

DEPARTMENT OF AGRICULTURAL ECONOMICS

# Knowing and Managing Grain Basis

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Differences in grain prices throughout the world are the result of surplus or deficit production in various regions. In general, grain prices are lower in the inland producing regions and higher in grain-deficit, densely populated and port regions. Distances between producing and consuming regions explain the price differential.

Transfer costs, which include loading or handling and transportation charges, are the most important variables in determining grain price differentials. Price differentials between regions cannot exceed transfer costs for very long. Whenever this situation occurs, buyers will purchase commodities from the low-priced market (raising prices there) and ship them to the higher-priced market (lowering prices there).

The price producers receive for grains at the country elevator is derived from a central market price less transportation and handling costs. Country elevator

managers watch the prices in several markets to determine where the demand is the greatest. Country elevator managers deduct transfer costs to the higher-priced market in determining the bids they can offer local producers.

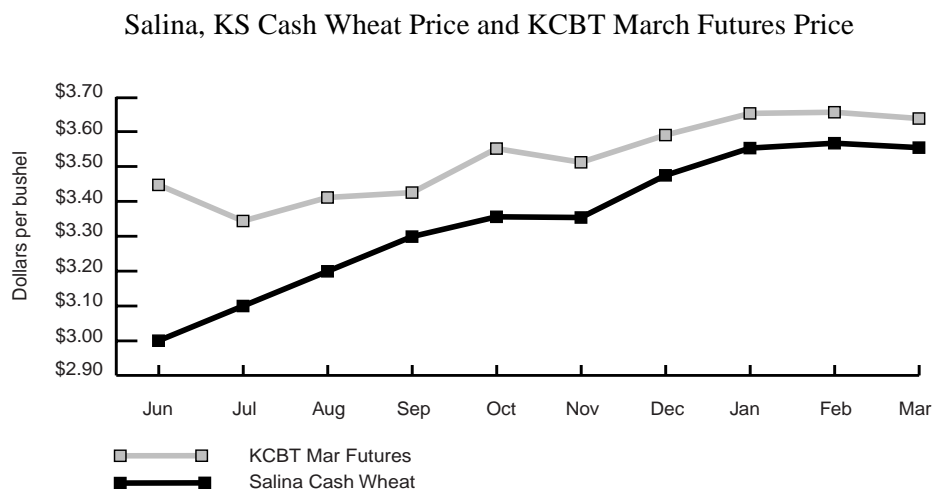
**Basis**

Basis is the difference between a cash price and the futures price of a particular commodity on a given futures exchange.

The futures price represents the price offered for a futures contract. A futures contract is a legally binding agreement which calls for delivery of a specified quantity and quality of grain at a specified place in a designated month in the future.

Futures contracts are offered for various months of the year. Each month relates to the seasonality of harvest, marketing, or consumption patterns of grain through the year. A futures price is locked in when a

Figure 1. Salina, Kansas cash price and March Kansas City futures wheat price as the delivery month approaches.



Basis = Cash Price - Futures Price

contract is bought or sold; otherwise, futures prices fluctuate based on market supply and demand information. The cash price and the futures market price tend to converge as the contract delivery month approaches.

For example, a “normal” relationship between the cash price and March Kansas City wheat futures price from June through March is illustrated above for Salina, Kansas over a 5-year period (Fig. 1). In June, the difference between the cash and futures price is large as harvest is underway and supplies are plentiful. This difference narrows as the delivery date approaches, at which time the difference equals the cost of transportation. In March, at the time and place of delivery, the cash and futures prices are the same (except for transportation cost), because if the price were higher in one of the markets, traders would buy or take delivery in the low-priced market and sell or make delivery in the high-priced market, which would minimize any price difference.

### **Basis Variability**

The factors that affect basis include expected supply and demand for grains at the elevator, supply and demand for transportation services, variations in grade between what is grown and the futures contract, and the unavailability of substitutes at a particular location.

Knowledge of the historical basis for a certain area or local elevator is important in making basis contract decisions. For example, basis contract offers ranged from 10 cents under to 28 cents under the futures price in the Texas Panhandle for July delivery priced off the 1996 July Kansas City wheat contract. Were they good basis contract offers? In this case, the historical 5-year average was 31 cents under with a range of 20 cents under to 50 cents under. Therefore, Panhandle producers had opportunities to lock in basis significantly better than the 5-year average.

Not only do temporal differences in basis occur, but also spatial differences. On the same day in January in 1996, three elevators located within 15 miles of each other were offering basis contracts at 10, 18 and 23 under the July Kansas City wheat contract price for July delivery. The differences in the bids could be directly related to differences in demand, storage availability and transportation costs.

### **Tracking Basis**

Tracking basis weekly at the local elevator or spot markets such as nearby feedlots is important to a producer in managing basis risk. Generally, area and/

or regional estimates of basis are available from the Extension Service or private sources. Using information from a combination of these sources is an excellent way to evaluate basis contract offers.

