



KANSAS FARM MANAGEMENT ASSOCIATION

Your Farm - Your Information - Your Decision

N E W S L E T T E R

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MEASURING ECONOMIES OF SIZE

This article examines economies of size for KFMA farms using five-year average data for 2003-2007. Economies of size illustrate how average cost per unit of output varies as firm output increases. If economies of size are prevalent in an industry, average cost per unit of output declines as firm output increases.

Expense ratios are typically used to examine per-unit cost differences among farms and ranches. The KFMA program summarizes information for the total expense ratio, the adjusted total expense ratio, and the economic total expense ratio. To compute these ratios, total expense, the definition of which varies by ratio, is divided by value of farm production. The total expense ratio is computed by summing operating expense and depreciation and dividing by value of farm production. The adjusted total expense ratio is computed by summing operating expense, depreciation, and unpaid operator and family labor and dividing by value of farm production. The economic total expense ratio is computed by summing operating expense, depreciation, unpaid operator and family labor, and current and noncurrent asset charges and dividing by value of farm production. The average total expense ratio, adjusted total expense ratio, and economic total expense ratio for 2003-2007 were 0.767, 0.917, and 1.098, respectively. These ratios vary substantially among farms. For the top profit

margin quartile, the average values for 2003-2007 were 0.669, 0.793, and 0.979, respectively.

Figures 1-3 present the average total expense ratio, adjusted total expense ratio, and economic total expense ratio for each KFMA farm with continuous data for the 2003-2007 period. All three graphs illustrate the wide difference in per-unit costs among farms. However, even after adjusting the scale of the vertical axis, the graphs are not identical. The graph for the economic total expense ratio clearly shows more variability among the smaller farms and less variability among the larger farms than the other two graphs. The difference in per-unit cost graphs is particularly evident when comparing Figure 1 and Figure 3. Computation of the total expense ratio does not include the opportunity costs for labor or capital. Because the amount of hired labor and asset ownership varies widely among farms, comparing the total expense ratio among farms is often like comparing apples and oranges, particularly when these comparisons are made across farm size categories. When measuring economies of size, all accrual and opportunity costs should be included. Thus, the economic total expense ratio would be a more appropriate measure of economies of size than the total expense ratio or the adjusted total expense ratio. The economic total expense ratio graph, Figure 3, clearly indicates that there are economies of size for KFMA farms.

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In summary, economies of size are measured using average cost per-unit of output. The economic total expense ratio for KFMA farms with continuous data from 2003-2007 indicates that there are substantial economies of size in

Kansas agriculture. All three figures illustrated in this article will be updated when 2008 data is summarized later this spring. More information on benchmarks by farm size category can be found in the paper entitled “Financial Performance and Farm Size”. This paper is

posted on my contributor site on the AgManager web site.

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Figure 1. Total Expense Ratio

