

Public Price Reporting, Marketing Channel Selection, and Price Discovery: The Perspective of Cow/Calf Producers in the Dakotas

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Cow/calf producers operating in the Dakotas were surveyed on their price discovery strategies, marketing channel preferences, and their perceptions of how regime change in the public price reporting system for fed cattle affected the beef industry in general and the cow/calf industry in particular. Survey results indicate cow/calf producers consider local institutions (auction barns, etc.) to be more reliable for price discovery than regional or national institutions (futures market, USDA public price reports, satellite auctions, etc.). The auction barn marketing channel is the preferred channel for marketing cattle and is considered the most reliable source of market information by producers. Dakota cow/calf producers perceive livestock mandatory price reporting as benefiting the beef industry in general, but consider public price reports to be less reliable than local sources of market information.

Key Words: beef supply chain, cow-calf marketing, marketing channel, price discovery, public price reporting

The contribution of timely and accurate public price reports to the efficient operation of U.S. livestock markets and the price discovery process has been discussed widely in the literature. Lawrence, Shaffer, and Hayenga (1996) provide a brief but informative overview of this discussion. One important aspect of public price reporting is the role it plays as a public good. Ideally, public price reports provide all market participants with the same level of information, resulting in the leveling of the market playing field for all participants.

Henderson, Schrader, and Rhodes (1983) contend that the government provision of this service has contributed to a movement away from public markets and toward

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Funding for this project was provided by the Four State Consortium Grant Program. The authors are grateful to Mary Brashier for her editorial assistance, and two anonymous reviewers for helpful comments. Any remaining errors are the sole responsibility of the authors.

direct sales of agricultural products. The decline in terminal market transactions for fed cattle during the last half of the 20th century is consistent with this conjecture. Thinning terminal markets have raised questions about market transparency and price discovery associated with public reporting of terminal market transactions (e.g., Tomek, 1980). The government response to declining terminal markets for fed cattle during this period was to increase its reliance on voluntarily reported transaction information for direct sales.

During this period, however, direct sale information collected on a voluntary basis by government market reporters also began to thin. By the end of the 1990s, the USDA estimated that 35% to 40% of all negotiated transactions in the fed cattle market were not being reported [USDA/Agricultural Marketing Service (AMS), 2000]. The thinning of voluntarily reported transactions contributed to the public price reporting reform movement that led to the passage of the Livestock Mandatory Reporting Act in 1999. Thinning livestock cash markets are cited in the mandatory price reporting (MPR) literature as a source of competitive disadvantage for producers who rely on public information sources for price discovery (e.g., Wachenheim and DeVuyst, 2001; Fausti, He, and Diersen, 2003; Fausti and Diersen, 2004).

In the cattle industry, MPR regulations have been instituted only in the slaughter cattle market. Public price reporting for the upstream components of the beef supply chain is still conducted primarily through a network of state-funded market reporters who are trained by the USDA to provide price information on auction market activity in the stocker and feeder cattle markets.¹ Price, quality, and volume information is collected by these certified reporters and then transmitted via the USDA-AMS market news wire.

Recent reform of the public price reporting regime for fed cattle begs the question of whether these changes affected upstream links in the beef supply chain. We investigate the potential effect of regime change on marketing and price discovery practices of cow/calf producers. North and South Dakota were selected as a case study because when the cow/calf industries of North and South Dakota are combined, they represent the second largest beef cow/calf-producing area in the United States behind Texas. A survey of cow/calf producers was conducted during the summer of 2005. The questionnaire was designed to elicit information on: (a) producer marketing strategies, (b) producer price discovery strategies, and (c) producer perceptions about any benefits of MPR in the fed cattle industry to the beef industry in general or the independent producer in particular.

The remainder of the paper proceeds as follows. The first section presents a review of the literature, highlighting earlier studies that have focused on the marketing channel, price discovery, and mandatory price reporting. This is followed by a section devoted to survey design and statistical methodology. The empirical results are then discussed. The paper concludes with summary remarks and an overview of the survey results and their implications.

¹ In the Northern Plains, the term "stocker cattle" refers to weaned calves 500 to 600 lbs. Stocker cattle are typically backgrounded for 30 to 90 days before being placed in the feedlot. The term "feeder cattle" refers to weaned calves 700 to 800 lbs. Feeder cattle typically are placed directly into the feedlot.

