

March 15, 2001

Ames, Iowa

Econ. Info. 1810

CATTLE PRICE FORECAST ERRORS IN THE 1990S: FUTURES AND SEASONAL INDEX

In a recent Iowa Farm Outlook I relayed a story about lecturing a class on price forecasting only to be asked, “*How good are you anyway?*” That question prompted me to evaluate my hog price forecast, the futures market, and a seasonal price index for accuracy in predicting prices. The January 15, 2001 newsletter summarizes the results. But, it also raises the question of how good are cattle price forecasts. The analysis below compares the futures market to the seasonal price index as methods of forecasting fed cattle prices. I did not include my forecast, not from fear of embarrassment (the hog market proved that), but because I have not systematically forecast cattle prices. I always have a forecast on record, but I do not reevaluate and update it like I do the hog forecast following the Hogs and Pigs report.

The Live Cattle Futures 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. Because cattle prices follow a fairly predictable seasonal pattern, it is possible to forecast prices based on the current price and the assumption that history is a predictor of the future.

Table 1 summarizes the two forecasting methods described above for the 1990-2000 period. We evaluated the futures market forecast by using the closing futures price one week after the Cattle on Feed report was released and adjusted it for the previous 5-year average basis. A price was forecast for each month and the three months were averaged into the quarter. The seasonal index was based on the monthly average price for the same month as the report (i.e., January average price following the January report) to forecast a price for each of the next 12 months, and then averaged three months into each quarter. These forecasts were then compared to the actual average price for the first quarter 1990 through the third quarter 2000.

The forecast error was defined as the actual price minus the forecast price. A positive error means the forecast was too low. A negative number means the forecast was too high. On average both forecasts work pretty well for the first two quarters and not bad three and four quarters out. Futures tend to overestimate prices in the first two quarter after a forecast and underestimate prices 3 and 4 quarters out. The Index consistently overestimated actual prices by a small amount.

However, the measure of forecast accuracy is not the average, but the variability. One measure of the variability is the standard deviation. If the errors are distributed in a “bell-shaped” curve around the average, then about two-thirds of the time the actual price will be within plus or minus one standard deviation of the average. For example, there is about a 67 percent chance that first quarter prices will be from \$3.28/cwt below the seasonal price index forecast to \$3.28/cwt above the seasonal price index forecast. Both futures and the index have similar “average” errors, standard deviations, and in general, even the extreme misses are close to one another.

Forecasting Price

What are the forecasts by these two methods following the January 2001 report, and can the information be helpful in planning marketings for 2001? Table 2 uses the Index and Futures forecast methods shown in Table 1 to forecast quarterly average fed cattle prices for the four quarters of 2001. The “Forecast” number is based strictly on the Index and the January average price and Futures prices one week after the report, and a five-year average basis.

The “Adjusted Forecast” adjusts the first line by the average forecast error shown in Table 1. The “Lower Range” is the adjusted forecast minus one standard deviation and the “Upper Range” is the Adjusted Forecast plus one Standard Deviation.

Through March 9th the weekly Iowa Choice Steer prices had averaged \$78.38, pretty close to the forecast price. While this analysis was done once a quarter, it could also be updated each month a week after a Cattle on Feed report.

Managing Risk

This information may be more valuable in managing risk than it is in predicting price. We would expect the actual price to be between the upper and lower range two-thirds of the time. Actual prices could be below the lower one-sixth and above the upper one-sixth of the time.

If you are comfortable with a one-in-six chance or prices below the lower range, then no risk management action may be needed; if not, you should implement some type of risk management strategy to protect against this chance. Likewise, if the market is offering a price that is near the top end of this range, ask if you want to take the price or stand a five-sixth chance of lower prices.

Hedging in futures will essentially lock in the Futures Forecast price with some variation due to basis risk. Buying a put option can block the chance of lower prices. Now with either method you can evaluate the probability of lower prices you are avoiding.

Table 1. Summary of Cattle Price Forecasting Errors (\$/cwt), Futures with Five-year Basis and Ten-year Seasonal Index.

