Livestock Basis

Curriculum Guide

I. Goals and Objectives

    A. Understand the concept of basis.
    B. Learn how basis information can be used in decision-making.
    C. Learn how to construct a historical basis table to track basis.

II. Descriptions/Highlights

    A. Basis is defined as the difference between the local cash market and a futures contract price (Basis = Cash Price - Futures Price). Basis is sometimes referred to as the price of a cash commodity at a particular location, relative to a specific futures contract, because it provides a measure of the local supply and demand conditions vs. the aggregate supply and demand situation depicted by the futures contract's price.

    B. The formula indicates that, if basis is negative, the futures price is greater than the cash price. Conversely, a positive basis indicates the futures price is less than the cash price.

    C. Knowledge of historical basis patterns can be useful when estimating expected sale or purchase prices at the conclusion of a futures or options hedge, when evaluating a current cash market quote, and when evaluating forecasted cash prices.

    D. Livestock basis is always computed using the nearby (closest to expiration) futures contract since, generally, it is not possible to store livestock into the expiration period of a subsequent futures contract. However, grain basis can be computed using a deferred futures contract price since grains are a storable commodity. A deferred futures contract is any futures contract farther away from expiration than the nearby futures contract.

    E. The mathematical formula used to compute basis is a powerful tool. If we rearrange the equation (Basis = Cash Price - Futures) and solve for the cash price we discover the following relationship: Cash Price = Basis + Futures Price

        Hedgers can use basis for the time frame when they expect to deliver (or accept delivery of) the cash commodity to estimate their expected price if they place a hedge at today's futures price level. The difference between a hedger's actual price, at the conclusion of the hedge, and the expected price, at the outset of a hedge, will be attributable to the difference between the actual and expected basis.

F. Knowledge of historical basis levels also can be useful when judging the acceptability of a local cash market price. As the cash price equation (cash price = basis + futures) indicates, a commodity's cash price can be decomposed into its futures price and basis components. The basis component can be compared with historical basis levels for that particular time of year and a judgement made regarding the acceptability of the cash price. If the basis differs substantially from historical levels, some additional research to determine why the difference exists and whether it is likely to persist is warranted.

G. You can generate a forecast of the cash price by replacing basis with <u>expected</u> basis. In this case the formula becomes:

Expected Cash Price = *Expected* Basis + Futures Price.

This means you can use a basis forecast, in conjunction with the futures price, as a cash price forecasting tool. The technique is straightforward. Simply add today's futures price (choosing the futures contract that will be the nearby contract during the forecast period) and a forecast of the basis during the forecast period to obtain a cash price forecast.

H. Because basis tends to follow the same pattern year after year, historical basis data can be used to forecast basis. The first step to forecasting basis is to generate a historical basis table to compare basis across years. Setting up basis tables on a weekly basis is the preferred approach.

It is important to have data available for the appropriate sex and weight since it can have a big impact on basis. Review the discussion regarding potential problems with holidays, consistency of data and data availability.

I. Since basis tends to follow the same pattern year after year, historical basis data can be used to help forecast future basis levels. The simplest technique, and one of the most reliable, is to use the historical average basis level for the week you are interested in forecasting as a forecast. Recent research indicates that, generally, three year averages are preferred when forecasting feeder cattle or slaughter cattle basis. Comparable research regarding the appropriate historical average to use when forecasting lean hog basis is not available, but it's likely that a three to five year average will perform well.

III.   Potential Speakers

A. Extension economists
B. Livestock marketing consultants

IV. Review Questions

A. What does it mean when the basis for a particular location is negative?

Answer: A negative basis simply means the futures price is higher than the cash price and a hedged futures price would be discounted by the amount of the negative basis.

B. When tracking livestock basis, should the nearby futures contract or a deferred futures contract be used?

Answer: When tracking livestock basis, the nearby (closest to expiration) futures contract is always used because livestock is not a storable commodity (like grains are).

V. For More Details

Internet web sites for livestock basis data for several markets in:

Texas: http://livestock-marketing.tamu.edu
Kansas: http://www.agecon.ksu.edu/livestock

❗ Defining Basis

☞ Basis = Cash Price - Futures Price

☞ Negative Basis

✓ Futures price above the cash price

☞ Positive Basis

✓ Futures price less than cash price

❗ Uses of Livestock Basis

☞ Estimating expected sale or purchase prices resulting from futures or options hedges

☞ Can be used to derive cash price forecasts

☞ Evaluate a cash market bid

❗ Which Futures Price To Use

☞ Livestock Basis

✓ Use nearby futures contract

☞ Grain Basis

✓ Use nearby or deferred contract

✓ Depends on purpose:

• Evaluate storage - use deferred

• Harvest sales - use nearby contract

❗ What is a Nearby Futures Contract

☞ The contract that will be closest to expiration at time of cash market transaction

EXAMPLE - In October, nearby corn futures contract is December (CBT) corn futures

❗ Examining the Basis Formula

☞ Basis = Cash Price - Futures Price
☞ Rearrange formula
  ✓ Cash price = Basis + Futures price
  ✓ Allows for breaking cash price into two components:
    • Basis & Futures Price

❗ Cash Price Components & Hedging

☞ Cash Price = Basis + **Futures Price**
☞ Hedging allows us to "lock in" the futures price by using the futures as a temporary substitute for the cash market transaction we intend to make at a later date
☞ Selling the futures contract "locks in" the futures price, but it does not "lock in" the basis

❗ Evaluating Cash Market Bids

Historical Basis Data Useful When Evaluating Bids

☞ First Step: Decompose cash market bid
  ✓ Cash Price = Basis + Futures Price
  ✓ Cash Price - Futures Price = Basis

☞ Compare the "implied" basis in cash price bid with historical basis

❗ Hedging vs. Cash & Basis Contracts

Cash Price = Basis + Futures Price

☞ Hedging allows us to "lock in" the futures price without "locking in" the basis
  ✓ A cash contract "locks in" the futures price without "locking in" the basis

  ✓ A basis contract "locks in" just the basis

❗ Forecasting Cash Prices

Cash Price = Basis + Futures Price

☞ If you take today's futures price + your "expected" basis at the time you'll deliver the cash commodity, you have today's futures based estimate of your cash price

☞ Expected Cash Price = Expected Basis
+ Today's Futures Price

❗ Expected Sale Price With a Hedge

Short Hedger (i.e., plans on cash market sale)

☞ If you take the futures price at which the hedger sells the futures contract + the "expected" basis at the time delivery of the cash commodity will take place, it equals the hedger's "expected sales price"

☞ Expected Sale Price = Expected Basis + Price at which futures contract sold

❗ Constructing Historical Basis Tables

☞   Weekly

☞   Your local cash price and futures price of same date

☞   Same sex

☞   Track over period of years

❗ How Do You Forecast Basis?

☞   Basis follows seasonal (i.e. repeatable) patterns
  ✓   Means we can use historical basis data to forecast basis

☞   Need historical basis tables or charts
  ✓   One day per week
  ✓   Use same day's cash & futures prices
  ✓   Average weekly cash &futures for slaughter cattle
  ✓   Keep track over a period of years

❗ How Do You Forecast Basis? (Cont'd)

Example: 700 -800 lb. steer basis
October 15, Dodge City, Kansas

Date	3-Year Avg.
10/1	$-0.26/cwt.
10/8	$+0.91/cwt.
10/15	$-0.27/cwt.
10/22	$+0.02/cwt.

☞ Initial basis forecast = 3 yr. avg. basis: $-0.27/cwt.

☞ Minimum and maximum for that week provide a measure of basis risk

☞ Can fine tune basis forecast based upon recent basis levels