Structure in the Cattle and Beef Industry and the Need for Mandated Cash Market Participation

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Chairwoman Stabenow, Ranking Member Boozman, and Members of the Committee, thank you for having me be part of this hearing. I am a professor and extension economist in the Department of Agricultural Economics at Colorado State University. I have been on faculty at Colorado State University for 24 years. Prior to that I was on faculty at Michigan State University and Oklahoma State University. I have taught, delivered extension education programming, and conducted research at the Land Grant universities for which I have worked for 32 years. My research long-term academic research focuses on livestock and meat product markets. Most of my work on the cattle feeding and meatpacking industrial organization has been in service to this body. I was a member of multi-institution research team that worked on the cattle and beef portion and the downstream portion of the Congressionally mandated ***2007 USDA Grain Inspection Packers and Stockyards Administration – Research Triangle Institute – Livestock and Meat Marketing Study***. And I was also part of the Oklahoma State, Kansas State, and Iowa State University faculty team that worked on parts of the Congressionally mandated ***1996 USDA Packers & Stockyards Administration Concentration in the Red Meat Industry Study***. These are the most substantial studies to date of the cattle and beef industry and all the economic concepts while many of the specific results of those works remain relevant today. I have worked and continued to work on market power questions within the cattle and beef industry. Most recently I have been studying the relationship between the thinning cash trade and price discovery in fed cattle and beef markets.

To address to the bottom line first. Mandating cash trade will cause substantial disruptions and higher costs to participants in the fed cattle market. These costs will be passed upstream to cow-calf producers – and to a lesser extent downstream to consumers. This is a foundational result from the existing body of peer reviewed research. The cost is at least in the hundreds of millions of dollars annually and is more likely over a billion of dollars. Research is also clear in that there is no evidence that mandating cash trade will improve prices in the fed cattle market or upstream to cattle producers. There is no research nor documented evidence that there is any benefit much less a benefit similar to well-documented costs. The cost-benefit assessment of mandatory cash trade is conclusive, settled, and one-sided. Details associated with proposed policies are important. But the definiteness of the relevant economics is clear.

Further, the bottom line on the price discovery and volume of negotiated cash trade research is that there is little to no simple relationship between the volume of cash trade and objective measures of price discovery. Substantial price discovery occurs at relatively large cash volumes and substantial price discovery occurs at very small volumes. There are also large variations in the amount of objective price discovery that occurs across regional USDA AMS markets and the volume in those markets. There is no basic recommendation that a certain minimum cash trade will result in significant price discovery.

Returning to the big picture, the structure that we see today of the meatpacking and cattle feeding industries has been determined by economics and the environment. Industry structure is the number of firms, the number of business units within firms, the size of these firms, geographic dispersion, and other aspects related to the footprint of these industries. Both industries provide the needed services

for the lowest cost. Both industries have also been innovative and have made substantial improvements in the quality of food products offered.

The impact of the environment on the cattle and beef markets is straightforward. Cattle consume forage and live and grow outdoors in a relatively slow biological process. The underlying beef cow herd is also dispersed across the continent. It is concentrated in areas where the cattle enterprises do not compete with crop production but where there are grasslands, pastures, and forage production. Relative profitability of cow-calf enterprises creates incentives or disincentives to expand or contract the national herd. But this profit motive must be supported by available forage. It is in the context of this variation in beef cow and calf numbers that the cattle feeding and meatpacking industries offer services, create opportunities and wealth, offer products to domestic and international consumers, and are faced with constraints and limits. Cattle feeders and meatpackers make strategic and operational decisions well-after underlying industry size decisions, in terms of available animal numbers, are made.

At the other end of the market channel, it is also important to recognize that all revenue available to cattle and beef industry participants originates from consumers. The cow-calf industry only has economic success if it and the downstream participants – cattle feeding and meatpacking – offer products and services that result in products in which the consumer is interested. These products and services must be offered in combination as each step creates value and economic opportunity. There are no other industries outside of cattle and beef of which I am aware that work in their entirety in this type of setting – whereby supply decisions, demand revelation, and changing the product form are in distinctly different industries. Coordinating the system is difficult.