Literature Review

The cow/calf industry is the only segment of the beef industry that has not succumbed to the forces of increased market concentration and vertical integration. In 2005, there were approximately 770,000 beef cow operations in the United States, and 85% of the beef cow inventory in the United States was located on operations of less than 500 head [USDA/National Agricultural Statistics Service (NASS), 2006]. Market concentration is minimal in the cow/calf industry relative to feedlot and packing industries. Agricultural economists believe the environmental requirements needed to efficiently operate a beef cow operation preclude the cow/calf industry from yielding to the forces of market concentration that have drastically reduced the number of producers in the poultry and pork industries. However, increased concentration in the feeding and packing industries has affected market behavior and market information sources upon which cow/calf producers depend for price discovery and the timing of marketing decisions.

Marketing Channel

In a national study, Schmitz, Moss, and Schmitz (2003) reported that 60.8% of the U.S. calf crop is sold through local auction barns.² The residual is marketed via video auctions (11.4%), internet sales (5.1%), and private sales (22.7%). In the Dakotas, the authors estimate 72.5% of the calf crop is sold via local auction barns; private sales account for 15% in North Dakota and 20% in South Dakota, and video and internet sales represent 12.1% and 7.5% of total sales, respectively. Results of the Schmitz, Moss, and Schmitz study suggest calf sales in the United States are dominated by local auction markets. This implies that both public and private price reporting on local auction market activity with respect to price, volume, and quality is an important conduit for the transmission of market information to buyers and sellers participating in those local markets.

From a survey of Iowa producers who sell feeder cattle, Lawrence, Shaffer, and Hayenga (1996) reported that 88.5% of producers indicate the most common method of marketing their animals is by public auction. The authors characterize Iowa's feeder cattle market as being dominated by small producers. The importance of the public auction marketing channel among small producers was also verified in a recent study of Louisiana cow/calf producers by Gillespie, Basarir, and Schupp (2004).

Price Discovery

The Lawrence, Shaffer, and Hayenga (1996) study cited above also addressed the issue of producer preference for private versus public sources of livestock price

² Schmitz, Moss, and Schmitz (2003) also provided a breakdown across marketing alternatives based on a simple weighted average by number of beef cow operations across 15 states. Given that small operations dominate the national population of beef cow operations, and those small-scale operations prefer local auction markets when selling calves, the percentage of beef cow operations selecting local auction barns when selling calves increases to 65.8%.

information during the price discovery process. Findings reveal that when Iowa producers sell feeder calves to a private party, the information sources used by producers in the price discovery process are feeder cattle market price (53% of respondents), fed cattle market price (39% of respondents), and feeder cattle futures market price (8% of respondents). With respect to auction market price reports, Lawrence, Shaffer, and Hayenga found that 72% of Iowa producers surveyed consider auction market prices when making marketing decisions. Further, when selling feeder cattle, 87% of Iowa producers stated that auction market price reports were at least of moderate input into the price discovery process for estimating the market price of their animals.

Mandatory Price Reporting

In the livestock cash market, cash market transactions occur either through direct negotiations between individual buyers and sellers or in public auctions based on observable product attributes. The public reporting of agricultural commodity cash market transactions has been the responsibility of the USDA since 1915. The Agricultural Marketing Act of 1946 established the Agricultural Marketing Service (AMS) to improve the government's ability to provide accurate public price reports. The public reporting of voluntarily reported livestock prices began in 1946 (Perry et al., 2005).

The AMS was given the responsibility to provide public price and volume reports on slaughter cattle transactions through its market news program. These public market reports were based on information voluntarily supplied by market participants to its market reporters or from reporter observations at public markets. The voluntary livestock price reporting system (VPR) worked reasonably well for many years.

By the late 1990s, however, many industry participants believed the voluntary system had become ineffective (Wachenheim and DeVuyst, 2001; Azzam, 2003). It was argued that the thinning of the cash market undermined the reliability of the public price reporting system for slaughter cattle. For example, in the early 1990s, local daily fed cattle cash price reports for Kansas and Texas were not released for about 10% of the days due to lack of sufficient trading volume. By year 2000, AMS was unable to release 60% of these daily market reports (Grunewald, Schroeder, and Ward, 2004). With the increased volume of cattle moving outside the spot market, coverage of these daily market reports became a major concern of market participants.

In this environment, Congress passed the Livestock Mandatory Reporting Act of 1999, which required the reporting of all livestock transactions by large meat packers. MPR was to begin in January 2001, but numerous problems with collecting and summarizing transaction information from packers delayed implementation until April 2001 (Grunewald, Schroeder, and Ward, 2004). As implemented, the packers were required to report on all livestock transactions if they annually slaughtered an average of 125,000 cattle or 100,000 swine, or slaughtered or processed an average of 75,000 lambs. MPR, as applied, covered about 90% of commercial cattle slaughter.