Forecast Error One Quarter Out		
	Index	Futures
Average	-0.48	0.22
Std Dev	3.28	3.34
Min	-8.85	-6.14
Max	5.47	9.35
Forecast Error Two Quarters Out		
	Index	Futures
Average	-0.39	0.05
Std Dev	4.96	4.60
Min	-11.06	-8.88
Max	9.83	10.92
Forecast Error Three Quarters Out		
	Index	Futures
Average	-0.38	-0.03
Std Dev	5.65	5.74
Min	-10.84	-11.73
Max	11.91	12.08
Forecast Error Four Quarters Out		
	Index	Futures
Average	-0.51	-0.27
Std Dev	5.67	5.94
Min	-11.32	-13.06
Max	12.50	13.59

Table 2. Fed Cattle Price Forecasts for 2001 Following January 2001 Cattle on Feed Report (\$/cwt)

January - March		Index	Futures
Forecast		78.69	77.06
Adjusted Forecast		78.21	77.28
Lower range		74.93	73.94
Upper range		81.49	80.61
April - June		Index	Futures
Forecast		79.06	74.29
Adjusted Forecast		78.67	74.34
Lower range		73.72	69.74
Upper range		83.63	78.94
July - September		Index	Futures
Forecast		75.19	71.26
Adjusted Forecast		74.81	71.23
Lower range		69.16	65.49
Upper range		80.45	76.97
October - December		Index	Futures
Forecast		77.04	73.79
Adjusted Forecast		76.53	73.52
Lower range		70.86	67.58
Upper range		82.20	79.47

John Lawrence

U.S. CORN AND SOYBEAN PRICES: WHAT'S AHEAD FOR THE REST OF THE YEAR?

Negative market psychology, triggering of stop-loss orders, and speculator closing out of long futures positions brought a sharp decline in cash and futures prices this week for corn, wheat, and soybeans. Four major elements are behind weakness in corn and soybean prices: (1) StarLink and lagging corn exports, (2) forecasts for a very large increase in South American soybean production (up about 200 million bushels from last spring, with over two-thirds of the increase coming from Argentina), (3) expectations that U.S. soybean plantings will be up substantially again this spring, and (4) concern that the European Union may be forced to severely reduce its livestock populations. For soybeans, the depressed prices are due more to U.S. and world supply considerations than to demand problems. The recent sharp drop in U.S. and foreign stock markets also may have reinforced a negative psychology among grain traders. Part of the decline in U.S. stock markets reflected concern about the financial health of Japanese banks. Japan's government was quick to reassure banks that it would buy unwanted stocks, thus supporting their financial condition. Also, Japan's equivalent to the Federal Reserve System indicated it might drop its official interest rate to zero to help the economy. Japan is a key influence on other economies of the western Pacific Rim. The sharp break in grain prices this week appears to be a bit of an over-reaction to these developments. While traders initially may have thought the EU would reduce hog numbers by the 33 to 38 percent cut Taiwan experienced in 1998, a decline of this amount is not presently indicated for EU.

