

Effective Canadian Fed Cattle Price and Market Information

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Background and Problem Statement

Price discovery is the impounding of new information into commodity prices. Recent representative prices are the most important information potential buyers and sellers who are negotiating in a marketplace can have. Discovered prices provide immense information about expected supply and demand conditions. Because we cannot observe precise demand and supply, cash and forward prices are discovered based on what participants believe demand and supply conditions will be given available market information.

An array of prices will naturally exist across transactions in a market. The range of observed prices for fed cattle in particular occur for a number of reasons, including a range of buyer and seller market perceptions, variation in market knowledge, differences in market leverage, differences in market analytical ability of traders, transaction costs, search costs, transportation costs, differences in local supply and demand, timing of sales, transaction volumes, and quality variation of cattle across transactions. The range of prices discovered for similar lots of fed cattle will also hinge heavily on available market information available to buyers and sellers. *A market whose participants are starved for information will have much wider price dispersion than one that is information rich.*

In recent years, for a variety of reasons already noted by CanFax and others, the cash fed cattle markets in Canada and in the United States have become thinly traded. That is, way fewer weekly transactions populate the discovered cash price information set being provided by market reporting agents. So few transactions occur during some weeks, confidence in the reliability or representativeness of prices reported by CanFax or by USDA is questionable. The reporting agency is not the source of the problem. The issue is that so few transactions at times occur to establish a reliable price quote. In such situations, relatively small numbers of transactions that are not representative can have economically important influences on reported prices. The problem with waning confidence in the cash negotiated market is more acute because many fed cattle sales are formula priced using the negotiated reported cash price as the base in the formula. *As such, if the negotiated cash price reported is not reliable, then formula prices using thin cash price as a base are also suspect.*

A host of alternative strategies have been identified to help resolve the problem of thin cash market cattle trade. Identified alternatives are outlined in the recent CanFax publication on fed cattle price discovery. Many of the alternatives focus on salvaging cash market cattle trade assuming it is an essential market for the fed cattle industry. Under status quo, where a significant percentage of cattle are formula priced off the cash market price, a reliable cash market discovered and reported price is essential. However, if the reported cash price is not

reliable, and making it reliable is burdensome, it will simply be replaced in formula base prices over time making the reported cash price less important.

Many proposed fixes to the problem are somewhat of a catch-22. That is, fixes include proposals such as paying feedlots or marketers to negotiate cash prices for more fed cattle. This incentive system is one possible way to get more cash market trade to occur. Other proposals have even suggested designing policy mandating a portion of overall trade to occur in the cash market. This latter proposal generally has had little traction because it is so difficult to design in a way that would be workable and enforceable. *The challenge with these types of fixes is that they negate many of the motivations that exist to move away from this form of fed cattle marketing in the first place. As such, they are not very attractive alternatives.*

One of the arguments made for why cash markets are underutilized is that they are public goods. What this means is that price information gleaned from these markets can be used freely by any individual without exclusion of others and use by one person does not reduce the opportunity for use by another individual. That is, the opportunity for free riding on discovered and reported prices has long been present, and it has occurred regularly in fed cattle markets, but it has perhaps never been more apparent than it is today. *This public good attribute of cash markets alone is not sufficient to explain why there is underinvestment in discovering cash market prices since this public good nature has always been present and the underinvestment has been a comparatively recent phenomenon in fed cattle.*

The reasons for underinvestment in cash cattle price discovery are because value propositions such as reduced buyer/seller search time, reduced costs of frequently negotiating prices, grid pricing opportunities providing premiums for specific quality traits, preferences by feedlots to schedule cattle deliveries well in advance of slaughter, and desires by packers to keep plants operating at efficient levels provide incentives for marketing agreements that exceed the net value associated with being engaged in regular negotiated cash market price discovery. This is very important to recognize because it speaks loudly to why simply encouraging cattle feeders to go back to using the negotiated cash market would require more incentives than we might envision. That is, all the reasons that motivated producers and packers to quit negotiating cash transactions in the fed cattle market still exist. To go back to that method of price discovery negates many of the advantages of marketing agreements and forward contracts.

