Transportation and Quality Adjusted Basis:

Does the Law of One Price Hold for Feeder Cattle?

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Beef cattle and calves are produced in nearly all regions of the United States. In 2002, there were over 33 million beef cows in the US (Utah Agricultural Statistics, 2007). Figure 1 shows geographically how beef cattle herds are dispersed throughout the US (National Agriculture Statistics Service, 2002). Cattle produced in different areas are not all alike. Different regions raise different types of cattle due to environmental, resource, and other factors.

The US cattle feeding industry is much more concentrated geographically than beef cow-calf production, Figure 2 (National Agriculture Statistics Service, 2002). A study by Bailey, Brorsen,, and Thomsen (1995) identified four major cattle feeding areas. The first is the Omaha, Nebraska area which includes eastern Nebraska, eastern South Dakota, Iowa, and southern Minnesota. The second is the Greeley, Colorado area which contains feedlots in northeast Colorado and western Nebraska. Dodge City is the third area which includes feedlots in and around western Kansas. Lastly, the Amarillo, Texas feeding area which includes the Texas and Oklahoma panhandles. Consequently, feeder cattle scattered throughout the US are sold and typically shipped to any one of these four feeding areas based on the location of the sale. Generally, feeder cattle are shipped to the closest feeding area to minimize transportation costs, but feeder cattle may also be shipped to more distant feeding areas.

Feeder cattle prices are variable throughout different markets in the US. Cattle being sold on the same day in Idaho, Nebraska, and Tennessee may all sell for different prices. For example, in November of 2006 auction sales in Utah, Nebraska, and

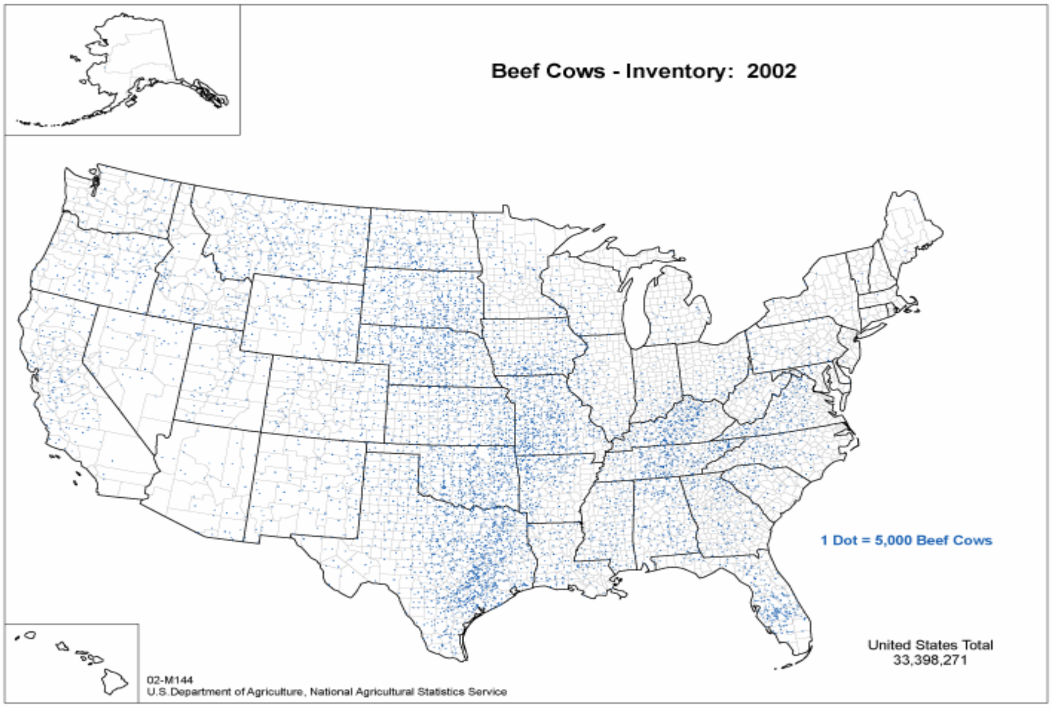

Figure 1 Geographical Location of Beef Cows across the US (NASS, 2002).

