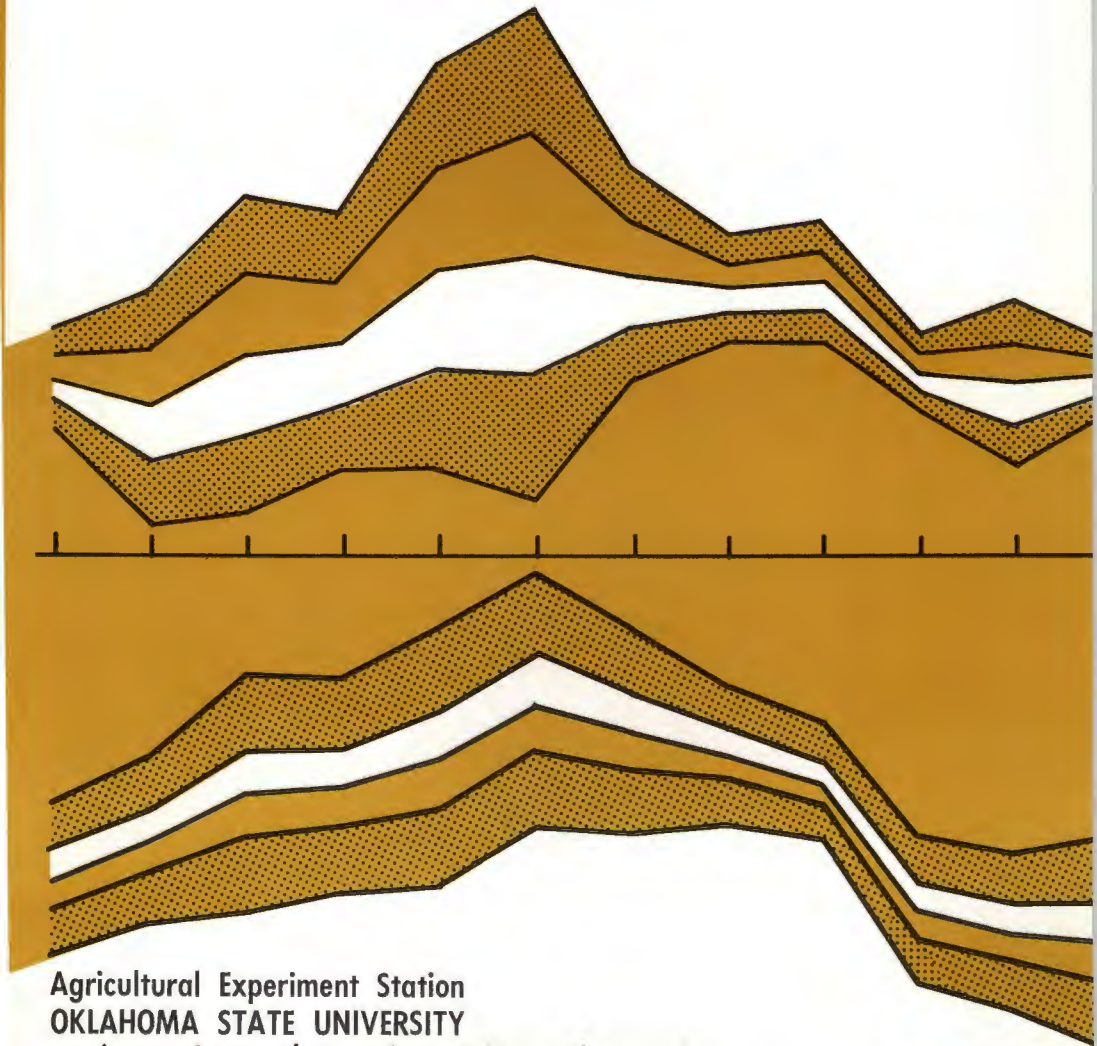


Seasonal Relationships of Beef Cattle Prices in Oklahoma



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Seasonal Relationships of Beef Cattle Prices In Oklahoma

Paul D. Hummer and Ronald B. Campbell*

Seasonal price variation is characteristic of average monthly prices of many farm products. These price movements are often consistent from year to year because of repetitive seasonal variation in the supply and/or demand for the product. The knowledge of such variation often proves useful in the marketing of farm products.

Historically, beef cattle prices have exhibited some seasonal variation due primarily to variation in supply. Although beef is produced throughout the year, the level of production and marketings varies because of biological factors, weather patterns, and seasonal variation in production costs. This study was done to analyze recent seasonal price data which may be useful in deciding when to market cattle.

Method and Procedure

Average monthly prices of the major grades and weights of stockers and feeders sold at the Oklahoma City market were used in this study. These prices were obtained from weekly data published in *Market News* by the Livestock Division of the U.S.D.A. Consumer and Marketing Service. Monthly prices of slaughter cattle were obtained from market data compiled for the Oklahoma-Texas Panhandle area by the Federal Market News Service, U.S.D.A., Amarillo, Texas. It was felt the latter prices were indicative of the prices received for the majority of fed beef produced in Oklahoma. Additional data on marketings and prices received by Oklahoma farmers were obtained from the Statistical Reporting Service of the U.S.D.A.

The time period used in this study was 1962 through 1969. This eight year period did not include a complete cattle numbers cycle but

*Research reported herein was conducted under Oklahoma Station Project No. 1269

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it was selected as being representative of a period of growth and change in feedlot capacities and technology in the Oklahoma area. Analysis of seasonal relationships in Oklahoma beef cattle prices for earlier time periods covering 1949 through 1962 were reported in earlier publications.^{1,2} This bulletin follows closely the format of the October, 1965 publication.

The method used to obtain seasonal price relationships involves the computation of (1) a centered 12-month moving average, (2) the average price of each month expressed as a percent of the moving average for the same month (often called an index), (3) the mean of the percentages obtained for any given month for the selected period of years, and (4) the standard deviations of the percentages and of the mean of the percentages for each month. The original average monthly price for any given month includes seasonal variation. On the other hand the centered moving average does not contain seasonal variation since it is an average of 12 months. Thus the percentage the original monthly price is of the centered moving average (step 2) measures the monthly fluctuation in price due to seasonal variation. The average seasonal price percentages on indexes so derived are included in Appendix Tables 1 through 4. Any one of these monthly indexes may be interpreted as the percentage that the monthly price is expected to be of the average yearly price.

Throughout this publication, the seasonal price patterns for selected grades of a given class of beef animals are generally presented on one chart. This is followed by a separate chart(s) which includes two ranges for the seasonal patterns for each of one or more grades in that class. The first and wider range is relevant for those who are interested in how high or low a monthly index may be in any individual year. The second and narrower range is relevant for those who are concerned with how high or low the average of the monthly indexes for a given month may be for a group of years. Both ranges are based on probabilities.³

Seasonal Variation in Cattle Marketing and Average Prices

Marketings of cattle directly affect cattle prices. The availability of roughage and the variability in costs of feeding animals at different seasons of the year in turn influence the marketings of cattle. During the

¹James S. Plaxico and Jackson L. James, *Beef Cattle Prices, Seasonal Movements and Price Differentials on the Oklahoma City Market*, Oklahoma Agricultural Experiment Station Bulletin No. B-486, February, 1957.

²Leo V. Blakley, Odell L. Walker, and John G. McNeeley, Jr., *Monthly Variations of Beef Cattle Prices in Oklahoma*, Oklahoma Agricultural Experiment Station Bulletin No. B-642, October, 1965.

³The first and wider range is that within which the monthly index for any individual year is expected to fall in two out of three years. The second and narrower range is that within which the average of the monthly indexes for a given period of years is expected to fall at a two out of three year probability level.

1962-69 period the number of cattle marketed on the average was highest in the late summer and fall months with a high of 40 percent above average in October but then dropped below average in the late winter months with an average low of more than 25 percent below average (Figure 1). The pattern is similar for calves but with greater variation in that October marketings averaged 132 percent above average and fell to 50 percent below average or less in the winter and spring months.

Prices generally moved inversely to cattle marketings, dropping to a low of 96 percent of average in October and reaching a peak of 103 percent of average in June. Note that the price range around the yearly average is considerably less than the range for marketings.

A slight decrease has taken place in the amount of seasonal variation of Oklahoma total cattle marketings from that which prevailed in the 1949-1962 period. There has been a much greater decrease in the range of variation of prices, from about 12 percent for the 1949-1962 period to seven percent in the 1962-1969 period. And on the average, June prevailed as the high month in the latter period as opposed to April in the previous period. The decrease in price variation is probably due not only to the decrease in variation of total marketings but also to the variation in amounts of different classes and grades of animals which make up the total marketings.

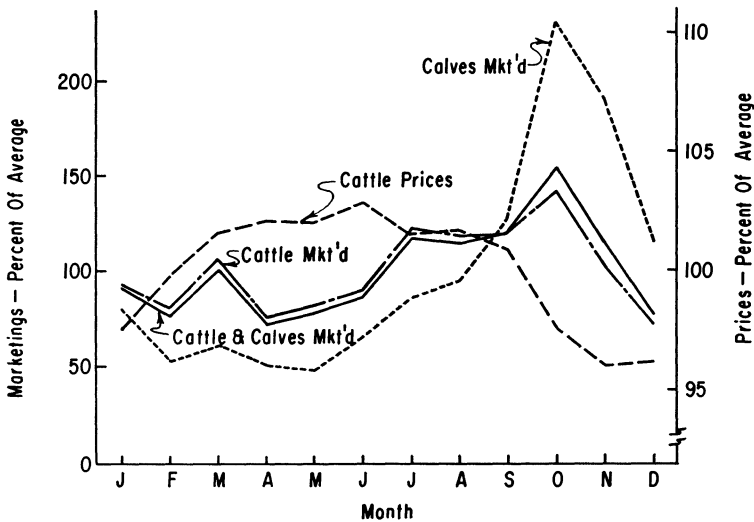


Figure 1. Seasonal Patterns for Prices Received by Oklahoma Farmers for Cattle, and Salable Receipts of Cattle and Calves in the Oklahoma City Market, 1962-69.

High grade slaughter animals have become more important in Oklahoma in recent years and as a rule exhibit less seasonal price variation than lower grades. The same is true of higher grade stocker and feeder animals. Also the relative importance of slaughter animals to stocker and feeder cattle has affected the average price variation since each was different in the magnitude and timing of seasonal highs and lows.

Slaughter cattle prices in the 1962-1969 period were highest in the June through September period whereas stocker and feeder cattle prices peaked in June and fell, on the average, through the late summer into the winter and recovered more rapidly in the spring. Thus, a change in the proportions of the classes marketed had some effect on the pattern of average prices over and above any change in the pattern for an individual class.