Cash Price Reliability

Of considerable interest is, when are reported cash prices sufficiently reliable and when are they unreliable? What signals can be used to help make this determination? Reported prices occur over a span of time and across different locations with different buyers and sellers involved in the various transactions. As such, there will be natural variability in prices across transactions, even in a very efficient market. So, variation in prices is expected. Further, market fundamentals can change quickly as new information becomes available, so simply observing variation across a set of transactions to discern whether prices being reported are reliable is not a sufficient barometer of pricing performance or price reporting reliability. Ideally, to discern if

a particular market price report is reliable one needs to have an efficient market price to compare it with. However, in cash fed cattle markets, no such efficient benchmark market price exists.

One might argue that a price report from the U.S. could offer an efficient benchmark by which to compare Canadian cash fed cattle prices, but the same issue of thin cash markets is present in the U.S. as is present in Canada. Plus, basis variation between U.S. and Canadian fed cattle markets (including local supply and demand variation, impacts of mandatory country of origin labeling (MCOOL) on price integration between Canada and U.S, and exchange rate volatility) renders the comparison of limited value. Short of being able to compare prices being reported in one market to a known efficient and reliable market elsewhere, one must rely on judgments made from the prices that are collected in the local market. In such a situation, there is no formula that signals to us exactly when the cash market is truly reliable or when it is not. In fact, there is a continuum of relative reliability or unreliability.

A few relative simple statistics can be used to help signal when there may be problems associated with having a reliable price quote or in making adjustments to that quote (note these are only signals and certainly not definitive tests of reliability):

1. Compare the weighted-average price (weighted by head) with the median price (the price in the middle of the set of transaction prices sorted from lowest to highest) from the set of transactions collected from packers during a week or day (depending upon frequency of price report being issued). If the weighted average and median prices diverge by more than say \$1-\$2/cwt or 1-2% from each other (pick your tolerance level), this is a signal that the distribution of prices is skewed one direction or the other. If the median is larger than the average, there were some lots sold for relatively low prices compared to the others impacting the weighted average calculation and vice versa if the median is smaller than the average. In a thin market, this could mean that a few prices on the tail of the distribution are affecting the reported price and should be considered as candidates for removing from the prices before reporting the weighted average or report both the weighted average and the median prices.
2. Collected transaction prices will generally not be normally distributed most days and may or may not be during most weeks (this is based on my experience in examining transaction prices for livestock in the U.S.). This implies that reporting a standard deviation of the reported price is not useful as it has little interpretation. Instead, what I recommend is reporting the overall weighted average, the median, and the weighted averages for the highest third, middle third, and lower third of price ranges. That is, sort the transaction prices from lowest to highest and calculate weighted-average prices for the highest third, middle third, and lowest third (where the thirds are numbers of head represented). This provides a range of prices to help users assess the distribution of prices reported, yet does so in a way that censors the actual range of prices. Reporting the overall range of prices is generally not useful because the range has a variety of reasons for existing and without additional information about why the range is what it is, the range is not interpretable.

In discussions with USDA reporters, some have suggested sorting transactions from low to high and tossing out the highest 25% and lowest 25% and reporting the weighted average and price range for the middle 50% of transactions. This is referred to as reporting based on the 25th and 75th percent quartiles of transactions. The rationale is to try to provide information on where the bulk of the sales occurred. I advise against this because the number of head in either the high or low 25% could represent way more or less cattle than 25% which would make the middle 50% biased relative to an overall weighted average calculated using all transactions (and I have verified this to be the case in selected samples). Reporting the weighted averages for the thirds suggested in point 2 above is superior to the quartile procedure. At the very least if the quartile procedure were used, I would recommend it be done based on number of head and not number of transactions – that would ensure that one throws out the 25% highest and lowest priced number head which would not be the same as the 25% highest and lowest transactions.

A very important component that has not been a systematic part of livestock price reporting, at least in the U.S., but is strongly recommended is a periodic independent analysis and review of the procedures and the individual transaction data being reported. There are many reasons for such review, but foremost is statistical analysis of the data. The appropriate interpretation of information associated with reported prices relies heavily on the properties and distribution of the underlying transactions. If large numbers of transactions are available (e.g., thousands), this issue is not as critical. However, when numbers of transactions get smaller, the properties of the underlying transactions become much more relevant to how prices are summarized, reported, and how they should be interpreted by users.