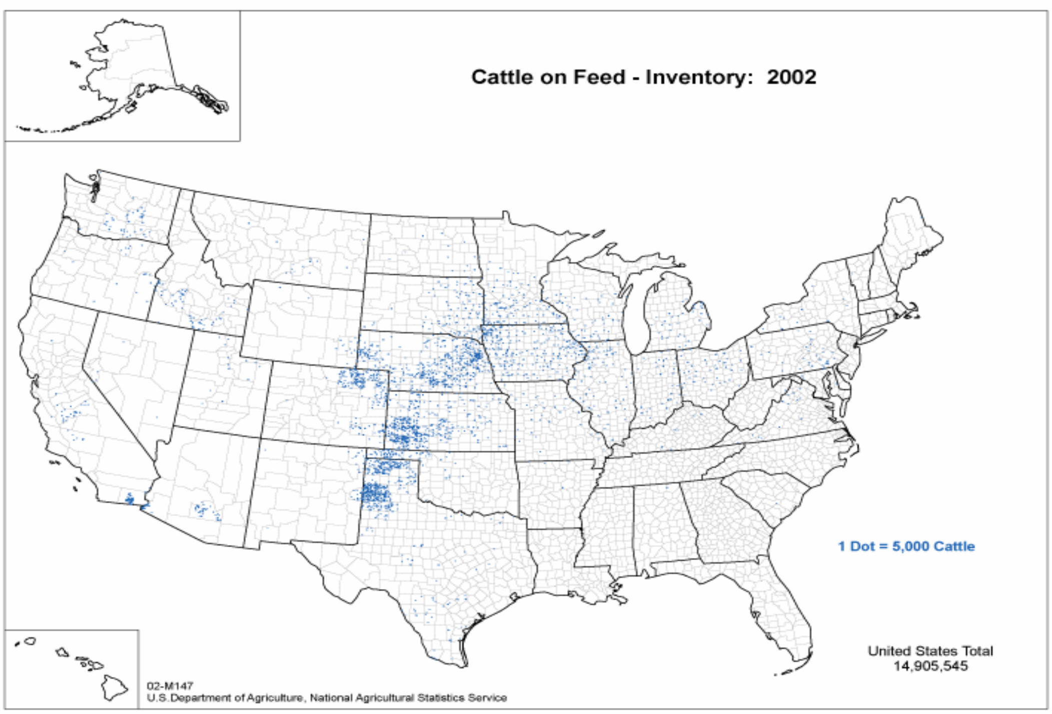

Figure 2 Geographical Location of Cattle on Feed in the US (NASS, 2002).

Tennessee had average prices of $103, $117.35, and $96.07 per hundredweight (cwt) for 500-600 pound steers (Agriculture Marketing Service, 2008). Can these price differences be explained by the transportation costs to the nearest major cattle feeding region? Are there quality differences in the quality of feeder cattle that are impacting these prices? Is each of these markets responding to different market conditions?

What should be the relationship between prices in geographically dispersed feeder cattle markets? The economic law of one price, which assumes that prices in different markets do not differ by more than transportation costs, is generally recognized to apply to agricultural commodity markets (Tomek and Robinson, 1990). This would also apply to the feeder cattle market as well. If differences between feeder cattle prices in two different markets exceeded transportation costs, it is assumed that there would be opportunities for arbitrage. Therefore, price differences between any two cattle markets are expected to be less than, or equal to, transportation costs.

Implicit in the law of one price is the homogenous nature of the commodity. If a commodity is not homogenous, and if there are differences that are valued in the market place, then prices would be expected to reflect these differences. Therefore, if it were the case that the quality of a commodity differed by market area, then price differences between two market areas would not only differ by transportation costs but by quality factors as well. Feeder cattle are not a homogeneous commodity. There are several cattle characteristics which influence the prices that are offered for cattle. Some of the more influential cattle characteristics that effect price include: weight, gender, breed, frame, and flesh condition.

The overall objective of this research is to determine if the law of one price holds in the US feeder cattle market. Three specific objectives are to: (1)Determine the value that the market places on various cattle attributes, sale lot characteristics and market factors; (2)Determine if feeder cattle prices are equivalent across broad geographic regions in the US once they have been adjusted for transportation and quality differences; and (3)Determine if feeder cattle prices are equivalent across states within a specific geographic region of the US once they have been adjusted for transportation and quality differences.

Data and Methods

Auction data was obtained from Superior Livestock Auction for sales in 2004-2006. The data includes variables such as price, breed, sex, weight, origin and destination, number of head, and days to delivery. The original data set contained over 30,000 lots of calf, yearling and breeding stock. For this paper, the data set was narrowed to 9,570 lots (1.1 million head) of steer and heifer calves that weighed 450-700 pounds and were delivered in October and November. This is essentially the market for spring-born, fall-weaned, calves.