Seasonal Variation in Slaughter Cattle Prices

The patterns of seasonal price variation among classes and grades of slaughter animals differed significantly because of the great range of variety from Choice steers to cull cows and bulls. June and September were the high months for slaughter steer and heifer prices, with February and March generally the low months. Prices of slaughter cows and bulls average highest in April and lowest in November with a much greater variation than that shown by highly finished steers and heifers coming from the feedlot. This reflected the greater variation in seasonal marketings of cull cows and bulls because of the seasonal fluctuations in the availability and relative costs of feed for such animals.

Steers

Choice, 900-1100 Lbs. and 1100-1300 Lbs.

The seasonal patterns obtained for the prices of Choice steers in the Oklahoma-Texas Panhandle reflected differences in the two weight classes analyzed (Figure 2). The prices of 1100-1300 lbs. steers ranged from a low of 2.4 percent below the annual average in February to a high of 2.7 percent above the average in June. A secondary peak occurred in September. Prices were above average for the months of May through September only. On the other hand, the prices of 900-1100 lbs. steers increased from a low of 3.1 percent below average in March to a high of 4.1 percent above average in September. Prices were above average for the months of June through October.

Much of the difference in patterns between the two weight groups probably resulted from the different time periods used for the two groups: 1965-69 for 1100-1300 lbs. and 1962-69 for 900-1100 lbs. Con-

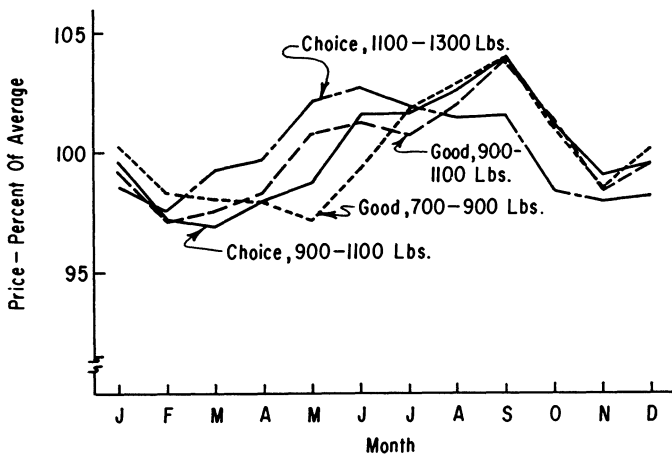


Figure 2. Slaughter Steers: Average Seasonal Price Variation for Selected Weights and Grades, Oklahoma-Texas Panhandle, 1962-69.*

*Price Data for Choice Steers, 1100-1300 lbs. Were for the Period 1965-1969.

tinuous data for the heavier group were not available for the longer 1962-69 period. This gave relatively more weight in the heavier group to the 1968-69 years where the month of September was not the high month for the year.

There was considerable price fluctuation from year to year for slaughter steers for certain months which suggests the use of caution in rigidly accepting the seasonal price pattern for this class of cattle. The variation in prices for a given month from one year to the next was the greatest in general for the first half of the year (Figure 3).⁴ May and June had the greatest variation for both weight groups. For the 900-1100 lbs. group, the range in May was ± 8.7 percent, or a range of \$4.40 based on the annual average of \$25.23 per cwt. (Appendix Table 5). The range was considerably narrower (less variable prices) in the months of August, September, and October for both weight groups.

Good, 700-900 Lbs. and 900-1100 Lbs.

Seasonal variation was also present for Good steers, 700-900 lbs. and 900-1100 lbs. with a pattern similar to that for Choice steers, 900-1100 lbs. (Figure 2). Prices for the heavier Good steers rose above the annual average in May whereas prices for the lower weight group did not do

⁴See the Method and Procedure section for an explanation of the ranges shown in Figure 3 and succeeding charts.

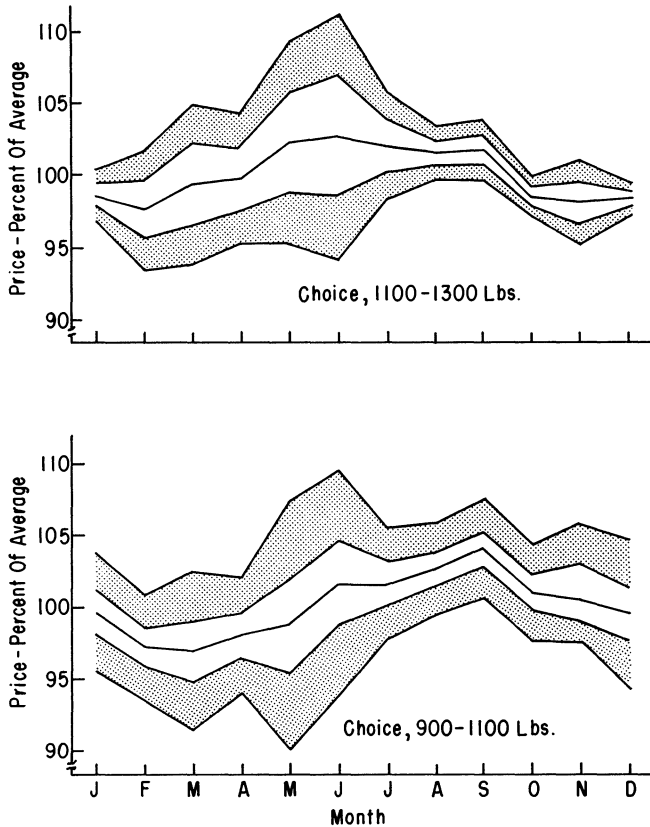


Figure 3. Slaughter Steers: Expected Ranges for Mean and Individual Year Indexes of Seasonal Price Variation for Selected Weights and Grades, Oklahoma-Texas Panhandle, 1962-69.*

*Price Data for Choice Steers, 1100-1300 lbs. Covered the Period 1965-1969.

so until July. Once above average, prices of both groups averaged above 100 percent of the annual average through October, both peaking in September at about 104 percent of average. Some recovery in prices was evident around December and January with a drop in late winter and early spring.

The variation in prices from year to year was greatest for both weights of Good steers in December and the first half of the year but was generally less than the variation for Choice steers in the same time period (Figure 3). March, May and June were the months of greatest price variation, with more than ± 5.0 points fluctuation in the indexes

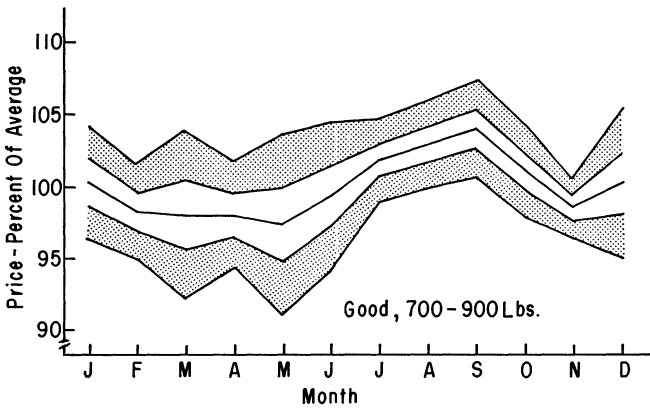
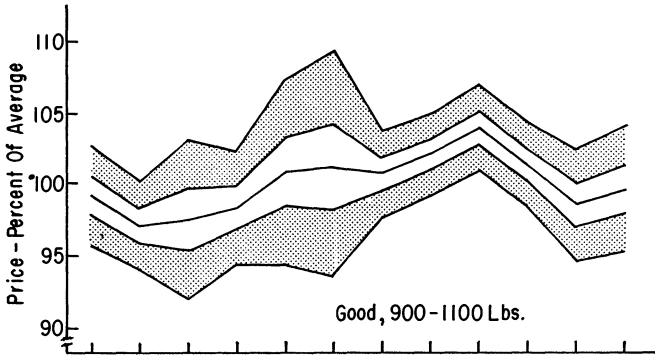


Figure 3. Continued.

(greater than \$2.41 per cwt. based on \$24.07 annual average in the case of 900-1100 lbs. Good steers—see Appendix Table 5).

Heifers

Choice, 700-900 Lbs. and 900-1100 Lbs.

Seasonal movement of prices for heifers closely resembled that for slaughter steers. Prices for both weights of Choice slaughter heifers peaked in September at more than 103 percent of the annual average (Figure 4). A secondary peak occurred in June with the lighter group reaching nearly 103 percent of average and the heavier group lagging somewhat at about 101.5 percent. Early summer through early fall was the period of relatively higher prices with below average prices prevail-

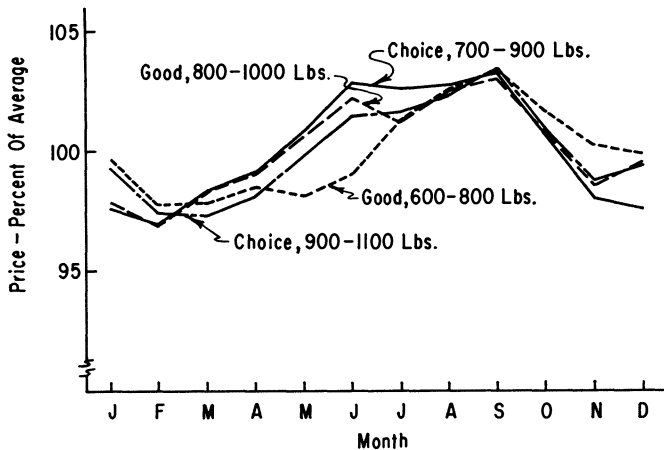


Figure 4. Slaughter Heifers: Average Seasonal Price Variation for Selected Weights and Grades, Oklahoma-Texas Panhandle, 1962-69.*

*Price Data for Choice Heifers, 700-900 lbs. and Good Heifers, 800-1000 lbs. Covered the Period 1963-1969.

ing from November through April. Some price recovery was evident in December and January for the heavier group.

March through June was the period of greatest price variation from year to year for any given month (Figure 5). The greatest range, close to ± 7 percent for both weight groups, was in June. The price variation was considerably less for the period of July through November. For the lighter weight group, December and January were also months of relatively low price variability from year to year.

Good, 600-800 Lbs. and 800-1000 Lbs.

The seasonal variation in prices for Good slaughter heifers ranged from an average high in September of around 103 percent to average lows in February of nearly 98 percent and 97 percent for the heavier and lighter weight groups, respectively. In general the seasonal price pattern for Good heifers coincided with that for Choice heifers: higher than average prices in the early summer through early fall with lower than average prices the rest of the year. An exception is the failure of the prices for Good, 600-800 lbs. heifers to show a secondary peak in June. In fact, the June index was below average at 99 percent. Too, the November average price was not below the annual average for this class as it was for the other steer and heifer classes.