Returning to the idea that economics has determined industry structure. The meatpacking industry is comprised of large firms owning multiple and geographically disperse large plants. These large plants are substantially more cost efficient than small plants and can pay more for inputs such as cattle. Prior to the COVID period, reasonable and approximate costs of beef animal slaughter and fabrication for the most efficient plants were $180-$210 per head. Modestly smaller commercial sized plants had costs of about $300-$425 per head. And very small local plants had costs of about $600-$750 per head. Large plants are very efficient but require substantially more animals to realize this efficiency. The largest plants require something on the order of 20-25 thousand animals per week to achieve these economies. Modestly smaller plants might process 8-10 thousand head per week. While the smallest plants may only require several hundred head per week. Nationally, there are slightly more than 30 individual plants that slaughter and fabricate about 20 million animals. The substantial economies of size in this industry are a well-known research result. These plant economies of size are leveraged by unified management and marketing personnel. This marketing function reaches internationally.

Similar economies or efficiencies are observed in the cattle feeding industry. Relatively smaller and usually diversified feeders in the upper Midwestern US might only feed several hundred to several thousand head per year. While larger commercial feeders further south and west would have one-time capacity at any single location larger than this amount. These larger commercial feeding enterprises specialize in feeding cattle often in multiple locations. Specifics of the relative costs for this industry are less well known and less easy to document. These often depend on local climate, feed availability, animal availability and distance to the closest packer, and local ability to use animal waste. But like the packer, the spreading of fixed costs associated with the feeding operation across as many animals as possible given capacity creates substantial economies of size.

These economies benefit not just the feeding and packing industries, but also consumers in terms of increasing the volume of product offered and lowering the price. The same is true for producers but with a reversed price impact. Cow-calf producers have and will market more animals at higher prices. Without size economies beef prices for consumers would be substantially higher and cattle prices for producers would be substantially lower.[1]

Both industries have also been creative and innovative in pursuit of continued improved efficiencies and expanded quality offerings. Once economies of size have been largely realized the next opportunities were in lowering transactions costs associated with variations in the flow of fed animals and beef through the system. The individuals worked to better coordinate the system. Alternative marketing arrangements are essential in this cost cutting and efficiency gaining exercise. Individuals are rewarded for innovation and then the innovations became the industry standard. These alternative marketing arrangements optimize the performance of group/pens of cattle and help optimize the performance of large packing facilities. These gains were well documented in the USDA-RTI Study. Those basic economic assessments remain today and are without doubt much larger.

In the cattle industry, alternative marketing agreements (AMAs) are formulas and forward contracts. These marketing methods are alternatives to using the cash market. Formulas value cattle transactions based on usually USDA AMS reported regional prices as the base with premiums and discounts assessed based on the agreement between the feeder and packer. Forward contracts are transactions that are valued today and delivered at least 30 days into the future. AMAs are reasonably worth about $25 per head for animals marketed through AMAs to the cattle feeding enterprise. This valuation can be considerably higher. AMAs are also worth about $25 per head to the packer. This is a reasonable valuation for most packers but for some the valuation is modestly lower while for others it is higher. What are the sources of these benefits?

For the cattle feeding enterprise, it is mainly improved cattle management – improved management of the individual pens of cattle. The improved cattle management also allow the targeting and securing of quality premiums. These premiums are from a variety of sources – animals may be fed to specific carcass yield programs, meat quality programs, or programs looking for specific characteristics such as natural, organic, source verified, and international market requirements. There is an increasing multitude of market outlets that require some level of coordination beyond negotiating today for delivery in the next two weeks. <u>This improved cattle management cannot simply be secured through use of the negotiated grid</u>. This is because negotiations in any given week can fail and failure impacts management of the individual pen of cattle, cascades into groups of animals, and entire feeding enterprise. Formula use improves the functioning of the entire market – both cash and AMA.

