

# Live Cattle Futures Forecast Errors, 1990-2008

The Live Cattle futures market is a single location where anyone with an opinion on what prices will be in the future can essentially vote their forecast. The resulting futures prices represent a “composite” forecast at a particular point in time. However, futures markets trade on information and react as new information becomes available. Research has repeatedly shown that the futures are as accurate, or better than other forecasting methods, but just how good of a predictor are futures?

This simple analysis compares the Live Cattle futures price to the contract maturity price to evaluate its accuracy. Five forecast periods were evaluated for each Live Cattle contract from February 1990 to June 2009. The forecasts were the average futures closing prices for the selected week (Monday-Friday) compared to the maturity price, which was the average price of the last five trading days of each contract.

The forecast error was defined as the maturity price minus the forecast price. A positive error means the forecast was too low. A negative number means the forecast was too high. In efficient markets, one would expect that the forecast error would average \$0 and there would be no predictable pattern to the errors.

## Results

The forecast error is measured as a percent of the futures price at maturity. Figure 1 shows the 24 week forecast error for all 117 contracts. It shows that the

errors are distributed around 0% in a random pattern. One contract’s error was unavailable (February 1990) due to a lack of price information, 50 errors were negative and 66 of errors were positive. There is little evidence of serial correlation or a cyclical pattern. Approximately 32% of errors were within +/- 3.5% of 0 with 28% less than -3.5% and 41% greater than 3.5%.

Figure 2 reports the forecast error by contract and time to maturity. There is not a consistent pattern across the contracts. February, August, October, and December contracts errors tended to decrease as maturity approached. However April and June errors varied widely. While the errors are small (1% of \$90/cwt is \$.90/cwt), these results suggest that the February, August, October, and December contracts tend to under estimate futures prices at maturity. The contracts from April & June (with the exception of 8 weeks out) tended to over estimate the maturity price. It is important to remember that there are only 19 numbers at most in each of these averages and a large error in any one year can change the average dramatically. Keep in mind that research such as this has consistently shown that markets are efficient and that highly predictable patterns in the data that could be used to generate a profit will be exploited until the profits are bid out of the system.

Figure 1. Percent Error 24 Weeks Out for Contract Months February 1990 to June 2009.

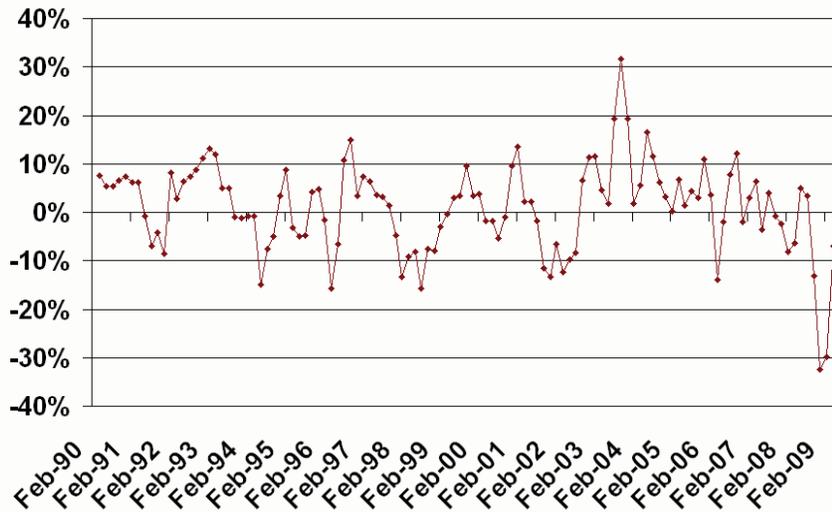
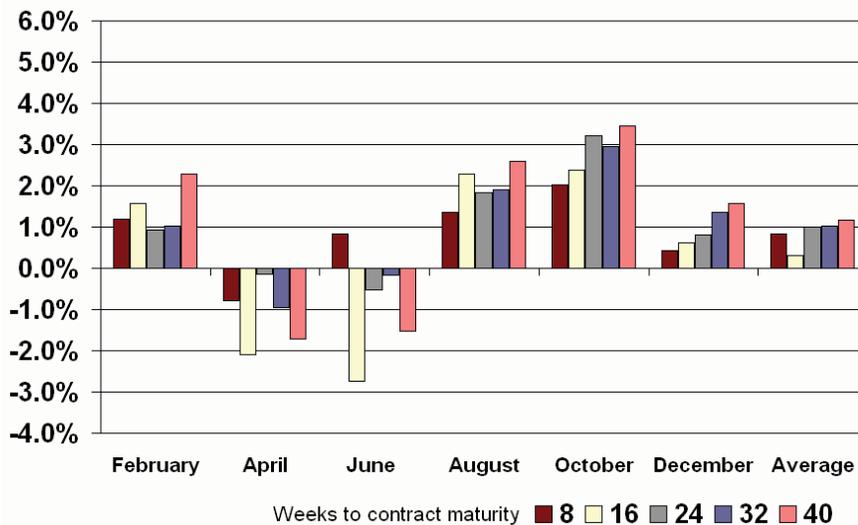


