

Financial performance configurations

MICHAEL LANGEMEIER²

ABSTRACT

The purpose of this paper is to examine the financial performance of a sample of crop/beef cow farms using the operating profit margin ratio and farm growth as relevant measures. Farms were divided into four performance categories: low profit/low growth; low profit/high growth; high profit/low growth; and high profit/high growth.

Approximately 36 percent of the farms had above average operating profit margin ratios. Of this group, approximately 54 percent had a below average growth rate in the beef cow herd and the remaining 46 percent had an above average growth rate in the beef cow herd. Characteristics of these two groups were similar. However, interestingly, the farms with the above average growth rate in the beef cow herd, also had a higher growth rate in crop hectares from 2002 to 2009.

KEYWORDS: Operating Profit Margin Ratio; Farm Growth

1. Introduction

Net farm income in the United States has been relatively high during the last three years. For example, using data from the Kansas Farm Management Association (KFMA), the average net farm income during 2007, 2008, and 2009 was \$115,312 (£72,000)³; \$124,617 (£77,000); and \$104,781 (£65,000) respectively (Herbel and Langemeier, 2010). In contrast, the average net farm income from 2000 to 2006 was only \$43,867 (£27,000).

It is also important to note that crop farms have been relatively more profitable over the last few years than crop/livestock and livestock farms. In particular, average net farm income for beef cow and crop/beef cow farms that participated in the KFMA program were below the five-year average in 2008 and 2009 while average net farm income for non-irrigated and irrigated crop farms were substantially above average.

In addition to varying among farm types, performance varies substantially among individual farms and ranches with similar enterprises (Langemeier, 2010a). Because of this, benchmarking performance with similar farms is essential.

The purpose of this paper is to examine performance differences among crop/beef cow farms. Performance was measured using the operating profit margin ratio as well as farm growth.

2. Methods

Steffens, Davidsson, and Fitzsimmons (2009) emphasize the importance to firms of simultaneously discovering and exploiting advantages. Discovering advantages is

related to firm growth while exploiting advantages is related to profitability. The agricultural economics literature typically has addressed firm growth and profitability separately (e.g., Villatora and Langemeier, 2006; Yeager and Langemeier, 2009).

This study examines both firm growth and profitability. Firm growth was measured by computing the growth in the beef cow herd on each farm. Firm growth is particularly important for family farms that are bringing another generation into the operation. The operating profit margin, a commonly used measure of financial performance, was used as the profitability measure. This ratio was computed for each farm and year by adding accrual interest expense and subtracting unpaid family and operator labor from net farm income and dividing the result by value of farm production (Langemeier, 2009). The annual operating profit margins for each farm were then used to compute the average operating profit margin ratio for each farm.

The two performance measures described above, the operating profit margin ratio and the growth in the beef cow herd, were used to categorize farms into the following groups: low profit/low growth; low profit/high growth; high profit/low growth; and high profit/high growth. In addition to comparing the profit margins and the growth rate of beef cow herd among these groups; value of farm production, net farm income, total hectares, crop hectares, number of beef cows, number of beef feeders, percent of labor devoted to crops, growth rate in crop hectares, asset turnover ratio, and economic total expense ratio were compared across performance groups. The percent of labor devoted to crops was computed using crop and livestock labor standards as well as information on crop hectares and the head of livestock managed. The asset turnover

¹ This paper was originally given at the 18th International Farm Management Association Congress, *Thriving In A Global World – Innovation, Co-Operation And Leadership*, at Methven, Canterbury, New Zealand, 20 – 25 March 2011, and is reproduced by kind permission of the conference organisers.

² Department of Agricultural Economics, Kansas State University, USA

³ Approximate conversions using a rate of around \$1.6 per £1, July 2011.

ratio was computed by dividing value of farm production by average total assets. The economic total expense ratio was computed by adding the opportunity cost on owned assets to total expenses and unpaid family and operator labor, and dividing the result by value of farm production. If the economic total expense ratio is below 1.00, the farm is covering all accrual and opportunity costs, and is earning an economic profit.

3. Data

Data for 321 crop/beef cow farms in the Kansas Farm Management Association (KFMA) with continuous data from 2002 to 2009 were used in this study. These 321 farms represent approximately 22 percent of the farms with whole-farm analysis data in 2009 (Herbel and Langemeier, 2010). To be included in this study, a farm had to have beef cows, and usable income, expense, and balance sheet data. Income and expense were expressed on an accrual basis. Value of farm production included crop income, livestock income, income from government payments and crop insurance proceeds, and miscellaneous income sources such as patronage dividends and custom work income. Livestock income was expressed on a value-added basis. Specifically, accrual livestock purchases were subtracted from accrual livestock sales to arrive at accrual livestock income.

