Introduction and Background

Feeder cattle prices depend on the weight of cattle and it is well recognized that prices per hundredweight (cwt) normally decrease as cattle weights increase. Not only do prices vary across cattle weights, but the magnitude of price differences depend on the weight of cattle. This price differential, more commonly known as a price slide, is a reflection of the costs to add weight to an animal (i.e., cost of gain). Because costs of gain ($/cwt) are generally lower than the price of cattle ($/cwt), lighter weight cattle have higher prices than heavier weight cattle and the price slide exists.

Prices slides are a measure of the amount of price adjustment as weight changes from a base weight and are often stated in terms of historical averages. For example, from January 2000 through August 2009, the average price difference between beef breed steers weighing 500-599 pounds and 600-699 pounds in Wisconsin auctions was $6.37 with a range of $2.89 to $10.75.\(^1\) Thus, an average price slide of 6.37¢ for each additional pound or $6.37 for each additional 100 pounds. This compares to a slide of $4.50 with a range of $1.85 to $6.49 between steers weighing 700-799 pounds and 800-899 pounds during this same time period.

The amount of price adjustment not only differs by weight but also varies for steers and heifers and has a seasonal component. Market forces also impact the magnitude of the weight-price adjustment as price slides reflect complex interactions between dynamic markets for feed and fed cattle and other feeder cattle price determinants (Swanson, 2013).

Price slides have a number of uses, the most common of which is adjusting the price of forward contracted cattle if actual weight is different from a specified base weight (Bailey and Peterson, 1991; Dhuyvetter

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\(^1\) The data came from USDA-AMS weekly report MD_LS150, “Wisconsin Cattle Summary”, which contained weekly summaries for slaughter cattle and the most recent dairy and feeder cattle auctions covered by the Wisconsin Federal-State Farm Market News Service.
Price slides are also useful for evaluating price changes for weight gain which have implications for many management and marketing decisions such as creep feeding calves, rate of gain to pursue in backgrounding programs, length of grazing season, and timing of buy/sell decisions (Dhuyvetter and Schroeder, 2000; Peel, 2017; Tonsor and Mollohan, 2017).

Understanding how market conditions affect price slides allows for weight adjustments to be incorporated into dynamic price forecasts (Dhuyvetter and Schroeder, 2000). However, price volatility in recent years has shown that historical averages are inadequate to accurately capture price adjustments over a wide range of price levels (Peel, 2017; Tonsor and Mollohan, 2017). Furthermore, as prices become thinly reported, or not reported at all, it becomes increasingly important to understand how variable price slides are and what economic factors influence them. A noteworthy example of this shortcoming in price reporting is when the Wisconsin Livestock and Grain Market News Program ceased operations on Friday May 15, 2009 due to state budgetary constraints. With this change to reporting, or lack thereof, Wisconsin feeder cattle price reporting now only consists of much aggregated summary reports, often only reporting wide weight and price ranges, on auction market websites.

Faced with the formidable task of determining how market prices are likely to change as cattle weight and expected input and output prices change, one may want to use more of a statistical-based approach versus a traditional “rules of thumb” approach for developing projections. This feature implies that a pricing model should provide for direct calculation of expected market prices of feeder cattle of various weights under varying market conditions. The model could then be used as a decision aid when making forecasts.

Perhaps the most germane existing study on price-weight relationships for feeder cattle was provided in 2000 when Dhuyvetter and Schroeder used individual sale lots of cattle from Kansas auctions to quantify how feeder cattle price changes as cattle weight, expected input costs, expected selling prices, recent feeding margins, and cattle feeding risk change. They also examined how these factors change in relative importance as feeder cattle weight varies. This study also identified differences between price slides for steers and heifers and how price slides varied seasonally. Given that the data used in this study are now over 20 years old, an update of these relationships is warranted. Tonsor and Mollohan (2017) found that feeder cattle prices have become much more responsive to corn and fed cattle prices since the summer of 2008 and that the relative impact of fed cattle prices has increased compared to corn prices.

