

Current Report

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Using Seasonal Price Patterns to Improve Feeder Cattle Marketing Decisions

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Market Outlook and Marketing Decisions

Expectations of future cattle market trends is one of several critical factors that influences a producer's choice among marketing alternatives. The decision to forward price or remain exposed to cash price volatility is influenced by price expectations over some planning period. Marketing success will be improved to the extent that both price level and volatility are correctly anticipated.

This current report provides information on average feeder cattle price relationships and shows how this information can be used to project feeder cattle prices several months into the future. These simple price projections may be useful to augment other market outlook information and formulate expectations that improve feeder cattle marketing decisions.

Seasonal Feeder Cattle Price Patterns

Although history seldom repeats itself exactly, month to month price changes for different classes of feeder cattle are among the most consistent cattle price relationships that we can identify. Relative changes in prices throughout the year reflect the net effect of seasonal production practices and seasonal demand relationships in the cattle industry. Although seasonal supply and demand factors will vary from year to year, knowledge of past average relationships is a good first step to anticipating price changes.

Change in price for several classes of feeder cattle at Oklahoma City were calculated from one month to five months ahead. Average price changes were calculated using weekly USDA prices which are then averaged by month. Tables 1, 3, 5, 7, 9, and 11 present these monthly average price changes one to five months ahead for any base month of the year. Each table is for a different feeder cattle class including: 400 to 500, 500 to 600, 600 to 700, 700 to 800 pound steers and 500 to 600 and 600 to 700 pound heifers. Tables 2, 4, 6, 8, 10, and 12 present the standard deviations of average price changes one to five months ahead for the same classes of feeder cattle. Information contained in Tables 1-12 is based on data from January 1979 to August 1990.

Projecting Feeder Cattle Price Changes

Simple projections of feeder cattle prices using seasonal patterns requires two pieces of information; current price levels and the appropriate value from one of the tables. Assume it is March, and the price of 600 to 700 pound steers for May is to be projected. From Table 5, the average change in price of 600 to 700 pound steers two months ahead of March is -2.21, that is, the price of 600 to 700 pound steers usually drops by \$2.21/hundredweight (cwt.) from March to May. If the current (March) price of 600 to 700 pound steers is \$85.00/cwt., the projected May price would be \$82.79/cwt. (85.00 - 2.21). Tables 1, 3, 5, 7, 9, and 11 can be used to project prices for any of the six classes of feeder animals for up to five months ahead from any base month.

Price projections made by the procedure described above will not be exactly correct. In many instances, determining the range within which the future price is likely to fall is as valuable as a point estimate for marketing decisions. Variation in price changes around the average, as measured by the standard deviations in the even-numbered tables, can be used to calculate a range within which the future price is likely to fall.

Following the previous example, the standard deviation of 600 to 700 pound steer prices projected two months ahead of March is \$4.73 (Table 6). Thus the odds are two out of three that the May price will be plus or minus one standard deviation of the average expected price, or between \$87.52 (82.79 + 4.73) and \$78.06 (82.79 - 4.73). In other words, two-thirds of the time the price will be between \$78.06 and \$87.52.

How Well Do Seasonal Patterns Work?

Table 13 shows projections of March average monthly prices for 600 to 700 pound steers for the years 1976 to 1990 using the previous October as a base month. The second column of Table 13 is the expected March price projected from the previous October. Columns three and four are the high and low values equal to plus and minus one standard deviation from the expected value. Column five is the actual March monthly average price and the last column is the difference between the actual and expected price. In 11 of the 15 years

the actual price was within the price range determined five months prior. Statistically, the range of plus or minus one standard deviation would be expected to include the actual price 10 out of 15 years or two-thirds of the time.

It is apparent from Table 13 that significant errors can occur when using the seasonal patterns. For example, in 1978 and 1979, a period when prices were rising very rapidly, the seasonal pattern underestimated the actual price by a significant amount. However, the projected price differed from the actual price by less than five percent in seven of 15 years and by less than 10 percent in 12 of 15 years.

