Buttonwood Merchants

Cattle Economics:
Price Normalization after the Steroid Era

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Key Points:

- In August of 2014 cattle on feed reached its lowest level since 2009 and in early November cash prices put in their all-time high of 171 cents per pound.
- It is apparent that impressive margins throughout the summer of 2014 succeeded in bringing many breeders back to the market, but the data still suggest that there remain an insufficient number of feeder cattle to be brought to auction.
- The normalization to lower price levels will happen slowly but the high price for cattle at present will make it quite difficult for the market to trade materially higher; therefore, the real opportunity lies in opportunistically selling upside volatility skew to create a positive carry book.

The market for cattle, both Feeder and Live Cattle, has seen an immense rally over the past few years to the highest levels on record. Currently there exists an opportunity to trade for an eventual normalization of the market as economic drivers incent the rebuilding of a depleted herd. In order to properly trade this normalization one must understand the mechanics of the market to know which strategies offer the best risk adjusted returns.

The Seeds of Shortage

Each week ranchers and breeders across the Midwest truck, rail, and hoof their cattle to auction houses where they will be sold to feedlots for fattening. After four to eight months and 600 pounds, 80% of these animals are marketed for slaughter to one of four packing houses (Tyson, Cargill, JBS, or National Beef) before being shipped to retailers throughout the United States. Figure 1 highlights this flow.

Out of economic necessity the average breeding lot markets 43 head of cattle per year while a representative packing house can buy as many as 200,000 animals per week. The economies of scale that benefit the large packing houses do not extend to raising animals from a young age, young cattle require nearly an acre per head to graze before they reach marketable size, while large animals can live for years in relatively enclosed spaces. This fact has several important implications for business decisions. The operators of breeding lots

are not able to hedge future price risk because their small size and the variable nature of the product they market prohibits it. This results in their operating decisions being made off of prevailing market prices.

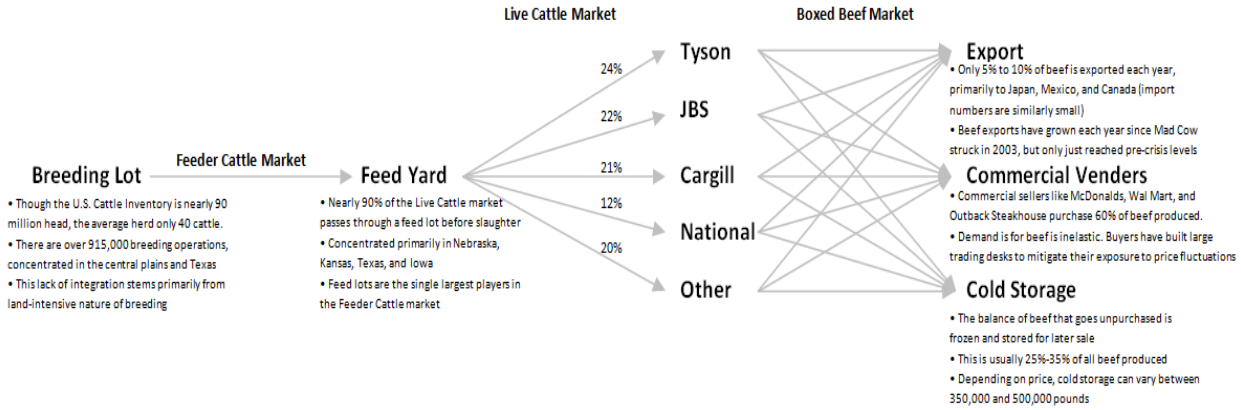

Figure 1: Flow of Cattle through the Development Chain

Killing the Herd

In the fall of 2011 the U.S. cattle herd was the second largest, second only to 2006, on record (This is shown in Figure 2's Cattle on Feed data). Margins were positive for both feedlots and packing houses, and retail demand was robust. In the spring of 2012 a drought in the Great Plains forced grain prices higher while feeder prices remained stubbornly low. Breeder margins dipped into negative territory and operations were given little choice but to reduce in size and auction their remaining animals, including their breeding stock. Some even exited the breeding business altogether, especially in Texas where their land was worth more for its production of oil and gas from the underlying shale formation than as grazing pasture. As a result, the flow of animals through the entire development chain (shown in the lower part of Figure 2) slowed and prices rose incrementally from the summer of 2012 to the fall of 2013.