Dhuyvetter and Schroeder (2000) found that breed (English, mixed, continental) had little impact on results, however dairy feeder cattle were not included in their analysis. Previous research has shown that dairy feeder cattle receive a large price discount relative to beef breeds but market conditions do impact the magnitude of the discount. Lopez et al. (2017) found an average discount for dairy cattle of $43.83/cwt; while Mathews (2007) found a discount of $19.06/cwt and Schulz et al. (2010) found a discount of $12.22/cwt. This discount is commonly attributed to decreased feed efficiency, more days required on feed, beginning management at a younger age, and subsequent discounts as a fed animal when sold to a packer. Because existing research on price-weight relationships only focuses on beef breeds, only parallels can be hypothesized for dairy feeder cattle.

The dairy cattle industry’s influence on beef production is important. CattleFax (2017) beef audits for 2012-2016 show fed dairy cattle average about 10% of total U.S. cattle slaughter. Holsteins are the predominant dairy breed. According to the National Animal Health Monitoring System (NAHMS) 2014 dairy study, Holsteins were housed on 89.6% of dairy operations and represented 86.0% of all dairy cows (USDA-APHIS-VS-CEAH-NAHMS, 2016). Thus, Holsteins contribute to the largest portion of dairy beef.

This study contributes to the literature in two important ways. First, we update the analysis of Dhuyvetter and Schroeder (2000) to determine if, and how, price-weight relationships have changed and the relative importance of factors influencing price slides. Second, we determine how price slides differ between beef breed and Holstein feeder cattle.

2 Dickamore (2015) provided updated information on price-weight relationships for feeder cattle based on Georgia, Kansas, Montana, Nebraska, and Oklahoma weekly auction sales data as reported by USDA’s Agricultural Marketing Service for June 2005 to June 2015. Due to limitations with using aggregate data, compared with sales of individual lots of cattle, and other modeling choices several cattle characteristics and market factors were not included in this analysis.
Methodology and Data

The aggregate, empirical, price-dependent, input-demand model for feeder cattle is used to estimate direct interaction terms between the price slide and feed costs, expected fed cattle selling prices, price risk, recent feeding margins, gender, and month of the year. The model is expressed as:

\[ PRICE_{it} = \beta_0 + \beta_1 LC_{it} + \beta_2 CN_t + \beta_3 WT_i + \beta_4 WT_i^2 + \beta_5 HFR_i WT_i + \beta_6 HFR_i WT_i^2 + \beta_7 LC_{it} WT_i + \beta_8 LC_{it} WT_i^2 + \beta_9 CN_t WT_i + \beta_{10} CN_t WT_i^2 + \beta_{11} MARGIN_{t-1} WT_i + \beta_{12} MARGIN_{t-1} WT_i^2 + \beta_{13} \sigma_C WT_i + \beta_{14} \sigma_L WT_i + \beta_{15} LOTSIZE_i + \beta_{16} LOTSIZE_i^2 + \beta_m \text{MONTH}_m WT_i + \beta_{m+12} \text{MONTH}_m WT_i^2 + \epsilon_{it} \]

where \( i \) refers to a specific lot of cattle at time \( t \). \( Price \) is the average price per cwt and \( WT \) is the average weight in pounds of a lot. \( LC \) is the live cattle futures price corresponding to the month the feeder cattle in lot \( i \) would be expected to be sold to a packer and \( CN \) is the average corn futures price over the feeding period. \( HFR \) is a dummy variable equal to 1 if the cattle are heifers and 0 otherwise. \( MARGIN \) is the actual, 22-week, cattle-feeding margin for fed cattle marketed the previous week. \( \sigma_C \) and \( \sigma_L \) are coefficients of variation of daily prices for the past 22 weeks for corn futures (\( CN \)) and live cattle futures (\( LC \)). \( LOTSIZE \) is the number of head in the lot. \( MONTH \) is a set of dummy variables for month (\( m \) = Jan (default), Feb, Dec) included to account for seasonality in cattle feeding performance. The interaction terms and squared weight variables allow for different slopes associated with different production functions for each weight of feeder cattle. For a complete derivation and interpretation of the model, see Dhuyvetter and Schroeder (2000). This model is well established and extends previous work (e.g., Buccola 1980; Lee and Brorsen 1994; Marsh 1985; Anderson and Trapp 1997) in examining price-weight relationships for feeder cattle.

