

**Mandatory Price Reporting in Fed Cattle Markets:
Motivations and Implications**

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Introduction

Providing timely, reliable, and relevant livestock market information is an important function of the USDA. It has long been recognized that USDA public information services generate substantial social returns (Hayami and Peterson). Information regarding recent prices greatly facilitates the price discovery process. Public price quotes significantly reduce search costs and because they reflect a wealth of information regarding supply and demand, they serve to communicate information to otherwise uninformed market participants (Grossman and Stiglitz). Producers and their organizations have long supported USDA information reporting, especially price and related data. Price discovery is the process by which buyers and sellers use available information to discern where they believe demand and supply intersect to arrive at an agreed price for a particular transaction. At any point in time, equilibrium supply and demand are unobservable and unknown to the parties in the negotiation. Therefore, market participants must collect and analyze market information to arrive at a price for which they are willing to complete a transaction. In agriculture, buyers/processors of raw farm products generally have considerably more information than producers because of firm size affording them substantial economies of scale in information collection and analysis. They typically are in the market more regularly, in a broader geographic area, and they have access to internal firm data that often represents a sizeable share of the entire market. Buyers/processors are also one stage closer to final consumers so they also have better information on demand than producers do. As such, producers need information to ensure a price discovery process that is not biased in favor of the more informed potential buyers.

In April 2001 the USDA launched the Livestock Mandatory Reporting Act of 1999 (U.S. Senate). This new information reporting law was enacted to directly address a perceived need to provide more market information to livestock producers in light of substantial changes that have occurred in livestock market structure and marketing institutions. The primary purpose of mandatory reporting was that it would “better reflect the overall supply and demand situation of the marketplace and would allow producers to better determine prevailing market prices, conditions, and arrangements pertinent to the marketing process,” (Federal Register, p. 14,659). The Mandatory Reporting Act was a stark contrast in terms of the process of collecting information compared to previous voluntary reporting methods used by Agricultural Marketing Service (AMS) to report livestock prices and sales.

Livestock mandatory reporting provides a good case study to help us to better understand motivations, consequences, and implications of such a policy. The purpose of this paper is to discuss why livestock mandatory reporting (LMR) evolved, summarize its effectiveness and economic impacts, and assess implications of LMR. Particular emphasis here will be placed on fed cattle and beef market components of mandatory reporting with less direct reference to the hog and lamb industries. This effort is important for several reasons. The LMR policy proposal

was strongly contested by the packing industry, but supported by producers.¹ Understanding why this is the case is important for discerning the effectiveness of LMR and for comprehending current industry participant perceptions of LMR. USDA has scheduled a formal review for mandatory livestock market reporting and background information provided here should be useful as government officials consider its future.

Livestock Mandatory Reporting Act

The crop and livestock reporting service of the USDA began regularly collecting and disseminating livestock information in 1866 (Kastens). Over the years several changes and modifications were made to what was reported and how it was collected. For roughly the past five decades, prior to mandatory reporting, livestock price and market information reporting was conducted by the Agricultural Marketing Service (AMS) under the auspices of the Agricultural Marketing Act of 1946. The purpose of Market News provided by AMS was to facilitate orderly and efficient operation of agricultural markets. The intent was to provide consistent public market information to help participants make more informed marketing decisions.

The 1946 Act covered numerous agricultural commodities including livestock and meat products. Under the Agricultural Marketing Act of 1946 AMS relied upon purely voluntary cooperation from livestock and meat industry participants for reporting of information. USDA market reporters stationed in field offices collected daily information from livestock auctions and terminal markets, as well as directly from packers, producers, retailers and others. The Livestock Mandatory Reporting Act of 1999 was enacted into law in October of 1999 as an amendment to the Agricultural Marketing Act of 1946. This legislation targeted only specific commodities of the 1946 Act including cattle, beef, swine, and lamb. The legislation provides specific guidelines for the reporting of each commodity. In addition, the Act calls for monthly retail price reporting for beef, pork, lamb, chicken, turkey, and veal and meat price spreads by Economic Research Service.