The March price projections in Table 13 are based on the previous October prices, looking five months ahead. Price projections using the data in Tables 1 through 12 can be updated with current cash prices each month. Thus, the five month ahead projections made in October could have been compared with four month ahead projections made in November, three month ahead projections in December and so on.

Generally, price projections made five months ahead have a larger standard deviation and thus a wider range within which prices will likely fall than projections made with shorter time intervals. The previous discussion of reliability of seasonal patterns is influenced by the use of five month ahead projections rather than more reliable shorter term projections.

It is not uniformly true that shorter time intervals will improve price projections. There are some months that inherently have more price variation and therefore may be less useful as a base month for price projections than a previous month. Consider, for example, projecting the November price of 400 to 500 pound steers from known prices in August and September. Table 2 shows the standard deviation of price projections made three months ahead of August (\$3.45) is less than for projections made two months ahead of September (\$5.62). Thus price projections for November are generally more reliable when based on August prices rather than September prices. Price volatility in September and October for 400 to 500 pound steers probably reflects normal variation in the development of wheat pasture in Oklahoma, which in turn, is the major factor influencing the demand for stocker cattle at that time of year.

Figure 1 demonstrates the generally improved statistical confidence of price projections as the time interval decreases. Beginning with May 1990, new price projections for 400 to 500

pound steers in October 1990 were made each month prior to October. Not only does the expected price change each month with new current price information, but smaller standard deviations narrow the range within which the October price is expected to fall.

In a similar manner, projections farther into the future from any given base month will generally exhibit increasing regions within which the price is expected to fall. Figure 2 shows projected prices of 600 to 700 pound steers for November 1990 through March 1991, using October 1990 as a base month. Each successive month more distant from the October base has a larger standard deviation and thus a wider price range within which the actual price may fall. In other words, as projections farther away from a base month are made, it generally takes a wider price range to have the same two-thirds chance of including the actual price.

Seasonal Patterns and Other Outlook Information

There are limitations in using seasonal patterns to project prices. Conceptually, the procedure described in this current report assumes that current demand and supply influences are captured in the current cash price. Moreover, the projection from a base month to a future month assumes that the only thing that will change is the normal seasonal demand and supply influences.

One implication of these assumptions is that this technique will most likely miss "turning points", that is, instances when fundamental changes in supply and demand relationships cause a new price trend. The use of seasonal patterns assumes current trends will continue and will reflect new trends only after the fact.

Price projections generated by the technique described above are best used as an initial indication of normal seasonal influences, subject to modification by other information at your disposal. For example, seasonal patterns will tend to underestimate prices when there is an underlying upward trend in the market. Similarly, seasonal patterns will tend to overestimate prices when there is a strong downtrend in the market. Interpreting these price projections in light of other information will improve their usefulness.

Table 1. 400-500 Pound Steers, Seasonal Price Patterns

Base Month	Average Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	2.82	4.49	5.10	3.09	1.40
FEB	1.59	2.47	0.42	-1.55	-3.95
MAR	0.75	-1.45	-3.44	-5.62	-4.90
APR	-2.42	-4.53	-6.46	-5.46	-3.17
MAY	-1.89	-3.58	-2.23	-0.03	-1.88
JUN	-1.36	0.08	1.78	-0.16	-1.35
JUL	1.87	2.92	0.99	0.37	1.71
AUG	0.46	-1.07	-1.51	-0.36	-0.86
SEP	-1.55	-1.85	-0.94	-1.03	1.34
OCT	0.14	0.69	1.13	3.61	5.05
NOV	0.38	0.55	3.17	4.41	4.98
DEC	0.57	3.34	4.37	4.72	3.14

