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MEASURING PRODUCER LEVEL BEEF CATTLE ALLIANCE FINANCIAL PERFORMANCE

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ABSTRACT

There has been a movement toward developing production and marketing alliances in the beef cattle sector in the United States to improve communications and ultimately provide higher priced branded products consistent with consumer demand. Beef cattle producers do not employ a consistent methodology to measure the financial performance of alliance participation. Nor do they have the information to negotiate financially sustainable agreements. The concentrated packer and retail sector do not share cost and returns information beyond total business data required by public traded corporations. A methodology using cost accounting and economic analysis is described to measure return on producer's assets for an alliance agreement. This information can be used to inform the margin sectors, feedyards, packers and retailers on what share of increased revenue from branded product sales to pass to the cow-calf segment to make participation competitive and the alliance financially sustainable. The cow-calf segment must absorb the added costs and cyclical financial loss to participate in alliances. Increased revenue is required to make branded products a more profitable marketing option than producing commodity beef.

Introduction

There has been a movement toward developing production and marketing alliances in the beef cattle sector in the United States to improve communications and ultimately provide higher priced branded consumer-desired products. By differentiating beef from the commodity market, branded products capture additional consumer dollars that can be shared by participating segments. Alliance members are to share information across segments to help guide production and marketing. This arrangement is also consistent with the value based marketing philosophy where all participants share in added net revenue associated with providing a more desirable consumer product.

In reality cow-calf (breeding segment) producers do not employ a consistent methodology to measure the financial performance of participating in an alliance. Nor do they provide information to negotiate agreements that are financially and economic sustainable at the producer level. If this segment does not provide information to other segments, there is limited supply chain information exchange. Information is needed irrespective of the fact the packers and retailers do not report on detailed costs and returns at their level. This paper describes the beef industry structure and a methodology to measure financial and economic performance from breeding, growing and finishing segments to measure return on assets from alliance participation.

The US cow-calf or breeding sector is characterized by 830,670 beef producers, with the majority being small producers. Ninety two percent of the producers have less than 100 cows but account for 48 percent of the 33 million head beef cow inventory. The remaining 10% of the operations have 52% of the cows. The group of producers with more than 500 cows accounting for 0.7% of the beef cow operations and 15% of the cattle inventory. The producers with larger herds are the most likely group to participate in an alliance that requires retaining ownership of the cattle beyond breeding. Participation in the finishing phase requires approximately 100 head of uniform aged feeder cattle, which is difficult for herds of less then 250 cows. The actual number of producer participants in alliances is not known. There are approximately 30 production and marketing alliance organizations in the US in 2002 (Henderson, Ward).

Other segments of the beef industry are very concentrated. Four retailers account for 70% of total sales, while four beef packers account for 85% of steer and heifer slaughter cattle which account for more than 80% of cattle harvest. There are 779 feedyards, (16 % of the lots over 4,000 head onetime capacity), that market 21 million cattle. These feedyards account for 79% of the marketing of feedyard cattle. In other words the concentration of economic power is in the segments beyond the cow-calf sector. Sharing of financial performance and cost information across segments (information transparency) does not take place in current alliances. It is doubtful that concentrated sectors will ever share very sensitive financial information revealing their complete position. However, complete information from the cow-calf, growing and cattle finishing segments would help the concentrated sectors better understand alliance sustainability.

There is no published performance information on beef cattle alliance cost or return on assets for participants. The lack of information on financial performance is associated with the lack of standardized cattle cost accounting at the producer level. A majority of cow-calf producers use cash accounting to comply with tax reporting requirements. The cash information without cattle or feed inventories is inadequate to measure financial performance for the different cattle production and marketing segments. Producers now use partial budgets to project the economics of retaining ownership and the custom feeder provides direct cost and feedyard gross margin information. Cattle are priced at market value for each segment of production and marketing so actual cost or net return to capital information is not reported.