Under the LMR Act, voluntary reporting of prices and trade volume is replaced by requiring beef packers that slaughter 125,000 head of cattle, swine packers that slaughter 100,000 head of swine, and lamb processors that slaughter or process 75,000 lambs annually to report details of all transactions of livestock to the AMS. Additional provisions require reporting of boxed beef cut sales, lamb carcasses and cuts, and import and export sales data for beef and lamb. As this Act replaced the previous voluntary reporting system, transactions of smaller packers are explicitly excluded from LMR. Packers must report details of all transactions twice daily to the AMS in an electronic fashion. AMS compiles this information and releases summary reports.

The original LMR rule that went into effect in April 2001 included what was tabbed the “3/60” confidentiality guideline. The guideline required at least three firms to be included in all categories during a reporting period and no single firm could represent 60 percent or more of the total reported value during a reporting period in order for AMS to report a price. This resulted in many daily reports not being reported (as was predicted by Wachenheim and DeVuyst and

¹ The National Cattlemen’s Beef Association and the National Pork Producers Council (McNutt) supported LMR. In contrast, the American Meat Institute strongly opposed the policy stating, “USDA’s final mandatory price reporting rule will create an enormous burden on meat packers and provide few off-setting benefits to anyone in the livestock or meat industry,” (Boyle).

others). The “3/60” confidentiality guideline was already being used in other USDA agencies (e.g., National Agricultural Statistics Service (NASS)) but it was so restrictive that reports were frequently not reported. The problem was so severe that in August 2001, five months after inception, USDA modified the original rule to a “3/70/20” confidentiality guideline. The change requires at least three firms to provide data at least 50 percent of the time over the most recent 60 days. Also, no one firm can provide more than 70 percent of the data for a report over the most recent 60 days and no one entity may be the only provider of data more than 20 percent of the time over the most recent 60 days (USDA).

Between April 2, 2001 and August 17, 2001, before the confidentiality guidelines were modified, 81% of regional and national daily afternoon direct slaughter cattle negotiated purchase prices were not reported because of confidentiality. After modification of the confidentiality guidelines, all regional and national daily afternoon direct slaughter negotiated purchase reports between August 20, 2001 and April 2, 2002 were reported without confidentiality breaches. Prior to the modification of confidentiality guidelines, only 24% of regional fed cattle morning reports were released, the rest were not reported because of existing confidentiality rules. This was not a workable reporting procedure and following confidentiality guideline modifications, reporting frequency increased to 77%. This should serve as an important lesson if USDA considers other types of mandatory reporting.

Motivation for Livestock Mandatory Reporting

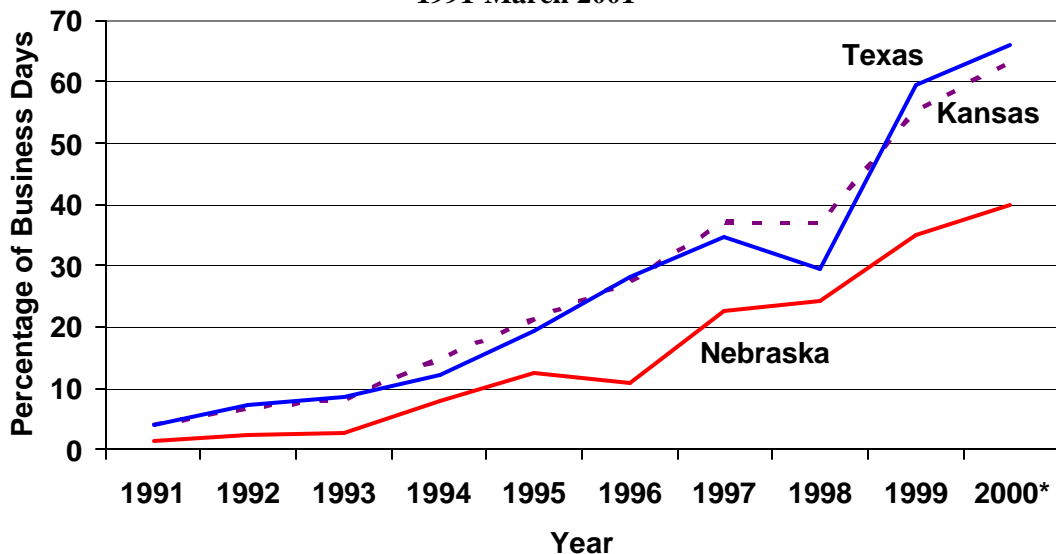
The reason for enactment of LMR was to provide market participants with information that was not available under the voluntary reporting system. Changes that occurred in market institutions and marketing methods over time led to several concerns with the voluntary reporting system. However, it should be noted that no comprehensive research was conducted prior to LMR that indicated how inaccurate the voluntary system may have been, and thereby suggesting what potential gains would be from LMR.