Both of the above ways of reporting prices in a thin market require a reasonable number of reported transactions to complete the analysis. My recommendation is that fewer than perhaps 35-50 transactions, representing at least 30+ head lot sizes, from say 25-30 different sellers per day or per week, depending on reporting frequency, would make both suggestions listed above fruitless activities since simply too few of cattle would be represented in this procedure to make the calculations useful. If fewer than 35-50 transactions were available daily or weekly from packers using a procedure for example similar to mandatory price reporting used in the U.S. where all transactions are loaded electronically each day by packers to USDA, then the cash market has become of little value since it simply has too few transactions to be reliable.

Regardless of the ideas presented above, the long-term trend toward fewer fed cattle cash market transactions, if it continues, will eventually (and may already) make cash negotiated prices of little value for the industry. That is, unreliable price data have little useful value. *Even worse is when industry participants do not know whether the reported price data are reliable or not because then they do not know how much to rely on the information.* As such, alternative market information reports need to be developed to help fed cattle buyers and sellers discern market conditions and make sound pricing decisions as this transition from cash negotiated pricing to other forms of fed cattle valuation occur.

Alternatives to Cash Markets

Thinning or disappearance of the cash negotiated fed cattle market does not mean that a market for fed cattle cannot still function effectively and efficiently. However, the tradeoff that the industry must face is that alternatives are also not free. That is, the value of free riding on the cash negotiated market price by those using formulas, must be weighed relative to how reliable and representative that price may or may not be of expected supply and demand versus the costs that would be incurred to either use a different base price in the formula or negotiate a different cattle valuation method. The issues associated with alternative base prices have been widely addressed elsewhere, so we will not belabor those here, but the alternatives include possible use of live cattle futures, wholesale cutout prices, or retail prices – all of which may work for some market participants but each has substantial drawbacks. Given the current market environment and apparent market trends, none of these alternatives appear to currently offer general long-run solutions.

A question that has not been addressed is whether it is the cash market itself, in particular the act of negotiating spot cash transaction prices, or the information that emanates from that negotiation that has value? Clearly, the information is what has value, not the cash negotiated market itself. The information that is provided through cash price reporting is the array of reported prices over time. If the reported price is reliable, it reflects current supply and demand conditions present in the cattle market. If cattle supplies are ample or meat sales are slow, fed cattle prices decline. When cattle supplies are tight or meat sales and/or exports are strong, fed cattle prices increase.

In lieu of a reliable cash negotiated fed cattle trade and cash reported price, what is needed is information that enables those involved in fed cattle trade to establish a way to value fed cattle and to monitor and measure what valuations are in the market by overall participants in trade for a period of time. What are needed are clearer pictures of future cattle and beef supply and cattle and beef demand as well as a summary of price valuations that reflect supply and demand expectations. Armed with this information, longer-term marketing agreements would not need to rely upon thinly traded cash markets for base prices. Instead, base price values could be negotiated over longer horizons based on information about anticipated supply and demand and longer term cattle prices could be reported to market reporters much like negotiated cash market prices currently are collected and reported to provide information to industry participants.

Essential Information

What would be the framework of information needed to help guide longer term price negotiations? *What is needed is information that can help buyers and sellers negotiate longer-term pricing decisions rather than relying upon the unreliable and decaying cash negotiated market to provide a base value at cattle harvest.* Three main sources of information are necessary to improve forward price discovery: expected cattle and beef supply and demand and some sense of the fed cattle valuations represented in the overall market.

Improved information about anticipated fed cattle and beef supply is essential. Table 1 provides a summary example of the types of supply information that could be collected to help facilitate more effective forward price discovery. Detailed information about the number of cattle placed on feed by weight class and sex, *together with* the anticipated marketing dates and target market weights of placed cattle would greatly add to the future fed cattle and beef supply information. In addition, the numbers of cattle that are expected to be marketed over the next 1-2, 3-4, and 5-6 months need to be reported, summarized, and updated weekly. This information is necessary for developing a data base that can be used to more accurately predict forthcoming cattle and beef production numbers.

