Key Beef Cattle Marketing Concepts

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The beef market is one of the most fascinating in all of agriculture due to its size, complexity, and uniqueness. As of January 2021, there were more than 31 million beef cows in the United States with a little less than one million of them residing in Kentucky. The beef sector consists of many industries including cow-calf, stockering and backgrounding, finishing, processing, and retailing. Kentucky is largely a cow-calf state with a large stockering and backgrounding industry. Figure 10-1 provides a simplified visual representation of the industries within the beef marketing system.

The beef sector is comprised of many industries, and most cattle will pass through each of these (sometimes the stocker/backgrounding stage is bypassed and calves are placed directly on feed). While there are examples of vertical integration in the beef sector, it is much less prevalent than in other livestock species. For example, farrow-to-finish operations are the most prevalent type of operation in the hog sector and would essentially be a combination of the cow-calf, stockering/backgrounding, and finishing industries in the beef sector. The complexity of the beef system does create some challenges for information flow as signals from consumers must be sent back through several industries before reaching the cow-calf level. It is also worth noting that concentration increases as we move closer to the consumer. For example, a small number of companies control large market shares in the processing and retail industries whereas a large number of very small firms make up the cow-calf industry.

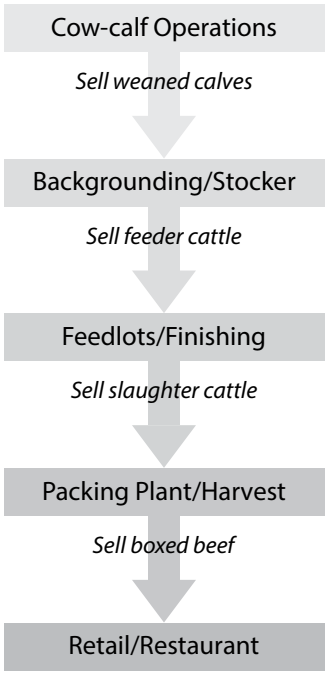

Figure 10-1. Overview of the beef marketing system.

Supply, Demand, and International Trade

Supply and demand drive prices for any commodity and the beef market is no exception. Typically, when one speaks of demand in the beef sector, they are speaking of domestic consumer demand for beef at the retail level. However, demand can also be estimated for fed cattle, feeder cattle, and calves, which is ultimately derived from the demand for beef. So, most discussions of beef demand start there.

Beef demand is a measure of consumer willingness-to-pay for beef products. The term willingness-to-pay is important because demand measures the relationship between beef consumption and beef price. An increase in consumer beef consumption doesn't necessarily represent an increase in beef demand if the increase in consumption was price driven. If consumers increase their consumption of beef while at the same time paying more for it, then that is a sign of an increase in beef demand. While, numerous factors have the potential to impact beef demand, three of particular importance are consumer tastes and preferences, incomes, and the prices of competing products.

Consumer tastes and preferences simply refer to changes in what consumers' desire. For example, beef demand decreased during the 1970s, 1980s, and the bulk of the 1990s largely due to changes in consumer tastes and preferences. Many consumers moved away from red meats during this time period. An example of a positive change in beef demand from changes in tastes and preferences would be the Atkins/South Beach diet trend that led to an increase in beef consumption for a segment of the market.

Incomes are another factor worth discussing as we think about beef demand. It is also important to understand that beef is not a single commodity, but rather a collection of a large number of products including high-end steaks, roasts, ground beef, and many other products. For most goods, consumers tend to increase their consumption when incomes are strong and this is likely the case for most of the beef market. Incomes are especially important in the case of beef as beef remains the most expensive meat of the three primary meats that Americans consume (beef, pork, and chicken). This tends to make beef more vulnerable to substitution during recessionary time periods when consumer disposal income is more limited.

Finally, consumer beef demand is impacted by the price of competing products. In the case of beef, its primary competition comes from two other primary sources of protein: pork and poultry. As the prices of competing products rise, beef prices become more attractive comparatively. For that reason, increasing supplies of pork and chicken are typically seen as a threat to beef demand. Increased pork and poultry production leads to downward pressure on the prices of those competing meats and makes beef look comparatively more expensive.