[1] The efficiency versus market power question has been asked often of the meatpacking industry. The findings are rather conclusively that efficiency gains are larger and that the industry is relatively competitive. See for example the early work Lopez, R. A., A. M. Azzam, and C. Liron-Espana. 2002. "Market Power and/or Efficiency: A Structural Approach." *Review of Industrial Organization* 20:115-126. And see a recent assessment Azzam, A. and S. Dhoubhadel. 2022. "COVID-19, Beef Price Spreads, and Market Power." *Journal of Agricultural and Resource Economics* (in press). The conclusion in this recent work is that fed cattle prices are competitive as opposed to exhibiting market power. Finally – Bouras, D. and A. Azzam. 2013. "Market and Welfare Effects of Multi-product Mergers with Reference to the Tyson-IBP Merger." *Journal of Business and Economics Research* 11:521-536 – offer the following, "we infer that the Tyson-IBP merger has generated the cost-efficiencies necessary to make consumers and livestock producers better off."

For the packer, AMAs also improve operations of the slaughter and fabrication facilities. Facilities with more AMA use have lower costs, operate at larger volumes, can better manage or maximize capacity utilization, and have more consistent volumes all of which combine for lower costs. Further, AMAs and formulas are important to develop and source supplies of animals with specific characteristics. Thus, like the feeding industry, the benefits to the packing industry are two-fold. More efficient operations with lower costs and improved end-product quality and different kinds of quality. These efficiencies and improved quality are not minor – values are substantial. This is a research conclusion.[2]

The incentive to not use the cash market is observed by both sides of the market. The main incentive is to timely market animals and the incentive is mainly realized by the cattleman or the cattle feeding enterprise. Cattle are not kept too long – increasing cost and impacting some qualities – and cattle are not marketed too soon – consumers prefer longer fed animals but not overfed. Packers also have an incentive for the correct quality of animals, but the packer will work with the animals that are available in the market. Packers do ***not*** have an incentive to ***not*** participate. Packers have the incentive to make a market – as do feeding enterprises – if prices observed do not represent the market conditions. Packers have stated to me over the years that they will purchase animals anyway cattlemen choose to sell them. The seller is in the driver's seat and largely makes the market-choice decision. And the cattle industry has the incentive to sell at as high a price as possible. If cash trade were deficient then it is the cattle industry that has the impetus to engage.

Further, the more complicated or subtle the combination of attributes the buyer is looking for, the more production decisions further back up the supply chain impact availability, then the more a contractual arrangement is needed to create investment, guarantee supply, and grow demand. AMAs have allowed producers through the cattle and beef supply chain to make changes and get compensated. AMAs have allowed purveyors to create new products and programs. AMAs are the source of innovation in the cattle and beef industry in the past 10-15 years. These innovations guarantee supplies and allow producers to participate. The coordination is done through a relative price – a price relative to the market price for cattle. I offer a "natural beef" example as an illustration. Some consumers have communicated a strong demand for beef labeled natural. Natural beef costs more to produce – some advanced production technologies are precluded – and the market size is not as large as that for all beef – as this beef is more expensive and is of interest to a subset of all beef consumers. Natural product lines are often coordinated through AMAs. Producers agree to participate and commit animals to the program before the calves are born. Production practices that allow for natural labeling are followed for the animal's life which spans nearly two years. Packers commit product volumes to interested buyers with negotiated premiums. This model could not be developed or maintained in the cash market. Supplies of natural animals may easily be out of balance with demands. Natural animals may be valued well above costs of production or may not cover costs of production. That uncertainty will cause the system to fail. We see new product lines and other innovations because of AMAs.

The choice of market used, be it cash or formula or forward contract, is a choice made that benefits the underlying business – also recognizing the market level impacts. I have yet to meet an individual with marketing responsibilities that does not recognize their actions can impact the overall marketplace.

[2] Detailed in Koontz, S.R., and J.D. Lawrence. "Impacts of Alternative Marketing Agreement Cattle Procurement Volumes on Packer Costs: Evidence from Plant Level Profit & Loss Data." *Agribusiness: An International Journal* 26(Winter 2010): 1-24.

Therefore, any policy which mandates more negotiated cash trade will require less AMA use and will impart a cost on the cattle and beef system and cattle and beef supply chain. Costs placed on packers and feeders will result in higher costs and lower quality offerings to consumers and will also result in lower prices to producers supplying calves to the system. The impact on producers is far larger than the impact on consumers. Consumers substitute to other proteins. This is a minor reduction is consumer wellbeing. Producers will market fewer animals at lower prices. This is a substantial reduction in producer – cow/calf producer – wellbeing. This is a definitive research conclusion.