Each segment of the beef cattle production and marketing sector has a different investment and cost structure. The cow-calf segment is characterized by highly fixed investments, as real estate for grazing is a major part of the total investment. Real estate is a separate investment from the cattle production. The cattle grazing lease rate can be used as the return to land or cost of grazing. Stockers or the grazing growing cattle sectors that are not contractually tied to a feedyard can have considerable capital investment in cattle and a higher grazing lease cost because of higher quality forage. This primary product sector faces very concentrated feedyard, packer and retail segments that have lower per unit product investments associated with product production, marketing, and fast turnover of assets.

Beef cattle alliances have not had changes in the resource ownership at the cow-calf or primary product production segments, as have taken place in the poultry and pork industries. Most alliances require the cow-calf producer to increase investment exposed to production and marketing risk. For example, cow-calf producers are required to precondition cattle (30- 45 day preparation period for cattle for the feedyard) and retain ownership through the feedyard. Some participants go through a longer confinement period (backgrounding) and or grazing (stocker) phase before the feedyard finishing phase. Added capital investment and management are associated in alliance participation by cow-calf producers.

Measuring the financial performance of alliance agreements requires an accurate measure of both costs and margins along with the capital investment required in each segment. For example, it is not correct to evaluate the financial performance of a retained ownership in an alliance by comparing the same $20 net margin over direct cost of a feedyard (which feed cattle for 180 days with a facility investment of $150 per head turned over at least twice a year) to a cow-calf operation's net margin.

The cow-calf producer has $900 invested per cow in breeding stock and supporting investment in machinery, equipment and vehicles producing an 82% calf crop or 430 pounds per year (McGrann, 2002). This does not include the $2,500 to $4,000 investment in land and improvements per cow that can be viewed as the real estate investment. In the case of the feedyard, one is comparing $40 annual return on a $150 investment to $20 on a $900 per cow investment.

Alliances often adopt different price grids and specify premiums and discounts. From a cost accounting and financial performance standpoint the net revenue, net margins, and return on investment must be measured. Information on premiums and discounts that are not identified with costs and net margins above total costs is of little value in assessing an alliance agreement.

Questions Addressed for Alliance Financial Evaluation

1. Is the alliance participation profitable from a total business perspective? Is the business profit and loss statement or return on assets improved through participation?
2. What is the total unit cost of the final product produced relative to product prices? Is the activity competitive?
3. What was the opportunity cost of participation in the alliance?

Methodology

Summarized below is a standardized cost accounting methodology for production and marketing segments from cow-calf to finished cattle. This methodology can be followed to measure the financial performance of an alliance from the cow-calf producer's perspective. McGrann and Ellis described an accumulated cost accounting methodology for growing and finishing cattle that will provide a consistent cost accounting for total unit cost, net margin, and measuring each segment's investment. The methodology outlined is consistent with the Standardized Performance Analysis (SPA) for the cow-calf and stocker/feeder segments, developed through efforts of the producer-led national Integrated Resource Management (IRM) and the Research and Education Committee of the National Cattlemen's Beef Association (NCBA).

The inventory cost methodology is a departure from Generally Accepted Accounting Principals (GAAP) used for external financial reporting. Inventories in the methodology are valued at accumulated costs including period costs (AICPA). GAAP does not inventory period costs. The distortions caused by not inventorying period costs is significant when there is wide variation in inventories frequently encountered when retaining cattle ownership and long production cycles. Low cost (less than $300) small business accounting systems like QuickBooks Pro™ can be set up to use activity based accounting or cost and profit center accounting to facilitate financial analysis. This data can be exported to spreadsheets to add the economic analysis. The ability to accumulate cost across fiscal years is a necessity as these production and marketing cycles exceed fiscal years.

Economic analysis of performance of the different segments includes the use of "sunk cost" concepts because once producers decide to continue retaining ownership through a phase this decision cannot be reversed without serious economic consequences. Market valuations are used in opportunity cost projections and to evaluate the performance of retained ownership decisions.