Table 1 presents the summary statistics for the 321 farms. Value of farm production averaged \$304,108 (£189,000). Average total hectares included feed grain (corn and grain sorghum), oilseed (soybeans and sunflowers), wheat, and hay and forage hectares as well as hectares in pasture or rangeland. The average total hectares and total crop hectares were 844 and 440, respectively. It is important to note that hay and forage hectares are included in crop hectares. Most of the farms had a least some hectares in feed grains, oilseeds, or wheat. In fact, only 6.5 percent of the farms did not have these crops. This illustrates how diversified the sample farms are.

The average number of beef cows was 105, which was approximately twice as large as the average 2007 Census farm with beef cows in Kansas (Langemeier, 2010c). The number of beef feeders, which included raised steers and heifers, was 199. The average growth rates in the beef cow herd and total crop hectares were 0.69 percent and 2.16 percent, respectively. The average profit margin was 0.1419 or 14.19 percent while the average asset turnover ratio was 0.2914. The average economic total expense ratio was 1.1131 indicating that on average the farms were not covering all opportunity costs.

4. Results

Table 2 presents the summary statistics for the profit and beef cow herd growth farm groups or categories. Economies of size are very prevalent in Kansas agriculture (Langemeier, 2010b). These economies of size are clearly prevalent in Table 2. Specifically, the farms with low profit margins tend to be considerably smaller than the farms with high profit margins. Because of the strong economies of scale exhibited by the sample farms, the discussion below will focus on comparisons between the two low profit categories and the two high profit categories.

The only variables that are significantly different between the low profit farms with a low growth rate and a high growth rate are the growth rate of the beef cow herd, the asset turnover ratio, and the economic total expense ratio. Though information on strategic planning and life cycle stages is not available, the low growth group may be represented by individuals that are slowly retiring or exiting production agriculture. The high growth group may be trying to garner economies of scale by increasing their crop hectares and cow herd size.

When comparing the high profit farm groups, the only variable that was statistically different between the two groups was the growth rate in the cow herd.

Though similar in farm characteristics; for example crop hectares, size of the cow herd, and percent of labor devoted to crops are very similar; the two groups of farms obviously responded quite different to the

Table 1. Summary Statistics for Crop/Beef Cow Farms in Kansas, 2002–2009.

Variable		Average	Standard Deviation
Value of Farm Production	US \$	304,108	318,459
	GB £*	189,000	198,000
Net Farm Income	US \$	72,326	90,970
	GB £*	45,000	56,000
Total Hectares		844	600
Total Crop Hectares		440	376
Feed Grain Hectares		118	147
Oilseed Hectares		130	163
Wheat Hectares		135	163
Number of Beef Cows		105	86
Number of Beef Feeders		199	698
Percent of Labor Devoted to Crops		0.6543	0.2226
Growth Rate of Crop Hectares		0.0216	0.0758
Growth Rate of Beef Cow Herd		0.0069	0.0730
Operating Profit Margin Ratio		0.1419	0.2484
Asset Turnover Ratio		0.2914	0.1780
Economic Total Expense Ratio		1.1131	0.4646

*Approximate conversions using a rate of around \$1.6 per £1, July 2011.
Source: Kansas Farm Management Association Databank, 2009.

Table 2. Summary Statistics for Profit and Beef Cow Herd Growth Categories.