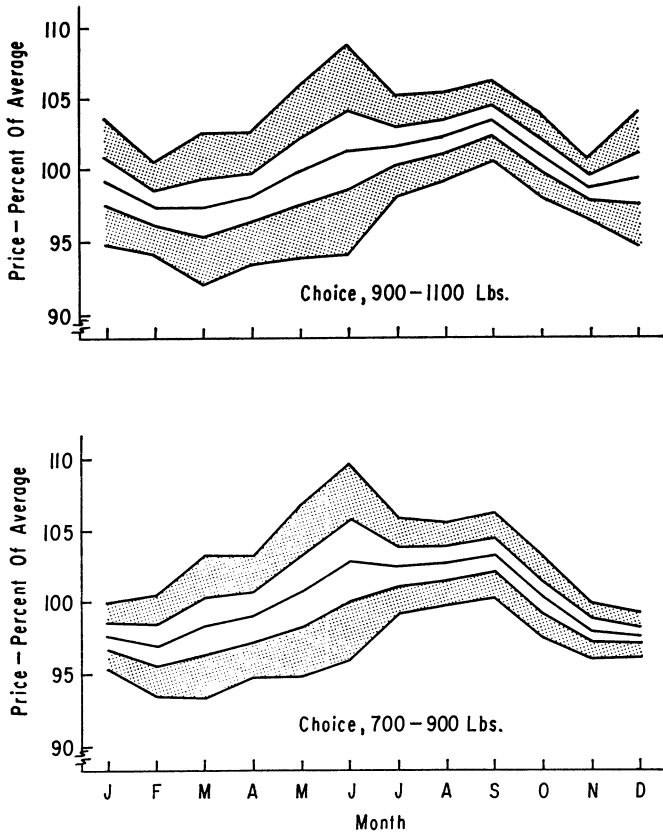


Figure 5. Slaughter Heifers: Expected Ranges for Mean and Individual Indexes of Seasonal Price Variation for Selected Weights and Grades, Oklahoma-Texas Panhandle, 1962-69.*

*Price Data for Choice Heifers, 700-900 lbs. and Good Heifers, 800-1000 lbs. Covered the Period 1963-1969.

Variation in prices from year to year for a given month ranged above ± 4.0 percent for the months March, April, May, June, and December. The largest range was ± 6.6 percent in June for the heavier Good heifers, equivalent to a range of about \$3.09 based on average prices for this period. This same group had the least price variation with ± 1.9 percent (\$.89) in January. For the lighter weight group, the least price variation (± 2.9 or \$1.36) occurred in September. In 1949-62 data these months were also among those with the highest ranges.

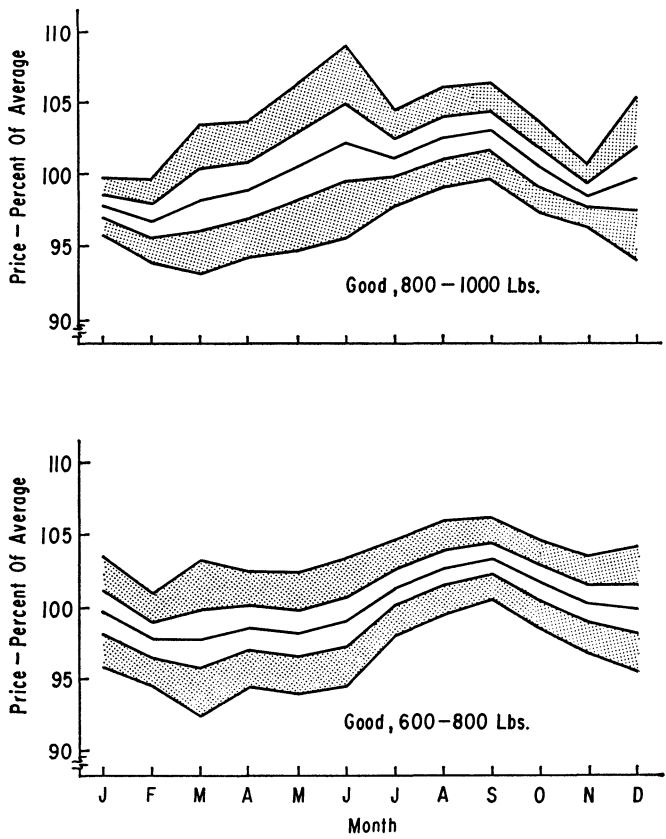


Figure 5. Continued.

Cows

Seasonal variation in slaughter cow prices for the 1962-69 period followed the spring high and fall low patterns observed in earlier time periods. The amount of price variation over the year increased as the quality grade level decreased, although the general patterns among grades were similar.

Commercial

Commercial slaughter cow prices were 3.5 percent below the annual average in January and increased steadily to a peak of 5.8 percent above average in April (Figure 6). Prices then fell to 2.2 percent below average in July, recovered to 0.4 percent above average in September and finished the year at 4.4 percent below average. November prices averaged

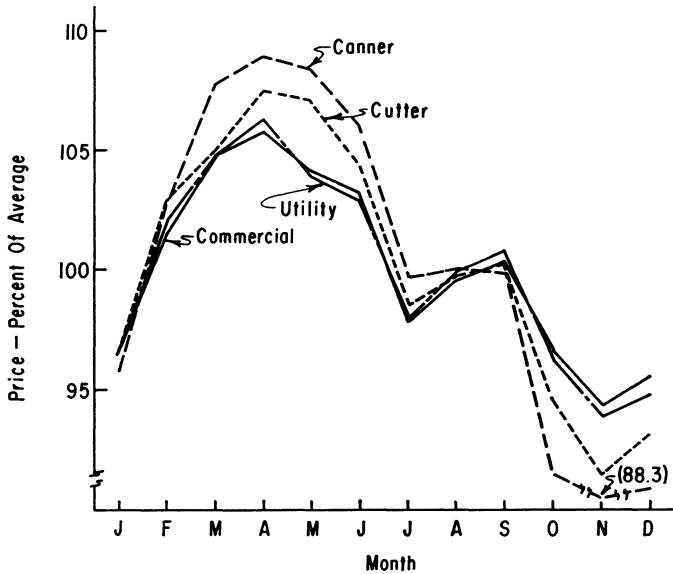


Figure 6. Slaughter Cows: Average Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

lowest at 5.7 percent below the average for the year.

As was true in the study by Blakley, et. al.⁵ the price variation from year to year for any given month was less for Commercial cows than for either slaughter steers or heifers (Figure 7). No monthly range exceeded ± 3.5 percent and the low range was ± 1.2 percent (\$.39) for January. The ranges tended to be highest near the peaks and troughs of average prices.

Utility

Prices of Utility slaughter cows followed closely the seasonal price pattern of the Commercial grade. For the Utility cows the April peak was slightly higher (106.3) and the November trough was lower (93.9) than for the Commercial grade. Again, price variation on a year to year basis did not exceed ± 3.5 percent for any given month.

Cutter

The seasonal price variation was greater for Cutter slaughter cows than for the Commercial and Utility grades. Once again April was the high month on the average with an expected index 7.5 percent above

⁵Ibid., p. 12.

the annual average. The trough was in November with an expected index 8.5 percent below the annual average. The general pattern of relatively higher prices in the spring than in the fall and winter followed closely the price patterns for the Commercial and Utility grades.

The variation from year to year around the expected price for any given month ranged from a high of ± 3.6 percent in March to a low of ± 1.3 percent in February. In dollar terms and based on an average price of \$14.75, these percentage variations amount to \$1.06 and \$.38, respectively.

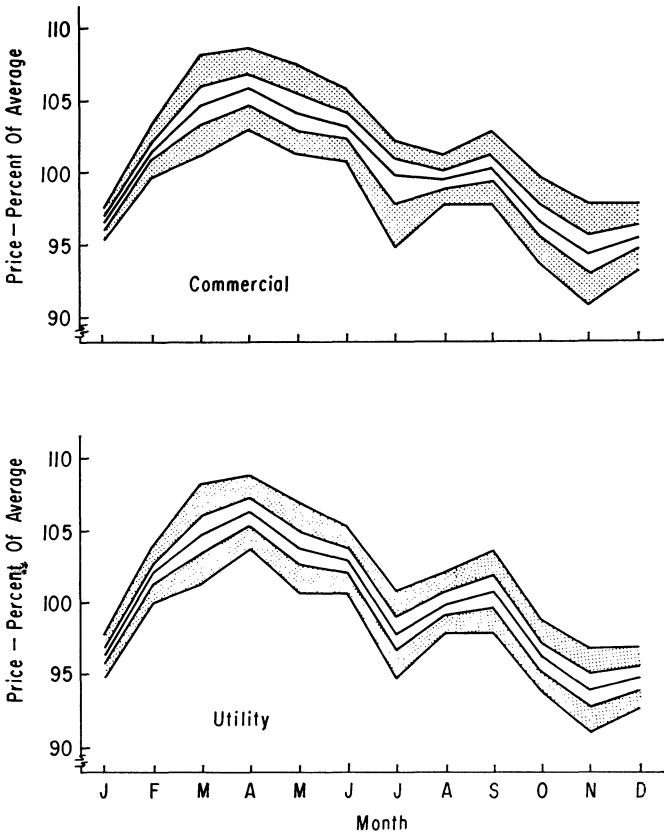


Figure 7. Slaughter Cows: Expected Ranges for Mean and Individual Indexes of Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

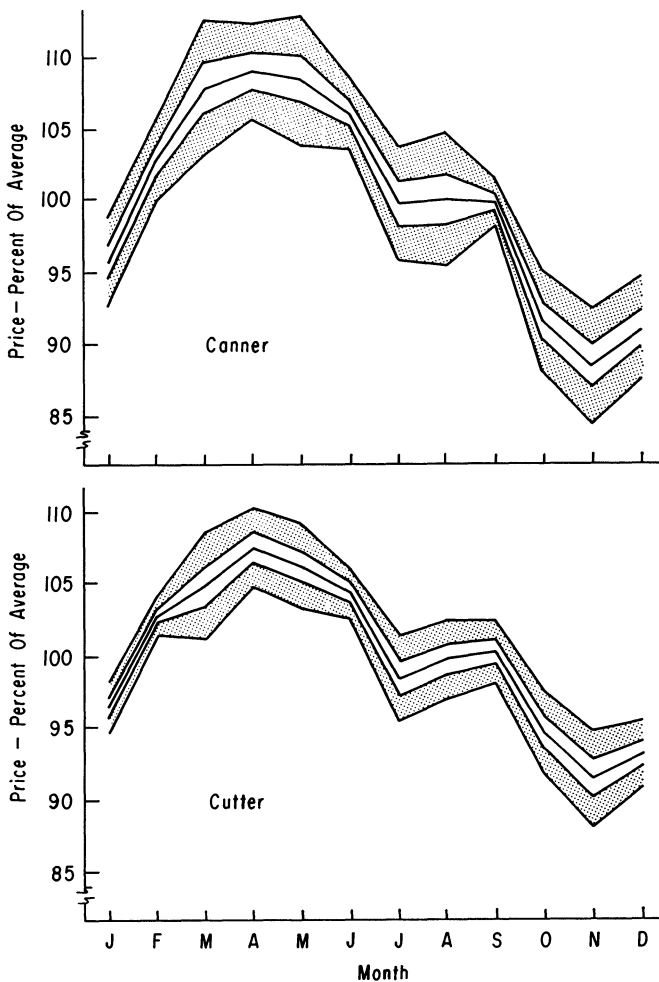


Figure 7. Continued.

