

MISSOURI LIVESTOCK BASIS

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A Primer on Livestock Basis

Futures quotes are prices that the buyers and sellers agree today to dealing products in the future. Due to that, they can be interpreted as estimates of price expectations. For example, the live cattle futures quotes today for contracts that will be closed by the next month represent a good estimate of the live cattle price for next month. Futures quotes are published daily by the [Chicago Mercantile Exchange Group \(CME\)](#), a marketplace based in Chicago.

Even though CME futures quotes are good estimates for future prices, they refer to specific types of products and conditions of delivery. Being so, local prices can differ from futures quotes for a variety of local factors that differ from the futures contracts, such as quality, location, transportation and supply and demand.

The difference between the local prices and nearby future quotes (the closest month after a physical transaction) is known as basis. When estimating basis, a good practice is to use local prices for livestock grades that are close to the grades specified in futures contracts, so that we are comparing comparable prices.

Knowing historic basis estimates for a specific good and location allows you to better forecast local prices using futures quotes. For example, if you know that live cattle prices in June in Missouri are usually \$7 higher than the live cattle futures for June, and that live cattle futures for June of next year are around \$140/cwt, it is expected that live cattle prices in June of next year will be around \$147/cwt in Missouri.

It should be noted that basis happens due to local factors that differ from the futures contracts. Therefore, while basis estimates reflecting historical trends might be useful, they may not accurately reflect unanticipated shocks and should be used with caution.

Live Cattle Basis

Live Cattle Basis is estimated as the difference between live cattle prices in Northeast Missouri and the live cattle futures quotes. CME Live Cattle Futures Quotes refer to a specific type of cattle, which is defined in [Chapter 101 of the CME Rulebook](#)¹. Considering that, we estimate live cattle basis using local prices from steers and heifers with Yield Grade 3 and Quality Grade Choice, which is the most comprehensive case and that most closely corresponds to the futures contract specifications. Data are obtained from the [USDA](#)

¹ According to that, each futures contract shall be for 70% Choice, 30% Select, Yield Grade 3 live steers or live heifers, as defined by the United States Department of Agriculture (USDA) [Official United States Standards for Grades of Slaughter Cattle](#), or producing 70% Choice, 30% Select, Yield Grade 3 steer or heifer carcasses, as defined by [Official United States Standards for Grades of Carcass Beef](#).

[AMS Livestock, Poultry, & Grain Market News](#) for northeast Missouri, home to three Missouri auction barns that have been selling cattle with these characteristics.

Live cattle basis is estimated as:

$$B_{LC_t} = P_{LC_t} - F_{LC_t} = \sum_{i=1}^3 W_{LC_{it}} (P_{LC_{ti}} - F_{LC_t})$$

Subscripts i and t represent location (auction barn) and time, respectively

B_{LC} represent the basis and at period t

P_{LC} represent the daily average price of steers and heifers with Yield Grade 3 and Quality Grade Choice

F_{LC} represent the close price of the nearby futures quote obtained from the Chicago Mercantile Exchange (CME) for the closest month after the physical transaction

$W_{LC_{it}}$ is the total weight sold at auction i at period t , measured in dollars per hundredweight of carcass weight

Feeder Cattle Basis

We estimate feeder cattle basis using feeder cattle futures quotes from [CME](#)², and local prices from medium and large steers with muscle grade 1 or 1-2.

Feeder cattle basis is estimated as:

$$B_{FC_t} = P_{FC_t} - F_{FC_t} = \sum_{i=1}^3 W_{FC_{it}} (P_{FC_{ti}} - F_{FC_t})$$

Subscripts i and t represent location (auction barn) and time, respectively

B_{FC} represents the basis

P_{FC} represents the daily average price of medium and large steers with muscle grade 1 or 1-2

F_{FC_t} represents the nearby futures quote (CME), measured in dollars per hundredweight of carcass weight

Lean Hog Basis

For the 2019-20 period, local prices come from the USDA AMS [Daily Direct Afternoon Hog Report](#); for 2021 and later, local prices are derived from the [USDA AMS Daily Direct Prior Day Hog Report](#).

² According to [Chapter 102 of the CME Rulebook](#), each futures contract shall be valued at 50,000 pounds times the CME Feeder Cattle Index. The CME Feeder Cattle Index™ is based upon a sample of transactions from these weight/frame score categories: 700-to-899-pound Medium and Large Frame #1 feeder steers, and 700 to 899 pound Medium and Large Frame #1-2 feeder steers.

Lean hog basis is estimated as:

$$B_{LH_t} = P_{LH_t} - F_{LH_t}$$

B_{LH_t} represents the basis

P_{LH_t} represents the daily average price of barrows and gilts sold in the negotiated market in the western Corn Belt.

F_{LH_t} represents the nearby futures quote (CME), measured in dollars per hundredweight of carcass weight