A grain producer should track two pieces of basis information weekly at all potential local outlets. First is the relationship of the cash offer to the nearby futures contract (Fig. 2). This provides estimates of basis for delivery of grain during any time of the year and can be used in evaluating storage decisions. (Please refer to *Post-harvest Marketing Alternatives*, in this series for more details.)

The second piece of basis information that needs to be tracked is forward cash contract offers (and basis contract offers if available) for harvest time delivery of grain. These quotes with respect to basis are relatively stable; however, variations do occur. Temporary changes in the cost of transportation services and supply and demand conditions can result in basis variation in forward contract bids.

If basis contracts are available, it may not be necessary to track forward cash contract offers since futures price minus the expected basis should equal the forward cash contract offer. However, it may be beneficial to check both the forward cash contract and basis contract offers, occasionally, to ensure that the price relationships are close.

For example, an elevator operator may receive a discount for contracting a number of cars or a unit train for harvest delivery of grain. In turn, the operator may offer favorable forward cash contracts or basis contracts to producers to ensure a sufficient supply of grain is available to fill the shipment. Typically, as the uncertainty of meeting the shipment commitment disappears, so do the favorable basis offers.

### **Managing Basis Risk**

Successful management of basis risk can add to a producer’s bottom line. Both elevators and producers have avenues available for managing basis risk. The efficient use of unit trains, forward contracting of transportation services, and exploration of alternative markets are all ways an elevator operator can minimize basis risk.

Grain producers have three basic ways of managing basis risk: forward contracting, basis contracts, and synthetic basis contracts. There are a number of variations of these three methods, such as minimum price contracts. Forward contracting is the simplest method because both price and basis risk are eliminated at the same time.

Figure 2. Basis tracking form.

Commodity _____					Location _____			
Nearby futures contract					Harvest delivery			
Date	Cash price	Futures contract month	Futures contract price	Basis	Forward cash contract offer	Harvest contract futures price	Implied basis	Basis contract offer

Basis contracts provide a method of eliminating basis risk without locking in a price. A basis contract holder is required to deliver a specified amount, generally in 5,000-bushel increments, during a given time frame. In return, the holder is guaranteed that the price received will be a fixed amount either above or below the underlying futures contract. Basis contracts are gaining popularity and are available from most elevators and processors.

### Three Primary Ways of Managing Basis Risk

- Forward Contracting
- Basis Contracts
- Synthetic Basis Contracts

In areas where basis contracts are not available, the formulation of a synthetic basis contract is an alternative. Creating a synthetic basis contract involves forward contracting the grain and taking a long position in the futures market at the same time. The forward contract locks in the price and basis while the futures allows the price to vary. Regardless of which way the price has moved by harvest, the basis will not change.

In general, any forward price offers will be comprised of a futures price and expected basis. Understanding this, the use of the basic forward pricing options (outlined above) can be represented by a box diagram, Figure 3.

The box is divided into four quadrants corresponding to the four possible combinations of acceptable price, unacceptable price, acceptable basis and unacceptable basis.

Of course, a producer's perception of what is an acceptable or unacceptable futures price is determined by his production costs, market outlook and whether he is a buyer or seller of grain. Comparing the basis offer to a historical 5-year average will help in determining whether it is a "good" or "bad" basis offer. In addition to comparing basis offers to the 5-year average, a producer must consider the dynamics of the market. For example, a producer may decide that a slightly below normal basis offer is attractive, because a potentially excellent crop suggests the basis will widen further as harvest arrives.

If price and basis are considered acceptable, forward contracting is attractive because it fixes both price and basis. If price is acceptable and basis is unacceptable, the best alternative is to hedge and hope the basis improves. If the price is unacceptable but the basis offer is acceptable, it may be advantageous to basis contract the grain and wait for a price rally. In the case of an unacceptable price and basis, the only alternative is to do nothing and hope the situation will improve over time.

Basis information and the marketing tools discussed also can be used to control the price of grain as an input into a different production system. For example, a producer who is planning to feed cattle may want to take advantage of a historically "weak" basis by entering into a basis contract with an elevator for the purchase of grain.

### Summary

The differential between cash and futures (basis) is relatively predictable. Understanding trends and/or tendencies in basis movement can help a producer make good decisions for minimizing basis risk. For example,

Figure 3. Use diagram of basic forward pricing decisions.

		Basis	
		Acceptable	Unacceptable
Futures price	Acceptable	Forward contract	Hedge
	Unacceptable	Basis contract	Do nothing

basis tends to have seasonal patterns. When supplies are ample, as at harvest, the basis tends to weaken. When supplies are limited, the basis tends to improve.

Basis fluctuations can have a dramatic effect on producer income. However, with the tools available, basis risk is manageable. Forward cash contracts, basis con-

tracts, synthetic basis contracts, and other variations such as minimum price contracts are all ways producers can control basis. Whether he is selling or buying grain, it is important to realize that basis risk is just another part of the business and needs to be managed accordingly.

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