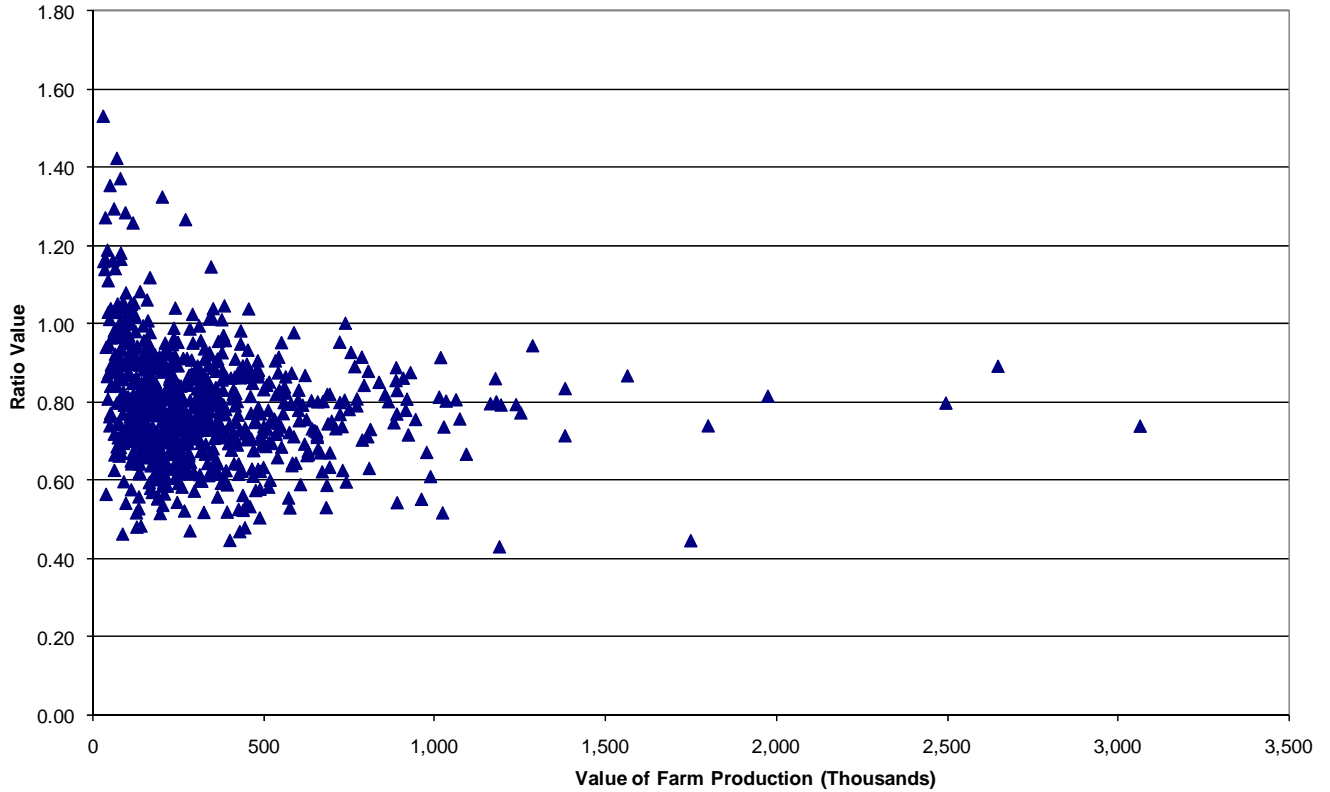


Figure 2. Adjusted Total Expense Ratio