The MPR system is designed to be a more comprehensive information collection system, and the method of data collection has changed dramatically. Under the new program, all transaction information is transmitted electronically from packers to AMS. This shift from voluntary to mandatory reporting has altered the public price reporting landscape for the beef industry. Ward (2006a, b) discusses the improvement in transparency of captive supply transactions (marketing agreement, forward contracting, and packer ownership). Ward (2006a) also notes that feedlot producers expressed initial disappointment with the new price reporting system because MPR was not perceived to improve price discovery and market transparency significantly. However, he suggests this initial dissatisfaction was likely the result of unrealistic expectations, and should dissipate over time.

Still, academic studies have signaled a potential problem with MPR. Schroeder et al. (2002), and Grunewald, Schroeder, and Ward (2004) raised concerns over how effective MPR has been in improving market transparency in the fed cattle market. Schroeder et al. conducted a survey of managers in the feedlot industry in Iowa, Kansas, Nebraska, and Texas. The survey offered a series of statements on cattle marketing and on MPR, and asked respondents to select from a range of numerical responses to indicate their degree of agreement or disagreement with each statement. They report respondents' strong disappointment with MPR. Specifically, only 41% of the respondents believed MPR was benefiting the beef industry, 76% indicated MPR was not as beneficial as expected, 52% believed the information on regional daily fed cattle prices did not increase, 65% revealed that MPR did not enhance their ability to negotiate cash prices with packers, and 63% stated that MPR did not enhance their ability to negotiate base prices or formulas with packers.

It should be noted that the Schroeder et al. survey was conducted in March and April 2002. MPR had been in place for only a short time and the problems arising from MPR implementation were still fresh in respondents' minds. During this period, fed cattle prices were also relatively low (\$70 per hundred weight live weight). In a recent Economic Research Service study (Perry et al., 2005), it was suggested that respondents' dissatisfaction with the MPR, as reported by Schroeder et al., may have been a reflection of market conditions rather than the implementation of the mandatory price reporting system.

One consequence of MPR which has not received a lot of attention from agricultural economists is the issue of market data aggregation under MPR. Data aggregation may affect local market transparency. Perry et al. (2005) contend this should not be a problem. Yet agricultural economists continue to discount this issue and the economic consequences of diminished transparency for price discovery in local markets. First, some regional market news reports were dropped, including live cattle reports for the Montana, Wyoming, and South Dakota districts (Fausti, He, and Diersen, 2003). Second, MPR price reports have exhibited greater price volatility relative to the pre-MPR period. Perry et al. argue that under MPR, automated methods of reporting may reflect a wider range of transactions and prices due to a substantially lower level of outlier filtering as the cause of increased volatility.

However, increased volatility may also reduce the value of aggregated reports for producer price discovery in local markets.

Political controversy surrounding the MPR system increased during the first four years of its operation due to producer perception that it failed to level the market playing field between packer and producer. As a result, the legislation was allowed to expire on October 1, 2005 (Perry et al., 2005; U.S. Government Accountability Office, 2005). The MPR system then operated as a quasi-voluntary public price reporting system for about one year. In September of 2006, legislation was passed by the U.S. Congress with assurances from the U.S. Senate leadership that future modifications would be implemented to improve the effectiveness of the system (U.S. Senator Harkin, press release, 2006). President Bush signed the renewal legislation (H.R. 3408) into law on October, 5, 2006 (The White House, 2006). This legislation extends the MPR act until September 30, 2010. However, the amended legislation did not significantly alter regulations for the cattle industry and did not address the aggregated data issue.

Survey Design and Statistical Methodology

In the summer of 2005, the state Extension Services of North and South Dakota provided the authors with the names and addresses of 814 active cow/calf producers in their respective states. Representing “countywide” mailing lists of county extension offices, this information was obtained from county extension personnel stationed in the west-central and northwest corner of South Dakota and the southwest corner of North Dakota. We believe these listings typify the cow/calf producers in this region of the Dakotas.

We designed the mail survey to elicit information on production and marketing practices of cow/calf producers operating in the Dakotas. Included in the survey questionnaire were questions eliciting information on producer perceptions of whether mandatory price reporting in the slaughter cattle market had impacted their operations. Questions were designed using either a Likert-scale or ranking-scale format. Both designs generate data that are ordinal in scale. Therefore, nonparametric statistical procedures were used to analyze the data.

The mail survey was administered according to the procedures recommended by Salant and Dillman (1994). The survey was mailed during the fall of 2005, and 199 completed questionnaires were returned, giving a response rate of 24.5%.