Lancasterian Demand Theory suggests that the value of a particular good is really the sum of the value of the individual characteristics that make up that good. In the case of feeder cattle, the value of a particular pen of feeder cattle is based on the sum of the values for cattle, lot, and market characteristics. In other words, cattle buyers are buying separate attributes such as: breed, sex, weight, flesh, frame, lot size, days to delivery, and shrink, as opposed to the whole animal.

In most of the prior studies on the value of particular feeder cattle characteristics, the actual market price for each lot of cattle sold is the dependent variable. However, in this research, rather than using price as the dependent variable, basis is used. Basis is defined as:

$$Basis_i = Price_i - Futures_j \quad \textbf{(1)}$$

where $Price_i$ is the actual price bid for the i^{th} lot for i=1,2,3,…,I and $Futures_j$ is the value of the Chicago Mercantile Exchange (CME) j^{th} Feeder Cattle contract on the auction date and for the month of delivery or the closest month after delivery if no contract is traded in the delivery month. For example, in order to obtain the correct futures data for a sale on the 10^{th} of July with 100 days to delivery, the futures price that was used would be the CME October Feeder Cattle Future price on July 10^{th}. Basis was used rather than the actual price because there were multiple sale dates each year for calves that were to be delivered in October or November. If one accepts the assumption that futures markets are efficient and unbiased predictors of prices in the future, then buyers and sellers in the markets should be using the futures market to establish prices for feeder cattle for future delivery. Therefore, basis will be less impacted by changes in the market price level from one sale date to the next for the same expected delivery date than with the actual prices.

The general form of the equation to obtain the value of individual lot characteristics can be written as:

$$b_i = \alpha_0 + \sum_{j=1}^{J} \beta_j CC_{ij} + \sum_{k=1}^{K} \gamma_k LC_{ik} + \sum_{n=1}^{N} \theta_n MC_{in} + \varepsilon_i \quad \textbf{(2)}$$

where b_i is the basis for the i^{th} lot for i = 1,2,3,…,I, where I is the number of lots sold in the dataset. The intercept is represented as α_0 with ε_i as white noise error term. CC is the j^{th} cattle characteristic of the i^{th} lot of cattle, LC is the k^{th} lot characteristics of the i^{th} lot of cattle, and MC is the n^{th} market characteristic for the i^{th} lot of cattle with β_j, γ_k and θ_n are parameter estimates. This equation is similar to that used by Bailey, Brorsen, and Fawson (1993).

The cattle, lot, and market characteristic variables used in the analysis are displayed in Table 1. *BASIS*, as defined in equation 1, is the dependent variable and is in dollars per hundred weight. *HEIFER* is a dummy variable and is expected to have a negative sign consistent with prior research (Faminow and Gum, 1986; Schroeder, *et al*., 1988; Ward and Lalman, 2003). *WEIGHT* is in pounds and is expected to be negative and non-linear (Bailey and Peterson, 1991; Buccola , 1980; and Faminow and Gum, 1986. The majority of previous literature has shown that breed impacts cattle prices (Bailey and Peterson, 1991; Brazle, *et al*., 1988; Faminow and Gum, 1986; Schroeder, *et al*., 1998; Smith, *et al*., 2000; Turner, Dykes, and McKissick, 1991; Ward and Lalman, 2003). The breed and breed combinations are *ANGUS*; *ANGXENG*, Angus-English Cross; *ANGXEXO,* Angus-Exotic Cross; *ENGXEXOXEAR,* English-Exotic-Ear Cross; *ANGXENGXEXO*, Angus-English-Exotic Cross; *CHARXANG*, Charolais-Angus Cross; *REDANGUS*, Red Angus; and *OTHER*, all other breeds and crosses. Past research has indicated buyer preference for larger framed and lighter fleshed feeder cattle (Bailey and Peterson, 1991; Brazle, *et al*., 1988; Schroeder, *et al*., 1998; Smith, *et al*., 2000; Turner, Dykes, and McKissick, 1991; Ward and Lalman, 2003). Therefore, *LARGE* (Large Frame) is expected to have a positive impact and *SMALL* (Small Frame) a negative impact on basis compared to medium frame. Likewise, *LIGHT* (Light Flesh) is expected to have a positive impact and *HEAVY* (Heavy Flesh) a negative impact on basis compared to medium flesh. The coefficient for *IMPLANTED* (Steroid Implants) would be expected to have a negative impact on *BASIS*. *HORNS* (the presence of Horns) is expected to be negative consistent with prior research (Bailey and Peterson, 1991; Brazle, *et al*., 1988; Schroeder, *et al*., 1998; Ward and Lalman, 2003).

