

## Persistence in Financial Performance

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August 2018

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This article examines the persistence of financial performance measures for a sample of farms over a five-year period. Specifically, using KFMA whole-farm data for farms with continuous data from 2013 to 2017, the operating profit margin ratio is computed for each farm and year. The number of years each farm was in the top and bottom performance quartiles is computed and discussed. Also, the operating profit margin ratio and corresponding farm characteristics are compared across financial performance quartiles. The operating profit margin ratio was computed by adding interest expense and subtracting unpaid family and operator labor from net farm income and dividing the result by value of farm production.

In addition to the operating profit margin, other variables compared across profit margin quartiles included value of farm production, net farm income, interest, unpaid family and operator labor, total assets, total debt, total expense ratio, adjusted total expense ratio, economic total expense ratio, asset turnover ratio, debt to asset ratio, percent of farms with positive cash flow, percent of farms financially stressed, percent of farms with expense ratios below 1.00, and percent of farms in five value of farm production categories (i.e., less than \$100,000 in value of farm production; value of farm production between \$100,000 and \$250,000; value of farm production between \$250,000 and \$500,000; value of farm production between \$500,000 and \$1,000,000; and value of farm production greater than \$1,000,000). The total expense ratio was computed by summing cash costs, accrual adjustments to costs, and depreciation, and dividing the result by value of farm production. The adjusted total expense



ratio was computed by adding unpaid family and operator labor to the expenses included in the total expense ratio and dividing by value of farm production. An adjusted total expense ratio below 1.00 indicates that a farm was able to cover accrual expenses, depreciation, and unpaid family and operator labor. The economic total expense ratio was computed by adding the opportunity cost on net worth to the expenses in the adjusted total expense ratio and dividing by value of farm production. If the economic total expense ratio was below 1.00, the farm or group of farms was covering all accrual and opportunity expenses, and was earning an economic profit. A farm was considered financially stressed if it had an adjusted total expense ratio above 1.00 and had a debt to asset ratio above 0.70.

Table 1 presents the summary statistics for the 643 KFMA farms with continuous data from 2013 to 2017. Value of farm production averaged \$601,647 and net farm income averaged \$81,104. The average operating profit margin ratio was 0.042 or 4.2 percent while the average asset turnover ratio was 0.227. The average total expense ratio, adjusted total expense ratio, and economic total expense ratio were 0.865, 0.993, and 1.187, respectively. As indicated by the percent of farms with an adjusted total expense ratio below 1.00, approximately 44 percent of the farms covered accrual expenses, depreciation, and unpaid family and operator labor. Approximately 9.5 percent of the farms covered all accrual and opportunity costs and thus were earning an economic profit. Approximately 1.9 percent of the farms were, on average during the 5-year period, financially stressed.

Table 2 presents the number of farms and percent of farms by profit margin category. Farms in the first category were in the top or bottom quartile for all five years. Only 13 farms, or 2.0 percent of the farms, were in the top profit margin quartile for all five years. Approximately 17.4 percent of the farms were in the top profit margin category for three, four, or five years (i.e., in the first, second, or third top profit margin categories). Approximately 16.2 percent of the farms were in the bottom profit

margin category for three or more years (i.e., in the first, second, or third bottom profit margin categories). It is important to note that approximately 37.3 percent of the farms were never in the bottom profit margin category.

Variable comparisons among the profit margin quartiles can be found below. Before discussing this information, some of the characteristics of the 13 farms that were consistently in the top profit margin quartile will be discussed. These farms had five-year average profit margins ranging from 0.207 to 0.412, and averaging 0.294. The average asset turnover ratio for this group was 0.210 and the average return on assets, not including capital gains on land, was 6.2 percent. The average value of farm production for this group of farms was \$845,170 or approximately \$243,500 higher than the average value of farm production for the entire sample of farms. All of these farms were covering accrual expenses, depreciation, and unpaid family and operator labor. Moreover, approximately 62 percent of the farms in this group were earning an economic profit.

Table 3 presents the summary statistics for the operating profit margin ratio quartiles. This table was created using five-year average data for each farm. The farms in the top profit margin quartile had an average operating profit margin ratio of 0.176 or 17.6 percent (Table 3). In contrast, the farms in the bottom profit margin quartile had an average operating profit margin ratio of -0.911. The farms in the bottom profit margin quartile also had a relatively low asset turnover ratio and relatively high expense ratios. In fact, only 52.2 percent of farms in the bottom profit margin quartile covered accrual expenses and depreciation (i.e., had a total expense ratio below 1.00). In contrast, 34.8 percent of the farms in the top profit quartile earned an economic profit.