Variable		Low OPR Low GR	Low OPR High GR	High OPR Low GR	High OPR High GR
Number of Farms		106	101	61	53
Value of Farm Production	US \$	207,790 ^a	224,035 ^a	448,223 ^b	483,471 ^b
	GB £*	129,000	139,000	278,000	300,000
Net Farm Income	US \$	36,100 ^a	33,935 ^a	138,268 ^b	142,045 ^b
	GB £*	22,400	21,000	86,000	88,000
Total Hectares		714 ^a	700 ^a	1,061 ^b	1,129 ^b
Total Crop Hectares		323 ^a	332 ^a	629 ^b	662 ^b
Feed Grain Hectares		77 ^a	77 ^a	184 ^b	203 ^b
Oilseed Hectares		74 ^a	90 ^a	224 ^b	211 ^b
Wheat Hectares		108 ^a	104 ^a	180 ^b	197 ^b
Number of Beef Cows		100 ^a	94 ^a	123 ^a	114 ^a
Number of Beef Feeders		111 ^a	172 ^a	235 ^a	383 ^a
Percent of Labor Devoted to Crops		0.6002 ^a	0.6159 ^a	0.7447 ^b	0.7318 ^b
Growth Rate of Crop Hectares		0.0088 ^a	0.0295 ^{ab}	0.0185 ^{ab}	0.0359 ^b
Growth Rate of Beef Cow Herd		-0.0421 ^a	0.0605 ^b	-0.0404 ^a	0.0571 ^b
Operating Profit Margin Ratio		0.0242 ^a	0.0316 ^a	0.2493 ^b	0.2259 ^b
Asset Turnover Ratio		0.2425 ^a	0.2942 ^b	0.2911 ^b	0.3498 ^b
Economic Total Expense Ratio		1.2903 ^a	1.2228 ^b	0.9979 ^c	0.9867 ^c

Notes:

OPR = operating profit margin ratio and GR = growth rate in beef cow herd.

Unlike superscripts within a row indicate that the values are significantly different.

*Approximate conversions using a rate of around \$1.6 per £1, July 2011.

relatively low beef enterprise net returns experienced in recent years. The low growth farms are reducing the size of their cow herd while increasing crop hectares. In contrast, the high growth farms are increasing their size in terms of both crop hectares and livestock numbers. The dichotomy between the two groups of farms is probably at least partially due to the increased volatility of crop and livestock prices experienced in recent years. It is important to note that, historically, many large farms in Kansas have been quite diversified. The high profit/high growth farms seem to be taking this route as they increase their size.

5. Summary and Conclusions

This paper examined the financial performance of a sample of crop/beef cow farms using the operating profit margin ratio and farm growth as relevant measures. Farms were divided into four categories: low profit/low growth, low profit/high growth, high profit/low growth, and high profit/high growth.

Approximately 36 percent of the farms had above average profit margins and approximately 48 percent of the farms had above average growth rates in the beef cow herd. The low profit/low growth farms had the lowest growth in crop hectares. The characteristics and financial performance of the high profit farms with low and high growth rates were very similar.

How can the difference in the growth rates of beef cow herds between the high profit farms with low and high growth rates be reconciled? Though specific information related to future plans is not available, it appears that these groups have different views concerning the future profitability of both the cow herd and production agriculture in general. In addition to expanding the cow herd, the high profit/high growth group also had the largest growth rate in total hectares.

About the author

Michael Langemeier (mlange@agecon.ksu.edu) is a professor of Agricultural Economics at Kansas State University. Michael received his Ph.D. from Purdue University in 1990. Extension and research interests include benchmarking of technical and financial performance, strategic positioning, and economies of size. Michael teaches courses in Farm Management, Managerial Economics, and Production Economics.

REFERENCES

- Herbel, K. and M. Langemeier. (2010) *KFMA Executive Summary: 2009 Profitlink Analysis*. Department of Agricultural Economics, Kansas State University, May.
- Langemeier, M. (2009) *Financial Ratios Used in Financial Management*. Department of Agricultural Economics, Kansas State University, MF-270, December.
- Langemeier, M. (2010a) Financial Performance and Farm Type. *KFMA Newsletter*, Department of Agricultural Economics, Kansas State University, May.
- Langemeier, M. (2010b) Financial Performance and Farm Size. *KFMA Newsletter*, Department of Agricultural Economics, Kansas State University, June.
- Langemeier, M. (2010c) *Comparison of 2007 Census and KFMA Farms*. Department of Agricultural Economics, Kansas State University, Staff Paper No. 11-02, August.
- Steffens, P., P. Davidsson, and J. Fitzsimmons. (2009) Performance Configurations over Time: Implications for Growth- and Profit-Oriented Strategies. *Entrepreneurial Theory and Practice*. Volume 33, January, pages 125–148.
- Villatora, M. and M. Langemeier. (2006) Factors Impacting Farm Growth. *Journal of the American Society of Farm Managers and Rural Appraisers*. Volume 69, pages 74–80.
- Yeager, E. and M. Langemeier. (2009) Measuring Sustained Competitive Advantage for a Sample of Kansas Farms. *Journal of the American Society of Farm Managers and Rural Appraisers*. Volume 72, pages 112–123.