers indicated, however, that they will continue to use the electronic auction in the future. Beef producers who are potential users of the auction indicated that they were aware of the trial. In addition, the possibility of future use by these producers seems to be good.

From the above conclusions, it appears that the electronic auction is an efficient method for marketing slaughter cattle in comparison with the alternatives. The only significant problem to be dealt with is the inaccuracy in cattle descriptions. In order to correct this, producers and listing agent personnel will have to be better trained in estimating carcass weights and grades. This should be done if packers are to completely accept and effectively utilize the new system.

#### 7.4 Limitations of the Study

In conducting the analysis for this study, it was necessary to deal with several limitations. Some of these have already been discussed earlier. This section mentions several other limitations that were experienced. One limitation concerned the nature of the beef industry in Ontario. It was necessary to assume, in the cost analysis, that the nature of the beef industry had not changed since Richards' study in 1978; that is, the distribution of producers throughout the province, and the distance that they ship cattle had not changed. This assumption was made because there has been no work done concerning these characteristics of Ontario beef producers since Richards completed his study.

A second limitation was in the availability of data. Price data for individual lots sold through the OPS, country auctions, or direct sales were not available. In addition, the available price data for the electronic auction were limited in size. The implications of this were outlined in section 5.3.

Another limitation was in the area of kill and yield efficiency costs. Figures were available from Richards' and Van Egteren's studies that were done in the late 1970's. However, in both cases the costs used were updated estimates from past United States studies. No estimates of these costs for Canadian marketing channels are available.

#### 7.5 Possible Areas of Future Research

One area that should be examined is the accuracy with which buyers estimate grades and yields for cattle bought through live auctions. This might be combined with research comparing alternative marketing systems as

to their ability to reward higher quality cattle with higher prices. These two areas are important in the evaluation of pricing efficiency as it is defined in this study.

It would also be useful to quantify the costs associated with kill line inefficiencies and yield losses, as they occur in the marketing of slaughter cattle in Canada. Alternative marketing channels could be examined as to their ability to minimize these costs.

## REFERENCES

- Agriculture Canada, Marketing and Economics Branch. Canada Livestock and Meat Trade Report. Vol. 64, #22, Ottawa, June 9, 1983.
- Canada Department of Agriculture. Canada's New Beef Grading System. Undated.
- Ceschi-Smith, Marguerite, Larry Martin and Michael C. Smith. Feasibility of an Electronic Auction for Slaughter Cattle in Ontario. School of Agricultural Economics and Extension Education, Ontario Agricultural College, University of Guelph, May 1982.
- Clarke, D. J., and H. B. Huff. Organization and Method of Operation of the Canadian Cattle and Beef Marketing System. Research Report No. 1, Commission of Inquiry into the Marketing of Beef and Veal, Ottawa, February 1976.
- French, B. C. "The Analysis of Productive Efficiency in Agricultural Marketing: Models, Methods, and Progress". A Survey of Agricultural Economics Literature. L. R. Martin, Editor, Vol. 1, pp. 93-206, Minneapolis, University of Minnesota Press, 1977.
- Grandin, Temple. "Bruises and Carcass Damage". International Journal of the Study of Animal Problems, 1(1980):121-137.
- Henderson, D. R., and D. L. Holder. "Lessons Learned in Electronic Marketing". Ohio State University Agricultural Economics Report, July 1982.
- Henning, G. F., and P. R. Thomas. Some of the Factors Influencing the Shrinkage of Livestock from the Farm to the First Market. Ohio Agricultural Experiment Station, Bulletin 925, October 1962.
- Johnson, R. D. An Economic Evaluation of Alternative Marketing Methods for Fed Cattle. Agriculture Experiment Station, University of Nebraska, Station Bulletin 520, Lincoln, Nebraska, June 1972.
- Kohls, R. L., and J. N. Uhl. Marketing of Agricultural Products. New York: MacMillan Company, 1972.
- Lane, S. H. Agricultural Marketing Handbook. School of Agricultural Economics and Extension Education, Ontario Agricultural College, University of Guelph, November 1979.
- Martin, Larry, Robert R. Richards, and W. R. Osborne. An Economic Comparison of Alternative Selling Methods for Slaughter Cattle in Ontario. School of Agricultural Economics and Extension Education, Ontario Agricultural College, University of Guelph, January 1979.
- Ontario Cattlemen's Association. "Proposal for a Five Month Trial of an Electronic Auction for Slaughter Cattle in Ontario". Toronto, October 1982.