Based on previous research by Schroeder, *et al*. (1998) and Brazle, *et al*. (1988), *HEAD* (Number of Head) is expected to have a positive but decreasing impact on *BASIS*. Feeder cattle that are weighed at the ranch of origin are likely to have experienced less shrink than cattle that have already been loaded on a truck and freighted some distance before a weight is obtained. Therefore, the coefficient for *RANCH* (Weighed at Ranch) would be expected to be negative. Turner, Dykes, and McKissick (1991) found that as "pencil shrink" offered as a term of sale increased the price received also increased. Therefore, *SHRINK* (Pencil Shrink percentage offered) is expected to be positive. Previous research on the effect that uniformity has on cattle prices has been inconclusive (Bailey and Peterson, 1991; Brazle, *et al*., 1988; and Smith, *et al*., 2000).

Feeder cattle prices are expected to increase at a decreasing rate as the *ORDER* (Sale Order) progresses (Parcell, Schroeder, and Hiner, 1995). The expected sign for *DAYS* (Days to Delivery) is unknown. *MILES* (Miles shipped) is expected to have negative sign. *FUTURES* (Futures Price) may also impact the price offered for cattle. If higher overall price levels, as reflected by the futures market, lead to even higher cash prices, then the impact on basis may be positive. However, if higher overall price levels create greater uncertainty, and if cash prices do not follow the futures higher, then the impact on basis may be negative. At this point, the sign is left indeterminate. There is no *a priori* information on *2005* and *2006* (Annual Dummy Variables).

Equation 2 was estimated using ordinary least squares regression. The regression procedure of LIMEP, an econometric software package, (Greene, 2003) was used to perform the regression analysis. The model was found to have problems of heteroscedasticity. Consequently, a White estimator was used to correct for heteroscedasticity and provide more accurate results.

The following equation was used to determine the total transportation cost per hundred weight for each sale lot:

$$TRANSPORTATION\ COST_i = \quad (3)$$

$$RATE_j*MILES_i/500 + (PRICE_i*(WEIGHT_i/100)*((((MILES_i/100)*.61)/100)-SHRINK_i)))$$

where *TRANSPORTATION COSTS* are in dollars per cwt., and are based on cattle trucks weight capacity of 50,000 pounds; *i* is the ith sale lot for i=1 to I; *j* is the jth rate for j=2004 to2006; *RATE* is the trucking rate charged in that year; *PRICE* is the actual auction price; *WEIGHT* is the animal weight in cwt; *MILES* is the distance from the sale origin to the sale destination; .61 is a constant percent shrink of body weight for each 100 miles in shipment (Brownson, 1986); and *SHRINK* is the pencil shrink offered in the terms of the sale. Average freight rates for the years 2004, 2005 and 2006 were $2.45, $2.67, and $3.30 per mile, respectively (Harris Brothers Trucking, 2007).

This transportation cost per cwt for each sale lot was added to the basis for each lot to obtain a transportation adjusted basis. Essentially, this price would represent the expected price if transportation were free. In other words, if buyers were not paying any actual freight, were not expecting the cattle to actually lose weight, and were not receiving any pencil shrink, then this would be the price that should have been offered if buyers and sellers were all correctly accounting for transportation in their negotiations.

The first objective of this research was to determine the value of various cattle, lot, and market characteristics for each sale lot of feeder cattle. To arrive at a quality adjusted basis, the parameter estimates obtained from the Hedonic regression were used to adjust the basis to be higher or lower depending on the cattle, lot, and market characteristics of each sale lot. Essentially, a predicted basis is calculated using the parameters of the regression equation estimated. Because *BASIS* had already been explicitly adjusted for transportation costs, the predicted basis did not include parameters associated with *MILES* and *SHRINK*. The result is a predicted quality and transportation adjusted basis for each lot.

The data were classified by steers and heifers and by three weight categories: 450-499 pounds, 500-599 pounds, and 600-699 pounds. Additionally, the US was divided into six regions (Table 2) and each sale lot was placed in a region based on the origin of the cattle. The PROC GLM in SAS was used to determine if the mean values differed by each of the classifications.

