

Grid and Formula Pricing in the Beef Industry

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This fact sheet provides an updated examination of pricing methods for US fed cattle. The Mandatory Price Reporting Act (MPR), enacted in April of 2001, motivates this update as most existing fact sheets were written prior to MPR. The added market transparency created by MPR likely changed many aspects of the fed cattle market complex, including fed cattle pricing methods. Producers who are aware of these pricing methods will better understand the factors influencing the final price of their cattle.

Grid and Formula Pricing

Grid pricing rewards cattle exhibiting specific, wanted traits while simultaneously penalizing those with undesired traits. Grid pricing systems allow buyers to vary prices according to differences in quality, rather than assume a homogenous quality for all cattle purchased. Premiums and discounts are dynamic and may vary according to plant averages, wholesale price/value spreads, and negotiated prices (Schroeder, et al.). Multiple premiums and discounts may be applied concurrently to any single animal relative to a transparent base price¹. Methods for calculating the base price include the average cost of cattle purchased by a packer in the week prior or week of slaughter, market reports, the boxed beef cutout value, futures market prices, or negotiated prices. As Ward, Schroeder, and Feuz pointed out, all of these methods use formula pricing to determine the base price except for negotiated prices.

Formula pricing determines the transaction price by referencing an exogenous price and typically determines the base price for grid pricing systems. Fed cattle futures prices and the boxed beef cutout value are frequently used as formula prices in the fed cattle market complex. Formula prices based on futures prices are advantageous as they are heavily traded and therefore

¹ A more in-depth analysis of premiums and discounts is available in the fact sheet [Beef Premiums and Discounts: An Update of 5-Area Cattle and Beef Quality Premiums and Discounts](#), accessible from AgManager.info.

less susceptible to random market movements (Ward, Schroeder, and Feuz). Formula prices linked to the boxed beef cutout value are advantageous for producers because they are tied to a price which packers have an economic incentive to raise. Generally, formula pricing assumes homogenous quality across all animals and varies according to broader market forces.

To summarize, grid pricing attempts to encourage the production of specified types of cattle through premiums and discounts for various carcass attributes applied to a base price. Formula prices are determined by external markets and are often used to calculate the base price for grid pricing systems. Grid pricing, however, does not always use a formula price to establish its' base price and may instead utilize other pricing systems.

Live Cattle Pricing

Since the introduction of MPR, use of negotiated prices for live cattle has fallen dramatically (Figure 1). In May 2011, immediately following MPR, negotiated prices accounted for 85-90% of the cattle priced. Since then, the percent of cattle sold under negotiated price systems has fallen below 50%. Formula pricing systems increased during this time and have taken the bulk of replacing negotiated pricing. Fed cattle priced on formulas now nearly equal cattle priced via negotiations, with much of this increase occurring since 2009. While data was not available to analyze reasons for this change, fed cattle market participants may be switching from negotiated prices to formula price in effort to price cattle on more widely traded markets. As futures prices and the boxed beef cutout are widely traded and reported, and reflect broader supply and demand circumstances, packers (or cattle feeders) may prefer tying prices to national markets.

Forward contracting has further replaced some of the diminishing negotiated prices. The percent of cattle purchased under forward contract arrangements was near zero in 2001 but has since steadily risen to near 20% levels. Forward contracting may appeal to packers beyond risk management purposes as the MPR act only requires forward contract prices to be reported at the end of every week.

Negotiated grid prices (where the grid's base price is negotiated between the packer and feeder within 14 days of delivery of the cattle) were not reported until April 2004 and were

included in formula pricing. Since the report's commencement, negotiated grid prices have consistently constituted the smallest portion of live cattle pricing methods.

Beef Carcass Pricing

While negotiated prices have traditionally dominated pricing live cattle, carcass pricing has historically used greater pricing methodology variety. Following MPR, the majority (60-70%) of carcasses were priced via formula pricing systems. Formula pricing use then waned, accounting for roughly 40% of carcasses from 2004 to 2008, but resurgence in popularity has increased its use to near 60% (Figure 2). During this time period (2001-2012), negotiated price use increased and then faded to constitute less than 20% of all carcass-priced cattle. It appears that packers, while once utilizing the increased market transparency of post-MPR market reports to negotiate prices, now prefer using formula prices. Multiple factors may have influenced this shift including; lower transaction costs of formula pricing, beliefs of bias in negotiated prices, an increased desire to manage risk, and natural responses to cattle cycle price dynamics.