- Ontario Cattlemen's Association. Breeder and Feeder. May 1983.
- Ontario Ministry of Agriculture and Food. Agricultural Statistics for Ontario 1981. Publication 20, August 1982.
- Ontario Ministry of Agriculture and Food. The Minister of Agriculture and Food, Annual Report, Fiscal 1981-82. Undated.
- Richards, R. R. "An Economic Evaluation of Alternative Methods for Selling Slaughter Cattle in Ontario". M.Sc. thesis, University of Guelph, 1978.
- Shepherd, G. S., and G. A. Futrell. Marketing Farm Products. Ames: The Iowa State University Press, 1982.
- Toronto Globe and Mail. February 8 - May 2, 1983.
- Van Egteren, J. "Alternative Marketing Systems for Live Cattle". Unpublished Study Prepared for the Commission of Inquiry into the Marketing of Beef and Veal, Ottawa, December 1975.
- Western Ontario Farmer. February 10 - May 5, 1983.
- Williams, W. F., and T. T. Stout. Economics of the Livestock-Meat Industry. New York: MacMillan Company, 1964.

## APPENDIX I

## ELECTRONIC AUCTION RULES AND REGULATIONS

1. The rules and regulations of the electronic auction are determined solely by the Electronic Auction Committee of the Ontario Cattlemen's Association. Any changes in these rules will be made in consultation with agents, packers and consignors, however the final decision will be made by the electronic auction.
2. A consignor's contract must be prepared and signed by the consignor and agent for every lot listed.
3. All listings must be entered into the terminals at least three and one-half hours before the scheduled start of the auction.
4. A weighing location must be specified for all lots, whether sold on a live, carcass or carcass/grade basis. Unless otherwise specified, the consignor is responsible for the trucking costs to this location. The packer takes title to the cattle at the weighing location and will pay trucking costs to his plant.
5. The minimum lot size for on-farm sale is twelve (12) head. Smaller lots of at least six (6) head may be delivered to the agent's location and offered as a single-producer lot. A producer with less than six (6) head must deliver the animals to the agent's location for co-mingling with cattle from other producers before being offered on a live basis on the electronic auction.
6. A reservation price may be specified on the contract and no lot will be sold below this price. All lots which have bids of more than the reservation price are sold and cannot be withdrawn.
7. Lots on which bidding fails to reach the reservation price may be offered up to two (2) additional times within the next six (6) business days at no cost to the consignor. Cattle cannot be re-offered on the same day.
8. For cattle offered on a carcass weight or carcass weight and grade basis only packing plants approved under the Ontario Beef Cattle Marketing Act may bid.
9. A delay of kill penalty will be assessed to the buyer if cattle sold on a carcass weight or carcass weight and grade basis are not killed within twenty-four (24) hours of the time that the check weight was taken. This penalty will be determined by electronic auction in consultation with packers, agents, and consignors.
10. Cattle sold on the electronic auction must be lifted for delivery within three (3) business days of their sale. The consignor may specify other delivery conditions in the contract. Failure of the

consignor to deliver the described cattle to the specified weighing location upon request may result in him being found liable to the buyer and/or agent for damages. Only weather conditions, other Acts of God, or delays in transportation beyond the control of the consignor shall excuse the consignor from damages as a result of failure to deliver the cattle.

11. In the event that a dispute should arise between buyer and seller, the two parties will first ask the listing agent to resolve the dispute. In the event that the agent cannot resolve the dispute, each party shall present the facts as they see them, and their proposal for settlement of the dispute to an arbitration panel appointed by the electronic auction. The panel will review the dispute and accept one of the proposals in its entirety. The accepted proposal will be the basis of the settlement of the dispute.
12. All buyers must be licensed under the Ontario Beef Cattle Financial Protection Program. The terms of the Ontario Beef Cattle Financial Protection Program shall apply on packer settlements with agents, except that, for cattle sold on a carcass or carcass and grade basis, payment from the packer to the agent must be in the hands of the agent by 2:00 p.m. on the first business day following grading.
13. The electronic auction fee for listing cattle on the auction is \$45/lot. This entitles the cattle to be offered up to three times as noted in Rule 7. The agent agrees to collect this fee from the consignor and to remit it to the electronic auction weekly.
14. The order of sale will be determined by the electronic auction.
15. The electronic auction, in consultation with agents, packers and consignors, will establish and publish weight and grade differentials.
16. The electronic auction may refuse to allow agents, packers, or consignors who have previously violated the rules to participate in the auction.
17. Any complaints about the description of any animals in a lot sold on a live basis must be made by the packer to the agent before the animals are killed.