Prior to enactment of LMR, Koontz compared transaction prices obtained from Professional Cattle Consultants on 108,783 pens of fed cattle marketed during June 1986 through June 1993 with voluntary AMS price reports. He found evidence that voluntary reporting was inefficient during times when prices were changing appreciably. In particular, the fed cattle price range reported by USDA did not increase fast enough with rising prices and did not decline fast enough with declining prices. He concluded that this could be a result of selective price reporting by both meat packers and feedlots when the market is moving against them. This is consistent with GIPSA who found numerous instances of non-reported prices when comparing fed cattle transaction data with public market reports. Non-reported prices were both above and below the reported market highs and lows, respectively, for some days. Koontz found more non-reporting of high fed cattle prices than low prices suggesting selective reporting by meat packers. Overall, he concluded that meatpackers appeared to “abuse the voluntary nature of price reporting more than feedlots,” (p. 61). He cautioned that the use of judgment by price reporters in not reporting prices for nonstandard cattle provided more meaningful price information than reporting a wide range of trade. Koontz argued that reporting as wide a range under mandatory price reporting as was observed in transactions data would not be informative. However, it is also important to keep in mind that dispersion of prices is also relevant for traders. Garbade, Pomrenze, and Silber determined that a compact distribution of price quotes led traders to adjust their individual prices

more toward the reported mean relative to a dispersed price distribution. Nonetheless, Koontz’s work suggested the need for more resources in voluntary reporting to ensure less non-reporting or mandated reporting in order to capture all transactions.

A general lack of fed cattle price data available for AMS to report became a progressively larger problem over time as fed cattle marketing methods changed. During the 1990s fed cattle prices became less frequently quoted by AMS. In the early 1990s approximately 10% of daily local fed cattle cash market price reports in Kansas and Texas were not reported because of insufficient trading volume. By 2000 and into early 2001 this had increased to more than 60% (Figure 1). A typical statement presented in daily regional USDA fed cattle price reports was “Trade quiet. Not enough slaughter steer or heifer sales confirmed for a market test,” (USDA, AMS). As daily fed cattle price reports became increasingly sparse, concerns regarding lack of reported price information escalated.

Figure 1. Percentage of Business Days Fed Cattle Cash Price Was Not Reported by AMS in Kansas, Nebraska, and Texas, 1991-March 2001

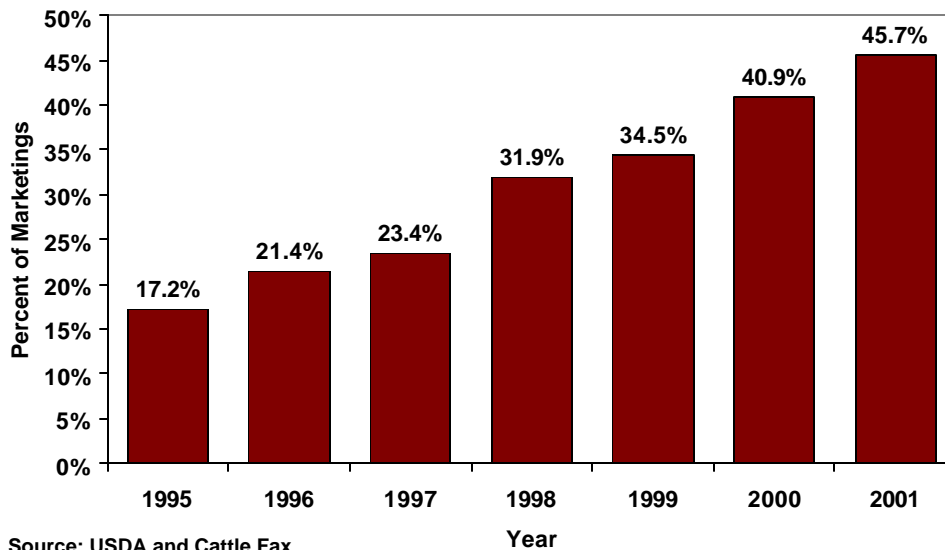


* Year 2000 includes Jan-Mar 2001 after which mandatory price reporting began
 Source: USDA, AMS