Beef supply is also an important piece of the price equation and is driven by many things. Certainly, the overall number of beef cattle on the market is a major factor affecting supplies. However, the amount of beef available is also impacted by slaughter weights, weather, international trade and many other factors. The quantity of beef on the market at any given time is estimated through cattle slaughter and beef production reports on a daily basis.

As one starts thinking about longer-term supply measures, discussion turns to cattle-on-feed reports and cattle inventory reports. Cattle-on-feed reports are survey based and are published monthly by USDA to estimate the number of cattle on feed in feedyards with capacity of over 1,000 head. This report not only includes an estimate of the total number of cattle on feed the first of each month, but also the number of cattle placed and marketed during the previous month. Cattle-on-feed reports can be used to provide estimates of slaughter cattle supply over the next several months.

Finally, cattle inventory reports are released by USDA-NASS twice a year and provide a more long-term estimate of supply. USDA estimates the total number of cattle and calves in the U.S. herd on both January 1 and July 1. This report also includes an estimate of the number of beef cows as of that date and an estimated size of the U.S. calf crop. The report can be used to gauge expansion or contraction of the U.S. cow-herd as it includes estimates of the number of heifers held for replacement purposes. Inventory estimates for individual states are released as part of the January 1 numbers.

A remaining factor to consider when discussing supply is the impact of international trade. Trade in beef products is a significant factor impacting U.S. beef prices. During 2020, the United States exported a quantity of beef equivalent to 10.8% of production, and imported the equivalent of 12.4% of its production. Imports were likely a bit higher in 2020 due to COVID-related production decreases in the spring of the year.

To put it simply, imports increase domestic supply and exports decrease domestic supply. However, trade is typically more complex than that, as we tend to export products that have higher values outside the United States and import products that have greater value in the United States. An excellent example of this is lean trim. Trim from U.S. packing plants is typically pretty high in fat. So, the United States imports a large amount of trim that can be blended with fattier trim in the United States to produce the blends of ground beef that are typically preferred by U.S. consumers.

Trade is also heavily impacted by relative production and consumption levels in importing and exporting countries, preferences of consumers, the value of the U.S. dollar, and any trade agreement or restrictions that might apply. While most trade discussion focused on beef trade, it is worth noting that trade in live cattle often occurs. While the United States exports very few live cattle, a significant number of live cattle come into the United States each year from Canada and Mexico.

Potential Market Outlets for Cattle

Beef producers have many alternatives as they consider marketing their calves. Key considerations include the expected value of the calves they sell by various methods, the amount of time they can devote to marketing, the security of payments received, and many other factors. The following section will briefly discuss four common marketing methods available to producers, but there are many options available.

Auction markets. Sale through auction markets is the most common marketing method in Kentucky. When producers sell cattle through auction markets they are paying a commission for a service and are outsourcing marketing to professionals. The auction market provides a platform for cattle to be sold by bringing multiple buyers together to bid on cattle in a competitive environment.

Auction markets are attractive in Kentucky for several reasons. First, auction markets are by far the simplest way to market cattle. All the producer really has to do is arrange for delivery to the market. This is especially attractive in situations where producers have limited time to devote to marketing such as in Kentucky where so many farmers have jobs off the farm. Secondly, most producers are small and unable to market tractor-trailer loads of cattle themselves. So, auction yards provide an environment where buyers can group cattle from multiple sellers and sort them into marketable load lots. Finally, auction yards are required to be bonded and use custodial accounting to keep operating money separate from money received for consignors. For this reason, payment is extremely secure and selling through a reputable auction market is virtually risk free in terms of receiving payment.

Internet/satellite sales. Internet and satellite sales are becoming more common across the United States. When selling using this method, cattle are typically offered for sale via video with a detailed description of the cattle in some type of sale catalog. This description, provided by the consignor, typically describes the cattle in terms of breed, color, frame, muscling, uniformity and other factors. It also usually includes details on weigh and delivery conditions so that buyers have a clearer picture of what they are bidding on. Multiple buyers can bid on cattle on site, or via the internet, in the same way they would bid on cattle that were physically at a sale barn. Internet/satellite sales are almost exclusively for cattle sold in tractor trailer loads.

