Formula Base and Net Pricing Differentials for U.S. Fed Cattle

Sheppard G. Rogers (sgrogers4@ksu.edu) – K-State Department of Agricultural Economics
Ted C. Schroeder (tcs@ksu.edu) – K-State Department of Agricultural Economics
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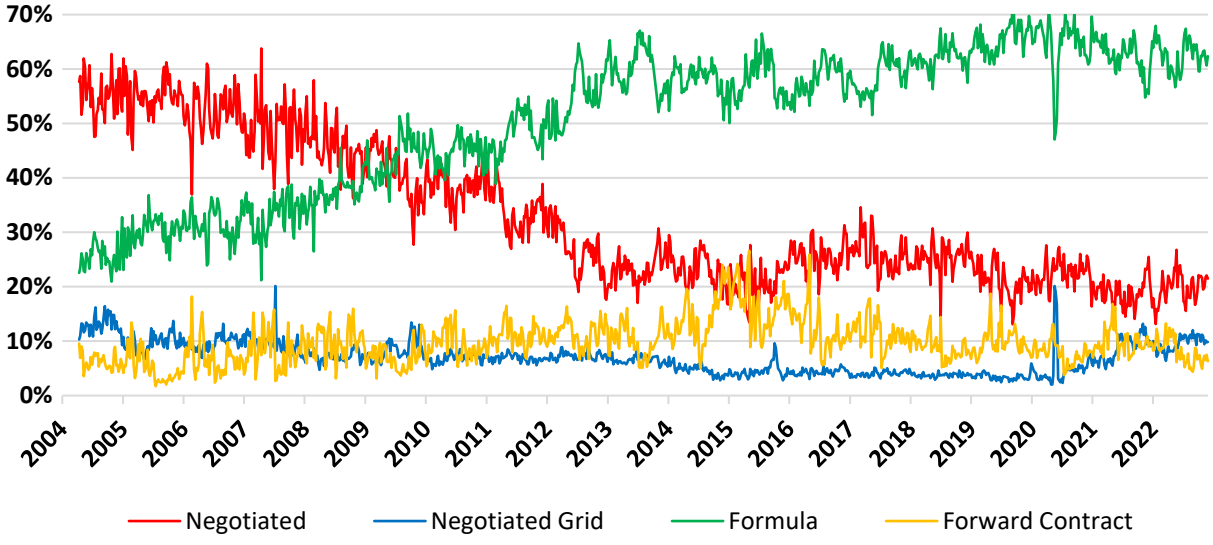
Livestock mandatory reporting (LMR), enacted by Congress more than two decades ago, required qualifying meatpackers to report livestock and related pricing data to USDA AMS twice daily. Since that time, cattle and beef in particular have responded to evolving consumer demands by shifting away from generic, cash negotiated commodities, to offering a wide array of specialized and differentiated beef products. Marketing agreements and formula pricing of fed cattle have facilitated these shifts, and as Figure 1 shows, account for more than 60% of fed cattle transactions in 2022. This fact sheet compares formula base and net prices over 2016 to 2021. We provide supporting information to help understand why the relationship between formula base and net prices has changed over recent years.

Figure 1. Percentage of Weekly Live Cattle Marketed by Transaction Types Nationally 2004 - November 2022



Data Source: USDA AMS as archived by LMIC
Numbers are all live and dressed sales of steers, heifers, other fed cattle, cows and bulls reported in a given week for each transaction type.

