Corn and Soybean Price Basis

Ag Decision Maker
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File A2-40

Weekly corn and soybean basis data for Iowa is presented in Information Files Iowa Corn Price Basis, www.extension.iastate.edu/agdm/crops/pdf/a2-41.pdf and Iowa Soybean Price Basis, www.extension.iastate.edu/agdm/crops/pdf/a2-42.pdf. The basis is computed for each price reporting district shown in Figure 1.

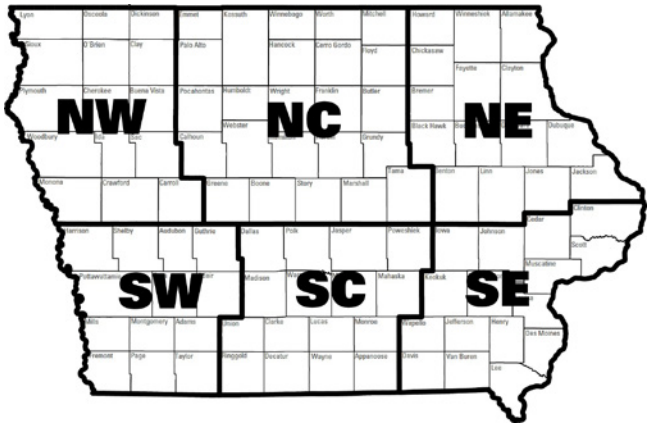
What is Basis

Basis is the difference between the futures price and your local cash price. For example, if the May futures contract is trading at $4.96 and the cash price is $4.63, the cash price is 33 cents under May ($4.63 – 4.96 = $–0.33). So the basis is –33 cents.

More specifically, basis is the difference between the current local cash price and the futures price of the contract with the closest delivery month. For example, corn basis in February is usually defined as the difference between the current cash price and the current March futures price.

Basis data for Iowa was computed by subtracting Thursday's closing futures price from Thursday's cash price. Cash price represents the price for No. 2 yellow corn and modified No. 1 soybeans. Cash prices were collected from each price reporting district. Since there is usually a range of several cents in cash quotations, the midpoint of the daily prices was used. In each table, the average basis along with the maximum and minimum basis for the last five marketing years is shown.

Figure 1. Iowa Price Reporting Districts



Factors affecting Basis

The difference between local cash price and futures price is due to transportation costs, storage costs, supply and demand, local conditions, and other factors. Figure 2 is a graphic illustration of a typical corn basis. The **general** price level is assumed to remain constant throughout the period so that the **relationship** between prices can be examined.

Transportation Costs

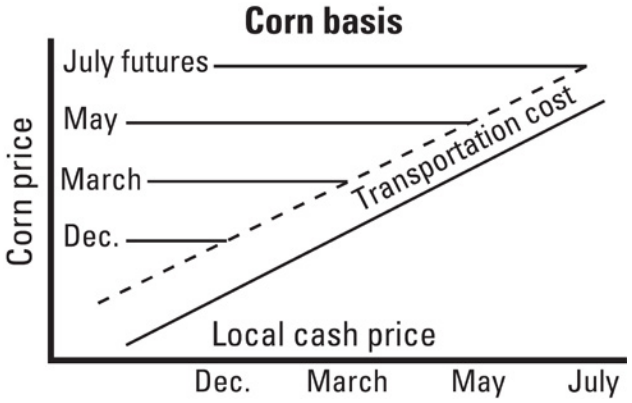
The local cash price and Chicago cash price differ by transportation costs. The transportation cost differential is due to the added cost of shipping a commodity from Iowa to market. For example, the cost of shipping corn from Iowa to the gulf is usually greater than the cost of shipping it from Chicago. So Iowa cash prices tend to be below Chicago cash prices, and therefore below futures prices.

However, the large number of ethanol plants and feed mills in Iowa has changed this dynamic. The market destination for much of Iowa's corn is now local. Changing markets can change the corn basis patterns in Iowa.

Storage and Interest Costs

Storage costs and interest (charge against money held in unsold grain inventory) vary throughout the year. Crops offered for sale at harvest incur no storage and interest costs. However, as the year progresses, storage and interest costs accrue and the cash prices increase to cover these costs. So cash prices, all else being equal, increase from harvest into the following summer to cover the accruing costs of storage and interest.

Figure 2. Typical Corn Basis



Revised March 2022

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However, futures prices do not increase during the year due to storage and interest costs. Regardless of when a futures contract is traded, the storage and interest costs from harvest until contract delivery are included in the price. For example, regardless of whether July futures are traded during January or the following June, the storage and interest costs from harvest until July are included in the futures price. So, cash prices tend to increase relative to futures prices from harvest through the marketing year.