The hypothesis of this work is that after basis has been adjusted for quality differences and for transportation costs, there will be no differences in basis level between regions of the country. This would imply that the law of one price is in existence in the feeder cattle market, at least in the case of a national satellite video auction market.

Results and Implications

Equation 2 was estimated using ordinary least squares regression to determine the impact various cattle, lot, and market characteristics had on *BASIS* for the sale lots. A White estimator was used to correct for heteroscedasticity and the parameter estimates are displayed in Table 3. The model accounted for approximately 70 percent of the variation in *BASIS*. Each estimated coefficient explains how much *BASIS* per cwt would change for a one unit change in the independent variable. Most parameter estimates were as expected and were significantly different from zero at the one percent level.

Heifers were discounted compared to steers and *WEIGHT* and *WEIGHTSQ* (weight squared) were significant and yielded expected results. This basis price slide is impacted by expected costs of gain in feeding calves, and therefore, is reflective of the feeding costs during the 2004-2006 time frame. Using the Angus breed as the default breed, all other breed and breed combinations were found to be significantly lower prices, lower basis, than Angus except for the Red Angus breed which was no different. The parameter estimates for frame were generally as expected with *LARGE* being positive and *SMALL* being negative. However, the coefficient for *LARGE* was statistically insignificant compared to cattle with medium frames. Compared to cattle with medium flesh, light fleshed calves received a price premium. The coefficient for *IMPLANTED* was positive and significantly different than zero at the one percent level. As expected, *HORNS* negatively impacted *BASIS*.

The parameter estimate for *HEAD* was positive and non-linear as expected. *BASIS* increases at a decreasing rate up to 541 head and then price begins to decline with larger lot sizes. *RANCH (*Weighing Conditions) also produced expected results. Predictions for shrink were also correct, but of a smaller magnitude than would have been expected. A one percent increase in the shrink offered as a term of sale only resulted in a basis increase of $.20 per cwt. Based on the price level for calves for this data set, an increase of more than one dollar per cwt would have been expected. This suggests that sellers would be better off if they did not offer a shrink on their calves.

Another coefficient which is particularly significant to this study is *MILES* (Miles to Delivery). As predicted, the parameter estimate has a negative effect on *BASIS* and is statistically different than zero at the one percent level. The *MILES* coefficient explains that for every one mile increase, *BASIS* is expected to be discounted by $.003/cwt. However in 2006 when the average freight rates were $3.30 per loaded mile, the total cost was $.0066 per cwt. All else being constant, this suggests that buyers are paying for at least half of the freight to haul cattle when considering deductions to price based on miles. *FUTURES* (Futures Price) was significant and had a negative impact on BASIS. The negative coefficient for basis demonstrates that as the futures increases by $1 the cash market will only follow by $.75 thus leaving a decrease in basis by $.25. Perhaps the explanation is that as the futures market rallies, the cash market does not share the same enthusiasm. Likewise, the cash market is less pessimistic on declining markets. In other words, for at least this data set, cash prices appear to be more stable than futures prices.

Transportation costs per hundred weight were determined for each sale lot and added to the basis. Basis was then adjusted for cattle, lot and market characteristics based on the parameter estimates from the hedonic regression. The mean quality and transportation adjusted basis for each region, gender and weight classification is displayed in Table 4. Basis differences by weight and gender were statistically significant but were not of particular interest to this study. However, even after adjusting basis explicitly for quality differences and transportation, basis still varied from region to region. The Southwest region consistently had the lowest basis across weight and gender categories, and the Intermountain West and Southeast regions typically had the highest basis.

The Intermountain West region was selected for further analysis to determine if the law of one price holds for states within a region. This region was of particular interest because of its remarkably high basis compared to that of other regions, and because this research is being conducted from within that region.

Results for the Intermountain West states were calculated in the same manner as the results for regional basis. The PROC GLM difference of means test was again utilized to determine if the quality and transportation adjusted basis means for each of the six states in the Intermountain West differed. The states included in the Intermountain West region are Colorado, Idaho, Montana, Nevada, Utah, and Wyoming. The basis means for each state in the Intermountain West region and for the three weight categories for both steers and heifers are displayed in Table 5.

