LIVESTOCK CRUSH MARGIN

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Using Crush Margin Information

Crush margins provide information on trends in cattle and swine profitability using data from futures quotes and historical basis. With this data, producers have a reference for trends and can plan how to use futures contracts or federal insurance programs, like Livestock Risk Protection (LRP) and Livestock Gross Margin (LGM), to lock in favorable margins and prices.

These estimates are updated weekly to incorporate new information from the futures market. However, they should be used with caution—although forward forecasting using futures is widely used and recognized for its accuracy, our estimates do not account for basis risk, which can cause observed margins to significantly deviate from our estimates. The methodology used to estimate livestock crush margin is adapted from Iowa State University's Livestock Crush Margins.

Cattle: Yearling to Finish Weekly Crush Margin

For the Missouri Livestock Market Watch, we define Cattle Crush Margin (CCM) as the value of a fed steer minus the cost of the feeder steer and corn:

$$CCM_T = (12.5 * LCF_{BT}) - (7.5 * FCF_{BT-5}) - (50 * CF_{BT-5})$$

> LCF_{BT} represents the fed cattle futures that expire in month T (or one month after T in the case of off contract months) adjusted for the Missouri basis (B) for month T. This price is multiplied by 12.5 for a 1,250-pound steer.
>
> FCF_{BT-5} represents the feeder cattle futures price adjusted for the Missouri feeder cattle basis at placement, five months prior to slaughter. This price is multiplied by 7.5 for a 750-pound feeder steer.
>
> CF_{BT-5} represents the corn futures price at placement adjusted by the Missouri basis multiplied by 50 bushels per steer.

Swine: Wean to Finish Weekly Crush Margin

For the Missouri Livestock Market Watch, we define Swine Crush Margin (SCM) as the value of a hog minus the cost of the weaned pig, corn, and soybean meal:

$$SCM_T = (0.74 * 2.8 * LHF_{BT}) - WP_{T-5} - (10 * CF_{BT-5}) - (0.075 * SBMF_{BT-5})$$

LHF_{BT} is the lean hog futures that expire in month T (or one month after T in the case of off contract months) adjusted for the western Corn Belt basis (B) for month T. This price is multiplied by 0.7*2.8 for converting the live weight of a 280-pound hog to carcass weight.

WP_{T-5} is the weaned pig price at placement, five months prior to slaughter. The weaned pig price per head is estimated to be 50% of the 5-month-out lean hog futures price not adjusted for basis. Fifty percent is the average ratio of USDA reported national weaned pig price per head and the 5-month-out lean hog futures price.

CF_{BT-5} is the corn futures price at placement adjusted by the northeast Missouri basis multiplied by 10.

$SBMF_{BT-5}$ is the soybean meal futures price at placement adjusted by the northeast Missouri basis multiplied by 10.