Supply and Demand

Basis is also affected by supply and demand conditions. Heavy farmer selling, especially at harvest, will tend to lower cash price but will have little effect on futures price. So basis is traditionally wide at harvest (more than can be explained by storage and interest costs and transportation). Conversely, light selling (often during spring planting) will tend to strengthen cash price but will have little effect on futures price. So basis will narrow. Variations in export demand further affect basis.

Geographic Variations

Basis patterns vary from one geographic area to another. Cash prices in northwest Iowa have historically tended to be lower than in southeast Iowa because of the additional transportation costs of shipping a commodity to processors or export markets. However, as the production of biofuels expanded, the relative basis patterns in Iowa have changed. Heavy local demand for corn or soybeans due to livestock feeding and bio-fuels processing bids up local cash prices and basis can narrow.

A geographic area that uses more grain than it produces is called a grain "deficit" area (versus a grain "surplus" area) and needs to import grain into the area from outside. This will increase cash price relative to futures price and the basis will narrow.

Localizing Basis

The relevant basis for a farmer is the basis at the local elevator. The tables represent an average basis for each price reporting district but can be used to approximate a basis for your elevator. To do this, periodically compare your local cash price with the mid-point of your price reporting district's cash prices as reported by the Iowa Department of Agriculture and Land Stewardship, iowaagriculture.gov/agricultural-diversification-market-development-bureau/month-end-grain-price-reports. After you have established an approximate relationship between the two prices, you can adjust the information in the tables. For example, if your price is normally five cents under the midpoint, you can adjust the basis figures in the table by five cents.

What is Spread

Spread is the difference between futures prices. Because grain is a storable commodity and produced only once every year, the futures prices for several delivery months represent the same crop. For example, corn futures prices for December, March, and July all represent the same crop and tend to move together. The September delivery month tends to be a transitional month between the old crop and the new crop. The difference between futures prices of different delivery months of the same crop is due to the costs of storage and interest between the delivery months. For example, the December futures price is usually the lowest of the futures contract months because delivery in December is close to harvest and only a small price premium is needed to cover storage and interest costs. The July futures price is usually higher because storage and interest costs from harvest until the following July are incurred.

Using Basis in Hedging

The two critical times when basis information is important for hedgers are in deciding whether to place a hedge and, if placed, when to lift the hedge.

Placing Hedges

Basis is important when considering whether to place a hedge because it is used to convert the futures price to a local cash equivalent price. The basis tables can be used to estimate the net local hedge price.

The producer considering hedging needs to determine the period when the crop will be marketed. Once the marketing period has been selected the appropriate futures contract delivery month is chosen. The expected basis during that time period is subtracted from the current futures price to obtain the estimated net price from hedging (not including transaction fee or interest on margin money).

For example, if you are considering placing a hedge using July futures and if you anticipate lifting the hedge in June, you can estimate the net hedge price by subtracting the expected June basis from the current July futures price.

Lifting Hedges

If it is time to lift the hedge and the basis is narrower than expected, the hedge returns will be larger than expected. With a storage hedge, the producer may lift the hedge earlier than anticipated if the basis is unusually narrow.

However, if it is time to lift the hedge and the basis is wider than normal, the producer may delay lifting the hedge until the basis approaches more normal levels. Of course, there are other factors to consider in making this decision. For more information on hedging see:

- Information File A2-60, Crop Price Hedging Basics, www.extension.iastate.edu/agdm/crops/pdf/a2-60.pdf;
- Information File A2-61, Using Hedging in a Marketing Program, www.extension.iastate.edu/agdm/crops/pdf/a2-61.pdf;
- Information File A2-62, Hedging vs. Forward Cash Contracting, www.extension.iastate.edu/agdm/crops/pdf/a2-62.pdf.

Analyzing Forward Contracts

Knowledge of basis patterns is useful in deciding between using a hedge or a forward contract with an elevator. If the contract price basis is significantly larger than the expected actual basis, a producer may consider hedging rather than forward cash contracting. The contract basis can be computed by subtracting the contract price from the futures price. However, if the contract price reflects a normal basis, it may be advisable to forward contract rather than hedge in the futures market.

Grain Basis vs. Livestock Basis

Many agricultural producers who understand livestock basis patterns try to transfer those principles to grain basis. However, there are some differences.

Grain is a storable commodity and the same grain can be used to satisfy several futures contract delivery months. So, grain futures prices tend to be tied to one another. Livestock is not storable so livestock futures prices for alternative delivery months tend to move independently.

Because grain is a storable commodity, the grain basis is tied closely to grain storage costs and interest costs. Livestock are not storable so there are no storage costs built into the basis.

An inverse basis in grain and oilseed futures (cash above futures) is unusual and indicates there is something abnormal occurring such as a severely cold planting season or extremely strong local demand. An inverse basis in crops will usually last only for a short period. However, an inverse basis in livestock futures is not unusual for distant delivery contracts and can exist for extended periods of time. Only during the nearby futures contract delivery periods do we expect livestock futures to be above cash price.

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