Armed with this information, future fed cattle and beef supplies could be more accurately estimated and realize fewer surprises over the next six months. As information is updated weekly, the accuracy of future supply projections should improve. This future supply information would need to come directly from the feedlot industry and beef packers who would need to report this information as accurately as is feasible on a timely basis to a central unbiased third party such as CanFax. On-going efforts are also needed to collect and report non-fed beef supplies as well as cold storage stocks of beef. Such information would improve cattle and beef supply forecasting. Collecting and reporting this information could be made quite efficient given current information technology. Furthermore, because of the interdependence of the Canadian and U.S. cattle markets, having the same information from the United States (provided by USDA) would be immensely beneficial. Without U.S. collaboration and reporting of similar information, the value of such information for the Canadian industry would be significantly constrained.

In addition to cattle and beef supply information, more information would be beneficial on future demand, both domestic and export, for beef. However, the nature of this information is more challenging to identify than evolving supply information and may be impossible to collect. On-going monitoring of wholesale and retail beef prices and sales volumes and beef and cattle exports may be the most important information that can be collected and reported here as well as periodic analysis of current and future demand prospects.

Table 1. Example of Supply Data Needed for Effective and Efficient Forward Fed Cattle Price Discovery				
Months Forward	Data	Frequency	Source	Units Measured
Current Month	Cattle Slaughter	Daily	Packers	Head, Carcass Weights, Live Weights, Dressing %
	Beef Production	Daily	Packers	Pounds, Quality Grades, Fed, Non-Fed
	Cash Fed Cattle Purchases	Daily	Packers	Head, Price, Sex
	Cattle Placements on Feed	Weekly	Producers	Head by Weight and Sex
	Cattle on Feed Inventory	Weekly	Producers	Head by Weight and Sex
	Cold Storage	Weekly	Packers	Pounds
	Beef Imports	Weekly	Packers	Pounds
	Beef Exports	Weekly	Packers	Pounds
	Cattle Exports	Weekly	Producers	Head, Sex, Weight
	Cattle Imports	Weekly	Packers	Head, Sex, Weight
1 through 2 Months*	Expected Cattle Marketings	Weekly	Producers	Head, Carcass or Live Weight, Sex
	Fed Cattle Forward Deliveries Expected	Weekly	Producers	Head by Sex, Expected Weights
	Fed Cattle Marketing Agreement Deliveries Expected	Weekly	Producers	Head by Sex, Expected Weights
	Fed Cattle Forward Deliveries Expected	Weekly	Packers	Head by Sex
	Fed Cattle Marketing Agreement Deliveries Expected	Weekly	Packers	Head by Sex
	Fed Cattle Forward Delivery Cattle Priced	Weekly	Packers	Price by Head and Sex
	Fed Cattle Marketing Agreement Delivery Priced	Weekly	Packers	Price by Head and Sex
	Packer Owned Cattle Deliveries Expected	Weekly	Packers	Head by Sex
3 through 4 Months*	Expected Cattle Marketings	Weekly	Producers	Head, Carcass or Live Weight, Sex
	Fed Cattle Forward Deliveries Expected	Weekly	Producers	Head by Sex, Expected Weights
	Fed Cattle Marketing Agreement Deliveries Expected	Weekly	Producers	Head by Sex, Expected Weights
	Fed Cattle Forward Deliveries Expected	Weekly	Packers	Head by Sex
	Fed Cattle Marketing Agreement Deliveries Expected	Weekly	Packers	Head by Sex
	Fed Cattle Forward Delivery Cattle Priced	Weekly	Packers	Price by Head and Sex
	Fed Cattle Marketing Agreement Delivery Priced	Weekly	Packers	Price by Head and Sex
	Packer Owned Cattle Deliveries Expected	Weekly	Packers	Head by Sex
5 through 6 Months*	Expected Cattle Marketings	Weekly	Producers	Head, Carcass or Live Weight, Sex
	Fed Cattle Forward Deliveries Expected	Weekly	Producers	Head by Sex, Expected Weights
	Fed Cattle Marketing Agreement Deliveries Expected	Weekly	Producers	Head by Sex, Expected Weights
	Fed Cattle Forward Deliveries Expected	Weekly	Packers	Head by Sex
	Fed Cattle Marketing Agreement Deliveries Expected	Weekly	Packers	Head by Sex
	Fed Cattle Forward Delivery Cattle Priced	Weekly	Packers	Price by Head and Sex
	Fed Cattle Marketing Agreement Delivery Priced	Weekly	Packers	Price by Head and Sex
	Packer Owned Cattle Deliveries Expected	Weekly	Packers	Head by Sex
* Each week the total deliveries and prices would be provided				