Canner

Prices of Canner slaughter cows had the greatest seasonal price variation of any slaughter or feeder cattle prices analyzed in this study. Expected prices rose steadily from below average in January to a peak of 9.0 percent above average in April, fell to about average for July, August, and September, then dipped to a low of 11.7 percent below the annual average in November.

Canner cow prices also showed more yearly variation around the expected monthly price than any of the other cow prices. Ranges for

March, May, and August were slightly above ± 4.5 percent. September prices varied the least from year to year (± 1.6 percent).

Bulls

Prices of slaughter bulls varied with the season much the same as prices of slaughter cows with a spring high and a fall low (Figure 8). Prices of lower grade bulls had slightly more variation than higher quality bulls.

Commercial

Expected Commercial bull prices started the calendar year one percent above the annual average and increased to 5.9 percent above average in April. Price then steadily decreased to about three percent below the yearly average in August and September and reached the low in November of 5.4 percent below average. This low was similar to that obtained by Blakley, et. al.⁶, using 1955-62 data, but the April high is about three percent higher than in the earlier data.

The range of the two out of three year probability level for the price indexes was one of the smallest of all cattle prices analyzed (Figure 9). At no time did this range exceed ± 2.8 percent (\$1.14). February, March, August, and November prices varied the most from year to year around the average.

⁶Ibid., p. 13.

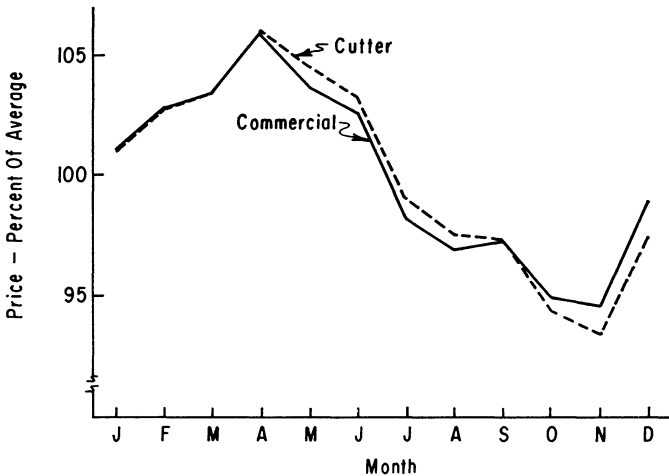


Figure 8. Slaughter Bulls: Average Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

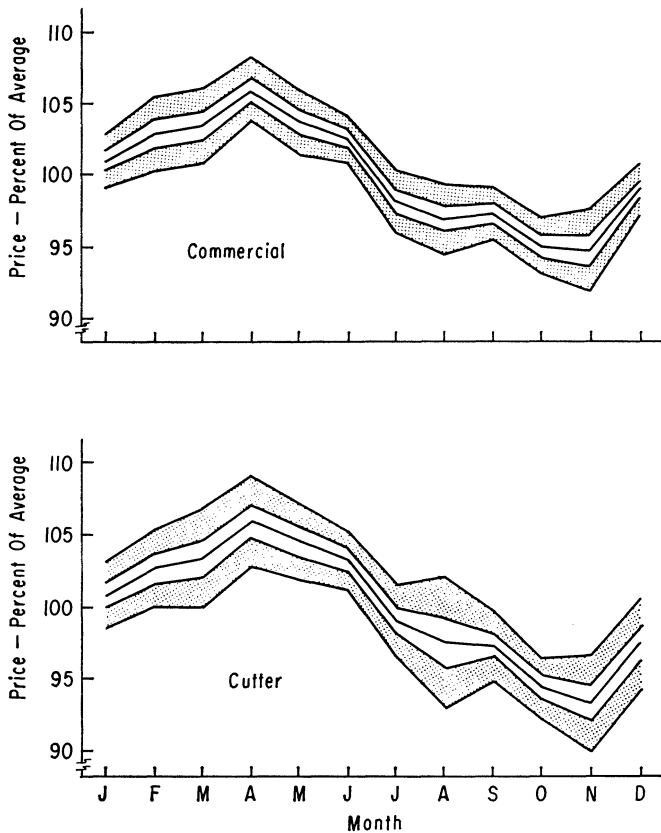


Figure 9. Slaughter Bulls: Expected Ranges for Mean and Individual Year Indexes of Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

Cutter

Average monthly price indexes for Cutter bulls were very close to those for Commercial bulls from January through April, but did not fall quite as rapidly in May and June as the prices for the higher quality bulls. Cutter prices showed more variation throughout the year, however, by dipping further below the annual average than Commercial prices during the last quarter, reaching a low in November of 6.6 percent below the annual average.

From year to year the prices generally varied more for Cutter bulls than for the Commercial grade. August had the greatest variation with a range of ± 4.6 percent; the high and low months for expected prices,

April and November, also had more price variation over the years relative to most of the other months.

Calves

Insufficient price data for slaughter calves during the 1962-69 period were available for analysis from the Oklahoma City market.

Seasonal Variation in Stocker and Feeder Cattle Prices

Steers

The seasonal price patterns for each grade and weight of stocker and feeder steers were very similar (Figure 10). Expected prices started the calendar year about two percent below average but were above the annual average by March. The peak prices occurred in June, three percent above the annual average. Prices then declined but stayed above average until October. This was the low month (three percent below average) for the expected prices of the Choice and heavy Good grades, whereas the low for the lighter Good and the Standard grades came in December.

This general pattern differs somewhat from that during the 1949-1962 period.⁷ Peak prices in the earlier period occurred in April on the

⁷Ibid., pp. 15-16.

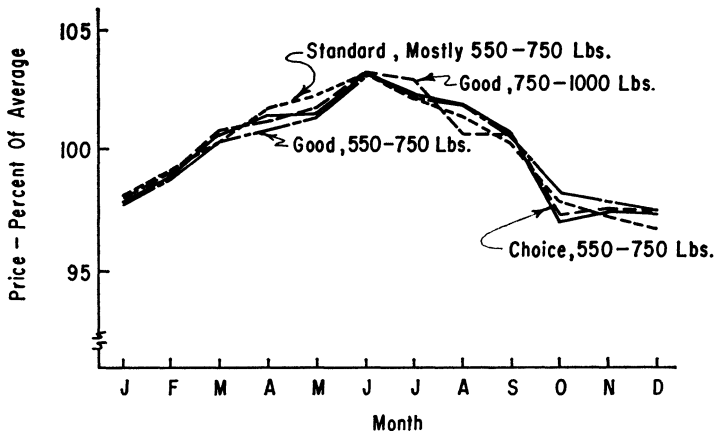


Figure 10. Stocker and Feeder Steers: Average Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

average. Also there is closer similarity in patterns between grades and weights during the more recent period than earlier with the lower grades showing less seasonal price variation than before. Except for the change in the peak month the more recent price patterns follow closely the price pattern for Choice feeder steers in 1949-1962 with about the same variation of three percent on either side of the annual average. Even in the 1949-1962 period expected prices for Choice feeder steers in June were still fairly strong at 1.6 percent above the annual average. This reduction in price variation and the similarity between recent price patterns and that of earlier Choice feeder steer prices are most likely due

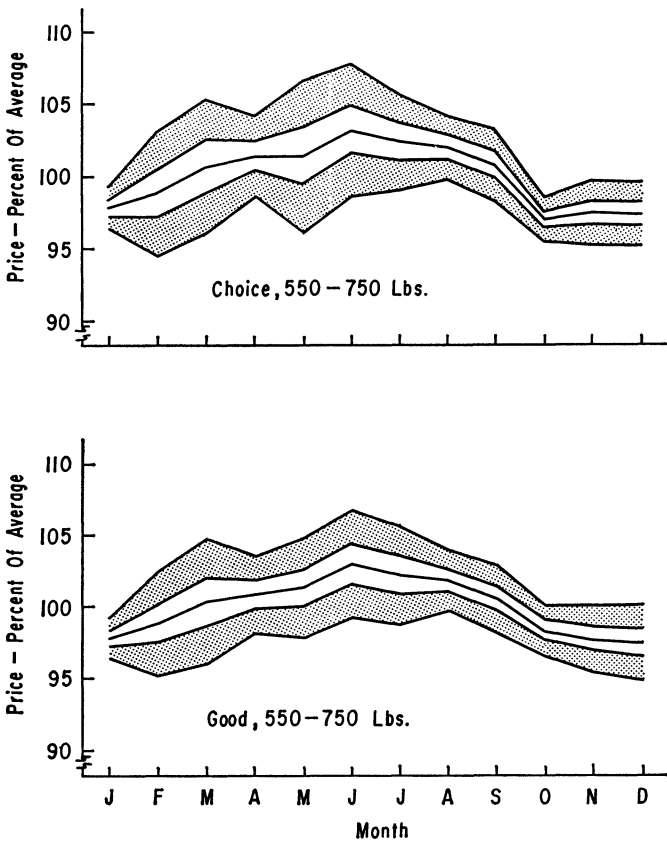


Figure 11. Stocker and Feeder Steers: Expected Ranges for Mean and Individual Year Indexes of Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

to the increased influence of large feedlots and their more uniform demand for feeder animals than when native and wheat pasture was a more predominant feeding vehicle.

The year to year variation for prices in a given month was generally greatest for March, May, and June (Figure 11). Choice feeder steer prices ranged ± 5.3 percentage points per cwt. (\$2.72) for June at the two out of three year probability level. At this same probability level the ranges and seasonal variations were such that the average yearly price could be expected in all weights and grades in any month except October through January for Choice steers, and January for Good, 550-750 lb. steers.