Sale price, weight, lot size, and gender (i.e., steer or heifer—no mixed lots were included in the analysis) information were collected for individual sale lots of feeder cattle sold at weekly Wisconsin auction markets from January 2010 through December 2017. A limitation of the data was that breed classifications were not consistently reported. Only broad categorizations of beef breed and Holstein were reported which both exclude beef × dairy crossbred cattle that were not consistently reported in the data. All beef breeds except Holstein are hereafter referred to as beef. One condition of data use was that it was provided to us absent specific auction locations or even anonymous auction designations. As such, we were unable to test or account for potential variability across auction locations.

The data used for model estimation included 125,645 individual lots of cattle. There were 66,640 lots of beef feeders and 59,005 lots of Holstein feeders with an average weight of 300 to 900 pounds. The average price was $136.02/cwt for beef feeders and $106.30/cwt for Holstein feeders. The largest number of beef feeder transactions occurred from October through January each year. This makes sense given that most operations in Wisconsin have spring calving herds and are marketing calves at weaning. Holstein feeder transactions were more evenly distributed throughout the year.

Settlement prices for live cattle and corn futures prices were obtained from the Livestock Marketing Information Center (LMIC). The live cattle futures contract used depended on the weight of the feeder cattle. Live cattle contracts used were the fifth, fourth, and third distant contracts for cattle weighing 300–499, 500–699 and 700–900 pounds, respectively, on the day prior to the sale date. Corn futures price was a simple average of all contracts relevant over the feeding period on the day prior to the sale date. For example, the corn

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3 Dhuyvetter and Schroeder (2000) included broad breed classifications (e.g., English, mixed, and continental) in their model, but they also reported that when the model was estimated excluding all breed variables the parameters of interest were quite robust. Thus, including specific beef breed variables, if we had them, would likely have little impact on results.

4 Lots with average weights less than 300 pounds or greater than 900 pounds were excluded from the analysis to be consistent with previous research on feeder cattle price determinants. There is some evidence that more feeder cattle are being marketed at heavier weights than in the past and thus it may be beneficial to consider heavier weights in future research.
Table 1. Select Summary Statistics for Feeder Cattle Sale Lots and Futures Prices, January 2010 through December 2017

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beef, N = 66,640</th>
<th>Holstein, N = 59,005</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
</tr>
<tr>
<td>Price, $/cwt</td>
<td>136.02</td>
<td>46.61</td>
</tr>
<tr>
<td>Weight (WT), pounds</td>
<td>577.35</td>
<td>148.45</td>
</tr>
<tr>
<td>Heifer (HFR), 0/1</td>
<td>0.48</td>
<td>0.50</td>
</tr>
<tr>
<td>Corn futures price (CN), $/bushel</td>
<td>4.82</td>
<td>1.30</td>
</tr>
<tr>
<td>Live cattle futures price (LC), $/cwt</td>
<td>124.78</td>
<td>17.19</td>
</tr>
<tr>
<td>Feeding margin (MARGIN), $/head</td>
<td>178.18</td>
<td>156.11</td>
</tr>
<tr>
<td>Corn futures C.V. (σ₁), %</td>
<td>6.79</td>
<td>4.14</td>
</tr>
<tr>
<td>Live cattle futures C.V. (σ₂), %</td>
<td>4.09</td>
<td>1.35</td>
</tr>
<tr>
<td>Number of head (LOTSIZE), head</td>
<td>2.90</td>
<td>4.37</td>
</tr>
</tbody>
</table>

The price for 300–499 pound feeders was the average of the nearby through fifth distant contracts, whereas the corn price for 700–900 pound feeders was the average of the nearby and first two deferred contracts.