Additional marketing arrangement for beef carcasses include negotiated grid and forward contact prices. In 2004, due to increasing interest in negotiating the base price for grid pricing systems, the USDA began reporting negotiated grid prices. Initially, nearly 25% of beef carcasses were priced under negotiated grid systems. However, interest subsequently waned and, in January 2012, less than 10% of carcasses were sold under such arrangements. Forward contracting has consistently been the least used marketing arrangement for carcass-sold cattle, seldom accounting for more than 10% of all cattle sold. Data was not available to analyze potential price discrepancies between pricing methods. Earlier research, however, failed to find significant differences in prices between negotiated, formula, negotiated grid, and forward contracted cattle (Ward).

Live vs. Carcass Pricing

Comparing quantities of fed cattle marketed on live or carcass bases, Figure 3 illustrates a decade-long preference toward carcass pricing. Marketing cattle on a carcass basis may provide greater transparency of cattle quality and provide more accurate value assessment to packers, creating a preference toward carcass pricing. The popularity of live or carcass marketing

arrangements appears to follow a cyclical pattern, with each arrangement converging near 50% in 2002, widening to a cyclical peak January 2008, and again approaching 50% in 2011.

Conclusions and Implications

Fed cattle are typically marketed under either grid or formula pricing arrangements. Grid pricing seeks to match price with cattle quality through the application of premiums and discounts relative to a base price. Formula pricing uses one or more exogenous prices to determine the cattle price. In the fed cattle market complex, these external prices are frequently either fed cattle futures prices or the boxed beef cutout value. Grid pricing systems most frequently use formula prices to establish their base price, though negotiated base prices are also employed.

The dynamics of grid pricing, once understood by producers, can lead to optimized fed cattle sales. Plant-average formula grid pricing fails to price cattle on their own merit, instead pricing based off the quality of cattle slaughtered in the week(s) prior. Negotiated grid systems price cattle according to their own quality but will likely be influenced by local supply and demand factors. Using fed cattle futures to formulate the grid base price is advantageous to producers as it follows broader supply and demand trends and is less influenced by individual slaughter plants.

Grid pricing offers economic advantages to producers who recognize the intricacies and implications of each grid's construction and premiums and discounts. Producers should seek to understand the base price formulation and how premium and discount levels vary. Doing so will allow them to market cattle which fit the grid's specifications and, in so doing, optimize returns to their operations. Producers should research available information on pricing systems, compare this with estimated costs of changing production methods or pricing methods, and produce the most efficient cattle type for their operation.

References:

Schroeder, T.C., C.E. Ward, J. Mintert, and D.S. Peel. 1997. "Beef Industry Price Discovery: A Look Ahead." *Price Discovery in Concentrated Livestock Markets: Issues, Answers, Future Directions*. W.D. Purcell, ed. Blacksburg, VA: Research Institute on Livestock Pricing, February.

Ward, C.E. 2009. "Price Comparison of Alternative Marketing Arrangements for Fed Cattle." Dept. of Agri. Econ. AGEC-616, Oklahoma State University.

Ward, C.E., T.C. Schroeder, and D.M. Feuz. 2002 "Grid Base Prices and Premiums-Discounts Over Time." www.agmanager.info/livestock/marketing/bulletins.../Grid_Base_Prices.pdf. Accessed 11/10/11.