Heifers

Seasonal price movements for feeder and stocker heifers were not only similar among grades but were similar to that for steers in that

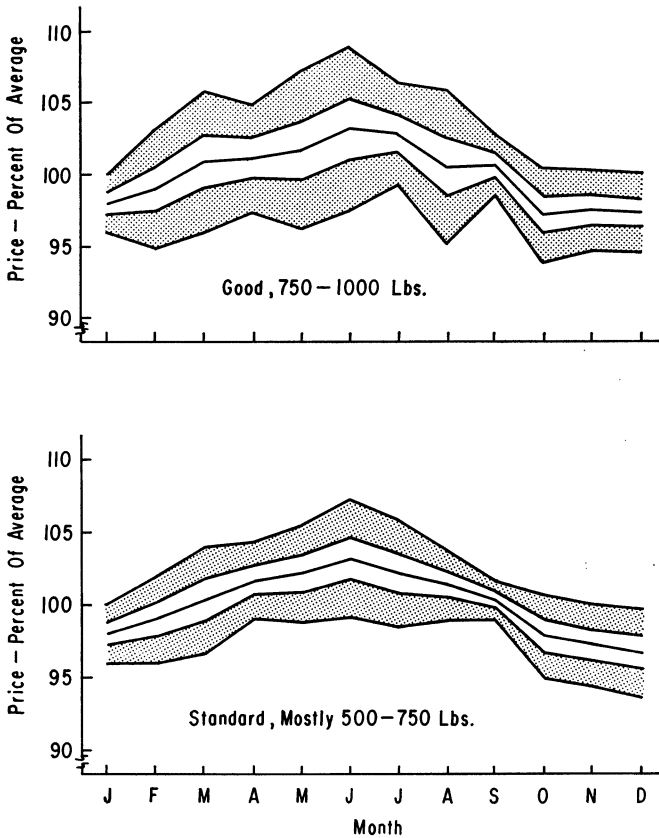


Figure 11. Continued.

expected prices were about two percent below average in January and increased to a peak in June (Figure 12). However, the seasonal price variation was greater for heifers than steers with prices peaking at about four percent above average, then dropping below average after September and reaching a low of more than four percent below average in December.

The year to year ranges in the prices were generally widest in March, May, and June (Figure 13). Choice heifers had wider price ranges, percentagewise, than any other stocker and feeder classification in that the range was above ± 5.0 percent for four months. August and September had relatively low price ranges—around ± 2 percent for both Good and Choice heifers.

In comparing 1962-1969 and 1949-1962 data, changes have occurred similar to those for feeder steers. The expected peak month has moved from April to June and the total seasonal price variation has narrowed from about five to four percent around the annual average.⁸

Steer and Heifer Calves

Prices for steer and heifer calves followed a similar definite seasonal pattern regardless of grade (Figure 14). Expected prices increased from three or four percent below average in January to a high of about 3.5 percent (4.7 percent for Choice heifers) in June. Prices then fell, but generally leveled off during late summer at around two percent above

⁸Ibid.

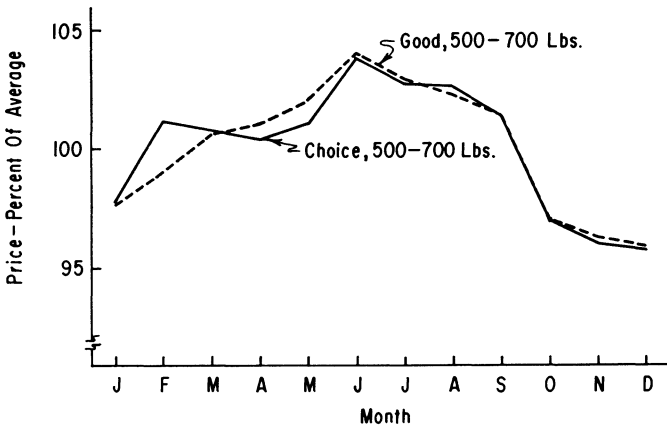


Figure 12. Stocker and Feeder Heifers: Average Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

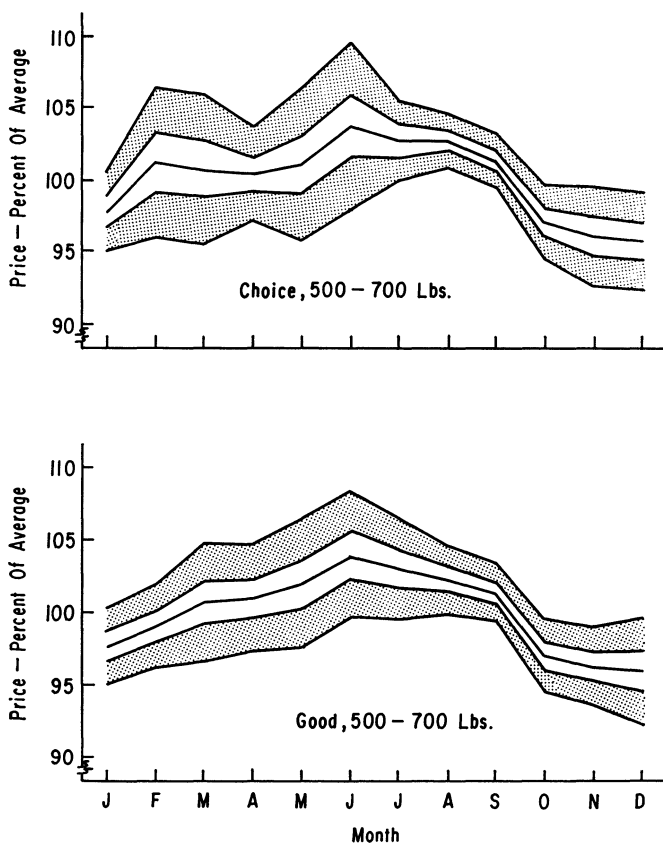


Figure 13. Stocker and Feeder Heifers: Expected Ranges for Mean and Individual Year Indexes of Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

average. Expected prices were below average by October and fell to a low in December of nearly four percent below average.

Once again the peak month has moved from April to June since the 1949-1962 period with some overall decrease in seasonal variation.⁹ Also the spring months included some of the widest monthly price ranges in a year to year comparison (Figure 15). Choice steer calves had a price range of ± 4.4 points, or \$2.52 per cwt., in June. The fall and winter months generally had the lowest price ranges.

⁹Ibid.

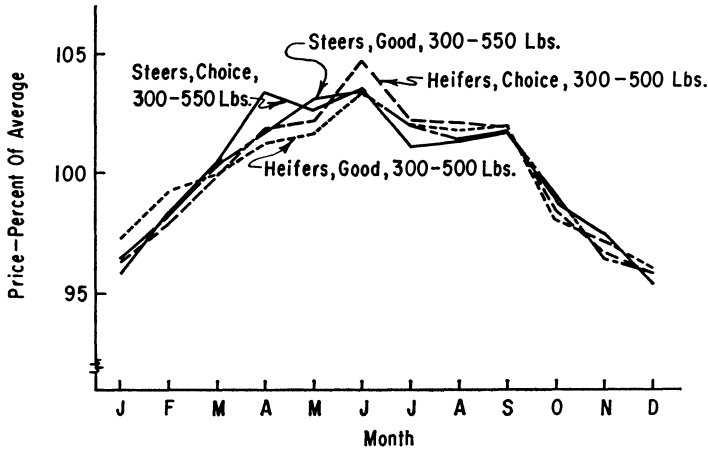


Figure 14. Stocker and Feeder Steer and Heifer Calves: Average Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

Price Relationships Among Selected Classes and Grades

Slaughter Cattle

Those who feed cattle for slaughter need to make many decisions on the type of feeder animal selected, the manner of feeding, and the time and grade to market. In making these decisions it is helpful to have a good understanding of the price movements of each class and grade, and their relationships to one another. For this purpose expected prices for selected classes and grades of slaughter cattle relative to prices of Choice slaughter steers, 900-1100 lbs. are shown in Figure 16.

The average prices in the 1962-1969 period for the different classes and grades were multiplied by the respective average indexes of seasonal variation. This seasonally adjusted price for each grade and for each month was then expressed as a percent of the adjusted price of Choice slaughter steers, 900-1100 lbs. for the corresponding month. Note that these relationships are averages; thus the actual price relationships for any given year may deviate from that expected.

Prices of Choice slaughter steers, 1100-1300 lbs., had some seasonal variation relative to Choice slaughter steers, 900-1100 lbs. Prices were relatively highest the first half of the year and absolutely higher than the lighter Choice steer prices from February through July reaching a

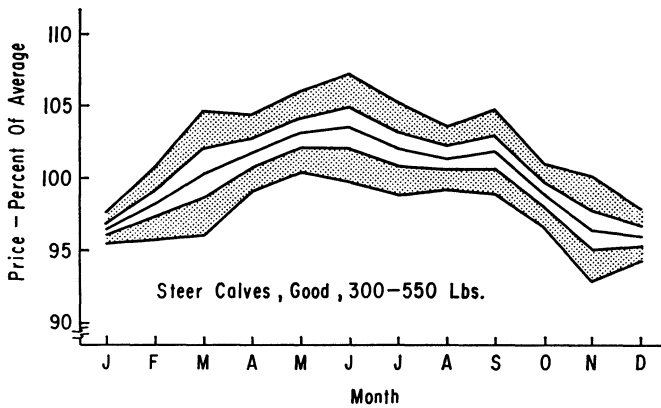
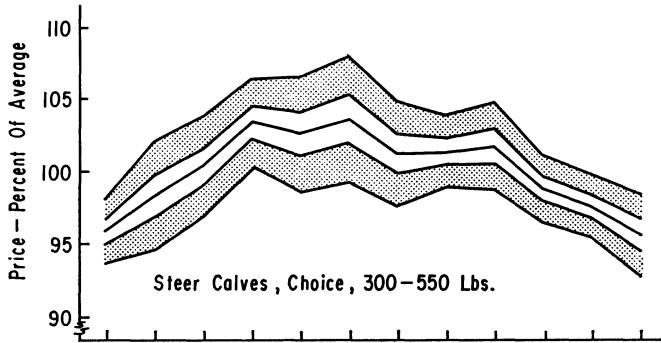


Figure 15. Stocker and Feeder Steer and Heifer Calves: Expected Ranges for Mean and Individual Year Indexes of Seasonal Price Variation for Selected Grades, Oklahoma City Market, 1962-69.

high of 103.6 percent in May. The heavier steer prices were relatively lowest in October at 97.4 percent of the lighter steer prices.