The most recent, lagged, cattle-feeding margin was defined as the nearby live cattle futures price ($/cwt) times 12.5 cwt minus the nearby feeder cattle futures price ($/cwt) 22 weeks prior times 7.5 cwt minus the average nearby corn futures price ($/bushel) over the preceding 22 weeks times 50 bushels. This margin specification is used in USDA’s Risk Management Agency livestock gross margin for cattle insurance policy (USDA-RMA, 2009) and reported weekly by Iowa State University Extension and Outreach (ISU Livestock Crush Margins—http://www2.econ.iastate.edu/margins/). Other margin specifications were examined and results were relatively robust with regards to the specific specification used.

**Estimation Procedures and Results**

Hedonic pricing models are estimated separately for beef and Holstein feeders. A single model including beef and Holstein transactions with all relevant interactions is also estimated to enable testing for the equality of coefficients from the two separate regression models. The test is provided by Clogg, Petkova, and Haritou (1995) and the SAS procedure provided by the UCLA Institute for Digital Research and Education (2018). PROC MODEL in SAS 9.4 is used for the analysis. The regression models are estimated using ordinary least squares.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Beef</th>
<th>Holstein</th>
<th>Variable</th>
<th>Beef</th>
<th>Holstein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusted R-squared</td>
<td>0.6488</td>
<td>0.6400</td>
<td>RMSE</td>
<td>27.616</td>
<td>23.449</td>
</tr>
<tr>
<td>Number of Observations</td>
<td>66,640</td>
<td>59,005</td>
<td>Number of Observations</td>
<td>66,640</td>
<td>59,005</td>
</tr>
<tr>
<td>Intercept</td>
<td>-65.44240***</td>
<td>(12.66340)</td>
<td>0.01291***</td>
<td>(0.00396)</td>
<td>(0.00405)</td>
</tr>
<tr>
<td>Live cattle futures (LC) ††</td>
<td>2.74596***</td>
<td>(0.9070)</td>
<td>0.02626***</td>
<td>(0.00405)</td>
<td>(0.00374)</td>
</tr>
<tr>
<td>Corn futures (CN)</td>
<td>-22.34060***</td>
<td>(1.9810)</td>
<td>Mar×Wt ††</td>
<td>0.00418</td>
<td>0.02577***</td>
</tr>
<tr>
<td>Weight (WT)</td>
<td>0.04903</td>
<td>(0.04430)</td>
<td>Apr×Wt †††</td>
<td>-0.01045***</td>
<td>0.03494***</td>
</tr>
</tbody>
</table>
| Weight-sqad (WT²)                | -4.00×10-5 | (3.70×10-5)| Apr×Wt-sqad ††                   | 1.80×10-5***| -3.00×10-5***| (5.63×10-6)
| Heifer×Wt (HFRWT) †††           | -0.05456*** | (0.00168) | 0.00418***                         | (0.00455)  | (0.00373) |
| Heifer×Wt-sqad (HFRWT²) †††      | 4.90×10-5*** | (2.52×10-6)| May×Wt †††                         | -0.09874***| -0.00309  |
| LC×Wt (LCWT)                     | -0.00130*** | (3.16×10-4)| Jun×Wt †††                         | -0.05996***| 0.03085***|
| LC×Wt-sqad (LCWT²)               | -3.49×10-7 | (2.64×10-7)| Jun×Wt-sqad ††                   | 8.10×10-5***| -2.00×10-5***|
| CN×Wt (CNWT) †                   | 0.02127*** | (0.00414) | Jul×Wt ††                          | -0.09874***| -0.00309  |
| CN×Wt-sqad (CNWT²) †             | -2.40×10-7 | (3.43×10-6)| Jul×Wt-sqad ††                   | 1.14×10-4***| 8.75×10-6  |
| MARGIN×Wt (MARGINWT) †††         | -1.00×10-4*** | (5.53×10-6)| Aug×Wt †††                         | -0.09634***| 0.00277   |
| MARGIN×Wt-sqad (MARGINWT²) †††   | 1.18×10-7*** | (8.30×10-9)| Aug×Wt-sqad ††                   | 1.12×10-4***| -4.30×10-7|
| Corn futures C.V×Wt (σC,WT) †††  | 5.37×10-4*** | (5.90×10-5)| 0.04541***                         | (0.00384)  | (0.00384) |
| Live cattle futures C.V×Wt (σL,WT)††† | 0.00259*** | (1.68×10-4)| 0.00411***                         | (0.00367)  | (0.00367) |
| Lot size (LOTSIZEWT) †††         | 3.54239*** | (0.04050) | 0.00359***                         | (0.00370)  | (0.00370) |
| Lot size-sqad (LOTSIZEWT²) †††   | -0.03995*** | (7.68×10-4)| 0.00359***                         | (0.00370)  | (0.00370) |