Figures and Tables

Figure 1. Live Cattle Pricing Methods

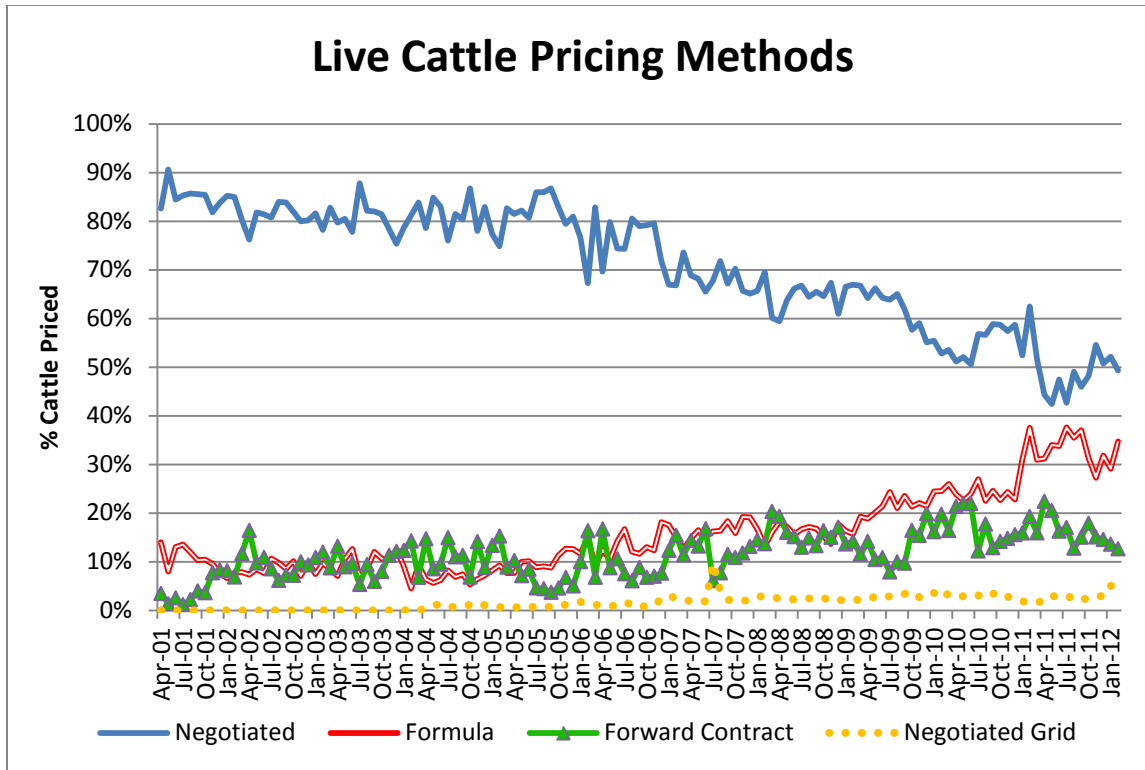


Figure 2. Carcass Pricing Methods

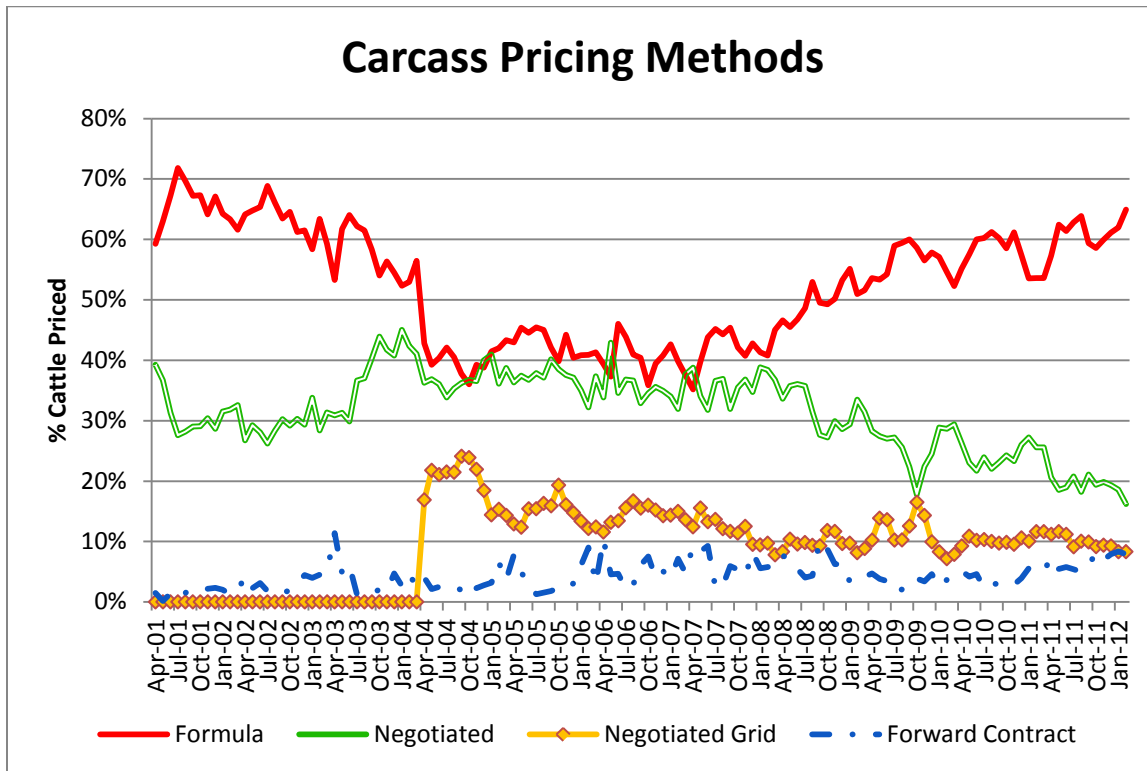


Figure 3. % Cattle Priced Under Live or Carcass Arrangements