One of the challenges of internet sales is the uncertain nature that exists with respect to many factors. For example, many cattle traits are only known to the extent that they are visible via the video or revealed by the seller via the cattle description. For this reason, cattle are typically offered for sale with a base weight and price slide. The base weight is the expected weight of the cattle at delivery and the price slide is the adjustment per 100 lb. for cattle that weigh over (or possibly under) their base weight. The price slide process may be best explained by using an illustration.

Price Slide Example

A group of calves is offered for sale through an internet sale and the consigner estimates they will weigh around 600 lb. at delivery. The consignor lists them with a base weight of 600 pounds and a price slide of $10 per cwt. For the sake of this discussion, let's assume this group of calves sell for $160 per cwt. If, at delivery, the calves actually weigh 700 lb., the price is adjusted downward by $10 per cwt., for a sale price of $150 per cwt. If the calves instead weighed 650 lb., the price would be adjusted downward by $5 per cwt for a sale price of $155 per cwt. Most slides only work in one direction and consequently do not raise the price of the cattle if they weigh less than the base weight. However, slides could be written to work in both directions in the sale catalog.

Direct sale of cattle. Many producers become interested in selling cattle directly to feedlots, backgrounders, or stocker operators. This is an option and some producers do it successfully. However, it is important that producers understand that direct selling of cattle requires much more effort on their part. They must first find a way to make contact with potential buyers which is a real challenge if cow-calf operators are not in an area where potential downstream entities operate. This is the case in much of the southeast if producers want to sell directly to feedlots. Beyond making initial contact, producers must become sales people and convince buyers to purchase the cattle they produced.

After actual sale considerations, producers choosing to direct market must deal with logistics and service for the cattle they sell. The producer has to arrange for delivery and weighing of the cattle, as well as collection of payment. They must also deal with issues that arise after sale such as poor performance. If cattle are sold through a stockyard, the producer doesn't get the call when problems arise. However, if the producer sells his/her calves directly, they will be the primary point of contact on those calves.

The final point to be made about direct sales is that arriving at a reasonable price for both parties is not always as easy as expected. When cattle sell through a competitive bidding process, the competition from other buyers tends to improve the efficiency of the pricing process. However, when pricing cattle directly to an individual, information becomes very important. It is not uncommon for one party to have better information about the market value of similar cattle or have a better estimate of what cattle weigh than the other party. For that reason, it is very important that producers selling direct have a solid estimate of the weight of the cattle they are selling and have a good understanding of the cattle market in their area. In order for direct selling to be more profitable for producers than auction markets, the net price of the cattle after delivery and shrink, must exceed the net price from the stockyards after delivery shrink and commission.

Direct-to-consumer sales. While Kentucky does not have a large cattle finishing industry or a large-scale meat processor, direct-to-consumer sales are a marketing option of which some producers are taking advantage. Kentucky has several meat processors that can harvest cattle on a custom basis for producers who wish to sell directly to consumers. USDA inspected plants can process cattle so that cuts of meat can be sold by the producer. Custom exempt meat processors, which are not USDA inspected, can provide custom processing services for the consumer.

Freezer beef is probably the most common form of direct-to-consumer sales. Producers can sell animals, or portions of animals (halves, quarters, etc.) directly to individuals. Freezer beef offers an excellent opportunity for producers to receive very good returns on a per-head basis, although considerable additional work (and time) is required. Direct sales also allow producers to capitalize on demand for local meat and production systems such as grass finished, natural, organic, and other attributes. Beyond freezer beef sales, some beef producers have been successful with farmers' markets, on-farm retailing, Community Supported Agriculture (CSA), as well as selling directly to wholesalers, restaurants, and retailers.

Factors Affecting Feeder Cattle Prices

While there are numerous factors that impact the value of cattle, this section will focus on a few factors of specific importance for feeder cattle. The first thing to remember is that the demand for feeder cattle is derived from demand for fed cattle. Key items that impact feedlot returns will impact what can be paid for feeder cattle and calves at any given time. Feedlots purchase feeder cattle today with the intention of selling fed cattle in the future and the primary cost of cattle finishing is feed costs. So, the two main factors impacting feeder cattle prices are the expectation of fed cattle prices in the future and corn prices.

