Trade Basics

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Understanding Basis: A Primer

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A large share of economic activity, including transportation, storage, and production, revolves around **basis, or the difference between prices**. Understanding basis starts with understanding the economic story behind the price difference. In particular, the economic story is critical when assessing if an unusually wide or narrow basis is an economic problem.

Basis usually involves prices of two attributes (or characteristics) of a product, with the prices for the two different attributes quoted at the same time:

- **Quality Basis:** difference between prices of two different qualities of a product; for example, high protein cash wheat price and Grade 2 (standard quality) cash wheat price, both prices at Topeka, Kansas
- **Spatial Basis:** difference between prices of the same product at two different locations; for example, number 2 yellow corn price at New Orleans, Louisiana and at Cairo, Illinois
- **Temporal Basis:** difference between prices of the same product at two different times; for example, July 2019 Chicago soybean futures price and soybean cash price, Illinois River (futures delivery point).

Quality Basis: Core economic story is that different supply and demand relationships generate a higher price for a product quality. For example, high protein wheat can command a higher price, since protein is important for baking quality, notably breads.

Spatial Basis: Core economic story is transportation cost over space (or distance). If spatial basis (the difference in price) exceeds the cost to transport a product between two locations, the product will be moved from the lower to higher price locations. This is called spatial arbitrage. If spatial basis is less than transportation cost, the product will not be moved. In a well-functioning market with no constraints, spatial basis tends toward the cost of transportation. As transportation cost increases, spatial basis increases.

Temporal Basis: Core economic story is cost of storage over time. If temporal basis exceeds storage cost, an incentive to store exists. This is called temporal arbitrage. If temporal basis is less than storage cost, the incentive is to increase consumption now. Storage costs include (a) physical storage cost, (b) interest opportunity cost, and (c) insurance (against physical destruction of product). Physical storage cost includes cost of physical structures and energy needed to keep the product usable. A stored product can always be sold and the return invested to earn interest. Continuing to store foregoes the opportunity to earn interest income, making it a storage cost. If storage cost increases, temporal basis will increase.[1]

Spatial-Temporal Basis: In many agricultural markets, the spatial-temporal basis, specifically futures price minus current cash price, is important. A specific example is July 2019 corn futures price minus cash price on Illinois River (futures delivery location) as of Dec. 15, 2018. oth transportation and storage costs impact spatial-temporal bases. A spatial-temporal basis will increase as transportation or storage cost increases.

Basis Variation: Basis varies with relative supply and demand for the basis attribute. For example, high protein wheat may not command a premium if supply of high protein wheat is high relative to demand. However, any economic activity will occur only if costs are covered; making economic costs tied to a basis attribute important to understanding the specific basis.

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[1] Controversy surrounds temporal basis as storage appears to occur even when price is expected to decline. One argument for this apparently irrational behavior is errors in measurement. A second argument is an additional return, called "convenience yield," exists to offset the expected price decline. Different versions of "convenience yield" exist. No argument or explanation is accepted as conventional wisdom.