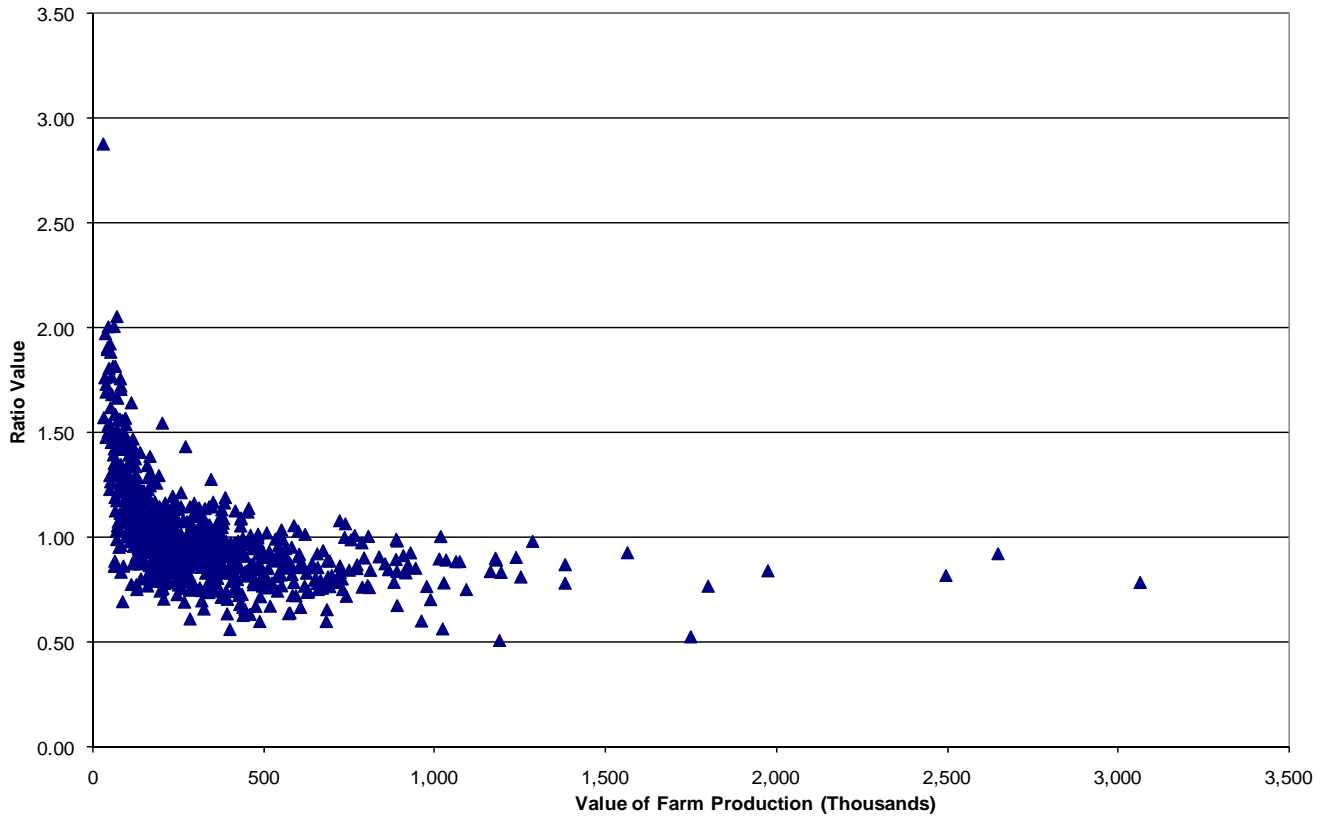
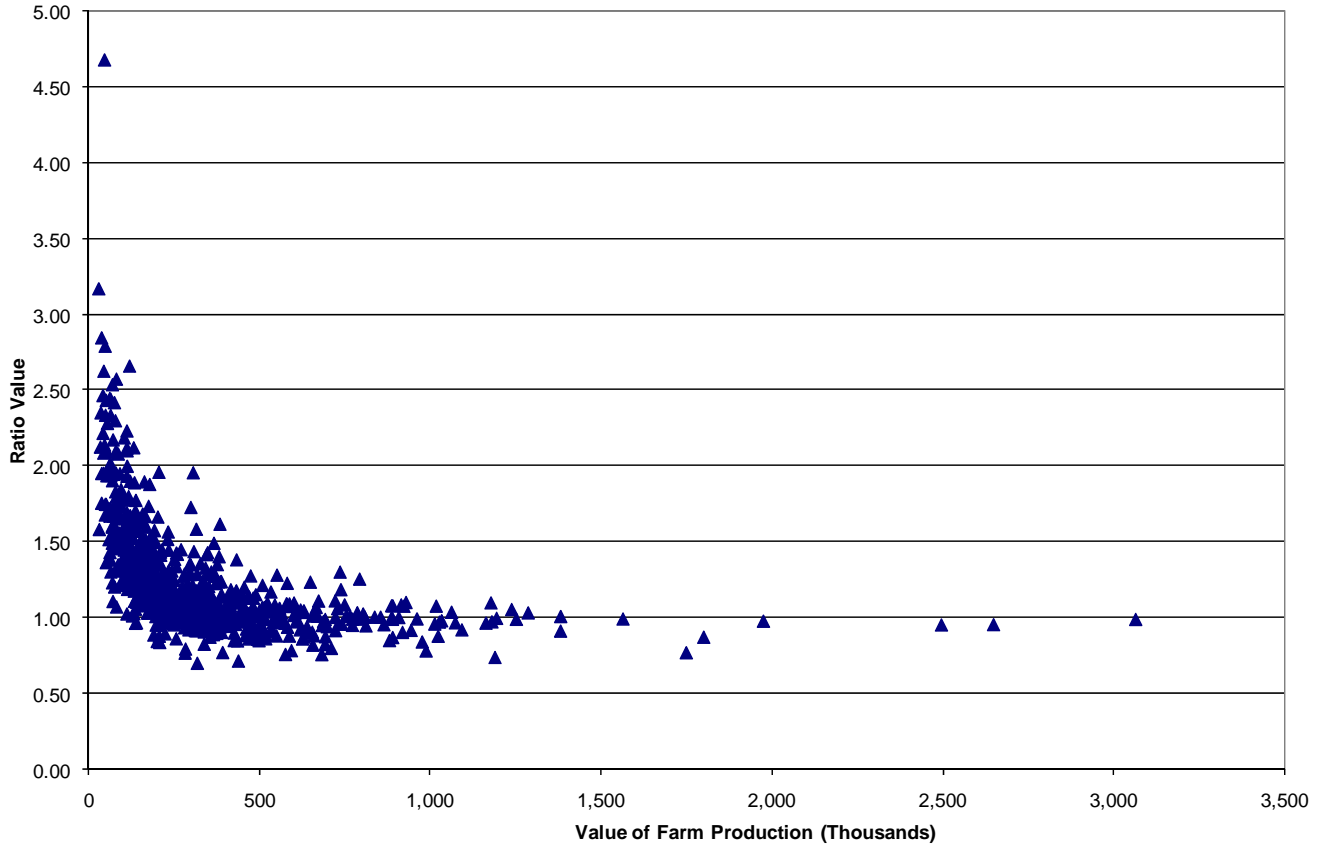