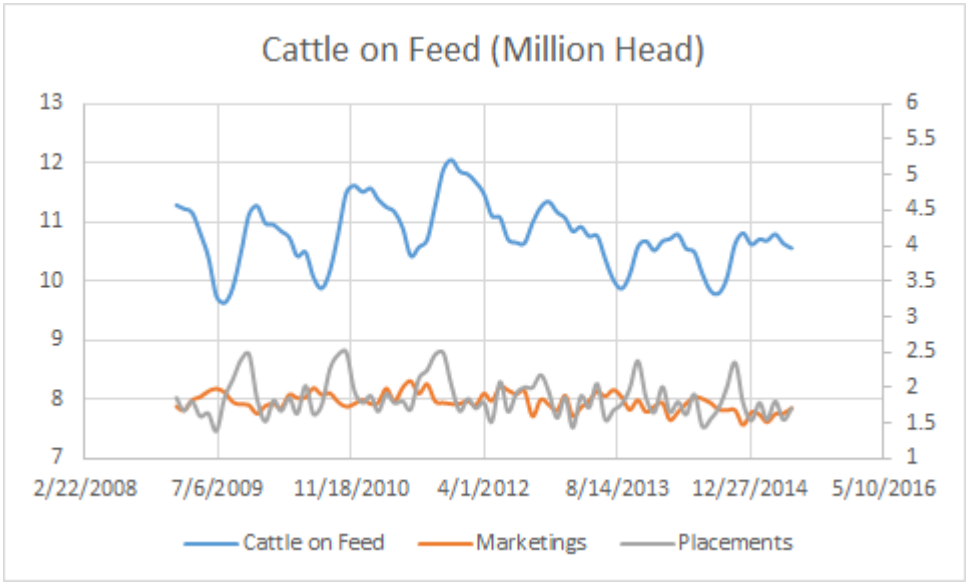

Figure 2: Number of Cattle of Feed, Monthly Marketing and Placement (USDA 6/19/2015 Report)

On August 6th, 2013, against a supply constrained backdrop, Tyson foods announced that in it would stop purchasing all cattle that had been injected with the hormone Zilpaterol (commercially known as Zilmax) in response to pressure from the USDA. Prior to the announcement it had been standard practice for feedlots to place animals on growth hormones in the weeks leading to marketing and slaughter. The supplement allowed animals to reach marketable weight nearly 20% more quickly and cut feed costs substantially, but by the end of August each of the 'Big 4' packers had pledged to cut Zilmax from their inventories. The product's abrupt prohibition resulted in feedlots rushing to market any animals that had been fed the hormone prior to the October 31st deadline. In September, 2013 the YoY change in marketings was +6.1% compared to a 10-year seasonal average of -.6%. Any resulting increase in short-term supply was eclipsed by a market-wide fear of inevitable shortage as winter fell on cattle country.

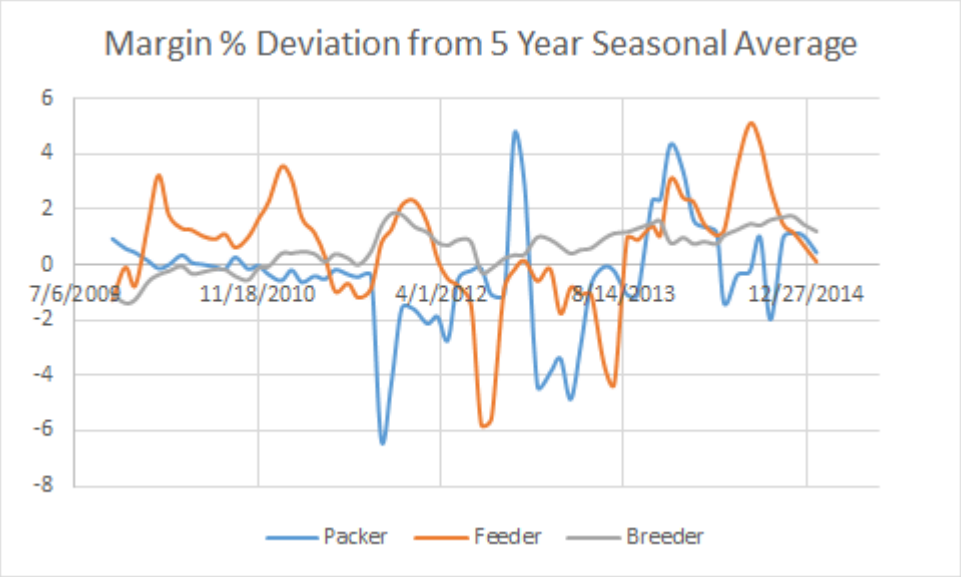

Figure 3: Approximate De-Seasonalized Margins for Each part of the Supply Chain

The polar vortex of 2014 hit the great plains particularly hard. Cold weather typically decreases the amount of muscle animals are able to gain as their metabolisms slow and they huddle together for warmth instead of around feed pens. Further cattle were lost in breeding yards as the intense cold proved too much for some pregnant cows. The 2014 spring calf crop was underwhelming and animals already on feed had failed to gain enough weight without the aid of Zilmax. In the month of February cattle prices appreciated 12 cents per pound, the largest MoM increase in over a decade.