Daily price quotes became sparse because of major changes that were occurring in the way fed cattle were being marketed. In the early 1990s the vast majority of fed cattle were sold on a live or carcass weight basis via negotiated trade between the cattle feeder and beef packer buyer. USDA market reporters frequently spoke directly to these parties in order to formulate the number of fed cattle marketings and associated transaction prices to summarize in their daily report. However, during the 1990’s progressively fewer cattle were being sold in the negotiated cash market. As a result, AMS began reporting a number for what they called “additional movement” in their weekly price reports. This additional movement value represented cattle that were not sold during the week on a negotiated basis. Figure 2 illustrates the trend in additional

movement over the 1995 through 2001 period. This trend is expected to continue in the future. Based on a survey of cattle feeders completed in 2002 (Schroeder et al. 2002), by 2006 feedlots expect only 33% of their fed cattle to be marketed using cash markets, 62% using grids, and 5% using other methods.

**Figure 2. "Additional Movement" Fed Cattle Marketings
Relative to Total Marketings, KS, CO, TX, and NE, 1995-2001**



Under the voluntary price reporting system, the problem with cattle that were marketed as additional movement was that market reporters did not attempt to collect and report a price for these cattle. Such cattle were generally priced using means other than negotiated live or carcass weight sales. For example, some of these cattle were sold using grids where each carcass in a pen potentially received a different price. Some were sold using a forward or basis contract where price may not have been established at the same time as the cash trade. Others were sold using various price formulas. A framework had not been established for reporting these prices, and given the heterogeneity of the pricing and valuation methods being used, it was not feasible for Market News reporters to collect representative price information from this variety of sales via the informal survey methods they were using. As such, cattle sold using nontraditional cash methods were removed from the cash market and not included in AMS price reports. This resulted in reports that often did not have sufficient volume of trade to establish a price quote.

Changes in fed cattle marketing methods also included an increasing number of cattle being marketed under marketing agreements between cattle feeders and beef packers. Respondents in the Schroeder et al. (2002) survey of cattle feeders indicated that 23% of cattle were under a marketing agreement in 1996, this increased to 52% by 2001, and was expected to further increase to 65% by 2006. No public information existed on the types of pricing arrangements present under these private agreements. As such, an increasing percentage of the cattle were

being excluded from price reporting because no framework was in place for AMS to collect, summarize, and report these data. Producers that were involved in such agreements as well as those that were not voiced concerns of a lack of available public information regarding terms of trade for this segment of the industry.

The lack of available market information was reflected in intensive interviews conducted with cattle feeders and beef packers in late 1996. The need for increased and more reliable cattle and beef market information resonated from nearly every cattle feeder, beef packer, and retailer interviewed by Schroeder et al. (1998). Cattle feeders particularly wanted increased information regarding terms of trade for formula priced and contract cattle being delivered to packers. Cattle feeders indicated that formula pricing arrangements had made it difficult for them to discern fed cattle supply and demand on a week-to-week basis. Improved wholesale beef price reporting was also being demanded. The sentiments revealed in the interviews reflected a level of frustration by many cattle feeders regarding what they perceived as inadequate market information lending support to more broad based market reporting.

Obvious from this discussion is that, largely because of changing fed cattle marketing methods, pressure mounted to make substantial change in the way AMS reported fed cattle prices. Similar events were happening in swine markets. Cash market trading of finished hogs declined from 43.4% in 1997 to 17.3% in 2001 (Grimes), a major change in a short four years. Mandatory reporting of cattle and swine market information may have been inevitable. Increasingly, there was a populist movement to reveal the perceived, “secret and favorable” treatment by packers of larger cattle feeding and swine production operations. Thus, some motivation came from the need for better information for decision-making and some from distrust of buyers/processors and their effect on market structure trends. How LMR was motivated is important because it demonstrates why the law was enacted, what knowledge market participants were expecting to gain from it, and how its effectiveness should be assessed.