Figure 3. Economic Total Expense Ratio



RELATIVE IMPORTANCE OF LIVESTOCK INCOME TO KFMA FARMS

This article documents the long-term trends in the percentage of value of farm production derived from beef income, dairy income, and swine income using Kansas Farm Management Association (KFMA) data from 1973 to 2007. The article also documents the trend in percentage of labor devoted to crop production from 1982 to 2007. Data for this variable is not available prior to 1982.

Due to price and weather fluctuations, it is often useful to examine five-year average data rather than the averages for a single year. Figure 1 presents the percentage of value of farm production derived from the three primary sources of livestock production (i.e., beef, dairy, and swine production) for the five-year period from 1973 to 2007. The percentage ranged from a low of 32.08 percent in the 2000-2004 period to a high of 52.99 percent in the 1978-

1982 period. The average percentage for the 35-year period was 44.08 percent. All of the five-year periods before 1992-1996 had an above average percentage of value of farm production derived from livestock production and all of the five-year periods after 1992-1996 had a below average percentage.

Table 1 presents the five-year average of the percentage of value of farm production derived from beef production, dairy production, and swine production, and the percentage of labor devoted to crop production. The percentage of labor devoted to crop production increased from 65.98 percent in the 1982-1986 period to 78.83 percent in the 2003-2007 period. The trend in percentage of income derived from dairy and swine production is definitely downward. In the 1970s, 9.96 percent and 11.77 percent of income was derived from dairy and swine production,

respectively. In contrast, in the 2000s, only 6.39 percent and 3.54 percent of income was derived from these two sources. Though varying from five-year period to five-year period, beef income also exhibited a statistically significant downward trend. Specifically, beef income as a percentage of value of farm production has declined approximately 0.90 percent per five-year period since 1973-1977.

Though livestock income as a percentage of value of farm production has declined over time, the vast majority of KFMA farms still receive at

least a portion of their value of farm production from livestock production. Future newsletter articles will examine the relative financial performance and cost efficiency of various combinations of crop and livestock enterprises with particular focus on the relative performance of crop/beef cow farms and crop/backgrounding farms.