As prices continued to climb to historic highs consumer demand proved surprisingly inelastic. Though placements on feed had declined to 1.455 million head by May of 2014 (nearly 150,000 below the 5-year average), slaughter had fallen to only 1.55 million head per month. Throughout the summer demand season it became apparent that ‘Big 4’ packers would prefer to run increasingly negative margins rather than risk losing market share to one of their three competitors. In August of 2014 cattle on feed reached its lowest level since 2009 and in early November cash prices put in their all-time high of 171 cents per pound.

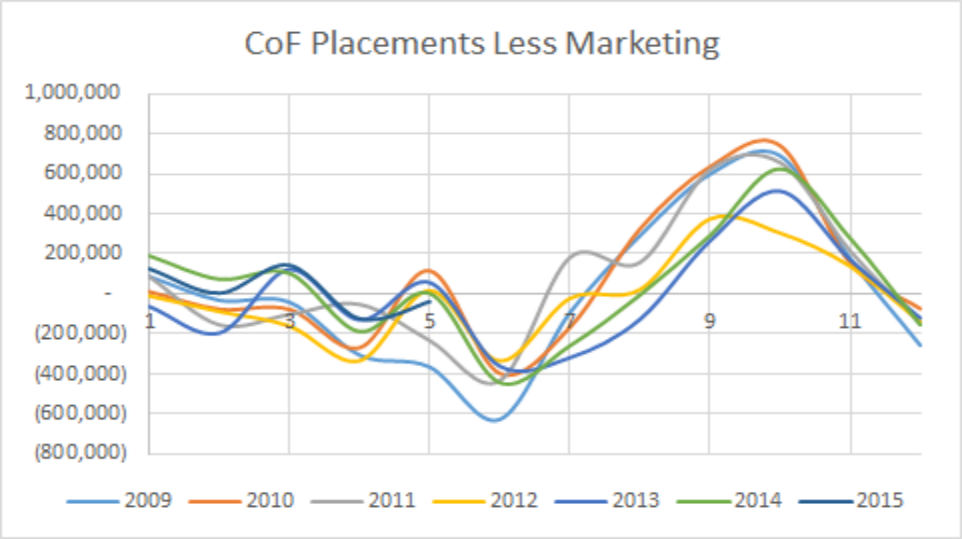

Figure 4: Cattle Place on Feedlots Minus Marketed (Slaughtered) Animals; Monthly USDA Data

Market Opportunity

The first half of 2015 saw both cash prices and placements normalize marginally. It is apparent that impressive margins throughout the summer of 2014 (Figure 3) succeeded in bringing many breeders back to the market, but the data still suggest that there remain an insufficient number of feeder cattle to be brought to auction. Rebuilding a depleted herd of breeding and young animals takes time and high margins must exist over the course of multiple gestation periods, which run approximately 283 days for most cattle species, for the initiative to be worthwhile. Large grain crops in South America and a solid start to the North American growing season should help keep feed prices low. With the input side of the breeder margin equation subdued, high cattle prices should incent a continued build of the herd; Figure 4 shows seasonally robust increases in herd size as new placement of cattle in feedlots outpaces the slaughter rate. However, this process will take time and the consequent normalization in price will happen over the course of the next two calf crops.

In 2015, the market has continuously overestimated the glacial speed at which cattle fundamentals change, particularly as they relate to the economic incentives of breeders at the front of the supply chain. Traders have been eager to run prices lower ahead of cash news, assuming that fundamental bottlenecks will resolve themselves in time for delivery. The strategy has not proved profitable as futures have rallied to meet the cash market in each of the February, April, and June expiries. These traders are correct in their fundamental assessment of the market but their execution strategy is inappropriate. The normalization to lower price levels will happen slowly but the high price of cattle at present will make it quite difficult for the market to trade materially higher; therefore, the real opportunity lies in opportunistically selling upside volatility skew to create a positive carry book. We will hedge out some of the tail risk of naked call selling by opportunistically purchasing calls with higher strikes to create call spreads. We are also creating an optimal portfolio by building strategic length in the Lean Hog and Corn markets against longer term support levels in those markets. The Cattle/Hog ratio is at attractive levels and those trades' risk reducing contributions to the aggregate portfolio will result in higher risk adjusted returns. Jeff will discuss our risk management and portfolio construction at greater length in the next thought piece.