Cow-calf and Weaned Calf Segment

Cow-calf cost accounting and capital investment methodology is documented and well tested through Standardized Performance Analysis (SPA). Cost and capital investment is identified with the fiscal year the calves are weaned. Total costs are adjusted for non-calf revenue from cull cows and bulls. Replacement heifer cost is derived from capitalizing their cost until reaching the breeding cow category. The SPA total unit cost is the transfer cost for weaned calf production that is used in alliance evaluation.

The SPA analysis calculates both financial and economic costs for weaned calf total unit costs. Financial costs are the actual accounting costs – cash, depreciation, and compensation for owner operator labor and management. Economic cost includes finance costs, opportunity cost of equity capital and a cash lease equivalent for land and market value for raised feed. Land appreciation is not considered as it is a capital investment considered separate from cattle use. Return on assets (ROA) is calculated for both the historical cost basis and market value of all assets.

Cattle Growing Segments - Preconditioning, Backgrounding and Stocker Grazing

From an alliance perspective these intermediate segments between weaning and the feedyard represent additional costs and capital use beyond the cow-calf segment. From an accounting perspective, the cow-calf phase and associated activities to deliver the feeder to the feedyard are cost centers. The finishing activity is the profit center. Each segment is evaluated at market price to determine if continued retained ownership leads to increased business net income over marketing the cattle. Market value may be above or below accumulated costs at any given point in time. This is particularly important where cost plus pricing is used to share net revenue between participants. Business net income is determined by the accumulated total cost across all segments and the revenue generated by the finished cattle sales. The annual rate of return on the total assets (ROA) across segments is the appropriate measure of financial performance. The accumulated total cost is the transfer cost between segments. All raised feed and grazing should be valued at cost so there is consistency with transfer costs and the total business financial statements.

Finishing Segment Analysis

The traditional feedyard closeout gross margin is inadequate to evaluate the financial results from a total business perspective because costs reported are incomplete. Although there is inconsistency in data and terminology in feedyard close outs, most firms provide feedyard margin information. Close outs provide direct feedyard cost information and associated revenue data. The margin, although frequently labeled profit (loss), is the net margin generated at the feedyard segment based on the cost of the feeder cattle used. The feeder's payweight cost is normally an estimate of the market value of the feeder, which equals the opportunity cost, adjusted for freight and marketing costs, for the cow-calf producer if the animal was sold. The way interest or capital cost is reported in close outs varies between feedyards. Most close outs will indicate actual interest paid or this information will be identified in the billing.

For alliance evaluation, the **"actual accumulated total cost"** of the cow-calf and preconditioning, backgrounding and or stocker phases must be used to value the feeder cattle. Costs must include, in addition to direct feedyard cost, indirect costs plus general and administrative costs (G&A). The actual finance interest cost is dependent on the use of debt financing. In order

to measure the impact of participation in an alliance on the business equity change (the bottom line or profit), revenue must be matched to the total costs across the production and marketing cycle. To capture the effect of the added capital investment requirement, an opportunity cost should be charged for the capital investment at each segment. Operating capital requirements are calculated for a full cost analysis including indirect cost, general and administrative cost and valuation of feeders at accumulated cost. Operating capital requirements are calculated.

Combining the Segments

The total cost per unit of production or Total Unit Cost (TUC) can be used as the transfer cost for each segment. Partial transfers should use the same TUC where cattle are transferred to different retained ownership activities such as stockers, replacement heifers or calf feeding.

To compare costs, margins and ROA by segment of production, assets can be grouped into capital assets (feeding facilities, machinery, vehicles, equipment and breeding stock), and operating capital. Depreciable assets and operating capital would be charged an opportunity or actual lender rate of interest. All segments would use the same rates for different uses of capital.