The costs of a mandate associated with the 50/14 policy proposal are at least in the hundreds of millions of dollars for the cattle and beef system and are more likely over a billion. The proposed legislation (S. 4030) offers the 50/14 policy as an option at the discretion of the Secretary of Agriculture. These cost estimates are the published scientific result from the USDA-RTI Study. This impact consumes 12-14% of the wealth created by the cow-calf industry and that was the result in 2005. The costs and lost wealth are likely far higher today in 2022. There is no situation where mandating cash trade is not a cost. If cash trade created value or was not inefficient then there would be an incentive to do it. And this cost is incurred annually for as long as the policy is in existence. Nonprice coordination is beneficial. Price coordination of the whole supply chain is proven to be costly. This is a well-known research result.

The proposed policies are focused on price discovery, and price discovery is an appropriate question when the cash market is thinning, but price determination is the relevant topic for concerns about market outcomes.

Will mandating cash trade improve fed cattle prices – impact price determination? And thereby result in improved feeder cattle and calf prices? There is no research which offers this as a conclusion. Research which examines fed cattle prices for market power finds that these prices are impacted primarily by supply and demand conditions, characteristics of the pen or transaction, and inventories of market ready cattle. Inventories of AMA cattle or formula volumes have very small impacts on cash prices once a more comprehensive assessment of the market is considered. Reducing or eliminating AMA volumes would have at most very small impacts increasing cash prices – less than $1-3 per head. These increases are many orders of magnitude smaller than the gains from AMA use. And this requires assuming that all market power is driven by AMA use – which is also unlikely.

And the lack of a meaningful impact is the practical conclusion, the cattle feeding industry which makes use of formulas would have a strong interest in more cash trade if it was understood that formula use negatively impacted cash prices or if more cash trade resulted in higher prices. It is straightforward to show that formula use, or AMA use, does not change the supply and demand balance in a marketplace and therefore is unlikely to impact price determination.[3] Further, I have tried to make use of statistical research methods to find any relationship between AMA volume and impacts on fed cattle price – the industry sometime refers to this as market leverage. I have been unsuccessful. Further, I communicate with other academics and industry participants that study fed cattle markets, trade the markets, and offer market analysis. AMA volume is just not something that is used to understand cattle and beef market dynamics and price behavior.

[3] For details see the write up PD-2022-01 Alternative Marketing Agreement Use and the Supply/Demand Balance in the Fed Cattle Market at the LMIC website.

The only potential benefit to mandating some minimum cash trade volume is to guarantee some level of price discovery. Discovering fed cattle prices in a cash market environment requires at least the trade of some cash fed cattle. One of the shortcomings of existing research is that it has not as addressed questions regarding price discovery. But there were no concerns expressed until in 2014-15 – and again in 2018-19 – about price discovery in fed cattle markets. (I coined the term "robust price discovery" and it is a vague description. It will elicit discussion, which was its purpose, but the meaning only speaks to the individual. There is no scientifically accepted definition of robust price discovery.) AMA use was not as common or substantial as it has been since the major studies. But the changes in AMA use over time should not be a surprise. The thorough adoption of AMAs and especially in some regions give rise to the next economic question. How thin is too thin? The largest portion of AMAs – formula transactions – have prices based on what has become the residual negotiated cash trade.

This is an area of research which I have devoted the past several years and there is no published research that I am aware of that links the amount of objectively measured price discovery to the volume of negotiated cash trade. My work in this area is not published and is only informally reviewed by some of my peers. Answering the question of, "How thin is too thin?" requires objective measures of price discovery. There are three measures that are used in the research literature. When the five USDA AMS reporting regions are examined using these tools there are a variety of conclusions. For example, the different measures offer different conclusions in different time periods. The price discovery process is very fluid and very easy to change. The main conclusion is that there is no relationship between price discovery and the volume of negotiated cash trade. There is no clear overall problem that price discovery is somehow deficient in regional fed cattle markets. Mandating cash trade does not address a price discovery problem that is observed today or since the beginning of Livestock Mandatory Reporting.

Price discovery is effective with large cash volumes and small cash volumes. Price discovery is not performed in any single USDA AMS regional market. Price discovery is at times performed mainly in the upper Midwest and at times mainly in the Southern Plains. The CME live cattle futures at times are very important and the downstream boxed beef value is at time also important. None of the price discovery results are clearly related to the volume of negotiated cash trade.