Reporting an Array of Alternative Market Prices

Ultimately, one of the more valuable sets of information that would complement the expected supply and demand data noted above is collecting and reporting price information associated with the various ways fed cattle are sold over various horizons. What is needed are weighted average prices and related price variability information (low third, middle third, high third weighted average prices) as noted earlier in the Cash Price Reliability section for current as well as forward fed cattle pricing that is updated weekly as prices are settled upon. What makes most sense is initially to model this reporting effort after the USDA mandatory price reporting for fed cattle where cash negotiated, forward contracts, marketing agreements, and negotiated grid priced fed cattle net prices are reported as delivered each week.

However, the USDA structure for reporting fed cattle prices was developed more than ten years ago before the current challenges relative to thin cash negotiated markets in fed cattle were present. *The current environment calls for collecting and reporting additional information on forward fed cattle prices that were not needed when the current USDA mandatory price reporting system was designed.* In particular, reporting weighted averages and associated price variation for forward prices for deliveries scheduled for future months is additional price information that is increasing in relevance and potential value. As more cattle feeders and packers move away from formula prices based on thinly traded negotiated fed cattle prices, and increasingly need forward price information to negotiate longer term pricing arrangements, this information becomes more valuable.

Table 2 illustrates a template for what types of information might be reported in a price report that includes forward fed cattle prices that are scheduled this week for delivery months into the future. This is simply for illustrative purposes and would need considerable refinement. The point is, such information on prices could reduce the dependence on a declining cash negotiated market in future price discovery negotiations. In design of such an information collection and reporting system, it would be strongly advised that industry stakeholders be involved in the design of the system. More time designing the specific information needs and how they would be collected, sorted, categorized, and reported is needed before one would move forward with such an initiative.

Table 2. Template for Fed Cattle Price Reporting						
		Low Third	Middle Third	High Third		
		Weighted	Weighted	Weighted	Weighted	
Category		Average	Average	Average	Average	Median
Current Week Sales						
Cash Negotiated Market						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Current Week Deliveries						
Cash Negotiated Market						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Forward Priced						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Marketing Agreement						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
1-2 Month Deliveries						
Forward Priced						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Marketing Agreement						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
3-4 Month Deliveries						
Forward Priced						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Marketing Agreement						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
5-6 Month Deliveries						
Forward Priced						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
Marketing Agreement						
	Live	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$
	Dressed	\$\$\$	\$\$\$	\$\$\$	\$\$\$	\$\$\$

Final Thoughts

The cash negotiated fed cattle market is thinning in both Canada and the U.S. The trend has been long term and driven by economic incentives. Turning the clock back to drive more negotiated cash price discovery is not a simple, inexpensive, or highly probable endeavor. Furthermore, turning the clock backwards is not necessary for fed cattle markets to function efficiently going forward. However, the transition from reported cash prices being central to short term information to being simply one among a larger set of relevant market information, requires development of new information and new ways of pricing and valuing fed cattle and in collecting and reporting relevant market information.

As new market information collection and reporting is designed the following are characteristics such a system must possess:

1. Accurate, representative, reliable, and difficult to manipulate
2. Strive for as close to 100% of relevant industry firm participation as is feasible
3. Auditable and verifiable
4. Timely
5. Compiled and reported by an independent third party
6. Easy, clear, and low cost for firms to provide information
7. Easy for industry participants to access and interpret reported information
8. Transparent in collecting and reporting procedures
9. Sensitive to confidentiality
10. Flexible to modify procedures and reporting methods as needed
11. Adaptable to make adjustments to process and reported information as needed

Any system for collecting and reporting market information that might be developed that does not possess all of these attributes will be less effective. *Finally, as noted earlier, periodic review of procedures used to collect and report price information and statistical analysis of the transactions comprising a report is strongly recommended.* The nature of the underlying transactions that populate a report is critical to design of reporting methods and appropriate interpretation by users of the reported information. This has not been done, at least in the U.S., and work that I have recently been involved with in review of such data suggests it can be a valuable exercise.