Marketing Channel Survey Question Design

We asked producers for their preferences among four alternative marketing channels. Two sets of questions concerned the marketing of feeder and stocker cattle, as it is not unusual for cow/calf producers in the Dakotas to sell lightweight weaned calves that need additional background feeding before placement in a feedlot. Animals sold as stockers for background feeding may be marketed differently from animals sold directly to feedlots. Specific survey questions or statements included in the cow/calf producer questionnaire are listed in box 1.

Box 1. Five-Point Likert-Scale Questions on Market Selection

- < I sell my feeder cattle at a local auction market.
- < I sell my feeder cattle to a feedlot operator.
- < I sell my feeder cattle in a satellite auction market.
- < I sell my feeder cattle to an order buyer/dealer.
- < I sell my stocker cattle at a local auction market.
- < I sell my stocker cattle to another rancher.
- < I sell my stocker cattle in a satellite auction market.
- < I sell my stocker cattle to an order buyer/dealer.

Likert Scale: 1 = always, 2 = frequently, 3 = occasionally, 4 = rarely, and 5 = never

Price Discovery Survey Question Design

The views of Dakota producers were elicited on the reliability of alternative market price information sources during their price discovery search process when marketing feeder and stocker cattle. Before completing the price discovery section in the questionnaire, producers were asked to focus on sources of market information they considered to be most important in their price discovery search strategy when they decided to market livestock. The price discovery question used in the survey is provided in box 2. The respondents were instructed to rank only information sources they had used in the past for price discovery.

Box 2. Eight-Point Ordinal-Scale Question on Price Discovery

Please provide a ranking from 1 to 8. Let 1 indicate the most reliable source of market information and 8 be the least reliable source when you are trying to determine the market price of feeder (stocker) cattle you have decided to sell. Rank only those sources you have used in the past.

- a. USDA public price reports published by the Agricultural Marketing News Service
- b. Price reporting by local auction managers or reporters in a public medium (newspapers, radio, etc.)
- c. Price reporting by fee-based electronic data services (DTN, Cattle Fax, etc.)
- d. Information from neighbors and friends
- e. Futures market
- f. Quotes from buyer
- g. Satellite auction market
- h. Other

Of the 199 respondents who returned completed questionnaires, 191 answered this question for feeder cattle sales, and 147 answered this question for stocker cattle sales. The structure of the question allows us to calculate the proportion of respondents who have used each of the information sources in the past as part of their price discovery process.

Mandatory Price Reporting Survey Question Design

The cow/calf industry depends upon derived demand for feeder cattle from feedlot operators. Because of direct linkages, any changes in the slaughter cattle market are expected to be felt quickly in the cow/calf industry. In our survey, we asked Dakota cow/calf producers to respond to a number of statements designed to elicit their views on how successful MPR has been in improving the public price reporting system for: (a) the beef and cow/calf industries; (b) their price discovery process for slaughter, stocker, and feeder cattle; (c) improving the relative importance of USDA public price reports in their marketing decisions; and (d) their ability to negotiate sale of feeder cattle to feedlot companies.

The producers were asked to select from a range of numerical responses to indicate their degree of agreement with each statement, from 1 (strongly disagree) to 5 (strongly agree). To avoid repetition here, the specific statements are presented and discussed elsewhere in the empirical results section.

Empirical Results

Analysis of Producer Response to Marketing Channel Survey Questions

The summary statistics reported in Table 1 reveal that the overall median Likert score for selling feeder cattle and stocker cattle via a public auction is 2 (frequently) and the mode is 1 (always). Producer preference for selling feeder and stocker cattle via a satellite auction has a median and a mode of 5 (never). Producer preference for selling feeder calves to a private party (feedlot operator or order buyer) has a median of 4 and a mode of 5. A median value of 4 indicates that approximately half of the respondents sell calves to private parties at least occasionally. Producer preference for selling stocker calves to a private party has a median and a mode of 5. Based on these statistical measures of location, producer marketing strategies for stockers and feeders are very similar, and producers have a strong preference for the auction market channel when selling calves either as stockers or feeders.

The data collected in the survey also enable us to test a proposition proposed by Schmitz, Moss, and Schmitz (2003) who suggest marketing channel selection by cow/calf producers is influenced by herd size. Specifically, the link they propose is that as herd size increases, transaction costs for electronic marketing of livestock decline. They argue that small producers do not have calf lot sizes large enough to economically justify the use of nontraditional marketing channels. We test this proposition using the survey data from questions relating to cow/calf producers' preferences for market channels. Since the data are ordinal in nature, a nonparametric correlation analysis was selected. Accordingly, the Spearman correlation procedure was used to test for association between herd size and marketing channel preference for selling feeder (table 2) and stocker (table 3) cattle.