Effectiveness and Economic Impacts

Because livestock mandatory reporting is relatively new there is a dearth of research that has been completed regarding its economic effectiveness. Further, the research that has been completed to date is purely theoretical, based on economic simulations and experiments, or anecdotal results from industry participant surveys. As such, we do not have a body of empirically verified research results regarding economic impacts of LMR. However, the few research contributions that have been made provide important insights into the ability of LMR to accomplish its intended goal of enhancing efficiency of livestock price discovery.

Bastian, Koontz, and Menkhaus used a fed cattle market simulation to determine whether mandatory price reporting would improve fed cattle pricing and production efficiency. In particular, they wanted to determine if making all transactions (in their simulation these included cash sales and forward contracts) public through mandated reporting would affect transaction price levels, uncertainty, and cattle feeding production efficiency. They used the Fed Cattle Market Simulator² with groups of students in which forward contract information (volume, price, and delivery week) was revealed to participants in addition to cash and futures price information

² This simulator has been tested and used extensively in numerous cattle marketing research projects over the past decade (e.g., see Ward et al.).

normally revealed in the simulator. Cash market prices were actually lower by \$1.06/cwt when forward contract information was made public to traders and forward contract prices averaged \$0.40/cwt lower than cash prices. The authors surmised,

“the increased information reduced marginal costs associated with information risk thereby reducing the spot price in the bilateral negotiation. Since the forward price and quantity information is known the risk for both the buyer and seller is reduced lowering information risk costs....This in turn lowers the price the seller is willing to accept when setting marginal revenue equal to marginal cost as they negotiate. This fact coupled with the seller’s risk of loss from production gives the buyer a bargaining advantage, and the price negotiated between the two parties is lower” (p.13).

What this means is that by having information available regarding forward contract prices and quantities in the market, sellers’ costs associated with uncertain forward contract information decline. Packer costs of information also decline allowing them to pay higher a price for cattle. Which of these two would dominate the other is an empirical question. Resulting prices ended up lower, which suggests seller uncertainty was reduced by more than packer information costs. Bastian, Koontz, and Menkhaus also found that variance of forward contract prices declined substantially (by 85%) when the additional information was provided, but cash market variance was unaffected. This indicates the information made forward contract prices more consistent across transactions for a given delivery period. This is an important finding if the result transfers to the real world. If it is consistent with industry practice, this would suggest that reporting terms of trade for formula, forward contract, and marketing agreement cattle, as is being done under LMR, would lead to a smaller range in prices across transactions for similar quality cattle. This arguably would represent increased efficiency. Bastian and colleagues also concluded that mandatory price reporting may improve production efficiency (producers selling more cattle near their optimal weight).

Similar results were found by Anderson et al. using the same fed cattle market simulator as Bastian, Koontz, and Menkhaus. In particular, limited reporting of price information in an experimental market increased price variability. It also adversely affected production efficiency. Withholding market information from participants resulted in more cattle being marketed at inefficient weights with higher production costs for cattle feeders and reduced negotiating leverage relative to packers.

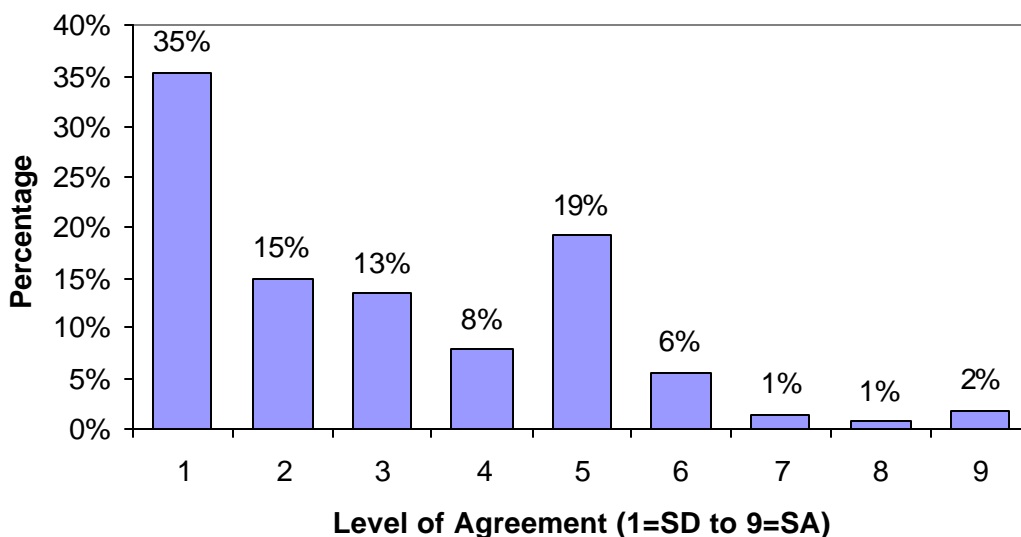
Azzam developed a purely theoretical model to predict the economic impact of LMR on livestock feeders and meat packers. Azzam’s model suggests packer marketing margins depend upon marginal cost of livestock, marginal processing cost, marginal LMR reporting cost, marginal cost of uncertainty, and marginal benefit in reduced uncertainty resulting from increased information reporting. Comparative statics of his theoretical model suggest that LMR reduces packer marginal cost of uncertainty by more than packer reporting costs, leading to an increase in derived demand for fed cattle and more competitive fed cattle markets. This result is important because it suggests that although beneficial to producers, benefits of LMR are not a result of increased information gleaned by producers.