Table 3. 500-600 Pound Steers, Seasonal Price Patterns

Base Month	Average Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	2.48	3.26	3.93	1.80	0.41
FEB	0.89	1.62	-0.49	-1.95	-2.97
MAR	0.61	-1.47	-2.74	-3.89	-3.51
APR	-2.14	-3.55	-4.61	-4.01	-2.64
MAY	-1.32	-2.04	-1.08	0.27	-1.38
JUN	-0.62	0.67	1.48	-0.28	-0.32
JUL	1.49	1.95	0.43	0.54	2.08
AUG	0.06	-1.07	-0.92	0.53	-0.30
SEP	-1.01	-0.84	0.49	-0.15	2.05
OCT	0.63	1.42	1.23	3.58	4.24
NOV	0.66	0.34	2.65	3.17	3.81
DEC	0.43	2.54	2.91	3.51	1.47

Table 2. 400-500 Pound Steers, Seasonal Price Variations

Base Month	Standard Dev of Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	3.37	4.69	7.13	8.69	7.43
FEB	5.57	7.82	9.63	7.83	8.68
MAR	5.20	6.94	6.06	6.71	7.64
APR	4.43	5.71	6.57	6.95	6.77
MAY	4.55	6.03	6.46	7.28	6.83
JUN	3.98	4.31	5.74	5.46	4.95
JUL	3.24	4.42	4.47	4.49	4.47
AUG	4.55	3.60	3.45	3.93	3.12
SEP	3.62	5.62	4.91	5.59	5.63
OCT	3.03	3.04	4.46	5.79	5.01
NOV	3.57	3.83	5.24	5.15	5.68
DEC	3.13	5.12	3.75	5.67	7.54

Table 4. 500-600 Pound Steers, Seasonal Price Variations

Base Month	Standard Dev of Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	2.86	4.17	6.98	7.59	7.19
FEB	4.04	6.23	7.16	6.71	6.73
MAR	4.54	4.71	4.83	5.49	6.38
APR	3.03	3.66	5.47	6.05	5.86
MAY	3.00	4.74	5.72	5.95	5.55
JUN	2.97	4.04	4.53	4.14	3.96
JUL	3.25	3.92	3.36	3.52	3.52
AUG	3.23	2.68	2.55	3.63	3.15
SEP	2.18	3.80	3.69	4.06	4.59
OCT	2.36	2.84	3.48	4.77	4.88
NOV	2.98	2.81	4.04	4.49	5.86
DEC	2.69	4.34	4.28	6.59	7.03

Table 5. 600-700 Pound Changes, Seasonal Price Patterns

Base Month	Average Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	1.50	1.47	0.84	-0.87	-1.60
FEB	0.04	-0.47	-2.19	-2.96	-2.61
MAR	-0.64	-2.21	-2.88	-2.61	-2.08
APR	-1.46	-2.42	-2.01	-1.10	-0.22
MAY	-0.72	-0.03	1.17	1.98	1.04
JUN	0.53	1.86	2.50	1.39	0.96
JUL	1.51	1.70	0.58	0.54	2.37
AUG	-0.24	-0.96	-0.90	0.79	0.35
SEP	-0.73	-0.58	1.21	0.73	2.08
OCT	0.49	1.76	1.55	3.14	2.99
NOV	0.99	0.91	2.27	1.87	1.25
DEC	0.30	1.64	1.11	0.42	-1.37

Table 7. 700-800 Pound Steers, Seasonal Price Patterns

Base Month	Average Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	1.37	0.77	-0.86	-2.43	-2.92
FEB	-0.58	-2.07	-3.64	-4.17	-3.04
MAR	-1.55	-2.96	-3.29	-2.29	-1.75
APR	-1.27	-1.88	-0.80	0.10	0.87
MAY	-0.32	0.97	2.18	2.83	2.00
JUN	1.18	2.61	3.10	2.19	2.04
JUL	1.48	1.74	0.76	0.94	2.70
AUG	-0.22	-0.91	-0.77	1.11	0.87
SEP	-0.59	-0.18	1.61	1.34	2.38
OCT	0.67	1.98	1.92	3.32	2.82
NOV	1.30	1.14	2.50	1.56	-0.16
DEC	0.20	1.43	0.48	-1.35	-3.08