The mean quality and transportation adjusted basis were equivalent for all states, except Montana, for the lightest heifer calf category. Idaho and Wyoming had statistically equivalent adjusted basis means for all weight and gender categories. Montana had the statistically highest basis in all three weight groups for both steers and heifers. This is especially interesting considering that Montana has the highest average mileage that cattle are transported from sale location to delivery destination of any state in the Intermountain West. In contrast to Montana's high basis, the mean basis for calves from Colorado was the lowest in five out of six categories. Colorado has the lowest average miles of transportation per lot. These results are consistent with a prior study by Bailey, Brorsen, and Thomsen (1995) in identifying that "Feeder cattle buyers absorb freight costs for cattle purchased in distant locations and discount purchases of nearby cattle by amounts that exceed estimated transportation costs."

This point is further illustrated by comparing Colorado, Montana and Utah. Approximately 40-50 percent of the feeder cattle from each of these states were shipped to either Colorado or Nebraska to be fed. The average miles feeder calves were shipped was 303, 612 and 527 for Colorado, Montana, and Utah, respectively. The actual basis and the basis adjusted for transportation for 500-599 pound steers for these three states are displayed in Table 6. While actual basis (actual price) was nearly identical for Colorado and Montana, after adjusting for transportation, Montana had a much higher basis. Even Utah, which had a lower initial basis, had a higher transportation adjusted basis than Colorado.

The nature of Superior Livestock Auction data allows for buyers to be well informed in nearly all areas of the US feeder cattle market. However, based on these results, it would appear that feeder cattle prices do not follow the theory of the law of one price. This finding is consistent with past commodity research which also concluded similar findings (Ardeni, 1989; Barrett, 2001; and Faminow and Benson, 1990). However, John Baffes (1990) explained that additional research must be performed in order to fully deny the law of one price. Perhaps, there are variables that are immeasurable or are not considered in this data set. Attributes like reputation, which can not be empirically measured, may have a profound affect on basis. Furthermore, there may be other implicit costs to arbitrage that are not considered here and that would therefore result in price differentials being greater than the transfer costs measured here.

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Table 1. Descriptive statistics for the 9,570 sale lots included in the analysis.

Variable	Mean	Std. Dev	Minimum	Maximum
Price	122.53	9.8764	61.75	164.25
Basis	12.80	9.8980	-43.00	56.00
Transportation Adj. Basis	22.99	18.3698	-38.43	85.87
Quality & Trans. Adj. Basis	4.22	16.3030	-42.31	69.59
Cattle Characteristics				
Heifer	0.3820	0.4859	0	1
Weight	567.78	63.1389	450	700
Small Frame	0.0016	0.0396	0	1
Large Frame	0.1079	0.3102	0	1
Light Flesh	0.1084	0.3109	0	1
Heavy Flesh	0.0355	0.1850	0	1
Angus	0.2479	0.4318	0	1
Angus-English Cross	0.1215	0.3268	0	1
Angus-Exotic Cross	0.1708	0.3764	0	1
English-Exotic-Ear Cross	0.0810	0.2728	0	1
Angus-English-Exotic Cross	0.0800	0.2714	0	1
Charolais-Angus Cross	0.1023	0.3031	0	1
Red Angus	0.0216	0.1455	0	1
Other Breeds	0.1748	0.3798	0	1
Horns	0.2178	0.4127	0	1
Implanted	0.2936	0.4554	0	1
Lot Characteristics				
Number of Head	115.90	65.8802	24	880
Uneven	0.9362	0.2443	0	1
Weighed at Ranch	0.4307	0.4952	0	1
Percent Shrink	0.0149	0.0103	0	0.03
Market Characteristics				
Sale Order	708.83	474.5509	1	1933
Days to delivery	88.09	40.5879	0	285
Miles to delivery	429.32	272.1989	0	1607
Futures	109.72	4.3124	94.50	118.33
Year 2005	0.3660	0.4817	0	1
Year 2006	0.3021	0.4592	0	1

Table 2. Division of US states into six regions.

Region	States
West	Washington, Oregon, California
Intermountain West	Idaho, Montana, Wyoming, Colorado, Nevada, Utah
Midwest	Kansas, Nebraska, North Dakota, South Dakota, Minnesota, Iowa, Missouri
Southwest	Oklahoma, Texas, Arizona, New Mexico
Southeast	Florida, Georgia, Alabama, Mississippi, Louisiana, Arkansas, North Carolina, Tennessee, Kentucky
Northeast	Indiana, Illinois, Wisconsin

Table 3. OLS-White parameter estimates for feeder cattle basis ($/cwt.) differentials.