Azzam's model raises several interesting points regarding economic impacts of LMR. He assumed, based upon estimates provided in the LMR Act, that average reporting cost for reporting packers would be \$0.01 per head (or at least quite small). Although detailed estimates of actual costs of LMR to packers have not been completed, initial indications are that costs are substantially higher than first estimated by USDA and reported in the Act. Both initial fixed investment cost to packers to comply with LMR protocol and on-going reporting costs have proven to be greater than originally estimated (rough estimates of variable compliance cost range from \$0.04 to \$0.40 per head across beef packers interviewed by Grunewald with the range varying considerably by reporting firm size). Azzam also assumed that LMR increases information relevant to beef packers to reduce their costs of uncertainty. The extent to which it has done this is not entirely clear. Together this could make benefits of LMR less dominant relative to costs than Azzam concluded. Azzam also assumed cattle feeders (producers) are price takers and as such they would not alter short run production and marketing decisions in response to increased information gleaned from LMR. However, if LMR provides increased details regarding the distribution of terms of trade across different cattle quality attributes and marketing methods (e.g., live, contract, and formulated) than was present under voluntary reporting, it could lead to changes by producers. As such, producers may actually alter their timing of cattle marketing to attain the optimal weight given market conditions as Bastian, Koontz, and Menkhous predicted. Thus, producers could gain more directly from LMR than Azzam's model predicts.

Wachenheim and DeVuyst argued that LMR could increase chances for tacit collusion by packers. The essence of their argument is that increased transparency could facilitate cooperative bidding for livestock by packers. Wachenheim and DeVuyst presented primarily a conceptual discussion of how characteristics of the livestock industry increase the likelihood of packer collusion under more transparent price reporting. Such increased disclosure of pricing information in other industries has been alleged to lead to collusive behavior. For example, Albaek, Moolgaard, and Overgaard presented evidence of collusive behavior by Danish ready-mixed concrete firms following regular publication of statistics on transaction prices. Fuller, Ruppel, and Bessler analyzed the impact of U.S. railroad contract disclosure on shipping rates. They concluded, "...contract disclosure and the increased reliance on posted tariffs facilitated rate coordination by the oligopolistic railroad industry, thereby, leading to an increase in rail rates" (p. 271). The implication of this work is that mandatory price reporting in fed cattle markets could actually lead to beef packer collusion and therefore lower slaughter cattle prices. This conjecture has not been formally tested, but it provides an interesting contrast to the designed intent of LMR.