Choice slaughter heifers, 900-1100 lbs. had little price variation relative to the Choice slaughter steers of the same weight. Prices of Choice slaughter heifers, 700-900 lbs., Good slaughter steers, 900-1100 lbs., and Good slaughter heifers, 800-1000 lbs. did exhibit similar seasonal variation relative to prices of the base group. These prices were relatively highest in March through June with May as the relatively high month in all cases. In the order of this listing, the average relative price re-

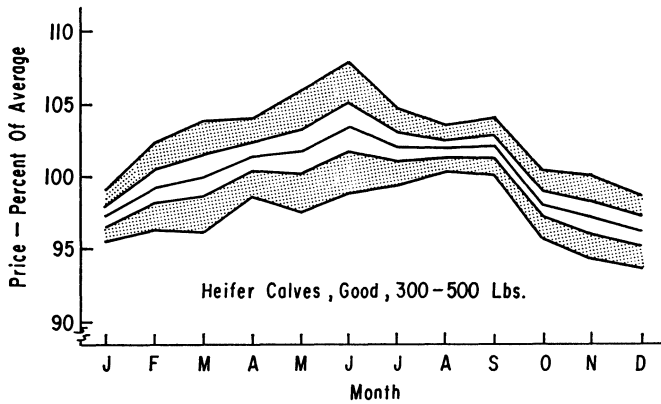
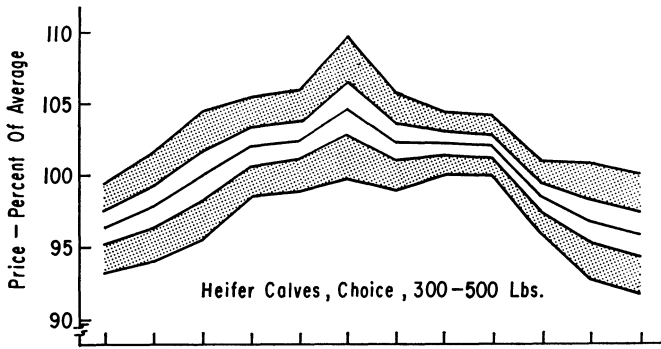


Figure 15. Continued.

relationships of these three classes with Choice slaughter steers, 900-1100 lbs., are 96.3, 95.4, and 92.9 percent.

Commercial bull prices were highest in April at 87 percent of the basic steer prices and lowest in September at 75.2 percent. The bull prices were relatively highest the first half of the year but showed a fairly steady decline from the peak to the trough. Commercial cow prices also were relatively highest the first half of the year, especially March and April, but at a lower price level. These prices declined rapidly relative to steer prices until July and then tended not to vary much from 62 percent of steer prices the rest of the year.

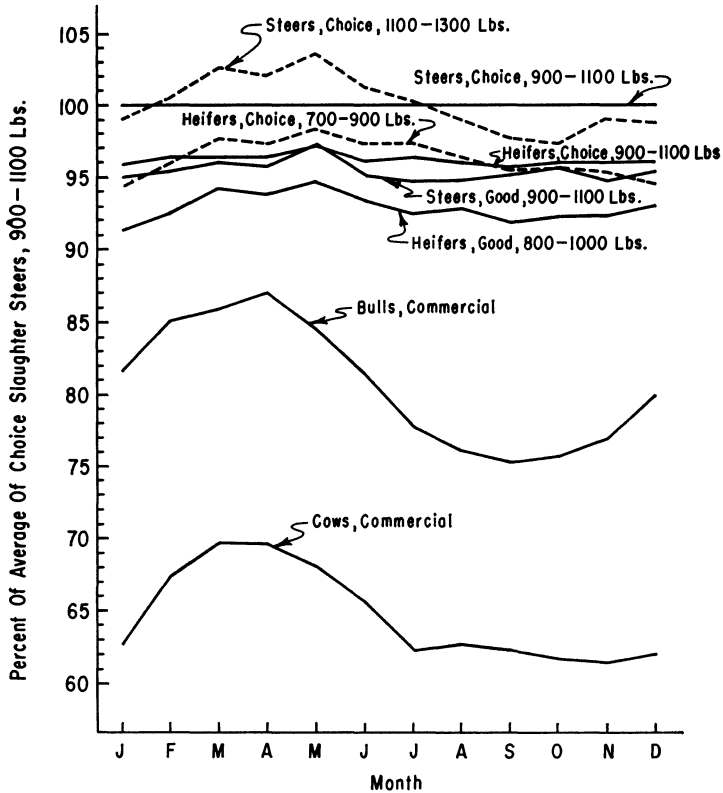


Figure 16. Relative Seasonal Price Patterns for Slaughter Animals Using Choice Steers, 900-1100 lbs. As the Base, Oklahoma City Market and Oklahoma-Texas Panhandle Price Series, 1962-69.

Stocker and Feeder Cattle

The seasonal price patterns among all grades of stocker-feeder cattle were more similar than those among slaughter cattle (Figure 17). Compared with Choice 550-750 pound steers as a base, the Good and Standard steers showed very little price variation. Good 550-750 pound steers averaged 92.1 percent of the Choice steer base price, with a slight relative increase in October. The heavier class of Good steers averaged 86.3 percent and Standard steers averaged 79.6 percent relative to Choice stocker-feeder steers with no clear pattern of seasonal variation from the base.

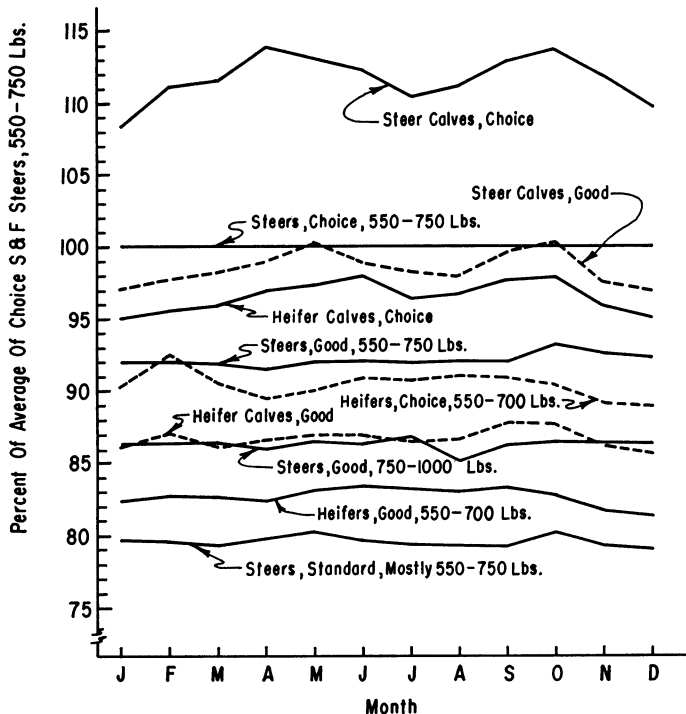


Figure 17. Relative Seasonal Price Patterns for Stocker and Feeder Animals Using Choice, 550-750 lbs. Steers As the Base, Oklahoma City Market, 1962-69.

Relative to Choice steers the prices of Choice and Good heifers averaged 90.4 and 82.6 percent, respectively. Both Choice and Good heifers had a slightly stronger position in the summer months than the rest of the year, with the exception that Choice heifers had a relatively strong position in February (up to 92.5 percent).

Prices of Good and Choice steer calves had a different seasonal pattern than price of Choice 550-750 pound steers. Prices of steer calves were relatively strongest in the spring and fall months. Prices were relatively lowest the rest of the year, but especially in December and January. The average prices relative to the Choice steer feeders were 98.5 and 111.7 percent for Good and Choice steer calves, respectively.

Both Good and Choice heifer calves had less seasonal price variation than steer calves relative to the base. There was still some evidence of relatively stronger prices in the spring and fall of the year. On the av-

erage, Choice heifer calf prices were 96.5 percent of the base with Good heifer calf prices lower at 86.7 percent.

Price Ranges for Selected Cattle Systems

The margin between the purchase price and expected sales price plays an important role in the decision to purchase feeder animals for feeding out to heavier feeder animals or slaughter animals. Unfortunately it is no easy task to predict the margin between the prices accurately, as many changing factors are involved. As an aid, however, price variation influencing the margin may be broken into trends, cycles, seasonal, and irregular variation. This study deals with seasonal price variation only. One must also keep in mind trend and cycle effects when looking at the overall price variation over the feeding period.

The first cattle system analyzed is the purchase of 550-750 pound Choice feeder steers, fed 150 days, and then sold as 900-1100 pound Choice slaughter steers. Prices of slaughter steers over the 1962-69 period averaged about 1.75 percent lower than the prices of the steers when purchased as feeders. The years 1964 and 1965 were the only years in this period to show a positive margin.

Two price ranges, one contained within the other, are shown in Figure 18 for this cattle system. These are ranges of expected selling prices relative to buying prices and reflect the pattern and magnitude of seasonal price variation of the one price series relative to the other, as well as the average yearly margin between the prices.

The smaller of the ranges, distinguished by the diagonal line shaded areas, was obtained by first assuming the Choice feeder steers were purchased at the average seasonally adjusted price for that month. The steers are then sold five months later and the range within which the selling price is expected to prevail at that time at the two out of three year probability level is expressed as a percentage of the purchase price and centered on the purchase month. The analysis indicated that a negative margin could occur in any month at the probability level stated above. The probability for a positive margin is least when feeders are purchased in the summer season and sold in the winter months when the price of slaughter cattle is at the seasonal low.

The larger range was derived using the selling price as a percentage of the purchase price, but with the assumption that the prices for both classes may vary within the two out of three year probability level. The upper limit was obtained assuming feeder steers are purchased at the lowest price consistent with the probability level for the class, fed 150 days, and sold at the highest price consistent with the probability level for the slaughter class. The lower limit was derived using the highest

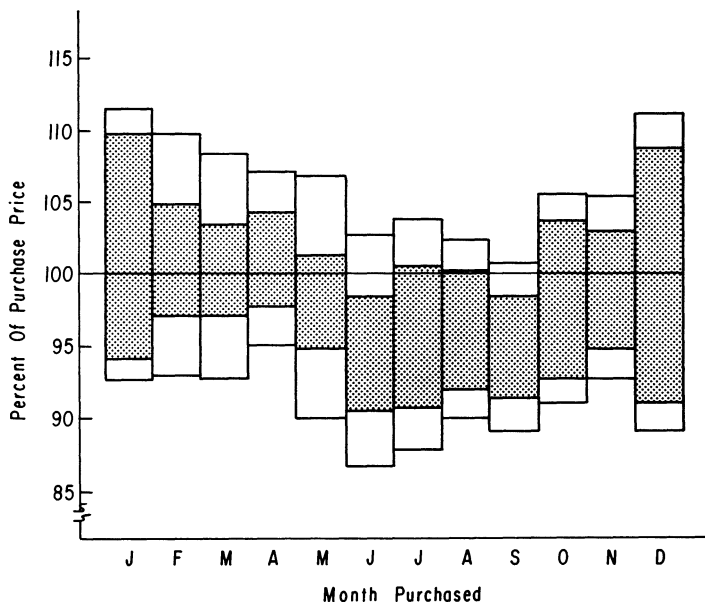


Figure 18. Range of Expected Selling Prices Five Months Later for Choice, 550-750 lbs. Feeder Steers, Fed 150 Days, and Sold As Choice, 900-1100 lbs. Slaughter Steers.

purchase price for feeder steers and the lowest selling price for slaughter steers (five months later) according to the two out of three year probability level for both. This range indicated that both positive and negative margins may be realized for each month of the year when both prices are allowed to vary within a given range. The purchase months of December and January had the greatest variation in margins. The upper extremes in ranges were from a positive .7 percent margin in September to a positive 11.5 percent margin in January. The lower range limit extremes were a negative 5 percent margin in April and a negative 13.3 percent margin in June.