Table 6. 600-700 Pound Steers, Seasonal Price Variations

Base Month	Standard Dev of Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	2.71	4.74	6.65	7.17	7.19
FEB	3.75	5.78	6.44	6.17	6.12
MAR	3.96	4.73	5.13	6.08	6.72
APR	2.69	3.94	6.12	6.82	6.49
MAY	3.04	5.09	5.84	5.98	5.68
JUN	3.80	4.68	4.90	4.51	4.39
JUL	3.04	3.97	3.24	3.45	3.34
AUG	3.24	2.50	2.56	3.47	3.90
SEP	2.25	3.41	4.04	4.78	4.94
OCT	2.49	3.11	3.92	4.30	5.05
NOV	2.97	3.07	3.51	4.30	5.62
DEC	2.52	3.42	4.36	6.18	6.56

Table 8. 700-800 Pound Steers, Seasonal Price Variations

Base Month	Standard Dev of Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	2.63	5.15	6.75	7.02	6.87
FEB	3.96	5.76	6.28	5.77	5.55
MAR	3.62	4.54	5.42	6.14	6.97
APR	2.85	4.53	6.10	7.31	6.77
MAY	3.32	4.64	6.00	6.03	5.58
JUN	3.58	4.75	4.84	4.52	4.40
JUL	2.76	3.54	2.97	3.02	3.22
AUG	3.17	2.59	2.17	3.55	4.18
SEP	2.15	3.00	3.92	4.87	4.75
OCT	2.05	3.19	4.02	4.25	5.16
NOV	3.07	3.36	3.52	4.70	5.61
DEC	2.45	3.39	4.61	6.18	6.37

Table 9. 500-600 Pound Heifers, Seasonal Price Patterns

Base Month	Average Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	1.74	2.36	2.13	0.24	-0.24
FEB	0.68	0.59	-1.41	-1.90	-1.99
MAR	-0.23	-2.15	-2.50	-2.71	-2.55
APR	-1.86	-2.47	-2.57	-2.13	-1.03
MAY	-0.43	-0.31	0.38	1.36	-0.08
JUN	0.00	0.95	1.73	0.09	-0.44
JUL	1.20	1.50	-0.11	-0.24	1.00
AUG	-0.07	-1.38	-1.26	-0.19	-0.02
SEP	-1.29	-1.15	-0.12	0.09	1.85
OCT	0.48	1.28	1.83	3.68	4.20
NOV	0.51	1.13	2.80	3.18	2.99
DEC	0.98	2.58	3.00	2.08	0.88

Table 11. 600-700 Pound Heifers, Seasonal Price Patterns

Base Month	Average Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	1.61	1.55	0.48	-1.02	-1.43
FEB	-0.02	-1.00	-2.51	-2.92	-1.76
MAR	-1.06	-2.46	-2.65	-1.71	-1.63
APR	-1.24	-1.71	-0.68	-0.30	0.20
MAY	-0.21	0.97	1.57	2.22	1.12
JUN	0.98	1.83	2.26	0.89	0.07
JUL	1.02	1.14	-0.28	-0.74	0.77
AUG	-0.21	-1.39	-1.62	-0.16	0.12
SEP	-1.18	-1.37	0.14	0.44	1.95
OCT	0.15	1.47	1.96	3.61	3.75
NOV	1.12	1.64	3.11	3.02	1.89
DEC	0.94	2.43	2.13	0.92	-0.68

Table 10. 500-600 Pound Heifers, Seasonal Price Variations

Base Month	Standard Dev of Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	2.57	3.91	5.31	6.17	6.28
FEB	3.40	5.26	6.16	5.65	5.63
MAR	3.60	4.58	4.67	5.32	6.30
APR	2.97	3.66	5.09	6.08	5.93
MAY	3.11	4.18	5.33	5.26	4.92
JUN	3.19	4.01	4.22	4.11	4.03
JUL	3.29	3.84	3.04	3.47	3.51
AUG	3.23	2.83	2.62	3.61	3.44
SEP	2.35	3.43	3.82	4.27	4.23
OCT	2.08	2.34	3.01	3.50	4.30
NOV	2.16	2.25	2.99	3.88	4.79
DEC	2.10	2.84	3.57	5.07	5.87