Formula Base Pricing

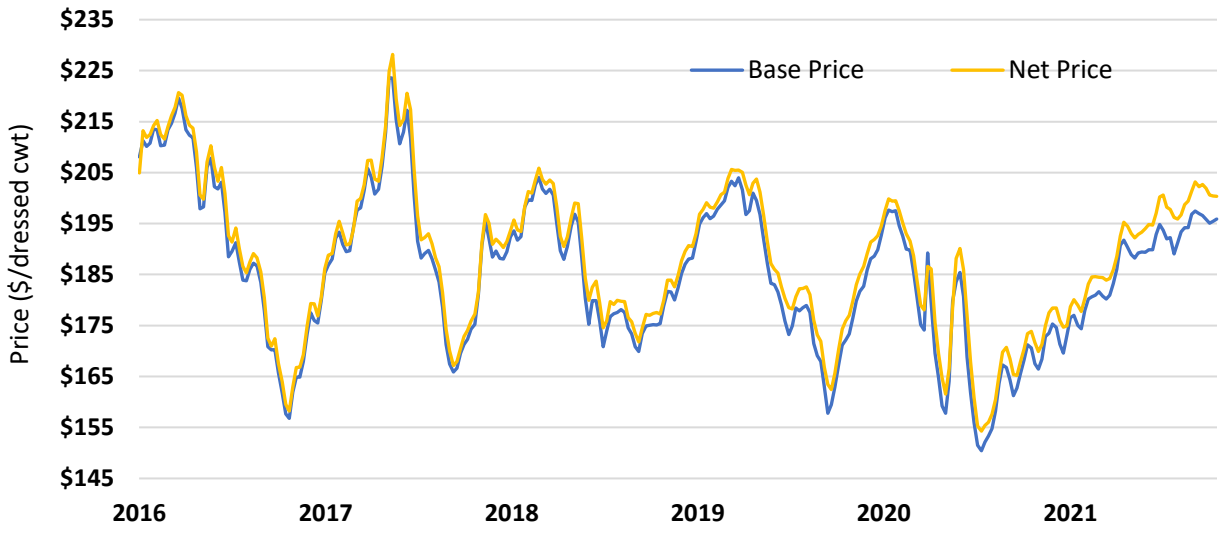
Formula trade refers to fed cattle transactions that are not negotiated cash, negotiated grids, or forward contracts. Formula base price are the base to which grid premiums and discounts are generally applied to determine net price paid. Formula base prices are not negotiated for each transaction, but rather utilize an externally discovered reference price. Reference prices may include: 1) plant average base prices for fed cattle purchased by a specific plant one or more weeks prior to the expected week of slaughter; 2) USDA reported national or area negotiated cash prices; 3) live cattle futures prices; or 4) wholesale beef prices.

Formula Base and Net Price Differentials in Recent Years

Figure 2 illustrates the relationship between national weighted-average formula base and net prices spanning January 2016 through October 2021. Formula base prices were reported by qualifying meatpackers under the authority of LMR and were obtained from USDA AMS. Formula net prices were obtained from USDA published reports as archived by Livestock Market Information Center (LMIC). Over time, the net price has increased relative to the base price in formula fed cattle purchases by packer. Beginning in 2016, formula base and net prices follow one another closely, maintaining a net-to-weighted-average base price differential of about $2/cwt which continued through 2018. The difference between formula net and base prices during 2020 through 2021 averaged about $3.86/cwt. In 2021 through October 2022 the weighted-average formula net to base price differential averaged $4.51/cwt, more than double what it was just five years earlier.

The trend in net price increasing relative to base price over time is likely associated with several contributing factors. First, this indicates on average pens of cattle sold on a formula with a grid received premiums net exceeding discounts in recent years. This could be in part due to cattle feeders getting better at targeting cattle production and marketing to match grid incentives, avoiding substantial discounts.

Figure 2. Comparison of Weekly Weighted Average Base and Net Prices for Dressed Steers and Heifers Marketed on Formula, 2016 - October 2021



Second, over this time period, the percentage of formula transactions that received adjustments for quality grade increased from 70% to 80%; yield grade from 64% to 74%; weight 44% to 49%; and other 33% to 46% (Schroeder, Coffey & Tonsor 2021). This indicates more transactions are associated over time with grids increasing the opportunity for receiving premiums as well as risks for experiencing discounts. Logically if producers are getting better at netting premiums exceeding discounts, the producers would also strive to increase use of grids to determine net prices.

Third, perhaps premiums offered have changed over time creating greater incentives to use grid adjustments. Figure 3 provides weighted-average premiums and discounts for quality grade of cattle transacted nationally compared to Choice grading (base quality grade) from 2016 to October 2021. From 2016 to June 2019, premiums for Prime quality grade remained relatively flat, averaging $12.65/cwt. From July 2019 to October 2021 premiums for Prime quality jumped to an average of $14.09/cwt, and in 2021-22 averaged $15.68/cwt. Premiums for Certified Angus Beef (CAB) averaged $3.72/cwt from 2016 to June 2019 and increased slightly to $4.32/cwt from July 2019 to October 2021. CAB premiums from January to October 2021 averaged $4.89/cwt. So, clearly premiums for high quality have increased over time.