### Notes:
- Numbers in parenthesis are standard errors. *, **, *** indicate statistical significance of coefficient estimate at p-value <0.10, <0.05, <0.01, respectively.
- †, ††, ††† indicate rejection of \( H_0: \beta_{\text{Beef}} = \beta_{\text{Holstein}} \) at p-value <0.10, <0.05, <0.01, respectively.
with the Newey-West correction of standard errors for heteroscedasticity and autocorrelation in SAS (Newey and West, 1987).\footnote{The Durbin–Watson test (Durbin and Watson, 1971) and Godfrey Lagrange multiplier test (Godfrey 1978a and 1978b) are used to detect the presence of serial correlation. Residuals in each model are tested for heteroscedasticity using White's test (White, 1980). The results show the coexistence of serial correlation and heteroscedasticity.} To avoid perfect collinearity in the model, an arbitrarily chosen lot of steers sold in January is used as the default.

Coefficient estimates and associated corrected standard errors are reported in Table 2. The beef model explains 65% of the variability in transaction prices and the Holstein model explains 64% of the variability in transaction prices. Most coefficients are statistically different from zero at a p-value<0.10 level, which is expected given the large number of observations used in model estimations. Comparing the regression coefficients of beef with Holsteins tests the null hypothesis, $H_0: \beta_{\text{beef}} = \beta_{\text{holstein}}$, where $\beta_{\text{beef}}$ is the regression coefficient for beef, and $\beta_{\text{holstein}}$ is the regression coefficient for Holsteins. Most of the coefficient estimates are statistically different at a p-value<0.10 level indicating these factors have differing impacts for beef and Holstein feeder cattle price slides.

Direct interpretation of many of the coefficients is somewhat difficult because of the various interaction terms and nonlinear variables in the estimated models. For example, the sign on the weight variable, $WT$, is positive in the beef model, but after accounting for all of the weight-interaction terms, the marginal impact of weight is negative over the relevant ranges of the data, as expected. To illustrate the impact of factors with interactions and squared terms that are more complex, results are shown in figures with predicted prices.