Table 1. Likert-Scale Summary Statistics for Market Channel Preference When Selling Feeder and Stocker Cattle

Description	Marketing Channels ^a			
	Feeders		Stocker	
	Mode	Median	Mode	Median
Auction (<i>n</i> = 189)	1	2	1	2
Order Buyer (<i>n</i> = 183)	5	4	5	5
Satellite Auction (<i>n</i> = 180)	5	5	5	5
Feedlot Operator (<i>n</i> = 180)	5	4	—	—
Rancher (<i>n</i> = 158)	—	—	5	5

Likert Scale: 1 = always, 2 = frequently, 3 = occasionally, 4 = rarely, 5 = never

^a Statistical measures of location (mode and median) are based on the number of responses for each marketing channel.

Table 2. Spearman Correlation Coefficients for Market Channel and Herd Size: Feeder Cattle

Description	Herd Size	Auction	Order Buyers	Satellite Auction	Feedlot Operators
Herd Size	1	0.33***	! 0.15**	! 0.20***	! 0.27***
Auction		1	! 0.53***	! 0.34***	! 0.45***
Order Buyer			1	0.21***	0.46***
Satellite Auction				1	0.26***
Feedlot Operator					1

Notes: Single, double, and triple asterisks (*) denote statistical significance at the 10%, 5%, and 1% levels, respectively. Correlation estimates are based on sample sizes of 176 @N @87.

Table 3. Spearman Correlation Coefficients for Market Channel and Herd Size: Stocker Cattle

Description	Herd Size	Auction	Order Buyers	Satellite Auction	Another Rancher
Herd Size	1	0.32***	! 0.15**	! 0.18**	! 0.04
Auction		1	! 0.21***	! 0.17**	! 0.23***
Order Buyer			1	0.24***	0.26***
Satellite Auction				1	0.17**
Another Rancher					1

Notes: Single, double, and triple asterisks (*) denote statistical significance at the 10%, 5%, and 1% levels, respectively. Correlation estimates are based on sample sizes of 156 @N @69.

As shown by the correlation analysis presented in tables 2 and 3, as herd size increases, producer preference for selling calves (feeders or stockers) through local auction markets decreases. The analysis also indicates: (a) as herd size increases, a producer's propensity to sell calves (stockers or feeders) to either a private party or satellite auction increases, and (b) there is an inverse association between producer preference for selling calves through a local auction and producer preference for selling via satellite or private party. These findings are consistent with the discussion by Schmitz, Moss, and Schmitz (2003) and lend support to their explanation of these relationships within the scope of "New Institutional Economics."

Analysis of Producer Response to Price Discovery Survey Questions

The summary statistics reported in tables 4 and 5 reveal an interesting pattern of producer preferences across information sources used in the price discovery process. Local sources of price information are preferred to general sources of price information when producers engage in the price discovery process.

With respect to feeder cattle sales (table 4), 98% of producers in the survey look to local auction market prices disseminated in the local media as a source of information. After local auction market information, 80% of producers look to local contacts, and 75% use quotes from buyers.

Gathering price information from non-local sources for use in the price discovery process is less popular among Dakota cow/calf producers. Survey results indicate that 72% of producers use USDA market reports, and 65% use fee-based market information sources. The exception is satellite auctions, where 77% of producers have used this information source.

On the issue of producer perception of the reliability of an information source, Dakota producers again view local market information as being more reliable than general sources of information as an input into their price discovery process (table 4). Location measures were used to generate an ordinal ranking of information sources. Survey respondents ranked auction market reports in local media outlets to be the most reliable source of information for price discovery, followed by local contacts and satellite auction prices. The source of information considered to be the least reliable was the "other sources" category, followed by USDA price reports, fee-based information sources, and futures markets. One interesting fact gleaned from the data with respect to usage is that USDA price reports ranked higher than fee-based or futures market reports, but fee-based reports and futures market reports ranked higher than USDA price reports on the reliability scale.