Deferred fed cattle futures. Feedlots purchase feeder cattle today with the intention of selling fed cattle in the future. CME© Live Cattle futures provide the best indication of fed cattle prices in the future. For example, if feedlots are looking to place feeder cattle with the expectation that they will come off feed in December, they can use December CME© Live Cattle futures as an indication of price expectations. As the December CME© Live Cattle futures contract increases in price, feeder cattle prices will tend to increase as well and the reverse is also true. Recent work from Kentucky suggests that as deferred CME© Live Cattle futures change by $1 per cwt, feeder cattle prices change by $1.00 to $1.20 per cwt (Burdine et al., 2014).

Corn price. Since feed prices are the largest cost for cattle finishing operations, changes in corn price have considerable impact on feeder cattle prices. As corn prices rise, finishing costs increase and the price feedlots can pay (and remain profitable) for feeder cattle decreases. Similarly, as corn prices decrease, finishing cost decrease and feedlots will pay more for feeder cattle as they compete with one another. Recent work from Kentucky auctions suggests that for every $1 change in corn price, feeder cattle prices tend to move $3-$4 per cwt in the opposite direction (Burdine et al., 2014).

Calf prices are also impacted by feed prices, but there tends to be a seasonal element to this impact. In the spring of the year, most calves are placed into a grazing program by a stocker operator. For this reason, feed prices may have less impact on calf values in the spring. Calf values are more driven by the expected value of heavy feeder cattle in the fall and the cost of those grazing programs. By fall, when forage availability is no longer driving calf values, calf prices respond to feed costs very much like heavier feeder cattle. In fact, they are likely to be more sensitive to changes in feed price as they are smaller and likely to be on feed for a longer period of time.

Lot size. In addition to the derived demand factors of live cattle futures and corn price, many other factors impact feeder cattle prices. One of particular importance in Kentucky is lot size, which refers to the number of feeder cattle that are sold in a single group. Since so many of Kentucky's cattle operations are small scale, a large number of cattle move through auction markets in small groups. However, when feeder cattle are shipped to the major cattle feeding areas in the

west, those feeder cattle will be shipped in load lot quantities (50,000 lb.) to increase trucking efficiency. For that reason, prices for feeder cattle tend to increase as lot size becomes larger.

Figure 10-2 shows lot size impact on feeder cattle prices in Kentucky preconditioned feeder cattle sales from 2005-2013. Notice that price premium increases as lot size increases, but does so at a decreasing rate. Figure 10-2 suggests that once lot size reaches the load lot level, price benefit largely flattens out. However, the most important part of the curve to focus on is the far left, which shows price changes for extremely small lot sizes. The biggest benefit for increasing lot size by a small amount is for small lot sizes. Going from a lot size of 5 head to 10 head will have a much larger impact on price than going from a lot size of 50 to 55. The key point is that small producers can enjoy significant price benefit if they can simply avoid extremely small lot sizes. Selling cattle as singles, or in groups of two and three are the most difficult for buyers to deal with and will bring the lowest prices at auction.

For this reason, some auction markets may offer special sales where calves from smaller producers are co-mingled to make larger lots for sale. Kentucky's Certified Pre-conditioned for Heath program (CPH-45) is an excellent example of this as calves from multiple producers are managed under a uniform health program and co-mingled into uniform groups at the time of sale. Both factors tend to increase the value of calves sold through the program.

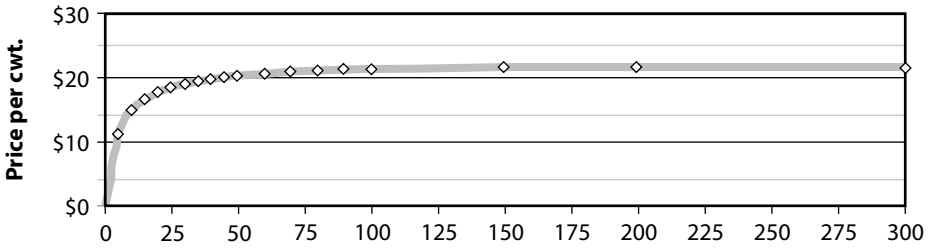

Figure 10-2. Lot size impacts on feeder cattle prices. Kentucky preconditioned feeder cattle sales (2005-2013) Source: Halich and Burdine, 2014