## APPENDIX II

## PARTICIPANT AND NON-PARTICIPANT SURVEYS USED IN THE STUDY

Meat Packer Survey

Note: All questions refer to the trial period prior to OLEX's purchase of the auction.

The first few questions deal with your use of the electronic auction as a means of buying cattle.

1. a) In general, is your firm satisfied, dissatisfied or indifferent with respect to its experience in using the electronic auction to bid on and buy cattle?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_

b) Why?

2. For each of the following individual aspects of the electronic auction, were you satisfied, dissatisfied or indifferent given your firm's experience in using the auction? (If satisfied with an aspect) Does it have any advantages over other marketing channels? (If dissatisfied with an aspect) What, if any, problems were encountered?

a) The bidding system?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_

b) The concept of having producers set reservation prices?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_

c) The transfer of title process?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_

3. For the cattle that your firm bought through this system, do you feel that the descriptions given before the auction were:

- a) generally reliable \_\_\_\_\_  
b) generally unreliable \_\_\_\_\_  
c) sometimes reliable and sometimes not \_\_\_\_\_

(If you felt that the descriptions were unreliable some or all of the time) Do you feel that this creates problems for you as a buyer on the system? Yes \_\_\_\_\_ No \_\_\_\_\_  
Why or why not?

4. During the trial period (from February until the end of May) was your firm satisfied, dissatisfied, or indifferent with respect to the performance of the computer terminal itself?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_  
What, if any, significant problems were encountered?

5. a) Given your experience during the trial period do you feel that your purchase price for cattle bought through this system was higher, lower or the same as prices you paid for similar cattle bought through other means?

Electronic auction prices were:      Higher      Lower      The same as

a) Toronto Stockyards	—	—	—
b) Country auction sales	—	—	—
c) Direct sales from producers	—	—	—

- b) If a substantial portion of cattle marketed in Ontario were sold through the electronic auction do you feel that your purchasing cost (not including the actual cost of the cattle) would be higher, lower, or the same as the cost of using other marketing channels?

Electronic auction is:

	<u>sign.</u> <u>less</u>	<u>slightly</u> <u>less</u>	<u>the</u> <u>same</u>	<u>slightly</u> <u>more</u>	<u>sign.</u> <u>more</u>
than a) Toronto Stockyards	—	—	—	—	—
b) Country auction sales	—	—	—	—	—
c) Direct sales from producers	—	—	—	—	—

The next set of questions is designed to obtain an estimate of the costs of marketing cattle through various selling methods.

6. What percentage of your slaughter cattle purchased in the last year were made through each of the following marketing channels?

a) Toronto Stockyards	—
b) Country auction sales	—
c) Direct sales from producers	—
d) Video auctions	—

7. Can you estimate your firms' purchasing costs (excluding the actual cost of the cattle and any transportation costs) using each of the following selling methods? (either on a per head or per cwt. basis).

	<u>Per Head</u>	<u>Per Cwt.</u>
a) Toronto Stockyards	—	—
b) Country auction sales	—	—
c) Direct sales from producers	—	—
d) Electronic auction	—	—

8. a) What is the distance (approximate) from your plant to the Toronto Stockyards?
- b) What does your firm pay for transporting cattle from the Toronto Stockyards to your plant? (either on a per head or per cwt. basis).

9. If your firm purchased slaughter cattle in any or all of the regions of Ontario listed below, and paid transport costs, what was the typical charge in each of the regions? (either on a per head or per cwt. basis).

	<u>Per Head</u>	<u>Per Cwt.</u>
a) Southern Ontario	_____	_____
b) Western Ontario	_____	_____
c) Central Ontario	_____	_____
d) Eastern Ontario	_____	_____
e) Northern Ontario	_____	_____

(The counties comprising each region are listed on an attached sheet).

10. Does your firm feel that improvements could be made to make the auction more efficient to buy cattle?

If so, what improvements?