Illustration – Cow-calf Retained Ownership Through Finished Cattle

Table 1. that follows illustrates the evaluation methodology of an alliance that provides information across segments, associated costs, investment requirements and ROA. This example is based on historical prices and case study information that approximates a branded product alliance agreement for a lot of cattle to demonstrate the evaluation methodology (McGrann, Richardson and McAdams, April 2003). As indicated in the summary, a positive ROA is offset by a negative for the preconditioning then rises with the positive finishing phase. The negative for the short 45 day preconditioning phase is common as this is the stress period after weaning and market price increase is insufficient to offset the added cost. Return on assets (ROA) is the sum of the net economic margin plus finance cost (opportunity cost of capital) divided by the total capital investment. Each phase is evaluated at net market value if marketed. In the example the positive margin is achieved at the finishing phase. Overall returns are low and would not warrant the added risk associated with participation is an alliance.

Table 1. Beef Cattle Retained Ownership Cow-Calf Through Feedyard Finishing
Financial and Economic Evaluation

	Cow-Calf	Precondition	Finishing
Head In	229	172	171
Head Out	172	171	167
Production Measures			
Date In	01-Jan-02	28-Aug-02	12-Oct-02
Date Out	31-Dec-02	12-Oct-02	19-May-03
Days	365	45	219
Pay weight in per head		616	658
Death loss %		0.50	2.30
Shrink %		3.00	
Out Weight		661	1,227
Total Payweight		113,124	
Pay weight out per head	616	658	1,199
Avg. Daily Gain		1.00	2.60
Production Per Head	**462**	41.70	569
Revenue			
Prices - Net Pay Weight Price			
Weaned	$83.00		
Preconditioned		$81.00	
Finished - Market price			$75.33
Net Revenue - If Marketed	$383.46	$516.75	$903.11
Revenue- Cow Calf Cost Adjustment	$31.52		
Direct Production Costs			
Cattle Cost			
Total Unit Cost $/Cwt	----------	**$85.41**	**$87.50**
Total Direct Cattle Cost $/Hd.	----------	**$526.13**	**$575.48**
Non-Cattle Cost			
Depreciation	$60.00	$0.00	$0.00
Feed - Yardage and Facilities	$0.00	$30.00	$264.81
Purchased Feed	$37.35	$0.00	$0.00
Hired Labor and Management	$90.54	$1.00	$0.00
Insurance	$6.06	$0.00	$0.00
Lease for Grazing	$80.00	$0.00	$0.00
Repair and Maintenance	$14.27	$0.00	$0.00
Freight and Trucking	$5.69	$0.00	$0.00
Utilities	$7.94	$1.00	$0.00
Vet Medicine and Processing	$10.61	$8.00	$8.00
Supplies	$4.40	$0.00	$0.00
Gasoline, Fuel and Oil	$7.87		
Custom Hire (machinery work)	$0.38		
Brush Control	$10.69		
Miscellaneous	$2.47		
Other	$0.00		
Total Non-Cattle Direct Cost	$338.27	$40.00	$272.81
Total Direct Production Costs	$338.27	$566.13	$848.29
Feedyard Margin	----------	----------	**$54.82**
Indirect Production Cost			
Owner Labor and Management	$30.28	$4.00	$10.00
Machinery, Vehicle Oper.& Deprec.	$0.00	$1.00	$0.00
Total Indirect Production Costs	$30.28	$5.00	$10.00
Net Total Production Cost	$337.03	$571.13	$858.29
Production Margin	$46.43	($54.38)	$44.82
General and Administrative Cost	$8.00	$2.00	$7.92
Total Operating Cost	$345.03	$573.13	$866.21
Operating Margin	$38.43	($56.38)	$36.90