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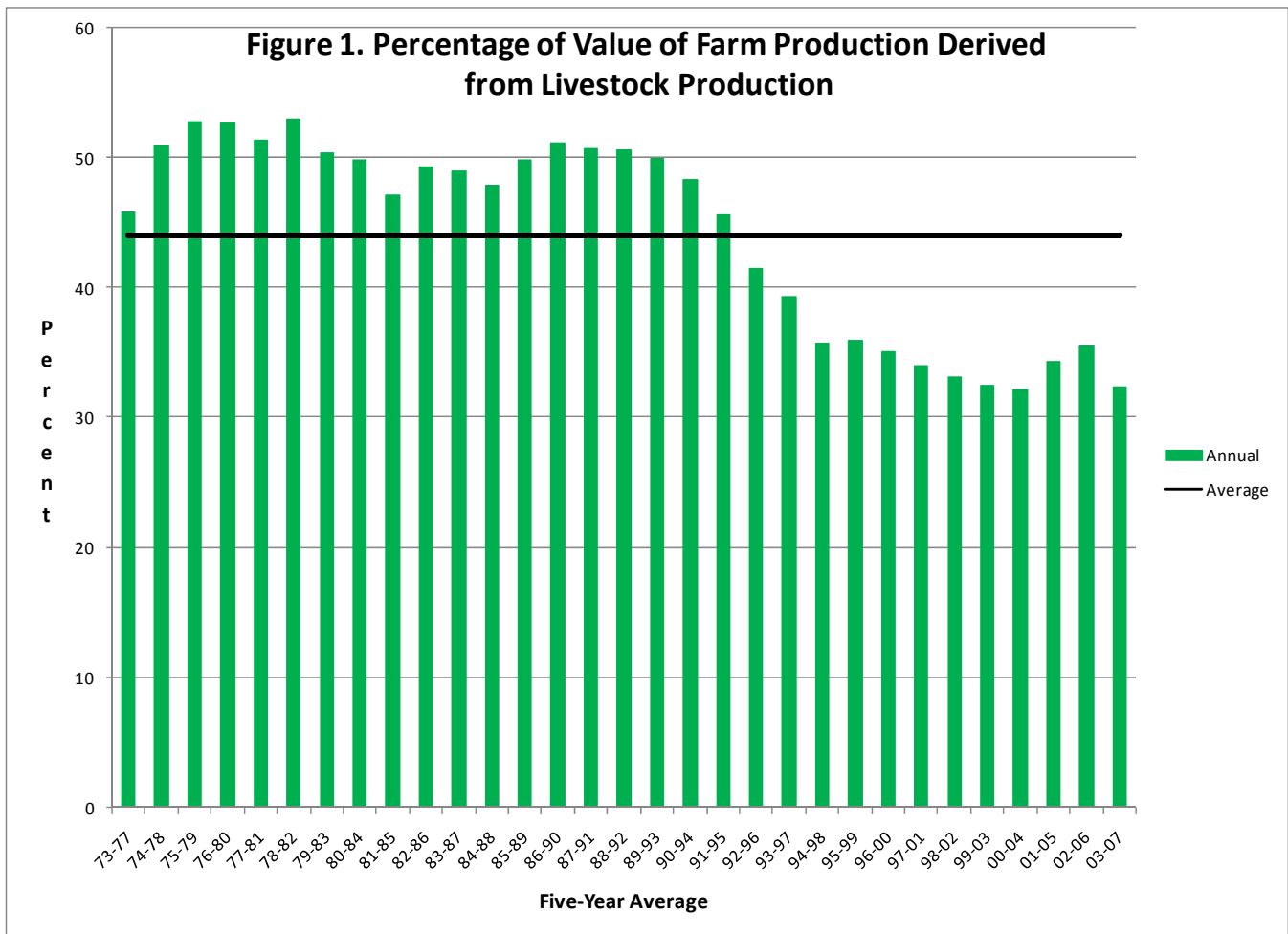


Table 1. Relative Importance of Livestock Income to KFMA Farms.

