6-5-1987

Using the Toledo Corn Basis to Improve Corn Marketing Decisions

Brian H. Schmiesing
South Dakota State University

COOPERATIVE EXTENSION SERVICE

Economics Newsletter

Editor: Donald C. Taylor

Economics Department SDSU, Box 504A Brookings, SD 57007 Tele: (605) 688-4141

No. 250 June 5, 1987

Using the Toledo Corn Basis to Improve Corn Marketing Decisions

Brian H. Schmiesing
Grain Research Economist
and
Boyd Ober
Research Assistant

Beyond the weather risks of raising corn in the western cornbelt, South Dakota corn producers are confronted with additional marketing risks when hedging or forward contracting corn. At Chicago Board of Trade (CBT) delivery points, the cash and CBT corn futures contract prices converge during the delivery month. Corn can actually be delivered or bought at the delivery point to fulfill the obligations contained in the CBT corn futures contracts. This type of abritrage is not possible at any South Dakota cash corn market, because these markets are not Chicago Board of Trade delivery points. Therefore, South Dakota cash corn prices do not converge to the CBT futures contract price during the delivery month.

Also, West Coast corn markets, such as Portland, directly influence the level of South Dakota corn prices. The further west or north the South Dakota corn market, the stronger the influence of the West Coast markets. These West Coast cash markets do not have a direct influence on cash corn prices at the delivery point markets for the Chicago Board of Trade (CBT) corn futures contracts. Because South Dakota is in a different spatial corn market, cash corn price changes in South Dakota do not always equal cash price changes in Illinois or Ohio.

This newsletter examines how corn producers in southeastern South Dakota can improve their ability to forecast changes in the relationship between CBT futures contract prices and South Dakota cash corn prices i.e., the basis. The technique is based on monitoring the cash prices in Toledo, Ohio--a CBT futures delivery location. To use this technique, producers must have available their local cash corn and futures contract prices. The Toledo price can be obtained from the USDA's Grain & Feed Market News or from a number of private newsletters.

Data Used

The price patterns of a South Dakota and Ohio cash corn market were contrasted. Sioux Falls daily cash corn prices and the closing prices for the maturing December CBT corn futures contract were collected from the Argus Leader. Daily cash corn prices for #2 corn delivered by truck to Toledo were obtained from the USDA's Grain & Feed Market News. Prices were collected for those trading days in December, where the maturing futures contract was traded. The period analyzed was 1981 to 1986 or for 6 years. If a high and low price were reported, the midpoint price was used in the analysis.

Toledo and Chicago are delivery points for CBT futures contracts. The Toledo and Chicago cash corn prices reported by the USDA and frequently reported in newspapers are actually to-arrive bids of either 15 or 30 days. This implies the corn must be delivered to the buyer within 15 or 30 days. During the delivery month these to-arrive bids are probably going to be based on a futures contract later than the current delivery month. Therefore, we would not expect these prices to always converge to the current delivery month's futures contract price.

The Toledo price series was selected because its basis was more stable during the delivery month. The Chicago price series is based on both truck and rail bids rather than only truck bids. This difference may partially explain the difference in the basis patterns for the two markets.

Toledo Prices Relative to Sioux Falls Prices

Because of South Dakota's distance from major export and domestic markets, its corn prices were among the lowest in the U.S. During 1981-1986, December prices averaged 29 cents higher in Toledo than in Sioux Falls (Table 1). The average price difference ranged between 20 to 35 cents. Previous SDSU economics research has demonstrated that improvements in the South Dakota rail system prior to 1981 have enabled South Dakota prices to improve relative to other regional markets. However, the size of this improvement is dependent upon the strength of the West Coast corn bid relative to Gulf markets.

Table 1: The Average Cash Corn Prices for Toledo and Sioux Falls during December of 1981-1986.

Year	Toledo	Sioux Falls	Difference
1986	$1.56	$1.36	$0.20
1985	$2.46	$2.12	$0.34
1984	$2.61	$2.35	$0.26
1983	$3.29	$2.94	$0.35
1982	$2.31	$2.05	$0.26
1981	$2.44	$2.10	$0.34
Average	$2.43	$2.14	$0.29

<u>Contrasting the Basis Levels</u>

Basis--defined as the cash price minus the futures price-- is used extensively in corn pricing by grain merchandisers. At delivery locations, such as Toledo, the expectation is for cash and futures prices to converge during the delivery month (Figures 1 & 2). Because Toledo is not a par delivery point, the basis will not coverge to zero. At Toledo a four cent discount is applied to the futures contract price. The Toledo basis will approach -4 cents as prices converge. Local supply and demand conditions, storage availability, to-arrive prices, and a number of other factors determine how close the basis will be to -4 cents.