A second cattle system involves the purchase of Choice steer calves in October, feeding for varying lengths of time and then sold as Choice stocker and feeder steers. Based on prices during the 1962-1969 period, the average margin was a negative 9.9 percent (Figure 19). The diagonally shaded range is expected when the calves are purchased at the seasonally adjusted average price in October and sold as Choice stocker and feeder steers at the upper and lower price level specified by the two out of three year probability level for that class in any month. The wider

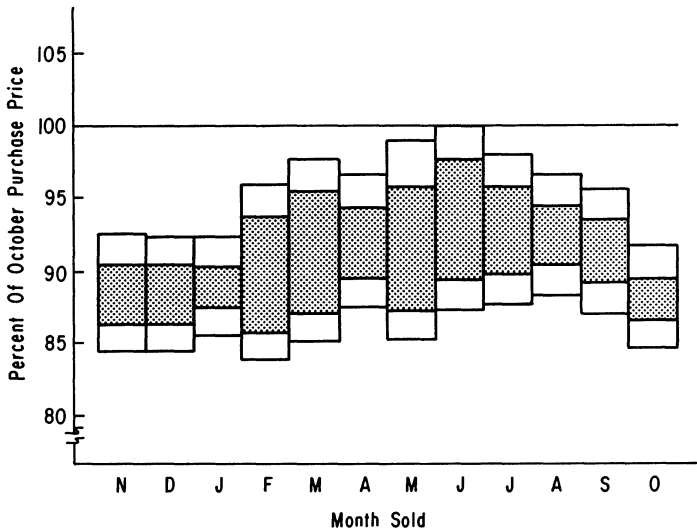


Figure 19. Range of Expected Selling Prices in Month Sold, As Percent of Prices Paid for Choice Steer Calves, Purchased in October, and Sold As Choice, 550-750 lbs. Stocker and Feeder Steers.

range is expected when steer calves are purchased at either the lowest or highest price level in October and subsequently sold at either the highest or lowest price level in any month, both price series based on the two out of three year probability level.

In only one month, June, did the expected selling price rise to the buying price, provided the buying price was at the lower limit of the two out of three year range and the selling price was at the upper limit. On the average, the margin was expected to be most negative in October through January, narrowing from February through June, and widening thereafter. The greatest ranges, however, occurred during the period of the more narrow expected margins. At the probability level previously specified, the widest or most negative margin could occur in February (−16.2 percent).

Summary

Historically, seasonal variation of beef cattle prices has been fairly consistent from year to year due primarily to repetitive seasonal variation in supply. A knowledge of this price variation is important to farmers and ranchers in deciding when to market beef cattle and calves. This study was done to analyze 1962-1969 seasonal price data for beef cattle

to aid the beef cattle producers of Oklahoma in making their marketing decisions.

Results showed that there has been a decrease in the seasonal variation of prices of all cattle from about 12 percent in the 1949-1962 period to about seven percent in the 1962-1969 period.

June and September were high months, on the average, for slaughter steer and heifer prices with lower prices generally prevailing in the winter and early spring months. Seasonal price patterns for steers and heifers were similar. Year to year price fluctuation for slaughter steers, especially in May and June, tended to overshadow the seasonal price pattern of this class of cattle.

Slaughter cow and bull prices were generally highest in April and lowest in November with a much greater seasonal variation than steer and heifer prices. The seasonal price pattern among cow and bull grades were similar but the price variation increased as the quality grade level decreased.

Prices of stocker-feeder cattle were highest in June and lowest in October for the 1962-1969 period. This differs from the 1949-1962 period where the peak price month was April. Also there was a closer similarity in seasonal price patterns between grades and weights during the 1962-1969 period with the lower grades exhibiting less seasonal price variation than in the earlier period.

Stocker-feeder calf prices varied seasonally with a high in June, above average prices through the summer, and a low in January.

The selling prices were, on the average, 1.75 percent lower than the buying prices for a cattle system which fed Choice stocker-feeder cattle to Choice slaughter grade. However, the price range indicated that a positive margin was possible in every month of the year. The price margin was the most advantageous for feed lot placements in late fall and winter.

When Choice stocker-feeder calves were purchased in October and sold in following months as Choice stocker-feeder steers, a negative price margin was the rule. This price margin was the narrowest from March through July.

Appendix Table 1. Slaughter Steers and Heifers: Seasonal Price Indexes, Standard Deviations and Standard Errors of the Means, Oklahoma Texas Panhandle Price Series, 1962-1969.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Slaughter Steers												
Choice 900-1100 lbs.												
Index ¹	99.6	97.2	96.9	98.0	98.8	101.6	101.6	102.6	104.1	101.1	99.0	99.5
Std. Dev. ²	4.2	3.6	5.5	4.0	8.7	7.8	3.9	3.2	3.4	3.3	4.0	5.1
Std. Error ³	1.6	1.3	2.1	1.5	3.3	3.0	1.5	1.2	1.3	1.2	1.5	1.9
Choice 1100-1300 lbs. ⁴												
Index	98.6	97.6	99.3	99.8	102.2	102.7	101.9	101.5	101.6	98.4	98.0	98.2
Std. Dev.	1.8	4.1	5.6	4.5	7.0	8.5	3.7	1.8	2.1	1.3	2.9	1.2
Std. Error	.9	2.1	2.8	2.2	3.5	4.3	1.8	.9	1.0	.7	1.4	.6
Good 700-900 lbs. ⁵												
Index	100.3	98.2	98.1	98.1	97.3	99.4	101.8	102.9	104.0	101.1	98.6	100.2
Std. Dev.	3.9	3.4	5.9	3.6	6.3	5.2	2.8	3.0	3.3	3.2	1.9	5.1
Std. Error	1.6	1.4	2.4	1.5	2.6	2.1	1.1	1.2	1.4	1.3	.8	2.1
Good 900-1100 lbs.												
Index	99.2	97.2	97.5	98.3	100.8	101.3	100.7	102.0	103.8	101.3	98.4	99.5
Std. Dev.	3.4	3.0	5.6	3.9	6.4	8.0	3.0	2.8	3.0	2.9	3.9	4.4
Std. Error	1.3	1.1	2.1	1.5	2.4	3.0	1.2	1.1	1.1	1.1	1.5	1.7
Slaughter Heifers												
Choice 700-900 lbs. ⁶												
Index	97.6	96.9	98.3	99.0	100.8	102.8	102.6	102.7	103.2	100.4	98.1	97.6
Std. Dev.	2.3	3.5	5.0	4.2	6.0	6.9	3.3	2.8	2.9	2.8	2.0	1.5
Std. Error	1.0	1.4	2.0	1.7	2.5	2.8	1.3	1.1	1.2	1.1	.8	.6
Choice 900-1100 lbs.												
Index	99.3	97.4	97.3	98.1	99.8	101.4	101.7	102.3	103.5	100.9	98.7	99.4
Std. Dev.	4.4	3.2	5.3	4.5	6.1	7.3	3.6	3.1	2.8	3.0	2.2	4.7
Std. Error	1.7	1.2	2.0	1.7	2.3	2.8	1.4	1.2	1.1	1.1	.8	1.8
Good 600-800 lbs. ⁷												
Index	99.7	97.8	97.8	98.5	98.1	99.0	101.3	102.7	103.4	101.6	100.2	99.9
Std. Dev.	3.9	3.2	5.5	4.0	4.2	4.5	3.4	3.3	2.9	3.1	3.4	4.4
Std. Error	1.5	1.2	2.1	1.5	1.6	1.7	1.3	1.2	1.1	1.2	1.3	1.6
Good 800-1000 lbs. ⁸												
Index	97.9	96.8	98.3	99.0	100.6	102.2	101.1	102.5	103.0	100.5	98.5	99.7
Std. Dev.	1.9	2.8	5.2	4.7	5.7	6.6	3.4	3.5	3.3	3.2	2.2	5.6
Std. Error	.8	1.2	2.1	1.9	2.3	2.7	1.4	1.4	1.4	1.3	.9	2.3

¹Percent of Moving Average.

²Standard Deviation of Indexes.

³Standard Error of the Mean of Indexes.

⁴1965-1969 Period.

⁵June 1962-May 1969 Period.

⁶1963-1969 Period.

⁷October 1961-September 1969 Period.