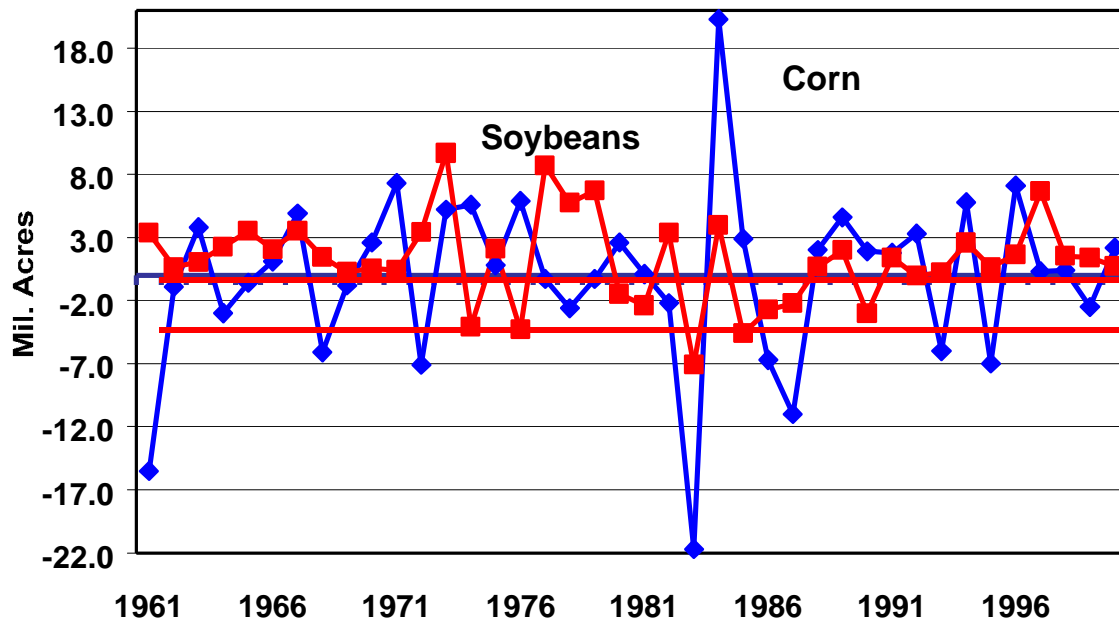
Partially offsetting negative global supply prospects, U.S. soybean exports from September 1 through March 8 and outstanding unshipped export sales were up 12 percent from a year earlier. China has been a very strong buyer of soybeans again this year, accounting for a significant part of the increase. The six-month EU ban on meat and bone meal feeding also has created a substantial demand for alternative protein feeds, primarily soybean meal. Some consideration is being given to a possible similar ban in the U.S., where meat and bone meal feeding is not allowed for cattle and sheep, but is acceptable for other livestock. Even so, positive demand developments are being overshadowed by the large South American crop and talk that U.S. soybean plantings may be up two and one-half to four million acres from last year. If that happens, it would boost the expansion in U.S. soybean planted acreage since the start of "Freedom to Farm" to about 14 to 16 million acres.

In contrast to soybeans, U.S. corn exports are lagging badly, with the total from last September 1 through March 8 and outstanding unshipped export sales down 9 percent from a year earlier. Relatively stronger new-crop prices for corn than for soybeans reflect expectations of a sharp decline in U.S. corn acreage this spring. The March 29 Planting Intentions Report will remove some of the uncertainty about 2001 acreage prospects, and will be an important market indicator for new-crop prices of both corn and soybeans. As we have indicated in previous issues of Iowa Farm Outlook, private projections of a 3 to 4 million acre decline in 2001 U.S. corn plantings and a similar increase in soybean plantings look doubtful, although not impossible.

Potential Changes in Corn & Soybean Plantings

Figure 1 shows year-to-year changes in U.S. corn and soybean plantings since 1961, in millions of acres. In 11 of the last 13 years, soybean plantings increased. For corn, U.S. plantings increased in 10 out of the last 13 years. Exceptions were 1993, 1995, and 1999. In 1993, extreme floods in Iowa and parts of neighboring states were a factor. In 1995, the government set-aside was a major contributor to reduced plantings, and 1999 reflected farmer perceptions that returns would be greater for soybeans than corn. Plantings in the last few years have varied by no more than about two million acres either side of the 1997 level. Prior to "Freedom-to-Farm" legislation in 1996, changes in corn acreage largely reflected changes in idle acres in the farm program, as shown in Figure 2. Recent comparison of returns in Iowa for corn vs. soybeans showed a slight advantage over corn, provided both crops have normal yields. A drop of 2 or 3 bushels per acre in the next year's average bean yield due to disease, nematodes or other factors would quickly wipe out the advantage. Similarly, a few cents increase in the corn price would wipe out the soybean advantage. Also, in some of the more rolling land areas of the Midwest, USDA officials have indicated to farmers that two consecutive years of soybeans on highly erodible land will not meet conservation requirements and could put government payments in jeopardy. Actual 2000 planted acres of both crops will be influenced by farmer perceptions about costs of drying in the fall, costs of irrigation where that is a factor in production, spring weather and spring price trends.

**Figure 1. U.S. Corn & Soybean planted Acreage
Changes From Previous Year, 1961-2000**



**Figure 2. Change in U.S. Corn Plantings &
Change in Set-aside Acres, 1961-2000**