Figure 2. Futures Forecast Error by Contract and Weeks to Maturity.



It is important to know more than the average about the forecast errors. Table 1 reports the average and standard deviation for each contract month by time to maturity. Standard deviation is a measure of variability around the average, and under normal conditions the actual forecast is expected to be within plus or minus one standard deviation of the average approximately two-thirds of the time. A larger standard deviation indicates more variation in the error. For August, October and December there is little change in the standard deviation beyond 8 or 16 weeks. Variation in the February and April contracts tends to increase incrementally with time to maturity. June's variation however, again varies widely like its errors.

**Table 1. Average and Standard Deviation of Forecast Error by Contract and Time to Weeks to Maturity.**

Weeks Out		Feb	Apr	Jun	Aug	Oct	Dec
8	Avg	1.2%	-0.8%	0.8%	1.4%	2.0%	0.4%
	StDev	5.6%	6.6%	6.3%	6.2%	7.2%	4.5%
16	Avg	1.6%	-2.1%	-2.7%	2.3%	2.4%	0.6%
	StDev	7.1%	10.3%	11.5%	8.5%	10.3%	8.8%
24	Avg	0.9%	-0.1%	-0.5%	1.8%	3.2%	0.8%
	StDev	10.4%	8.1%	6.9%	8.4%	10.3%	11.4%
32	Avg	1.0%	-0.9%	-0.2%	1.9%	3.0%	1.4%
	StDev	12.5%	10.5%	6.9%	8.5%	10.4%	10.6%
40	Avg	2.3%	-1.7%	-1.5%	2.6%	3.5%	1.6%
	StDev	10.9%	12.2%	10.5%	8.2%	10.4%	10.9%

Table 2 below provides the average and standard deviation of the forecast error by weeks to maturity across all contracts. The average error is randomly distributed around zero and rather small at .86% (.86% of \$90/cwt is \$.77/cwt).

**Table 2. Summary of Cattle Price Forecasting Errors (\$/cwt), 1990-2008.**

Forecast	8 wks out	16 wks out	24 wks out	32 wks out	40 wks out	Overall
Average	0.83%	0.30%	1.00%	1.01%	1.16%	0.86%
Std. Dev	6.06%	9.55%	9.22%	9.91%	10.52%	9.05%

This analysis is intended to provide some insight into how accurately Live Cattle futures predict the contract expiration price. As shown by these errors and standard deviations, there is significant variability, and contracts may under or over predict prices on average in any one year.

... and justice for all

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Many materials can be made available in alternative formats for ADA clients. To file

a complaint of discrimination, write USDA, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jack M. Payne, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.