Appendix Table 2. Slaughter Cows and Bulls: Seasonal Price Indexes, Standard Deviations, and Standard Errors of the Means, Oklahoma City Market, 1962-1969.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Commercial												
Index ¹	96.5	101.5	104.7	105.8	104.1	103.2	97.8	99.5	100.4	96.6	94.3	95.6
Std. Dev. ²	1.2	1.9	3.5	2.8	3.4	2.5	3.1	1.7	2.5	3.0	3.5	2.2
Std. Error ³	.4	.7	1.3	1.1	1.3	.9	1.2	.6	.9	1.1	1.3	.8
Utility												
Index	96.4	102.1	104.8	106.3	103.8	102.9	97.9	99.9	100.9	96.3	93.9	94.8
Std. Dev.	1.5	2.0	3.5	2.5	3.1	2.4	3.0	2.1	2.8	2.4	2.9	2.2
Std. Error	.6	.8	1.3	1.0	1.2	.9	1.1	.8	1.1	.9	1.1	.8
Cutter												
Index	96.5	102.8	104.9	107.5	106.1	104.3	98.5	99.8	100.3	94.6	91.5	93.2
Std. Dev.	1.8	1.3	3.6	2.8	2.9	1.7	3.0	2.7	2.1	2.9	3.4	2.3
Std. Error	.7	.5	1.4	1.1	1.1	.6	1.1	1.0	.8	1.1	1.3	.9
Canner												
Index	95.7	102.8	107.8	109.0	108.4	106.0	99.7	100.1	99.8	91.5	88.3	90.9
Std. Dev.	3.1	2.9	4.7	3.3	4.6	2.5	4.0	4.6	1.6	3.4	4.1	3.5
Std. Error	1.2	1.1	1.8	1.3	1.7	1.0	1.5	1.7	.6	1.3	1.5	1.3
Slaughter Bulls												
Commercial												
Index	101.0	102.8	103.4	105.9	103.7	102.6	98.1	96.9	97.2	94.9	94.6	98.9
Std. Dev.	1.8	2.6	2.6	2.2	2.3	1.7	2.2	2.4	1.9	2.0	2.8	1.8
Std. Error	.7	1.0	1.0	.8	.9	.6	.8	.9	.7	.8	1.1	.7
Cutter												
Index	100.9	102.7	103.4	106.0	104.5	103.2	99.1	97.5	97.4	94.4	93.4	97.5
Std. Dev.	2.3	2.7	3.3	3.1	2.7	2.1	2.4	4.6	2.4	2.1	3.4	3.1
Std. Error	.9	1.0	1.3	1.2	1.0	.8	.9	1.7	.9	.8	1.3	1.2

¹Percent of Moving Average.

²Standard Deviation of Indexes.

³Standard Error of the Mean of Indexes.

Appendix Table 3. Stocker and Feeder Steers and Heifers: Seasonal Price Indexes, Standard Deviation, and Standard Errors of the Means, Oklahoma City Market, 1962-1969.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Stocker and Feeder Steers												
Choice, 550-750 lbs.												
Index ¹	97.9	98.9	100.6	101.4	101.4	103.1	102.3	101.9	100.7	97.0	97.4	97.3
Std. Dev. ²	1.5	4.4	4.7	2.7	5.3	4.6	3.3	2.2	2.4	1.6	2.2	2.2
Std. Error ³	.6	1.7	1.8	1.0	2.0	1.7	1.3	.8	.9	.6	.8	.8
Good, 550-750 lbs.												
Index	97.8	98.8	100.4	100.8	101.3	103.0	102.1	101.8	100.6	98.2	97.8	97.4
Std. Dev.	1.5	3.7	4.4	2.6	3.5	3.8	3.5	2.1	2.3	1.8	2.3	2.7
Std. Error	.6	1.4	1.7	1.0	1.3	1.4	1.3	.8	.9	.7	.9	1.0
Good, 750-1000 lbs.												
Index	98.0	99.1	100.8	101.1	101.7	103.2	102.9	100.5	100.6	97.2	97.5	97.4
Std. Dev.	2.0	4.1	4.8	3.7	5.4	5.6	3.5	5.3	2.1	3.3	2.8	2.7
Std. Error	.8	1.5	1.8	1.4	2.1	2.1	1.3	2.0	.8	1.2	1.1	1.0
Standard, Mostly 550-750 lbs.												
Index	98.1	99.0	100.3	101.7	102.2	103.1	102.1	101.4	100.3	97.8	97.2	96.7
Std. Dev.	2.0	3.0	3.7	2.7	3.3	4.1	3.8	2.4	1.3	2.9	2.8	3.1
Std. Error	.8	1.1	1.4	1.0	1.3	1.5	1.4	.9	.5	1.1	1.1	1.2
Stocker and Feeder Heifers												
Choice, 500-700 lbs.												
Index	97.8	101.2	100.7	100.4	101.0	103.7	102.7	102.6	101.3	97.0	96.0	95.7
Std. Dev.	2.8	5.2	5.1	3.2	5.3	5.8	2.8	1.9	2.0	2.5	3.5	3.4
Std. Error	1.0	2.0	1.9	1.2	2.0	2.2	1.1	.7	.7	.9	1.3	1.3
Good, 500-700 lbs.												
Index	97.6	99.0	100.6	101.1	102.0	104.0	102.9	102.2	101.4	97.0	96.3	95.9
Std. Dev.	2.6	2.9	4.1	3.6	4.4	4.4	3.5	2.3	2.0	2.6	2.7	3.7
Std. Error	1.0	1.1	1.5	1.4	1.7	1.6	1.3	.9	.8	1.0	1.0	1.4

¹Percent of Moving Average.²Standard Deviation of Indexes.³Standard Error of the Mean of Indexes.

Appendix Table 4. Stocker and Feeder Steer and Heifer Calves: Seasonal Price Indexes, Standard Deviations, and Standard Errors of the Means, Oklahoma City Market, 1962-1969.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Stocker and Feeder Steer Calves												
Choice												
Index ¹	95.8	98.4	100.4	103.4	102.6	103.6	101.1	101.4	101.7	98.7	97.5	95.5
Std. Dev. ²	2.2	3.8	3.4	3.0	3.9	4.4	3.6	2.4	3.0	2.3	2.2	2.9
Std. Error ³	.8	1.4	1.3	1.1	1.5	1.7	1.4	.9	1.1	.9	.8	1.1
Good												
Index	96.5	98.2	100.3	101.8	103.1	103.5	102.0	101.4	101.8	98.8	96.4	96.0
Std. Dev.	1.1	2.5	4.4	2.7	2.8	3.8	3.2	2.2	2.9	2.2	3.7	1.8
Std. Error	.4	.9	1.6	1.0	1.1	1.4	1.2	.8	1.1	.8	1.4	.7
Stocker and Feeder Heifer Calves												
Choice												
Index	96.3	97.8	99.9	101.9	102.2	104.7	102.2	102.2	101.9	98.4	96.7	95.8
Std. Dev.	3.1	3.8	4.5	3.5	3.6	5.0	3.4	2.2	2.1	2.6	4.0	4.1
Std. Error	1.2	1.4	1.7	1.3	1.4	1.9	1.3	.8	.8	1.0	1.5	1.5
Good												
Index	97.2	99.3	99.9	101.3	101.7	103.4	102.0	101.8	102.0	98.1	97.1	96.2
Std. Dev.	1.8	3.1	3.8	2.7	4.3	4.5	2.6	1.6	2.1	2.3	2.9	2.6
Std. Error	.7	1.2	1.4	1.0	1.6	1.7	1.0	.6	.8	.9	1.1	1.0

¹Percent of Moving Average.

²Standard Deviation of Indexes.

³Standard Error of the Mean of Indexes.

Appendix Table 5. Average Prices of Cattle and Calves, by Class, Grade and Weight, Oklahoma City Market, 1962-1969.¹

Class, Grade, Weight	Average Prices
	Dollars Per Cwt.
Slaughter	
Steers	
Choice, 900-1100 lbs.	25.23
Choice, 1100-1300 lbs.	25.26 ²
Good, 700-900 lbs.	24.05 ³
Good, 900-1100 lbs.	24.07
Heifers	
Choice, 700-900 lbs.	24.30 ⁴
Choice, 900-1100 lbs.	24.28
Good, 600-800 lbs.	23.45 ⁵
Good, 800-1000 lbs.	23.43 ⁶
Cows	
Commercial	16.30
Utility	15.90
Cutter	14.75
Canner	12.92
Bulls	
Commercial	20.31
Cutter	18.36
Stocker and Feeder	
Steers	
Choice, 550-750 lbs.	25.68
Good, 550-750 lbs.	23.65
Good, 750-1000 lbs.	22.15
Standard, Mostly 550-750 lbs.	20.43
Heifers	
Choice, 500-700 lbs.	23.21
Good, 500-700 lbs.	21.22
Steer Calves	
Choice	28.68
Good	25.30
Heifer Calves	
Choice	24.79
Good	22.27

¹Oklahoma-Texas Panhandle Price Data obtained from the USDA Market News Service, Amarillo, Texas were used for slaughter steer and heifer prices.

²Estimated at 100.1 percent of prices of Choice Slaughter Steers, 900-1100 lbs., the average percentage for the 1965-69 period.

³Estimated at 99.9 percent of prices of Good Slaughter Steers, 900-1100 lbs., the average percentage for the 1963-68 period.

⁴Estimated at 100.1 percent of prices of Choice Slaughter Heifers, 900-1100 lbs., the average percentage for the 1963-69 period.

⁵Estimated at 99.6 percent of prices of Good Slaughter Heifers, 900-1100 lbs., the average percentage for the 1962-68 period.

⁶Estimated at 96.5 percent of prices of Choice Slaughter Heifers, 900-1100 lbs., the average percentage for the 1963-69 period.

Appendix Table 6. Indexes of Seasonal Variation in Marketing of Cattle and Calves in the Oklahoma City Market, and in Prices Received by Oklahoma Farmers for All Cattle, 1962-1969.

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Total Cattle Marketed												
Index ¹	92.1	79.8	106.9	75.2	81.9	89.3	122.1	117.9	119.7	141.2	102.0	72.0
Std. Dev. ²	20.2	11.3	4.1	10.0	13.6	14.2	18.0	18.3	20.7	9.0	7.9	8.7
Std. Error ³	7.6	4.3	1.5	3.8	5.1	5.4	6.8	6.9	7.8	3.4	3.0	3.3
Total Calves Marketed												
Index	80.5	52.4	61.5	50.4	47.4	65.0	85.9	94.1	126.3	231.8	189.3	115.4
Std. Dev.	10.3	12.6	15.4	9.5	8.5	11.5	16.3	9.5	17.3	29.9	26.7	19.7
Std. Error	3.9	4.8	5.8	3.6	3.2	4.4	6.2	3.6	6.5	11.3	10.1	7.4
Total Cattle and Calves Marketed												
Index	90.6	76.0	100.6	71.8	77.1	85.9	117.1	114.6	120.5	153.7	114.2	78.0
Std. Dev.	18.6	9.3	3.8	8.1	11.5	13.5	17.7	16.6	18.7	6.2	7.3	8.8
Std. Error	7.0	3.5	1.4	3.1	4.3	5.1	6.7	6.3	7.1	2.3	2.8	3.3
Prices Received by Oklahoma Farmers for All Cattle												
Index	97.6	99.8	101.7	102.1	102.1	102.9	101.4	101.7	100.9	97.6	96.0	96.2
Std. Dev.	3.4	2.9	4.4	3.0	3.3	5.4	3.7	3.2	1.6	2.2	2.3	2.7
Std. Error	1.3	1.1	1.7	1.1	1.2	2.0	1.4	1.2	.6	.8	.9	1.0

¹Percent of Moving Average.
²Standard Deviation of Indexes.

³Standard Error of the Mean of Indexes.



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