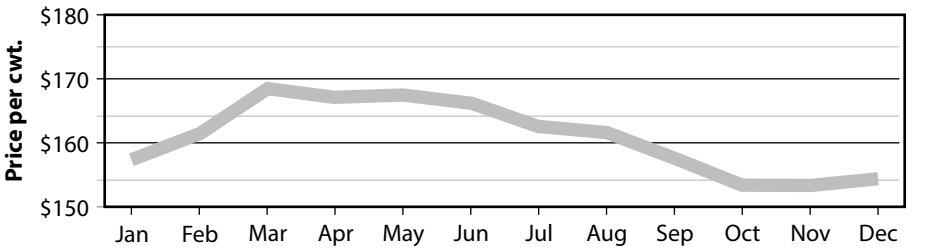

Figure 10-3. Average Kentucky auction prices (2010-2020) for 550 lb. medium/large frame #1-2 steers, $ per cwt. Source: USDA-AMS, Livestock Marketing Information Center, author calculations

Price Seasonality in Cattle Markets

Price seasonality refers to the typical pattern of prices within a year. Due to weather patterns, forage production, calving seasons, and other factors, there is a tendency for prices to follow similar patterns from year-to-year. While seasonal patterns don't always hold, beef producers should have a basic understanding of seasonality in the calf, feeder cattle, and cull cow markets.

Figure 10-3 shows average calf prices for 550 lb. medium/large frame #1-2 steers in Kentucky from 2010 to 2020. Note that calf prices tend to be highest in the spring and lowest in the fall for two primary reasons. First, spring calving herds are more common in the United States than fall calving herds so there are more weaned calves marketed in the fall of the year. Secondly, it is important to consider who is likely to bid on calves in the spring and fall and how that can impact their value. In the spring of the year, summer stocker operators are actively bidding on calves to place on pasture for the summer. Given the lower cost of gain on pasture, stocker operators are simply able to pay more for calves than feedyards and backgrounders that would be purchasing calves at the same time to place on purchased feed. As stocker operators compete for calves, they bid prices up in the spring as can be seen in Figure 10-3. In the fall of the year, stocker operators are not actively placing calves so they are more likely to be placed directly on feed in a feedyard or placed in some type of feed-based winter backgrounding program. The result is a lower target purchase price and hence lower calf prices in the fall of the year.

Seasonality for heavier feeder cattle is considerably different from what is seen in calf markets. The primary reason for the difference is that heavier feeders are not affected by grass demand in the same way that calves are as they will likely be placed directly on feed. Heavy feeder cattle values are driven by what can be paid for them given the expectation of fed cattle prices in the future (deferred live cattle futures) and the cost of finishing those feeders (feed prices). Seasonally, fed cattle prices tend to be highest in the spring and feed prices tend to be lower during the fall harvest time. For those reasons, heavy feeders tend to see their highest prices in the later part of the summer. To illustrate the seasonality of heavy feeders, Figure 10-4 depicts the average monthly prices from 2010 to 2020 for 850 lb medium and large frame #1-2 steers. Note the price peak in late summer and the lower prices in the winter.

While sales of weaned calves represent the largest revenue stream for cow-calf operators, they should not discount the importance of cull cow sales. Figure 10-5 shows cull cow prices for Kentucky from 2010 to 2020. Notice that cull cow markets behave somewhat similar to calf markets as they tend to peak in the spring/summer and reach their lows in early winter. Many will look at charts such as Figure 10-5 and consider holding cows through the winter in order to sell them at higher prices in the spring. However, this decision requires a budget analysis and is often complicated by the fact that cost-of-gain is typically very high for cows, and the value of the pounds added for cows is very low when compared to feeder cattle. However, Figure 10-5 does provide some insight as one considers calving seasons. Often the seasonal dif-

ferences in calf values are discussed, but the additional revenue from cull cow sales is not. In addition selling fall born calves on a stronger spring market, fall calvers also typically sell cull cows on a stronger spring market as well.