11. With the electronic auction being put into commercial operation, will your firm continue to use it as a means of purchasing slaughter cattle?

Why or why not?

Listing Agent Survey

The first few questions concern your experience as a listing agent for the Ontario Cattlemen's Association electronic auction system.

1. a) In general, were you satisfied, dissatisfied or indifferent with respect to your experience as a listing agent for the electronic auction?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_
- b) Why?
2. During the trial period (from February until the end of May), were you satisfied, dissatisfied or indifferent with respect to the performance of the computer terminal itself?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_

If dissatisfied, what, if any, significant problems were encountered?

3. In your opinion, were the prices received through the electronic auction  
a) higher than \_\_\_\_\_ b) lower than \_\_\_\_\_ c) the same as \_\_\_\_\_  
prices received for similar cattle through other marketing channels?

The next few questions are designed to help us compare the electronic auction's performance to that of other selling methods.

4. What commission fees did you charge for slaughter cattle sold during the trial period through:
  - a) your regular auction facilities?
  - b) the electronic auction?
5. On average, how many slaughter cattle buyers are present at your regular slaughter cattle auction?
6. On average, how many buyers bid on any single lot of slaughter cattle sold through your regular auction?
7. Looking back at the trial period for the electronic auction, do you feel that any improvements could be made to make it a more viable system for selling slaughter cattle? If so, what improvements?
8. Our records show that your firm listed \_\_\_\_\_ lots of cattle during the trial period up to and including the sale of May 4. This represented \_\_\_\_\_% of the total lots offered. What reasons do you feel prevented you from listing more cattle during the trial period?

Producer Survey (Auction User)

The first few questions deal specifically with your use of the electronic auction as a marketing channel.

1. a) Generally speaking, are you satisfied, dissatisfied or indifferent with respect to your experience using the electronic auction to market slaughter cattle?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_
- b) Why?
2. For each of the following individual aspects of the electronic auction, were you satisfied, dissatisfied, or indifferent given your experience using the auction?  
(If satisfied with an aspect) Does it have any advantages over other marketing channels?  
(If dissatisfied with an aspect) What, if any, problems were encountered?
  - a) The service provided by the commission agent?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_
  - b) The transfer of title process?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_
  - c) The idea of producers setting a reservation price?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_
  - d) The level of the commission fee?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_
  - e) The resulting grades and yields of the cattle?  
Satisfied \_\_\_\_\_ Dissatisfied \_\_\_\_\_ Indifferent \_\_\_\_\_
3. Did you feel that the prices bid on your cattle through the electronic auction were higher, lower or the same as the prices you would have received by marketing them by your usual method?  
Higher \_\_\_\_\_ Lower \_\_\_\_\_ The same as \_\_\_\_\_
4. Taking into account all the costs of marketing your cattle, do you feel that the cost of selling cattle through the electronic auction was
 

significantly less	_____
slightly less	_____
the same as	_____
slightly more	_____
significantly more	_____

 than the cost of the selling method you most often use?
5. Considering your experience listing cattle through the electronic auction, do you feel that this auction system is more competitive,

less competitive, or equally competitive when compared to your normal selling method?

More competitive \_\_\_\_\_ Less Competitive \_\_\_\_\_ Equally Competitive \_\_\_\_\_

The next two questions are designed to help give us an estimate of the cost of marketing cattle through the electronic auction.

6. What was the total commission fee charged by the listing agent to sell cattle through the electronic auction? (either on a per head or per lot basis).

(If the answer to the above is on a per lot basis) How many cattle per lot did you ship through the electronic auction?

7. For each lot that you sold through the electronic auction, what was the cost of transporting the cattle to the packer's plant? (either on a per load, per head or per cwt. basis) Did you use your own truck or a commercial trucker?

(If the cost of transport is given on a per load basis) How many head of cattle per truckload did you ship?

The next set of questions are background questions to give us an idea of the types of producers who are using the electronic auction.

8. What method(s) of selling cattle do you normally use? (If more than one answer, also ask which method is used most often).

Toronto Stockyards \_\_\_\_\_  
 Country auction sales \_\_\_\_\_  
 Direct to packer sales \_\_\_\_\_  
 Video sales \_\_\_\_\_

9. How many head of slaughter cattle did your operation market in 1982?
10. What was the average size of the lots of slaughter cattle that you sold in 1982?
11. What is your age?      19 - 39 \_\_\_\_\_  
    40 - 59 \_\_\_\_\_  
    60+                    \_\_\_\_\_
12. With the electronic auction being put into commercial operation, will you continue to use it as a method of marketing your slaughter cattle?