The average lot size and the variability of lot size across transactions are similar for beef and Holstein feeders (Table 1). While the average lot size is small, three head for beef and four head for Holsteins, larger lot sizes are associated with higher prices for both (Table 2). The impact of lot size is for increasing prices at a decreasing rate—the optimal lot size for beef is 44 head and for Holsteins is 171 head. The primary conclusion of this result is not specifically the optimal lot size, rather that buyers of both beef and Holstein feeders are willing...
The difference between model-estimated beef and Holstein prices (beef minus Holstein) from 300 to 900 pound feeders for both steers and heifers is shown in Figure 1 (all continuous variables are held constant at means and month dummy variable is for January). The premium between beef and Holstein decreases at an increasing rate as weight increases. Beef feeders weighing less than 700 pounds received a premium in excess of $35/cwt compared to Holsteins, with the premium on heifers being larger than steers. For cattle weighing greater than 700 pounds the premium on beef steers was greater than for heifers. One possible explanation for the heifer pattern is that young (lightweight) Holstein heifers might have, or be perceived to have, more health issues and/or be of lower quality, otherwise they would be held as replacements, but as they age (i.e., get heavier) these concerns lessen.

Figure 2 shows the difference between steer and heifer prices (steer minus heifer) for both beef and Holstein feeders from 300 to 900 pounds. For beef feeders the price difference is highest for calves weighing 500 to 600 pounds and lowest for the heaviest feeders. The animal science literature (e.g., Choat et al., 2006; Zinn et al., 2008) indicates that average daily gain is typically higher and feed to gain is lower in steers than in heifers, which helps explain the heifer discount. The narrowing of the discount at heavier weights is likely caused because there are fewer pounds of gain to be impacted by the lower efficiency. Thus, the feedlot production performance difference between steers and heifers is less at heavier weights. A review of the literature in Fausti et al. (2013) suggests additional reasons for the steer to heifer price differential such as slaughter heifers having a higher incidence of being graded dark cutter relative to steers and that slaughter heifers have a lower dressing percent as a result of pregnancy causing an increase in financial risk for producers when selling slaughter heifers relative to slaughter steers. The premium for Holstein steers over heifers is highest between 400 to 500 pounds and then it drops fairly rapidly at heavier weights. This could also be explained by the belief that lightweight Holstein heifers have health or quality issues, but this concern diminishes as the heifer ages.

Figures 3-6 show model predicted price slides relative to a 600-pound steer as corn futures price, live cattle futures price, feeding margin, and month of sale, respectively, vary for both beef (top panel) and Holstein (bottom panel) steers. The y-axis is held constant across all of these figures so that it is easier to compare price differentials.
Figure 3 shows the price slides for corn at the mean price and plus and minus two standard deviations. Similar to what Dhuyvetter and Schroeder (2000) reported, premiums (discounts) are greatest for lightweight (heavyweight) beef steers at low corn prices and these price differentials lessen as corn prices increase. However, the seminal study showed that price differentials decline at a decreasing rate as weight increases compared to beef steer price differentials decreasing at an increasing rate in Figure 3. The bottom panel of Figure 3 shows price differentials for Holstein steers as weight varies at various corn prices. As with beef, premiums (discounts) are greatest for lightweight (heavyweight) steers at low corn prices and price differentials lessen as corn prices increase. However, for Holsteins the relationship is much more linear and at very high corn prices (mean plus two standard deviations), heavier steers actually bring a premium relative to lighter steers.
Expected fed cattle price also has a sizable impact on the price slide (Figure 4). Premiums (discounts) are greatest for lightweight (heavyweight) beef steers at high live cattle future prices and these price differentials lessen as live cattle prices decrease. Similar to corn prices, Dhuyvetter and Schroeder (2000) show that price differentials decline at a decreasing rate as weight increases compared to beef price differentials decreasing at an increasing rate as shown in Figure 4. The bottom panel of Figure 4 shows price differentials for Holstein steers as weight varies at various live cattle futures prices. As with beef, premiums (discounts) are greatest for lightweight (heavyweight) steers at high live cattle prices and price differentials lessen as live cattle prices decrease. Similar to results with corn prices, for Holsteins the relationship is much more linear and at very low live cattle prices (mean minus two standard deviations), heavier steers essentially receive the same price as lighter steers.