Independent Variables	Coefficient	Standard Error	P-Value
Adjusted R^2	0.7004		
Intercept	214.5898	5.1506	0.0000
HEIFER	-8.7252	0.1171	0.0000
WEIGHT	-0.5073	0.0158	0.0000
WEIGHTSQ	0.0004	0.1365D-04	0.0000
Breed:			
ANGXENG	-1.8812	0.1858	0.0000
ANGXEXO	-2.0205	0.1566	0.0000
ENGXEXOXEAR	-5.0055	0.2602	0.0000
ANGXENGXEXO	-3.0217	0.2026	0.0000
CHARXANG	-1.1957	0.1988	0.0000
REDANGUS	0.4233	0.3954	0.2844
OTHER	-4.8052	0.2084	0.0000
SMALL	-10.0038	4.1412	0.0157
LARGE	0.0035	0.0070	0.6221
LIGHT	1.5746	0.2460	0.0000
HEAVY	0.0015	0.0026	0.5743
MPLANTED	0.0045	0.0008	0.0000
HORNS	-1.5640	0.1657	0.0000
HEAD	0.02048	0.0027	0.0000
HEADSQ	-0.1848D-4	0.5617D-5	0.0000
RANCH	-0.4791	0.1205	0.0001
SHRINK	0.0020	0.0004	0.0000
UNEVEN	-0.0043	0.0011	0.0001
ORDER	0.0047	0.0005	0.0000
ORDERSQ	-0.2609D-05	0.2654D-06	0.0000
MILES	-0.0033	0.0002	0.0000
DAYS	0.03699	0.0020	0.0000
FUTURES	-0.2525	0.0199	0.0000
2005	-0.8659	0.1280	0.0000
2006	-3.4853	0.1667	0.0000

Table 4. Mean quality and transportation adjusted basis by gender weight and region.

	Steers			Heifers		
Region	450-499	500-599	600-700	450-499	500-599	600-700
West Coast	7.27_{bc}	3.13_{b}	1.88_{b}	-7.31_{b}	-5.42_{b}	-4.4_{ab}
Intermountain West	13.32_{d}	11.49_{d}	13.95_{d}	-1.89_{c}	1.89_{c}	7.14_{d}
Midwest	6.5_{b}	7.29_{c}	6.59_{c}	-8.45_{b}	-3.26_{b}	$-.17_{bc}$
Southwest	$-.55_{a}$	-2.84_{a}	-3.22_{a}	-13.35_{a}	-12.19_{a}	-7.46_{a}
Southeast	12.80_{cd}	7.43_{c}	15.05_{d}	-7.21_{b}	-4.66_{b}	3.37_{cd}

Means with matching subscripts in each weight and gender column signify that basis is statistically the same at a 95 percent level of confidence. The a subscript denotes the smallest mean and each successive letter is a statistically higher mean.

Table 5. Mean quality and transportation adjusted basis for Intermountain West states by gender, weight and state.

	Steers			Heifers		
State	450-499	500-599	600-700	450-499	500-599	600-700
Colorado	12.05_{b}	4.28_{a}	1.66_{a}	-6.00_{a}	-7.68_{a}	-6.3_{a}
Idaho	12.68_{b}	8.72_{b}	9.25_{b}	-4.98_{a}	-5.48_{ab}	-1.97_{a}
Montana	19.80_{c}	18.29_{c}	24.68_{c}	6.93_{b}	8.98_{d}	17.38_{d}
Nevada	5.67_{a}	6.06_{b}	7.98_{b}	-3.88_{a}	-1.6_{b}	14.4_{cd}
Utah	14.52_{bc}	13.23_{c}	10.45_{b}	-4.42_{a}	3.78_{c}	5.65_{bc}
Wyoming	16.38_{bc}	8.75_{b}	6.84_{b}	-2.63_{a}	1.41_{bc}	-1.63_{ab}

Means with matching subscripts in each weight and gender column signify that basis is statistically the same at a 95 percent level of confidence. The a subscript denotes the smallest mean and each successive letter is a statistically higher mean.

Table 6. Actual mean basis and transportation adjusted basis for Colorado, Montana, and Utah.

	Colorado	Montana	Utah
Actual Basis	\$17.64	\$17.70	\$13.90
Transportation Adjusted Basis	\$23.89	\$40.74	\$32.96