Yes \_\_\_\_\_ No \_\_\_\_\_ Maybe \_\_\_\_\_

Why or why not?

Thank you very much for your cooperation and participation in this survey.

Producer Survey (Non-User)

1. (For Qualification of Producer) How many head of slaughter cattle did you market in 1982?
2. (For Qualification of Producer) What was the average size of the lots of slaughter cattle that you marketed in 1982?

If answer to #1 and #2 is greater than 10, continue. If not, inform the producer that his operation does not fit into the range of marketings suitable for this survey and thank him for his cooperation.

3. Are you aware of the electronic auction system for slaughter cattle set up by the Ontario Cattlemen's Association?

Yes \_\_\_\_\_ No \_\_\_\_\_

(If the answer is yes, continue. If the answer is no, skip to questions 7-9).

The following 4 questions deal specifically with the electronic auction system and are designed to help us determine the attitudes of producers towards this system.

4. Do you feel that you
 

a) do not understand	_____
b) partially understand	_____
or c) have a good understanding of	_____

 the process of listing and selling cattle through the electronic auction?
5. a) Since the electronic auction began operating in February, have you considered using it as a method of marketing your cattle?
 

Yes _____	No _____
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- b) Why have you not used it?

(Ask next question only if answer to #4 was b) or c.)

6. Are there any changes to the system that could be made that would make the electronic auction more appealing to you as a beef producer?

The next few questions are designed to give us a bit of background information about Ontario beef producers in general.

7. What method(s) of selling slaughter cattle do you use? (If more than one answer is given, also ask which method is used most often).

Toronto Stockyards	_____
Country auction sales	_____
Direct to packer sales	_____
Video sales	_____

8. What is your age?            19 - 39    \_\_\_\_\_  
   40 - 59    \_\_\_\_\_  
   60+        \_\_\_\_\_
9. With the electronic auction being put into commercial operation, would you consider using it in the future as a means of marketing your slaughter cattle?  
   Yes \_\_\_\_\_    No \_\_\_\_\_    Maybe \_\_\_\_\_  
Why or why not? (If different from #5b)

Thank you for your cooperation and participation in this survey.



## APPENDIX III

DATE CODES AND NUMBER OF LOTS USED IN  
CALCULATING ELECTRONIC AUCTION PRICES

<u>Date Code</u>	<u>Date</u>	<u>Lots of Steers</u>	<u>Lots of Heifers</u>
01	February 7	4	3
02	February 8	-	-
03	February 9	1	2
04	February 10	-	-
05	February 11	-	-
06	February 14	2	-
07	February 15	-	-
08	February 16	-	-
09	February 17	-	-
10	February 18	-	-
11	February 21	1	-
12	February 22	-	-
13	February 23	5	3
14	February 24	-	-
15	February 25	-	-
16	February 28	2	3
17	March 1	-	-
18	March 2	1	1
19	March 3	-	-
20	March 4	-	-
21	March 7	1	1
22	March 8	-	-
23	March 9	2	-
24	March 10	-	-
25	March 11	-	-
26	March 14	-	-
27	March 15	-	-
28	March 16	1	-
29	March 17	-	-
30	March 18	-	-

<u>Date Code</u>	<u>Date</u>	<u>Lots of Steers</u>	<u>Lots of Heifers</u>
31	March 21	-	2
32	March 22	-	-
33	March 23	-	-
34	March 24	-	-
35	March 25	-	-
36	March 28	1	-
37	March 29	-	-
38	March 30	1	-
39	March 31	-	-
40	April 1	-	-
41	April 4	1	-
42	April 5	-	-
43	April 6	-	-
44	April 7	-	-
45	April 8	-	-
46	April 11	1	-
47	April 12	-	-
48	April 13	2	1
49	April 14	-	-
50	April 15	-	-
51	April 18	-	-
52	April 19	-	-
53	April 20	-	-
54	April 21	-	-
55	April 22	-	-
56	April 25	-	-
57	April 26	-	-
58	April 27	1	-
59	April 28	-	-
60	April 29	-	-