Discounts for Select and Standard quality grades exhibit more cyclical behavior over time. From 2016 through 2020, Select quality grades had an average discount of $12.64/cwt, while Standard quality grade an average discount of $28.76/cwt. From January to October 2021, Select quality grade discounts had an average discount of $17.66/cwt, and Standard quality grade had an average discount of $31.50/cwt.

Yield grade premium and discount adjustments for dressed cattle transacted nationally from 2016 to October 2021 are provided in Figure 4. Yield grade premiums maintained a consistent level from 2016 to 2021 with yield grades 1 and 2 receiving $3.75/cwt and $1.75/cwt on average respectively. Yield grade discounts did not exhibit the cyclical behavior that quality grade discounts did over time. Over the same time period, discounts for yield grades 4 and 5 averaged $11.45/cwt and $17.13/cwt respectively.

This demonstrates that premiums and discounts for cattle quality had a greater impact on formula net prices producers received from packers in 2021-22 than in previous years going back to 2016. This further illustrates the importance of cattle producer knowledge of quality characteristics and average yields of their cattle. Formula pricing offers producers the ability to obtain higher prices for producing higher quality cattle, but in the same vein, is capable of reducing net prices by an equal or greater amount if quality specifications are not met. With more cattle being sold using formula pricing including grid adjustments, not only are strong value signals being sent to producers, but with greater premiums recently for high quality beef, these value signals are also larger than previously. Thus, average net formula prices have increased in economically important magnitudes relative to base prices in recent years.

Figure 3. Weekly Average Quality Grade Premium and Discount Adjustments for Dressed Cattle Transacted Nationally, 2016 - October 2022

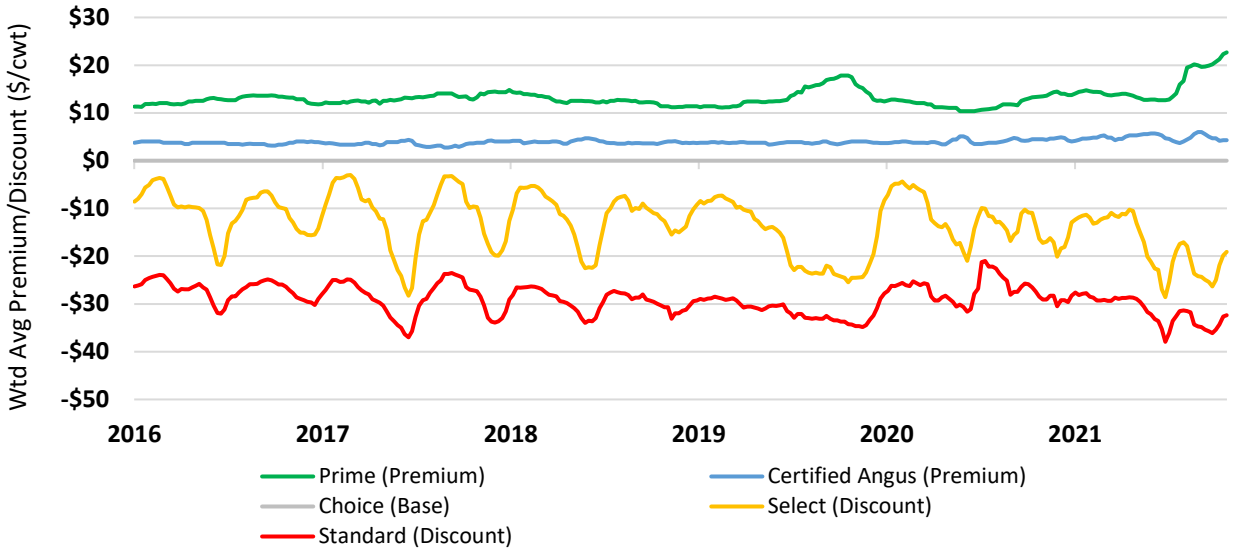


Figure 4. Weekly Average Yield Grade Premium and Discount Adjustments for Dressed Cattle Transacted Nationally, 2016-October 2021