Thus, mandating cash trade has high costs and no benefit – there will be no benefit to price levels seen by producers nor to the price discovery process.

It is also important to recognize what price discovery is not – price discovery is not higher prices. Price discovery is the market moving quickly and clearly to the appropriate price level. At times this is a lower fed cattle price and other times a higher price. It is a common misconception that better price discovery implies better prices for the individual contemplating the issue. And there is no scientific evidence that improved price discovery has value not already revealed in price nor will improve prices to producers.

So how can packer margins have changed so much without there being a problem with price discovery or price determination? The reason is the lack of coordination between packing capacity and cattle industry size decisions. There is no coordination and decisions in both industries are made by many-many individual businesses. For almost my entire career there has been substantial excess packing capacity. There has been far more packing capacity than beef animals to process. This was the case when I started my career path in the 1986 until 2016. For 30 years the essential question to understand changes in the packing industry was to understand what firm was going to have the most financial difficulty and what plant or plants would most likely close. This changed only in 2017. Since 2017, there

have been more animals available for slaughter than packing capacity. In today's market and since 2017, the marketplace needs packing facilities to operate six days per week. Prior to 2016, there was little incentive to invest in building packing infrastructure. The newest facilities built prior to 2016 have had multiple owner changes. Thus, the margin is needed to recover capital losses, fund renovation and innovation, and encourage expansion. The margin is market determined. If you are offended by the magnitude, then I ask did you see this coming in 2016? Few, and I know of none, that did.

I would like to conclude by offering a summary. Mandating minimum cash trade is substantially costly. Costs are at least hundreds of millions of dollars and more likely billions of dollars. These costs will be leveled on cow-calf producers nationwide and consumers of beef both domestically and internationally. Primary research which discovered these costs is almost 20 years old – but the economic concepts are foundational and the costs today are likely substantially higher. There is no research which can attribute higher cattle prices to mandated cash trade. Likewise, my preliminary work has revealed to me that price discovery is not improved with mandated cash trade. The price discovery we currently have in regional fed cattle markets is not deficient. And the cost-benefit of mandated cash trade is clear.

In June 2021, USDA Office of the Chief Economist and the Agricultural and Food Policy Center (AFPC) at Texas A&M University jointly sponsored a workshop in Kansas City, Missouri at which a series of papers summarizing work on fed cattle pricing issues were presented and discussed. These papers, along with a summary of the workshop, were compiled into a book published by AFPC and available on their website at https://www.afpc.tamu.edu/research/publications/710/cattle.pdf. This work is a unique summary of prior and new research. It offers an assessment of issues, concerns, research results, and some policy options. The work is also available at https://www.lmic.info/page/cattle-markets-price-discovery-and-emerging-issues. Along with the workshop book, some of the authors have written extension audience documents summarizing some of the topics. My statements in this testimony are consistent with the conclusions from that effort by 18 other agricultural economists.

Statements made by supporters of the legislation conclude that the policy will result in substantial gains. And yet I am aware of no research which concludes this. If the system is so broken, if the meatpacking industry is so taking advantage of producers, then why isn't there substantial much less no evidence that this is the case? Wouldn't there have been evidence as to that case presented in the OCE-AFPC joint workshop? Key findings from the book are listed on page *x-xi* and it is not a key finding that a minimum cash trade should be mandated. Wouldn't it be a conclusion from research? Wouldn't it be largely recognized across the population of market analysts and other followers of the cattle and beef markets? The reason is because the premise is not true.

However, any passage of the legislation will provide the opportunity for a unique experiment. Prior research assessing the costs and benefits had to be constructed from what we know about cattle and beef market economics – supply and demand, costs, incentives, and market dynamics. The actual passage of legislation and the resulting real-world adjustments in the marketplace will be measurable. We, the research community, will be able to assess whether the costs and benefits are as one-sided as our *a priori* research concludes.

I offer this assessment as a scientist with only an interest in communicating what we know from research. I have no vested interests that will benefit or deteriorate in the outcome of this committee's decision. If I can be of any further service, then I view that as an obligation.