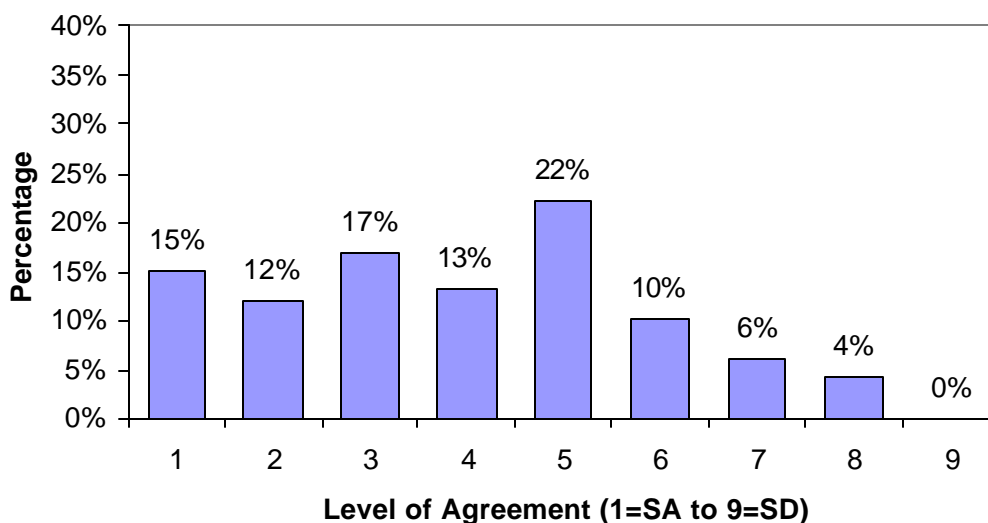
A recent survey of cattle feeders provides information regarding producer assessment of the effectiveness of LMR (Schroeder, et al. 2002 and Schroeder, Grunewald, and Ward). Producers indicated that in general, although responses were quite variable, LMR had not increased their ability to negotiate terms of trade with beef packers (figure 3), many felt it had not increased information on regional/national terms of cattle trade (figure 4), and it was not benefiting the beef industry (figure 5).

Figure 3. Cattle Feeder Survey Response Distribution to Statement: *MPR has Enhanced My Ability to Negotiate Cash Prices, Base Prices or Formulas, Grid Premiums/Discounts with Packers,*
(1= strongly disagree to 9=strongly agree)



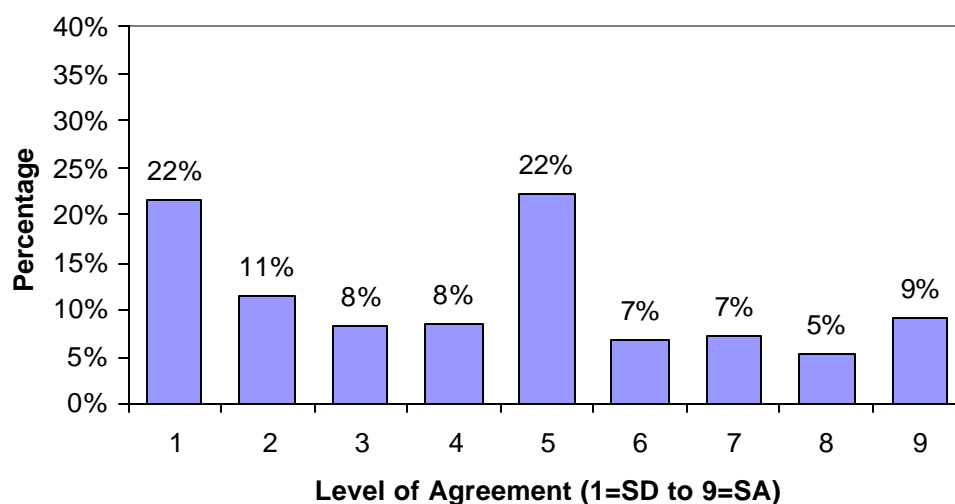
Source: Schroeder, Grunewald, and Ward.

Figure 4. Cattle Feeder Survey Response Distribution to Statement: *Information on Regional/National Daily Fed Cattle Cash Prices, Base Prices Used in Grid Pricing, Premiums/Discounts Used in Grid Pricing, Boxed Beef Prices has Increased,*
(1= strongly disagree to 9=strongly agree)



Source: Schroeder, Grunewald, and Ward.

Figure 5. Cattle Feeder Survey Response Distribution to Statement: *Mandatory Price Reporting is Benefiting the Beef Industry*, (1= strongly disagree to 9=strongly agree)



Source: Schroeder, Grunewald, and Ward.