Figure 4. Steer Price Changes by Weight for Various Live Cattle Futures Prices
Figure 5 shows price slides for steers, relative to a 600 pound feeder, at the mean lagged feeding margin and plus and minus two standard deviations. It is evident that this variable impacts price differentials considerably less than corn and live cattle futures prices. Also, there is very little difference in price differentials for cattle weighing less than 650 pounds. As weight increases beyond that point, the impact of the feeding margin becomes more pronounced. This is consistent with Kastens and Schroeder (1994) reporting that recent profits impacted cattle feeding decisions more than expected profits. This result is also generally consistent to what Dhuyvetter and Schroeder (2000) reported, i.e., the impact of feeding margin is much greater for heavier weight cattle.

Price slides are seasonal, because cattle feeding performance varies by season and due to supply and demand of different weight cattle varying seasonally. Figure 6 demonstrates the impact of selected months (Apr,
Jul, and Oct) on steer price by weight (holding other variables at their means). Beef steer prices vary by weight the most in October and the least in July. For Holsteins there are very few differences between months, which makes sense given that there is much less seasonality in Holstein feeder cattle supply throughout the year.

Coefficients of variation for live cattle and corn futures prices significantly impact prices for both beef and Holstein cattle. As corn price variability increases in the feeding period prior to sale, feeder cattle prices increase. The increase is greater for heavyweight feeders, compared to lightweight feeders and thus the price slide is “flatter”. This same result held for live cattle price variability (i.e., higher variability increases prices less for lightweight feeders compared to heavyweight feeders leading to a reduced price slide). While these effects were statistically significant, the impacts were much smaller than the other continuous variables shown in Figures 3-6 and thus they are much less economically important.

Figure 6. Steer Price Changes by Weight for Select Sale Months

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Jul, and Oct) on steer price by weight (holding other variables at their means). Beef steer prices vary by weight the most in October and the least in July. For Holsteins there are very few differences between months, which makes sense given that there is much less seasonality in Holstein feeder cattle supply throughout the year.

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Figure 6. Steer Price Changes by Weight for Select Sale Months
Conclusions and Implications
Results from this study are consistent with previous findings in that feeder cattle prices are positively related with larger lot sizes, prices decline as cattle weight increases (i.e., the price slide exists), and heifers bring lower prices than steers. As it relates to price slides, these increase notably when corn prices decline and when expected fed cattle prices increase. Recent positive cattle feeding margins tend to reduce price discounts for heavier weight cattle relative to lighter weight cattle. Seasonality of cattle feeding performance and supply and demand of different weight cattle contributes to seasonal variation in price slides. Variability in live cattle and corn prices impact price slides but the impacts are generally much less than other factors considered in this study.

A new contribution of this study is our effort to quantify the beef breed versus Holstein price spread across weights and determining how price slides differ between these cattle. Many of the market factors examined are found to have statistically different impacts on beef and Holstein feeder cattle price slides. A large price discount for dairy feeders relative to beef feeders has been documented previously but we show that the discount decreases at an increasing rate as weight increases. For Holstein price slides, at very high corn prices heavier weight feeders bring premiums relative to lighter weight feeders and at very low live cattle prices heavier feeders essentially receive the same price as lighter feeders. There is also less seasonal variation in price slides for Holsteins as compared to beef breeds.

Future analyses should consider differences in price slides for specific breeds, such as Angus versus Holstein. In addition, if the popularity of beef × dairy crossbred cattle continues, differences in these price slides compared to beef and dairy breeds should be examined. Nonetheless, as a test of one particular hypothesis with implications for producer’s management, marketing, and procurement decisions, our empirical analysis provides fodder for the discussion of beef versus dairy breed on feeder cattle price slides.

Although market participants cannot affect the forces that drive the cattle market, understanding how varying market conditions affect price slides can aid in management and marketing decisions. This study utilizes a model that translates feeder cattle transactions and detailed market data into practical parameters that can be used to help guide decisions. The model could be transformed into a decision tool spreadsheet for use when making forecasts.

References