During the delivery month of December, the average Toledo basis during the past six years has been -3 cents (Table 2). The highest or "strongest" basis was 5 cents, i.e., the Toledo cash price was 5 cents higher than the futures contract price. The lowest or "weakest" basis was -14 cents or the Toledo cash corn price was 14 cents lower than the futures price. Thus, the range between the high and low for the Toledo basis was 19 cents. The percentages and the associated basis levels shown in the table indicate that part of the time the basis was at or below

FIGURE 1: 1986 December Corn Basis

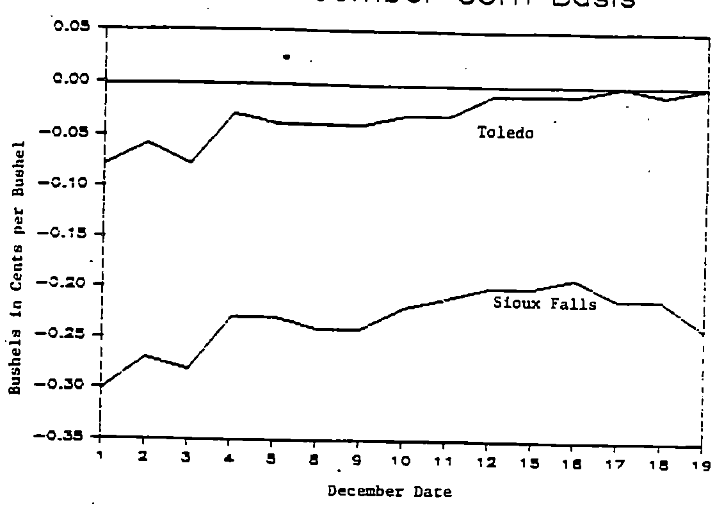

FIGURE 2: 1985 December Corn Basis

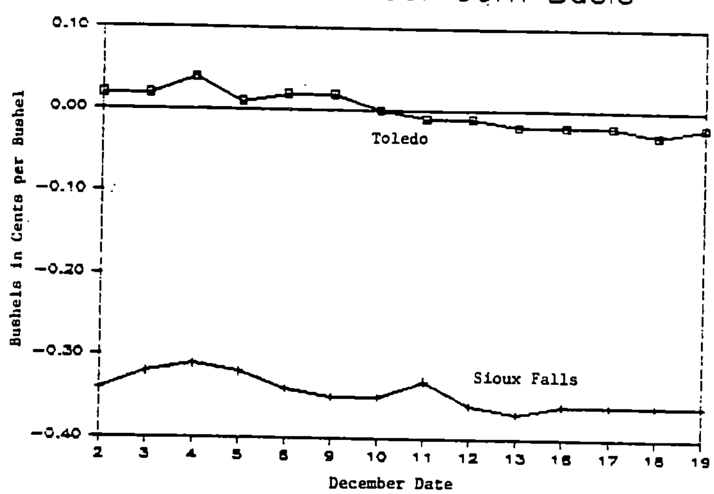

Table 2: Distribution of the Toledo and Sioux Falls Corn Basis During December of 1981-1986.

Description	Toledo	Sioux Falls
A. DISTRIBUTION OF BASIS:		
1. Highest basis	5	-19
2. 75 percent	0	-24
3. 50 percent	-2	-32
4. 25 percent	-4	-38
5. Lowest basis	-14	-49
B. DESCRIPTIVE STATISTICS		
1. Average basis	-3	-32
2. Difference between high and low	19	30

*The basis is reported in cents per bushel.

the specified basis level. For example, fifty percent of the December Toledo basis levels were at or below -2 cents.

The average Sioux Falls basis during the past years has been -32 cents, with a range between -19 cents and -49 cents. This basis uncertainty makes forward contracting price bids to producers riskier for Sioux Falls elevators and hedging riskier for producers. Fifty percent of the time the Toledo basis ranged between 0 and -4 cents, while the Sioux Falls basis ranged between -24 cents and -38 cents.

Hedgers Want a "Strong" Basis

To obtain the highest price possible in the hedge, a producer wants a "strong" basis. A "strong" basis refers to a situation where the cash corn prices are "strong" relative to the futures contract price. The strongest or highest basis for Sioux Falls was -19 cents. A producer wants to obtain a "high" cash price RELATIVE to the futures contract price.