Given the ordinal nature of the data, the third moment of the distribution of information source variables was evaluated to determine whether the distributions were positively or negatively skewed. All of the price discovery local information source rankings are positively skewed and all of the price discovery general information source rankings are negatively skewed with the exception of satellite auction markets. A positively skewed distribution implies producer preferences are revealing

Table 4. Information Sources for Feeder Cattle Price Discovery (based on 8-point ordinal scale)

Information Source	Number and % of Usage (N=191)	Usage Ranking	Reliability Ranking: Mode ^a	Reliability Ranking: Median ^a	Ordinal Reliability Rankings ^b	Mean	Distribution Classification ^c (positive or negative skew)
USDA Price Reports	n = 138 (72%)	5	7	5	7	5.02	-
Public Medium Auction Reports	n = 188 (98%)	1	1	1	1	1.83	+
Fee-Based Info. Sources	n = 124 (65%)	7	5	5	5.5	4.74	-
Local Contacts	n = 153 (80%)	2	2	3	2.5	3.84	+
Futures Markets	n = 137 (72%)	6	5	5	5.5	4.59	-
Quotes from Buyers	n = 143 (75%)	4	3	4	4	4.04	+
Satellite Auction Prices	n = 148 (77%)	3	2	3	2.5	3.70	+
Other Sources of Info.	n = 36 (19%)	8	8	7.5	8	6.03	+

^a Statistical measures of location (mode and median) are based on the number of respondents who ranked a particular information source. A rank of 1 indicates the most reliable and a rank of 8 the least reliable.

^b Ordinal rankings are based on median rank. In case of median rank ties, the ordinal rankings are based on mode rank.

^c Comparing measures of location (mean, median, and mode) and examining the histogram of a distribution determine the classification of a distribution as being positively (+) or negatively (-) skewed.

a common belief that local information sources are more reliable. A negatively skewed distribution indicates the survey group has a common belief that general information sources are less reliable.

Producer preference for information sources to facilitate the price discovery process when selling stocker cattle (table 5) is very similar to the feeder cattle price discovery results. Local sources of information have a higher percentage of usage than general sources. The same pattern also continues to hold when information sources are ranked based on reliability scores and the evaluation of the third moment of the distribution of information sources.

Analysis of Producer Response to Mandatory Price Reporting Survey Questions

As noted earlier, producers were asked to respond to a number of statements to elicit their views on how successful MPR has been in improving public price reporting.

Table 5. Information Sources for Stocker Cattle Price Discovery (based on 8-point ordinal scale)

Information Source	Number and % of Usage (N=147)	Usage Ranking	Reliability Ranking: Mode ^a	Reliability Ranking: Median ^a	Ordinal Reliability Rankings ^b	Mean	Distribution Classification ^c (positive or negative skew)
USDA Price Reports	n = 93 (63%)	6	4	5	7	4.80	-
Public Medium Auction Reports	n = 144 (98%)	1	1	1	1	1.71	+
Fee-Based Info. Sources	n = 88 (60%)	7	3	5	6	4.60	-
Local Contacts	n = 113 (77%)	2	2	4	4	3.92	+
Futures Markets	n = 99 (67%)	4.5	3, 5 ^d	4	5	4.36	symmetric
Quotes from Buyers	n = 100 (68%)	3	3	3	3	3.80	+
Satellite Auction Prices	n = 99 (67%)	4.5	2	3	2	3.82	+
Other Sources of Info.	n = 22 (15%)	8	8	8	8	6.41	+

^a Statistical measures of location (mode and median) are based on the number of respondents who ranked a particular information source. A rank of 1 indicates the most reliable and a rank of 8 the least reliable.

^b Ordinal rankings are based on median rank. In case of median rank ties, the ordinal rankings are based on mode rank.

^c Comparing measures of location (mean, median, and mode) and examining the histogram of a distribution determine the classification of a distribution as being positively (+) or negatively (-) skewed.

^d The futures market distribution is bimodal.

Table 6 lists these statements and presents a summary of the survey results for the MPR-related statements, including the median response value to the Likert-scale questions, as well as the proportions of respondents who tended to disagree (responses 1–2), be undecided (response 3), or agree (responses 4–5).

We were surprised to find that cow/calf operator opinions on mandatory price reporting are not correlated to herd size, level of education, years of experience, or membership in a beef industry or livestock association.³ Following the “category/statement” outline sequence presented in table 6, the discussion of the empirical results is divided into four categories.

³ We did explore the association of cow/calf operator opinions on mandatory price reporting responses and a number of potential explanatory variables (herd size, level of education, years of experience, and membership in a beef industry or livestock association) by estimating a cumulative logit model. We were surprised to find no significant relationship between the responses and these explanatory variables.