	Cow-Calf	Precondition	Finishing
Finance Cost - Capital Opportunity Cost	$49.56	$2.35	$8.59
Total Economic Cost	$394.60	$575.48	$874.80
Net Economic Margin (Loss) if Marketed	**($11.14)**	**($58.73)**	**$28.31**
Cost Summary			
Net Production Cost	$337.03	$571.13	$858.29
Operating Cost	$345.03	$573.13	$866.21
Total Economic Cost	$394.60	$575.48	$874.80
Total Unit Cost $/Cwt.	$85.41	$87.50	$71.29
Total Cost of Gain in Segment	$85.41	$118.36	$52.57
Capital Investment Summary			
Head In	229	172	171
Head Out	172	171	167
Non- Current Assets Investment			
Breeding Stock	$861.32		
Facilities Machinery & Equipment	$49.93	$20.00	
Total Non-Current Assets Investment	$911.25	$20.00	
Finance Cost - Opportunity Cost			
Cost of Non-current Assets %	5.00	5.00	
Opportunity Cost of Capital $	$45.56	$1.00	
Fixed Capital - Total Finance Cost	**$45.56**	**$1.00**	
Operating Capital			
Finance Cost - Opportunity Cost			
Annualized Operating Capital	$200.00	$67.45	$429.50
Opportunity Cost of Operating Capital %	2.00	2.00	2.00
Opportunity Cost of Operating Capital $	$4.00	$1.35	$8.59
Total Finance Cost - Opportunity Cost	**$49.56**	**$2.35**	**$8.59**
Summary			
Total Unit Cost $/Cwt.	$85.41	$87.50	$71.29
Total Cost of Gain in Segment $/Cwt.	$85.41	$118.36	$52.57
Net Economic Margin (Loss) if Marketed	($11.14)	($58.73)	$28.31
Total Finance Cost - Opportunity Cost	$49.56	$2.35	$8.59
Net Economic Margin Plus Finance Cost	**$38.43**	**($56.38)**	**$36.90**
Total Capital Investment	$1,111.25	$87.45	$429.50
Return on Assets (ROA)* %	**3.46**	**(64.46)**	**8.59**

Cycle Investment	$1,608.21
Net Margin Plus Finance Cost	$18.95
Cycle Return on Assets (ROA)* %	**1.18**

*** Pre-tax return on assets (ROA) is net margin plus finance cost (capital opportunity cost) divided by total annualized capital assets.**

Conclusions

There has been a movement toward developing production and marketing alliances in the beef cattle sector in the United States to improve communications and ultimately provide higher priced branded products that are more consistent with consumer demand. Beef cattle producers do not employ a consistent methodology to measure the financial performance of participating in an alliance. Nor do they have the information to negotiate agreements that are financially sustainable at the producer level. Given the concentration of packer and retail sector there is little reason to expect them to share cost and financial returns information beyond the general corporate total business performance required by public traded corporations. Described is a methodology to measure financial performance from breeding, growing and finishing segments to measure return on assets from an alliance. Application of the methodology is demonstrated in an example from cow-calf to finishing phase. The methodology uses cost accounting and economic analysis to calculate ROA as a measure of alliance's financial sustainability. Questions of profitability, competitiveness and the opportunity cost of participation can be addressed. This information can be used to inform the margin sectors, feedyards, packers and retailers to provide them insights into what share of increased revenue from branded product sales must be passed to the cow-calf segment. The cow-calf segment must absorb the added costs and cyclical financial loss to participate in alliances. Increased revenue is required to make branded products a more profitable marketing option for beef producers. The return can be compared to ROA in the other segments of the alliance to establish the criteria for net margin sharing or to evaluate alternative production or marketing systems irrespective to the information shared by the concentrated packer and retail sectors. Further studies to employ this methodology with producer members of an alliance could provide valuable decision information for participants to negotiate alliance arrangements.

BIOGRAPH

James McGrann develops and implements beef cattle performance analysis methodology through producer educational programs, software, and the Southwest U.S. Cow-Calf Standardized Performance Analysis (SPA) database with more than 400 herds with 300,000 breeding cows. Prior to joining the Texas A&M staff in 1979, McGrann was at Iowa State University. McGrann has technical assistance consulting experience in most beef production countries, including eight years in South America.

Doug Richardson is a research associate specializing in management accounting and beef cattle performance analysis and is a recent graduate from Texas A&M University with a master's degree in Agribusiness. As an undergraduate he was a member of the Texas A&M University livestock judging team that won regional and national level competition.

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