Producers have raised concerns regarding LMR that current morning, afternoon, and daily summary reports were generally not considered timely or frequent enough for producer decision needs (47% of survey respondents in Schroeder, Grunewald, and Ward had moderate to strong concerns regarding report timeliness). Under voluntary price reporting, reporters frequently provided verbal (preliminary) price reports to anyone who inquired. Following enactment of LMR that practice ceased. As a result of concerns with LMR, 46% of the cattle feeder survey respondents indicated moderate to strong agreement that LMR has made them more likely to use private price information sources in place of or to supplement public USDA reports. Finally, producers had high expectations of what LMR would accomplish. Some felt LMR would cause fed cattle sales negotiating leverage to become more favorable to cattle feeders as a result of increased price information being available (Maixner). However, the cattle feeder survey results indicated that roughly three-fourths of survey respondents moderately to strongly agreed that mandatory price reporting was not as beneficial as they expected. With just under half of fed cattle being sold on a non-cash basis and not being reported, producers may have felt increased reporting of these prices would reveal information they could use in price discovery. Results of this survey suggest it did not. Is this a condemnation of LMR? Not necessarily. Not revealing anything is in itself useful information. That is, if LMR did not reveal that non-cash marketings were receiving different terms of trade than what was being reported under voluntary reporting, “special deals” were apparently not present under non-cash trade. Therefore, LMR appears to have suppressed the argument that unwarranted price discrimination was occurring with certain sellers receiving preferential treatment.

Conclusions and Implications

Reliable, relevant, and timely market information is essential for efficient price discovery. USDA Agricultural Marketing Service has reported livestock price information on a voluntary basis for many years and the value of Market News has been thoroughly documented. Voluntary reporting worked well when cattle were marketed predominantly through terminal auctions or direct negotiation between packers and feedlots. Price reports generally represented adequate volume of transactions so reported prices were representative of trade. However, as fed cattle markets evolved from daily negotiation between either feedlots or commission companies and packers to other forms of price discovery, terminal markets disappeared and the number of negotiated cash transactions declined. Daily Market News became sporadically reported even in areas where large numbers of cattle were being traded. No method for voluntary collection and reporting of terms of trade for cattle marketed in ways other than negotiated cash trade evolved. As a result, enactment of the Livestock Mandatory Reporting Act of 1999 may have been inevitable. Substantial changes in cattle marketing methods necessitated a marked change in Market News reporting and simply tweaking existing reports was not likely to be sufficient.

Proponents of LMR had high expectations regarding what it would accomplish. Many are less enthusiastic about what it has accomplished, but this may be because the impact was more subtle than some expected. From a policy perspective, before replacing a voluntary price reporting system with a mandatory system, a comprehensive analysis should be conducted to determine potential gains and costs of a mandatory system. Early cost estimates of packer compliance were perhaps underestimated. If so, net benefits of LMR are less apparent. There was little evidence that voluntarily reported prices were significantly inaccurate. This reduces potential benefits from a mandatory system. Experimental and theoretical research suggests LMR could be beneficial by reducing costs of uncertainty and increasing competition in fed cattle markets. However, revealing too much information about rival pricing strategies amongst packers could provide opportunity for packers to collude. Evidence of this occurring in livestock markets has not been formally assessed and may not be present if individual firm pricing is not revealed.

Of broad interest from a policy perspective is whether the LMR Act of 1999 is a good model for Market News reporting in agricultural markets in general. Some lessons learned from early enactment of LMR are discussed in detail by the Secretary of Agriculture's LMFR report of June 2001 (LMFR Review Team). These recommendations mostly relate to having sound testing and auditing methods in place prior to implementation of mandated price reporting to lessen the chances of reporting errors as were experienced in boxed beef during the first six weeks of LMR.

The bigger question is whether capturing all transactions from a subset of the population, and summarizing and reporting them is worth the cost of doing so? How much has the effort cost the USDA? Early estimates were substantial. How much has the effort cost industry participants? Preliminary estimates appear to have been understated. How much of the cost was ultimately passed on to producers and consumers? These depend mostly upon the elasticity of supply and demand. How much benefit (if any) has accrued directly to those that ultimately pay for the increased costs of mandated price reporting? We simply do not know the answer to these important questions. As such, the marginal net benefits of livestock mandatory reporting are not known. Future research is needed to clearly assess these issues and develop a framework for evaluating the potential value of future mandated market information policies in other markets.

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