Table 6. Dakota Cow/Calf Producer Opinions on Impacts of Mandatory Price Reporting (based on 5-point Likert scale)

Category/Statement	No.	Median Score	Response Rate		
			Likert 1-2 <i>Disagree</i>	Likert 3 <i>Undecided</i>	Likert 4-5 <i>Agree</i>
Impacts on Beef and Cow/Calf Industry:					
(1) Replacing the VPR system with MPR for the public reporting of slaughter cattle prices has been beneficial to the beef industry.	187	4	9%	34%	57%
(2) Replacing the voluntary price reporting system with MPR for slaughter cattle sales has been beneficial for the cow/calf industry.	183	4	11%	37%	52%
Impacts on Price Discovery Process:					
(3) With the implementation of MPR, price discovery in the slaughter cattle market has improved in my region (state).	185	3	11%	57%	32%
(4) With the implementation of MPR, price discovery in the market for stocker cattle has improved in my region (state).	182	3	13%	53%	35%
(5) With the implementation of MPR, price discovery in the feeder cattle market in my region (state) has improved.	184	3	11%	49%	40%
Impacts on Cattle Marketing Decisions:					
(6) The importance of USDA public price reports, as input into my feeder cattle marketing decisions, has increased since MPR was implemented.	184	3	19%	51%	30%
(7) The importance of USDA public price reports, as input into my decision to retain feeder cattle, has increased since MPR was implemented.	177	3	29%	58%	13%
(8) The importance of USDA public price reports, as input into my stocker cattle marketing decisions, has increased since MPR was implemented.	174	3	24%	58%	18%
Impacts on Ability to Negotiate:					
(9) My ability to negotiate the sale of my feeder cattle to feedlot companies improved after MPR went into effect.	175	3	24%	53%	23%

■ *Impacts on Beef and Cow/Calf Industry*

The majority of cow/calf producers in our survey view MPR as having a beneficial effect on the beef industry in general and the cow/calf industry in particular. Survey responses showed a minority of the respondents were undecided as to whether replacing the VPR system with MPR for the public reporting of slaughter cattle prices had been beneficial to the beef industry (34%) or the cow/calf industry (37%).

The majority of the respondents agreed that replacing the VPR with the MPR has been beneficial to the beef industry (57% agreed versus 9% disagreed) and the cow/calf industry (52% agreed versus 11% disagreed). In contrast to our survey, Grunewald, Schroeder, and Ward (2004) focused on feedlot operators. According to their findings, only 28% of feedlot operators have a favorable view of MPR.⁴ This disparity in the survey results may reflect the time differential between studies, regional location, or the market segment of the industry surveyed.

■ *Impacts on the Price Discovery Process*

Questionnaire statements 3–5 in table 6 were designed to elicit respondent opinions regarding the effect of MPR on the cattle price discovery process in their geographical regions. A majority of respondents were unsure if the MPR improved the price discovery process for slaughter cattle (57%), stocker cattle (53%), or feeder cattle (49%) markets in their region or state. However, a higher proportion of the respondents agreed versus disagreed with the view that with the implementation of MPR the price discovery process improved in their region (state). Producer opinion when selling slaughter cattle was 32% agreed versus 11% disagreed; when selling stocker cattle, responses indicate 35% agreed versus 13% disagreed; and when selling feeder cattle, 40% agreed versus 11% disagreed. These survey results for cow/calf producers are slightly more favorable than the feedlot managers' view of MPR reported by Schroeder et al. (2002).

The insight gleaned from this set of questions suggests a strong majority of respondents do not positively view the regime change in the public price reporting system for fed cattle with respect to price discovery. A logical extension of this proposition is that a majority of respondents do not believe the regime change in the public price reporting system has improved market transparency or increased market efficiency.

Given that Dakota cow/calf producers expressed a preference for local market information during the price discovery process, producers likely would also prefer greater coverage of local markets in public price reports. Contrary to producer preferences expressed in the survey, public price reports under the MPR system are more aggregated than under the former voluntary price reporting system. The level of market aggregation used in MPR reports is a plausible explanation for producers giving MPR price reports low marks for usability and reliability in the price discovery process.

■ *Impacts on Cattle Marketing Decisions*

Questionnaire statements 6–8 in table 6 were designed to elicit respondent opinions on the importance of USDA public price reports as inputs into their marketing

⁴ Specifically, Grunewald, Schroeder, and Ward (2004, p. 530) reported that only 28% of feedlot operators agreed with the statement, "MPR is benefiting the beef industry," while 49% disagreed with this statement.

decisions. A majority of respondents were unsure if, with the implementation of MPR, USDA public price reports became more important in their decision-making process when they marketed feeder cattle (51%), retained feeder cattle (58%), or marketed stocker cattle (58%). Among those who had decided, opinions regarding the importance of USDA public price reports were mixed. More respondents in this group expressed the view that the USDA public price reports had become more important for their feeder cattle marketing decisions with the implementation of MPR (30% agreed versus 19% disagreed). On the other hand, more respondents in this group disagreed with the statement that post-MPR, USDA public price reports were more important for their decisions to retain feeder cattle (13% agreed versus 29% disagreed) and to market stocker cattle (18% agreed versus 24% disagreed).