Cattle Cycles

Cattle cycles have been taught by many years by economists as a way to explain the cyclical nature of the cow-calf business. Cattle cycles can be thought of as long term changes in beef cattle inventory that tend to have implications for cattle prices due to the impact on supply. As producers experience times of strong profit, they tend to want to expand the size of their herds and as they experience periods of low profit, they want to decrease the size of their herds. While there is a lot of variation in cattle cycles, they typically last 10-14 years. Below are seven steps that generally describe cattle cycles:

1. Calf prices are strong and producers are making good profits. So many want to increase the number of cows they manage. They do this by holding back heifers to develop into brood cows.
2. The short-term impact of holding back heifers decreases the number of calves being sold and actually tends to push calf prices higher. This amplifies the expansion signal.
3. Over time, those heifers that were held are bred, calve, and wean calves. This results in a larger number of calves being sold each year. Eventually, this will put downward pressure on prices, holding other factors constant.
4. As the supply of calves rises, calf prices continue to fall and many producers will exit the cow-calf business or choose to decrease the size of their herds. They do this by selling more females.
5. The increased quantity of females being sold places additional downward pressure on calf prices, which amplifies the liquidation signal.
6. Eventually, the resulting smaller cow-herd leads to smaller calf crops and calf prices start to rise again, increasing profits.
7. Go back to Step 1.

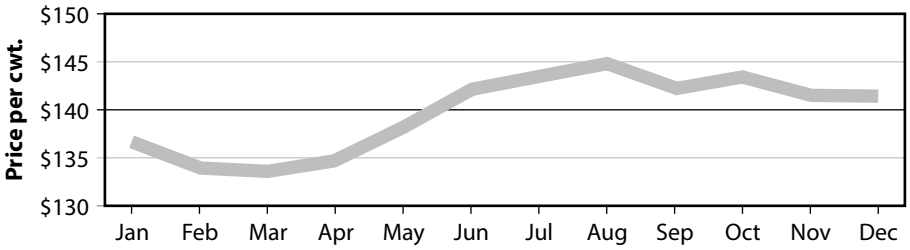

Figure 10-4. Average Kentucky auction prices (2010-2020) for 850 lb. medium/large frame #1-2 steers, $ per cwt. Source: USDA-AMS, Livestock Marketing Information Center, author calculations

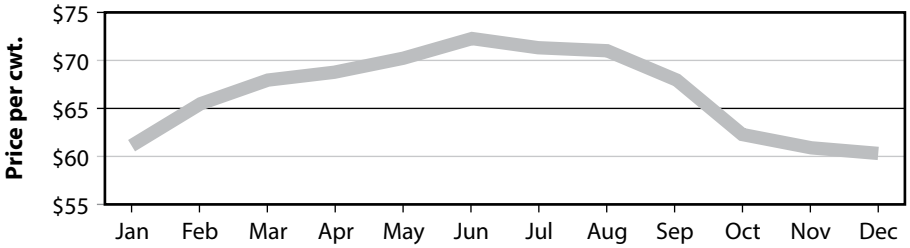

Figure 10-5. Average Kentucky auction prices (2010-2020). Cull cows—boning 80%-85%. Source: USDA-AMS, Livestock Marketing Information Center, author calculations