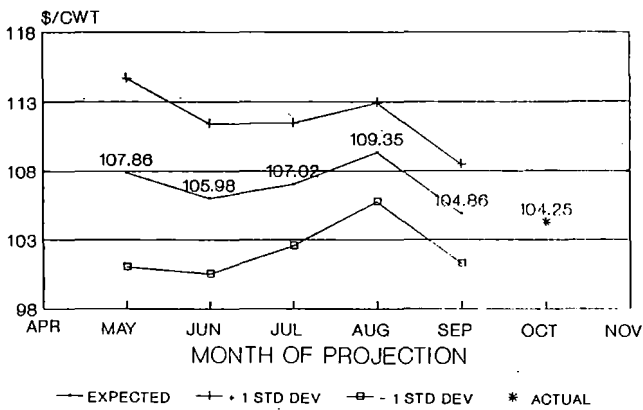
Table 12. 600-700 Pound Heifers, Seasonal Price Variations

Base Month	Standard Dev of Price Change from Base Month \$/cwt				
	Months Ahead				
	1	2	3	4	5
JAN	2.43	4.36	5.60	6.18	6.09
FEB	3.23	4.93	5.53	5.16	5.16
MAR	3.40	4.15	4.42	5.09	6.14
APR	2.79	3.76	5.21	6.60	6.14
MAY	2.83	4.12	5.63	5.63	5.23
JUN	3.06	4.34	4.50	4.32	4.26
JUL	2.98	3.42	2.72	3.01	3.32
AUG	3.25	2.80	2.62	3.55	3.61
SEP	2.27	3.23	3.86	4.25	4.48
OCT	2.10	2.53	3.29	3.62	4.39
NOV	2.37	2.56	3.00	4.16	4.96
DEC	2.36	3.04	3.96	5.28	5.71

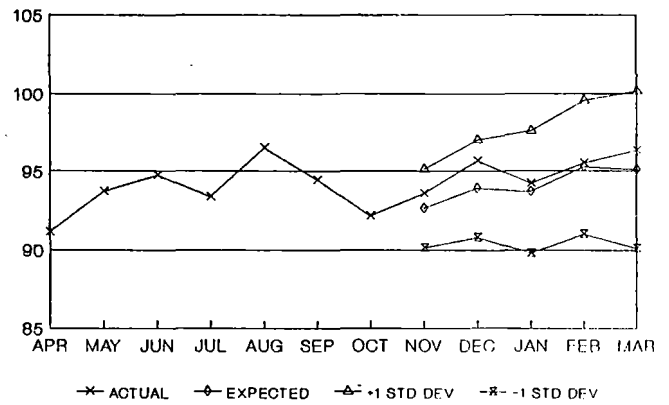
**Table 13. October Projections of March Price
600-700 Pound Steers, OKC**

Year	Expected	High	Low	Actual	Error
1976	39.12	44.17	34.07	39.57	-0.45
1977	38.52	43.57	33.47	39.68	-1.16
1978	42.99	48.04	37.94	53.35	-10.36
1979	66.89	71.94	61.84	89.73	-22.84
1980	82.10	87.15	77.05	77.96	4.14
1981	78.21	83.26	73.16	68.15	10.06
1982	66.49	71.54	61.44	65.11	1.38
1983	66.34	71.39	61.29	71.16	-4.82
1984	61.58	66.63	56.53	67.70	-6.12
1985	67.10	72.15	62.05	67.91	-0.81
1986	65.07	70.12	60.02	61.45	3.62
1987	67.43	72.48	62.38	71.39	-3.96
1988	82.67	87.72	77.62	85.63	-2.96
1989	88.31	93.36	83.26	85.98	2.33
1990	88.61	93.66	83.56	87.85	0.76

**FIGURE 1. OCTOBER 1990 PRICE PROJECTIONS
400-500 POUND STEERS, OKC**



**FIGURE 2. STEER PRICE PROJECTIONS
600-700 LB STEERS, NOV 1990 - MAR 1991**



PROJECTIONS BASED ON OCTOBER 1990 PRICE

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