

## CHAPTER 5: CONCLUSIONS AND IMPLICATIONS

### 5.1 Conclusions

For beef alliances, there is no single utility maximizing equation to solve and consequently open the door for every alliance's success. The wide array of preferences, risk tolerances, and motivations prohibits the application of a uniform template. This research exemplifies the direction future research must take: examining the effects of alternative alliance designs, educating participants with empirical evidence of likely outcomes, and allowing them to assign their own preferences to choices – ultimately determining a unique solution to every alliance problem.

The goal of this research was to provide useful guidelines to those parties constructing, designing, or already involved with a beef alliance. Findings of this research and keys for success with alliances are as follows:

**1) Cattle owner returns, determined by industry feeding margins, are more variable in nature than packer returns.**

- Owner returns average -\$4.37/head with a standard deviation of \$61.02/head. Historical feeder margins range from -\$190/head to \$130/head.
- Packer returns average \$6.38/head with a standard deviation of \$18/head. Historically, packer margins have ranged from -\$40 to \$58/head.

**2) Cattle owners are more likely than packers to press for margin sharing agreements in alliances.**

- With a significantly higher variance of margins than packers, cattle owners may believe margin sharing is needed to compensate for feeding margin risk exposure. Owners will wish to share packers' margin and/or encourage packers to share the feeding margins.
- Many cattle owners become involved with alliances to reduce return risk from a failed pricing system. These owners will likely assign a higher priority to margin sharing agreements when the alliance is organized.
- Most cattle owners do not have the risk management programs in place to deal with margin variance, and are therefore seeking margin sharing as a remedy for margin risk of participating in the alliance.
- The historical tendency of feeding margins to be negative for long periods of time could cause a significant cash flow problem to owners, or frustrate efforts to obtain financing.

**3) Packers are likely to agree to margin sharing requests to ultimately reap the benefits of improved supply chain coordination.**

- Packers can earn higher returns through cost savings from operating plants at higher utilization rates and removing the variation in daily slaughter rates. Anderson and Trapp estimated packer cost savings to be between \$3-6/head. These cost savings can be applied towards any decrease in returns from margin sharing.
- Packers with branded products need to attract and maintain large numbers of producers, and will be willing to accept margin sharing as a way to ensure a long term relationship with a group of cattle owners devoted to alliance success.

Table 5.1 presents results for three types of margin sharing cattle owners and packers could possibly choose from: owners transferring 50% of their margin to packers, packers transferring 50% of their margin to owners, or both owners and packers receiving 50% of each other’s margin.

**Table 5.1: Average owner and packer margins (\$/head) under alternative margin sharing agreements**

		No <u>Sharing</u>	Owner margin transfer of 50% to <u>Packer</u>	Packer margin transfer of 50% to <u>Owner</u>	Equal Margin <u>Sharing of 50%</u>
<b>Owner</b>	Mean	-4.37	-2.19	-1.18	1.00
	Std. Deviation	61.02	30.51	60.57	30.84
<b>Packer</b>	Mean	6.38	4.19	3.19	1.00
	Std. Deviation	18.00	33.66	9.00	30.84

**4) Cattle owners prefer equal margin sharing overall, for highest average return and lowest standard deviation. If equal sharing is not available, transferring their own margin to packers decreases margin variance. Receiving packer margins increases average return to cattle owners the fastest.**

- Cattle owners not concerned with revenue variance will choose to receive packer margin transfers if equal margin sharing is not available, and raise average return by 73%.
- Owners setting a high priority for risk reduction will choose to transfer their own margin to packers to reduce standard deviation by 50% and forego higher average returns.

**5) Packers prefer to receive owner margins and their variance rather than transfer their own margins to owners.**

- Packers can receive owner margins without transferring any of the packing margin to cattle owners and still return \$4.19/head.
- Accepting the owner’s preference of equal margin sharing would lower average return to packers to only \$1.00/head with a large increase in variance.

Table 5.2 presents the average premium earned by all cattle according to alliance quality level. These results point to the possibilities premiums have for improving owner and packer returns, as well as being used for bargaining between participants.

**Table 5.2: Average premium earned by all cattle according to alliance quality**

	<b>Average premium earned by all cattle (\$/head)</b>
<b>High Quality</b> <i>75% of cattle qualify for a premium line</i>	12.83
<b>Average Quality</b> <i>50% of cattle qualify for a premium line</i>	8.46
<b>Low Quality</b> <i>25% of cattle qualify for a premium line</i>	4.22

**6) Premiums can be substantial. If these data can be assumed representative of alliances, the largest potential for increasing average returns is through higher quality cattle.**

- The potential for cattle owners to benefit from premiums is significant. Allocated 100% of premiums, cattle owners could turn an average loss of \$4.37/head into a breakeven situation by only qualifying 25% of cattle for premium product lines.
- This analysis, however, does not include any study of the marginal cost of generating these premium pools.

**7) The key to generating the largest economic pie for division between owners and packers centers on capturing premiums through the sale of higher quality cattle.**

- Assuming premiums were to be divided evenly, cattle owners could increase average return per head from 48-146% according to quality, and packers could increase average return by 33 to 100%. These results could be achieved with no margin sharing agreement.
- Any time a participant has been allocated a percentage of premium rights, they either maintain or improve average return by seeing an increase in quality cattle instead of negotiating changes in margin sharing.

- Combined with Anderson and Trapp’s estimate of \$5-15/head of cost savings to the entire beef industry through non-price coordination, profits where 75% of cattle qualify for premium lines could reach \$17-27/head above traditional marketing system levels.