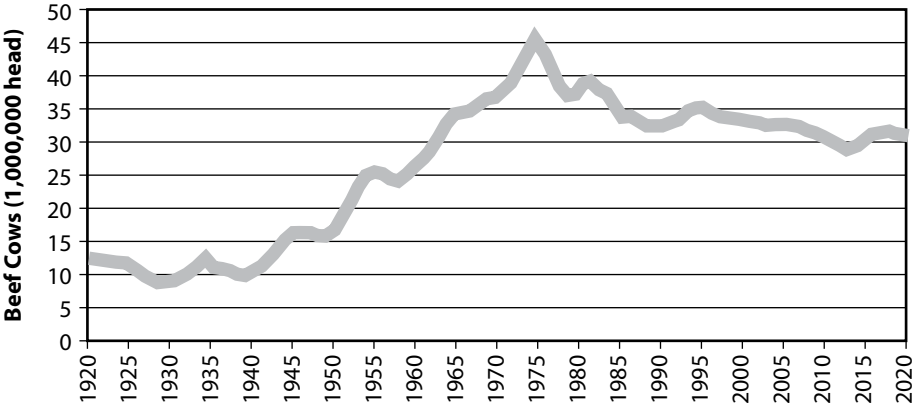

Figure 10-6. Jan. 1 U.S. Beef Cow Inventory, 1920-2021. Source: USDA-NASS

Figure 10-6 depicts U.S. beef cow inventory from 1920 to 2021, and clearly shows the cyclical nature of beef inventory during that time. Often when cattle cycles are discussed in an Extension setting, someone will ask the question, "So why do we keep doing this?" There is no easy answer to that question, but there are a couple reasons. The first is simply that producers respond to profits and there is no reason to believe that is going to change in the future. When profits are high, there is going to be temptation to expand. Secondly, the time lag involved is a major driver. Farms are not factories and cow-calf operators can't simply hire more workers and speed up the assembly line. It takes time to develop and breed heifers and it takes time for those heifers to produce and wean their first calves. So, there is considerable time lag between the start of expansion and when larger calf crops are actually seen at market.

While many have questioned the relevance of cattle cycles in recent years, it is likely that producers will continue to respond to profits as they always have and the associated changes in supply will impact prices. However, I do think producers should understand that given the increasingly volatile nature of cattle prices over the last several years cattle inventory is simply one factor among many that they should be watching. It is also generally advisable that producers keep cattle cycle dynamics in mind as

they make decisions about expansion and contraction of their herds.

Simply chasing prices (expanding when prices are high) may not be the best strategy for a cow-calf operation as it will typically be at least two years from when they make a conscious decision to expand until they actually have more calves to sell. Market dynamics are likely to be much different in two years. Producers should base their expansion decision on the expectation of profit during the productive life of the additional cows they are looking to add. Breeding cows are a long-term investment that should be evaluated using an eight to 12 year time horizon including expectations of calf values and production costs.

Sources of Market Information

For producers to be successful marketers, they need stay informed on the cattle market within which they operate. Fortunately, there are numerous sources of market information available for producers to take advantage of. As a starting point, producers should closely watch prices and market trends in the markets closest to them. The USDA Agricultural Marketing Service collects market data from most Kentucky auction markets. These reports can be accessed via the AMS website at https://www.ams.usda.gov/market-news/feeder-and-replacement-cattle-auctions#Kentucky.

Another very important publication that is published weekly by the Kentucky Department of Agriculture is the Kentucky Livestock and Grain Market Report. This report is sent out electronically each week and provides an excellent summary of Kentucky's livestock and grain markets. In addition to receiving the report by email, it can be accessed online at https://www.kyagr.com/marketing/documents/market-reports/AM_Livestock-Grain-Market-Latest-Report.pdf. Additionally, most auction markets have reports that they can make available to their clientele. Simply contact them for more information. Regardless of how market information is attained, know that information is becoming more and more important in today's cattle marketing environment.

Beyond local cash cattle markets, beef producers should learn to use the futures market as a source of pricing information. Futures market quotes are available through many sources, but they can be accessed online at the Chicago Mercantile Exchange website at www.cmegroup.com. CME© Feeder Cattle futures prices are cash settled to actual feeder cattle sales in a 12 state area. They are best representative of 700-900 lb. medium/large frame #1-2 feeder steers. Kentucky prices will be different from futures prices for cattle of the same weight due largely to transportation costs from Kentucky. This differential is typically referred to as "basis" in the cattle industry. While differences will exist, factors that affect the futures market will affect Kentucky prices similarly, so futures markets are an excellent source of market information.

Additional information on using the futures market as a source of pricing information and its potential as a risk management tool can be found in three publications—AEC 2013-01: *Using the Futures Market to Manage Price Risk in Feeder Cattle*, AEC 2013-03: *Using the Futures Market to Manage Price Risk in Feeder Cattle: Advanced Strategies*, and AEC 2013-AEC 2013-09: *Using the Futures Market to Predict Prices and Estimate Breakevens for Feeder Cattle.*

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