Years	Percentage of Value of Farm Production			Crop Labor Percentage
	Beef Income	Dairy Income	Swine Income	
73-77	23.35	9.39	13.03	NA
74-78	28.06	9.75	13.07	NA
75-79	31.97	9.79	10.97	NA
76-80	31.34	10.23	11.07	NA
77-81	29.99	10.63	10.70	NA
78-82	30.34	10.97	11.68	NA
79-83	26.57	11.80	12.02	NA
80-84	26.27	11.56	11.99	NA
81-85	25.32	11.02	10.77	NA
82-86	26.57	11.20	11.51	65.98
83-87	28.26	10.66	9.98	66.32
84-88	27.80	10.54	9.52	67.34
85-89	28.89	10.79	10.14	66.56
86-90	30.09	10.27	10.79	66.87
87-91	29.31	10.81	10.51	67.29
88-92	29.40	11.20	9.94	67.91
89-93	28.48	11.64	9.77	68.61
90-94	27.98	11.09	9.25	68.92
91-95	26.42	10.62	8.56	69.60
92-96	24.35	9.52	7.63	70.97
93-97	23.49	8.51	7.23	71.80
94-98	21.41	7.88	6.36	73.32
95-99	22.14	7.52	6.25	74.25
96-00	22.38	7.09	5.53	75.05
97-01	21.73	6.97	5.22	75.66
98-02	21.55	7.51	4.03	76.78
99-03	22.80	6.93	2.75	77.37
00-04	22.85	6.33	2.90	77.92
01-05	25.10	6.56	2.61	77.51
02-06	24.94	5.98	4.52	77.71
03-07	22.89	5.04	4.42	78.83

Source: KFMA Databank.

NA = Not available

RECOMMENDATIONS FOR FURTHER READING

This section of the newsletter will become a regular feature starting this month. The purpose of this section is to briefly discuss articles and web sites that may be of interest to the readers of this newsletter. In general, the articles discussed will not report on original research. Rather, the articles will contain citations to web sites and articles that discuss topics of general interest.

The January 2009 issue of *Top Producer* contains articles pertaining to due diligence when buying and selling commodities and potential shifts in land ownership. Given the current financial crisis, the article on due diligence is of particular interest. This article indicates that it is important to protect your business when working with input suppliers and when selling commodities. The article outlines the importance of creditor status, knowing the plans for your money, using cash for transactions, knowing state laws, and written contracts. The article on potential shifts in land ownership describes the average age of landowners and how this may impact land acquisition decisions. This article can be found in the "Moneywise" section of the magazine. The *Top Producer* magazine can be assessed through the following web site:
www.agweb.com.

A recent USDA-ERS publication entitled *The Transformation of U.S. Livestock Agriculture: Scale, Efficiency, and Risks* summarizes how U.S. livestock production has shifted to much larger and specialized farms. The publication concentrates on changes in the dairy, hog,

broiler, and fed cattle sectors. Though this topic is not the focus of the publication, the coordination of livestock production through contracts and shared ownership of assets is also discussed. The publication can be accessed from USDA web sites, but is also posted to my contributor site under "Recommendations for Further Reading".

The Ludwig von Mises Institute (www.mises.org) is a research and educational center that investigates classical liberalism, libertarian political theory, and the Austrian School of economics. In addition to sponsoring workshops, the Ludwig von Mises Institute publishes daily articles, a monthly newsletter, working papers, and professional journals. Of particular interest is a section of their web site pertaining to the current credit crisis. To access this material click on "The Bailout Reader" on the institute's internet home page. This section of their web site is divided into the following sections: Fannie Mae and Freddie Mac, The Housing Bubble, Inflationary Finance, Community Reinvestment Act, Short Selling, The Austrian Theory of the Business Cycle, Who Predicted This?, and What to Do. Other web sites containing information pertaining to the credit crisis will be highlighted in future newsletters.

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The Kansas Farm Management Association (KFMA) Newsletter is distributed monthly to provide farm management information to farm decision makers. Further farm management information can be found on the KFMA program website: www.agmanager.info/kfma; and, on the Extension Agricultural Economics website: www.agmanager.info. The Newsletter is edited by Michael Langemeier, Professor, Department of Agricultural Economics, Kansas State University.



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