One plausible explanation for these survey results is that cow/calf operators tend to make decisions regarding herd size, retaining feeder cattle, and retaining stocker cattle primarily on the availability of pasture. However, our survey findings suggest producer preference for local information sources is also a plausible explanation for why a strong majority of respondents do not believe that the value of public price reports, as an input into their marketing decisions, has increased as a result of regime change in the public price reporting system for fed cattle.

■ *Impacts on Ability to Negotiate*

Questionnaire statement 9 in table 6 was designed to elicit respondent opinions regarding the impact of MPR on their ability to negotiate the sale of their feeder cattle to feedlot companies. A majority of the respondents (53%) were not sure if their ability to negotiate changed after MPR went into effect. Remaining respondents were divided almost equally, with 23% agreeing (versus 24% disagreeing) that MPR improved their ability to negotiate with feedlot operators. Because producers in this survey express a preference for local information sources when engaged in price discovery, and a majority of them sell feeder cattle at local auction barns, it is not surprising that only 23% of respondents indicated MPR improved their ability to negotiate with feedlot operators when selling feeder cattle.

The survey results on producer perception of how effective MPR has been in improving price information and negotiating terms of trade are consistent with the survey results reported by Grunewald, Schroeder, and Ward (2004). It appears from our survey and the Grunewald, Schroeder, and Ward survey that a majority of producers in both the feedlot and cow/calf industries do not believe public price reporting has improved their negotiating position under MPR. However, as Ward (2006b) points out, regions dominated by large commercial feeders (Kansas and Texas) were more inclined to have a negative view on how effective MPR has been relative to regions dominated by smaller operators such as those who participated in the Schroeder et al. 2002 survey. Ward also suggests that producers are less negative toward MPR now due to increased confidence in the USDA's ability to accurately report prices and the industry's increased "familiarity over time with data and information available from MPR" (Ward, 2006b, p. 3). Ward's explanation is

consistent with the more favorable survey results we report for producer perception of MPR.

Summary

A mail survey of Dakota cow/calf producers was conducted in the summer of 2005. The questionnaire elicited information on: (a) producer preferences for marketing channels when selling feeder and stocker cattle, (b) producer preferences for sources of information when engaged in price discovery, and (c) producer perceptions of the positive and negative effects of the change to mandatory price reporting in the fed cattle market for cow/calf producers and for the beef industry.

The survey results on producer preference for marketing channel and price discovery information source alternatives add another dimension to the growing literature on cow/calf producer behavior. Producers in our study clearly have a natural bias in favor of local market information sources over aggregate or general market information sources. These findings suggest that the recent trend in public price reporting toward more aggregate reporting of market conditions in livestock markets may be less desirable from the viewpoint of small producers.

The results of the survey also indicate that producers strongly prefer to sell feeder and stocker cattle at a local auction market. However, there is a positive association between herd size and a producer's preference to sell to a private party. This is consistent with earlier findings reported in the literature (Schmitz, Moss, and Schmitz, 2003; Gillespie, Basarir, and Schupp, 2004).

Regarding the issue of cow/calf producer perceptions as to how effective MPR has been in improving the market environment, the majority of cow/calf operators express a mildly positive view for the beef industry in general and the cow/calf industry in particular. This is in contrast to the findings reported by Grunewald, Schroeder, and Ward (2004) for feedlot operators. However, when asked how MPR has affected the market environment at the regional or individual levels, a strong majority of cow/calf producers state they do not feel that MPR has improved: (a) the quality of public price reports, (b) price discovery, and (c) their ability to negotiate price when selling feeder cattle. It appears the Dakota producers do not believe MPR has improved the flow of information along the beef supply chain to local markets.

The contribution of this study lies in addressing the issues of marketing channel preferences, price discovery sources, and perceptions about the public price reporting system in a single survey. Previous studies investigated only one or two of the three issues discussed in this paper. Based on our survey results, cow/calf producers consider local institutions to be more reliable for price discovery and marketing their feeder and stocker cattle. Consistent with this view, producers perceive the current public price reporting system to be less reliable than local market sources when making individual marketing decisions. Consequently, the implication for public price reporting policy is that moving toward a more aggregate price reporting system is not the direction preferred by cow/calf producers in the Dakotas.

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