Assume a producer has hedged corn in May because of a price rally caused by a weather market. He has sold a CBT December corn futures contract to hedge 5,000 bushels of corn he plans to harvest in October. The CBT corn contracts are for 5,000 bushels. Assume he harvested the corn in October and he is now attempting to determine when to lift the hedge. Lifting the hedge implies the producer buys back the CBT futures contract and sells his cash corn to his local elevator on the same day and time.

Deciding When to Lift Hedge

When deciding the best time to lift the hedge, a Sioux Falls producer must attempt to forecast the change in the corn basis. If the basis "strengthens", a producer receives a higher price from the hedge. A "weakening" basis, on the other hand, implies a lower price from the hedge. Because there can be more confidence of what the Toledo corn basis will be in the delivery month and the tendency of cash corn prices at various markets to move in the same direction, a producer can use the Toledo corn basis to forecast whether the Sioux Falls basis will "strengthen" or "weaken."

The corn basis for 1986 and 1985 for Toledo and Sioux Falls during December are plotted on Figures 1 & 2. In 1986 the Toledo and Sioux Falls corn basis strengthened. In 1985 the corn basis weakened. Historically during 1981-1986, the Toledo basis tended to strengthen and move towards zero, if the Toledo basis was negative in the range of -14 to -4 cents. In 1986 the Toledo corn basis strengthened from -8 cents to 0 cents (Figure 1). If the Toledo basis was positive in the range of 0 to +5 cents, the basis tended to weaken. In 1985 the corn basis weakened from +2 cents to -2 cents (Figure 2).

As can be seen in Figures 1 & 2, the Sioux Falls basis tends to follow the Toledo basis. It is much easier to know when the Toledo basis will weaken or strengthen than the Sioux Fall basis. For example, at the beginning of December in 1986 and 1985, the Sioux Falls corn basis was -30 and -34 cents, respectively. During a particular year, is -30 cents or -34 cents a "strong or "weak" basis for Sioux Falls? We can not tell by simply looking at the Sioux Falls basis. In 1986 the Toledo basis was "weak" at - 8 cents and the expectation would be for a "stronger" basis in the future. Therefore, the chance of basis improvement is fairly high. In 1985 the Toledo basis was "strong" at + 2 cents and the expectation would be for a "weaker" basis in the future. Therefore, the chances of a basis improvement are fairly low.

This system can be used to analyze the weakness or strength of the Sioux Falls basis outside the delivery month. If the Toledo corn basis is -30 cents in October for the December futures contract, we can be fairly confident that the Toledo basis will strengthen by at least 26 to 28 cents. Our expectations would be for the Sioux Falls basis to strengthen but probably not by the same amount. If the Toledo basis was +15 cents in October, the expectation would be for a weakening basis in Sioux Falls. A "weak" basis implies the lifting of the hedge should be delayed, while a "strong" basis implies the hedge should be lifted.

Toledo basis information also can be useful when using basis fixed contracts. Basis fixed contracts are contracts where the producer establishes a basis for a specific futures contract. By monitoring the Toledo basis, producers can more easily determine when to fix their local basis. After the basis is fixed, the producer essentially is speculating on the

Cooperative Extension Service
U.S. Department of Agriculture
South Dakota State University
Brookings, SD 57007

OFFICIAL BUSINESS
Penalty for Private Use $300

Economics Newsletter

Address Correction Requested

BULK RATE
POSTAGE & FEES PAID
USDA
PERMIT NO. G 268

price changes of the specified futures contracts.

WARNING

Before using this technique for marketing decisions at other South Dakota corn markets or for other futures contract months, an analysis should be completed for that specific market and futures contract. Because of the influence of the West Coast markets and the impact of local supply/demand conditions, the technique probably will not be as effective for South Dakota corn markets to the north or west of Sioux Falls.

Knowing Where You Are Going Helps

By monitoring the cash prices at delivery point markets, South Dakota corn producers in the southeastern section of South Dakota can gain an additional perspective on whether a marketing opportunity exists. Even if a producer does not use the futures market to hedge, analysis of basis patterns can improve producer marketing decisions involving marketing alternatives at local elevators.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the USDA. Richard A. Battaglia, Director of CES, SDSU, Brookings. Educational programs and materials offered without regard to age, race, color, religion, sex, handicap, or national origin. An Equal Opportunity Employer.

HORIZONS AGRICULTURAL EXPERIMENT STATION CENTENNIAL 1887-1987