In a negotiation situation over alliance compensation design, both cattle owners and packers have a need to understand the tradeoff for each offer or concession. For example, cattle owners may seek to increase the level of equal margin sharing by 10%. In order to accommodate the request, packers will demand an appropriate increase in their premium rights. But how much premium right should be given up by cattle owners? How much premium right is needed by packers to maintain an equivalent level of return? Table 5.3 provides the marginal rates of substitution between premium rights and margin sharing needed to solve the negotiation problem.

**Table 5.3: Marginal rates of substitution between changes in premium rights and changes in equal margin sharing for cattle owners and packers to maintain equivalent returns on cattle marketed through the alliance**

	Low Quality Alliance <i>(25% of cattle qualify for premium)</i>	Average Quality Alliance <i>(50% of cattle qualify for premium)</i>	High Quality Alliance <i>(75% of cattle qualify for premium)</i>
1% change in premium rights is worth	0.4% change in equal margin sharing	0.8% change in equal margin sharing	1.2% change in equal margin sharing
1% change in level of equal margin sharing is worth	2.5% change in premium rights	1.25% change in premium rights	0.83% change in premium rights

Assuming a low quality alliance where there is already 20% equal margin sharing, the cattle owner request to increase sharing to 30% will be accepted if the packer can be compensated with an appropriate increase in premium rights. Table 5.3 shows packers would need a 2.5% increase in premium rights for every 1% increase in equal margin sharing. Therefore, the packer and cattle owner would both maintain an equivalent average return if equal margin sharing increased by 10%, and packers received 25% more of all premiums generated.

This marginal rate of substitution holds in a low quality alliance regardless of what the current level of equal margin sharing is, 20% or any other amount. Only cattle quality changes influence the relative value of premium rights to equal margin sharing arrangements.

**8) Premium rights make excellent bargaining exchanges for equal margin sharing agreements. Alliance participants can make tradeoffs between these two compensation designs to accommodate all preferences.**

- Knowing the relative worth of equal margin sharing and premium rights allows participants to bargain fairly. Absence of information can allow one participant to behave opportunistically, leading to mistrust and a breakdown of communication.
- At any quality level, packers will forego their hesitancy to share margins equally in exchange for the correct amount of premium rights.

**9) As cattle quality increases, premium rights become more valuable in terms of equal margin sharing. As cattle quality decreases, equal margin sharing becomes more valuable in terms of premium rights.**

- As more cattle qualify for premium lines, packers become more willing to participate in equal margin sharing with cattle owners in exchange for an increase in premium rights.
- As cattle quality decreases, cattle owners will demand more premium rights to forego any previously negotiated equal margin sharing arrangement with packers.

**10) Separate accounting of premiums and allocating rights to them sends the correct economic signal to cattle producers. Producers are rewarded for improvements in quality, and prices reflect true value of cattle at the consumer level, thereby allowing producers to understand better the end consumer's needs.**

- Combining all margins earned (feeder and packer) with premiums generated and distributing percentage to participants only serves to obscure the reason why returns may increase or decrease at a given time.
- Systems allocating a combined margin/premium lump sum are frustrated by the difficulty determining each participant's marginal value product.

Overall, research results support the working hypothesis that valuable guidelines can be created for beef alliances to improve performance, work through difficult negotiations, and generate premiums that reflect true quality of cattle. By coordinating efforts and understanding participant motivations, alliances can successfully meet consumer demands in the future and regain lost market share for beef products. This is the most crucial point, disagreement over how to slice the same amount of margin results in misguided energy, while concentration on growing the amount of premiums captured is the key to future industry success.

## **5.2 Future Research Needs and Implications**

More complete analysis of beef alliance design is frustrated by access to proprietary data. Future research would be superior through a longer-term study of alliances with access to all cost, margin, and premium data. This research represents only a snapshot in time of prevailing market conditions and premiums generated by a small group of cattle. A stochastic premium series would allow for a better understanding for how much premium is being generated by alliance cattle and the variance of that return. This type of analysis would provide more explicit guidance on the potential for premiums to offset any increase in operating costs from participating in the alliance, a piece of information needed by cattle owners, feeders, and packers.

Detailed premium data could also be used to evaluate the tradeoff experienced in the feedyard between lower feed conversion ratios and subsequently higher costs of gain and capturing premiums from the sale of higher grading cattle. By incorporating premium data from more than one source, researchers could begin to understand the range of premiums available over time.

This research should be expanded to cover the other beef industry participants who are likely involved with alliances. Most packers work with a retailer to guarantee market access for branded product lines. By incorporating retailers into the modeling, researchers could understand what, if any, impact retailers have on what types of alliances are created. Cattle feeders are other agents to include in future analysis.

Further research in this area with suitable data must continue to evaluate design choices alliances are making. Vertical coordination theory reveals that alliances are formed as a result of motivations more diverse than maximizing profits. There is therefore a need to analyze the outcomes of alternative governance designs to determine what works and what does not. Having knowledge of design effectiveness allows alliance participants to create their organizations with more complete information, thus increasing the likelihood for future success.

Eventually research on beef alliances will begin linking alliance designs back to original motivations for formation. Certain types and styles of alliances will need to be defined and categorized. Analysis will evaluate governance designs against one another and determine what type of alliance design satisfies a particular type of motivation the best.

The key to beef industry growth in the future is improvement in meeting consumer demands and increasing final product value. The rapid growth of alliances supports industry recognition of traditional marketing system failure and the need for improved supply chain coordination. This line of research serves to guide alliances through the difficulties associated with working as a unit more effectively and realizing the gains from cooperation more quickly.