The farms in the top profit margin ratio tended to be larger than the farms in the other profit margin categories, and had relatively lower expense ratios. Despite having a larger average farm size,



the top quartile contained farms of various sizes. Approximately 14.3 percent of the farms in the top quartile had a value of farm production below \$250,000. Almost a quarter of the farms in the top quartile had a value of farm production above \$1,000,000. Given that the average value of farm production for farms in the bottom quartile was only \$73,557, it is interesting to note that 3.1 percent of the farms in the bottom quartile had a value of farm production above \$1,000,000.

In summary, this paper examined the persistence of financial performance for a sample of farms over a five-year period. Results suggest that weather and other external factors made it difficult for a farm to consistently be in the top profit margin ratio over time. However, using five-year average data there was a substantial difference in financial performance between farms in the top and bottom quartiles. For example, farms in the top profit margin ratio quartile had an average operating profit margin ratio of 0.176 compared to an average operating profit margin ratio for the sample of farms of only 0.042.

Results also stress the importance of using several years of data to benchmark financial performance and suggest that it is possible for farms to have a sustained competitive advantage. Given the wide variability of financial performance documented in this study, a further examination of the characteristics of the farms in the top profit margin quartile, including obtaining information pertaining to management styles, experience, and decision making abilities, would be a fruitful area for further research.



**Table 1. Summary Statistics for 643 KFMA Farms with Continuous Data from 2013-2017.**

Item	Average
Value of Farm Production (VFP)	\$601,647
Net Farm Income	\$81,104
Interest	\$20,972
Unpaid Family and Operator Labor	\$77,044
Total Assets	\$2,650,805
Total Debt	\$545,060
Total Expense Ratio (TER)	0.865
Adjusted Total Expense Ratio (ATER)	0.993
Economic Total Expense Ratio (ETER)	1.187
Operating Profit Margin Ratio	0.042
Asset Turnover Ratio	0.227
Debt to Asset Ratio	0.206
Percent of Farms with Positive Net Cash Flow	95.33%
Percent of Farms Financially Stressed	1.87%
Percent of Farms with TER less than 1.000	85.23%
Percent of Farms with ATER less than 1.000	43.55%
Percent of Farms with ETER less than 1.000	9.49%
Percent of Farms with VFP less than \$100,000	3.89%
Percent of Farms with VFP between \$100,000 and \$250,000	21.77%
Percent of Farms with VFP between \$250,000 and \$500,000	31.42%
Percent of Farms with VFP between than \$500,000 and \$1,000,000	29.08%
Percent of Farms with VFP greater than \$1,000,000	13.84%

Source: Kansas Farm Mangement Association 2017 Databank.



**Table 2. Number of Farms and Percent of Farms by Profit Margin Categories.<sup>a</sup>**

Item	Number of Farms	Percent of Farms
<u>Top Profit Margin Category</u>		
First Category	13	2.02%
Second Category	40	6.22%
Third Category	59	9.18%
Fourth Category	124	19.28%
Fifth Category	155	24.11%
Sixth Category	252	39.19%
<u>Bottom Profit Margin Category</u>		
First Category	17	2.64%
Second Category	35	5.44%
Third Category	52	8.09%
Fourth Category	125	19.44%
Fifth Category	174	27.06%
Sixth Category	240	37.33%

<sup>a</sup> Farms in the first category were in the top or bottom quartile for all five years. Farms in the second category were in the top or bottom quartile for four of the five years. Farms in the third category were in the top or bottom quartile for three of the five years. Farms in the fourth category were in the top or bottom quartile for two of the five years. Farms in the fifth category were in the top or bottom quartile for one of the five years. Farms in the sixth category were not in the top or bottom quartile during the five year period.

**Table 3. Summary Statistics for Operating Profit Margin Ratio Quartiles.<sup>a</sup>**

Item	Profit Margin Quartile			
	First	Second	Third	Fourth
Value of Farm Production (VFP)	\$73,557	\$581,354	\$636,578	\$884,334
Net Farm Income	-\$14,030	\$35,668	\$90,499	\$212,337
Interest	\$14,217	\$21,842	\$23,700	\$24,146
Unpaid Family and Operator Labor	\$67,199	\$81,409	\$78,733	\$80,846
Total Assets	\$1,675,740	\$2,501,449	\$2,694,567	\$3,731,736
Total Debt	\$338,257	\$586,629	\$611,943	\$643,828
Total Expense Ratio (TER)	1.191	0.939	0.858	0.760
Adjusted Total Expense Ratio (ATER)	2.104	1.079	0.982	0.851
Economic Total Expense Ratio (ETER)	3.104	1.261	1.162	1.045
Operating Profit Margin Ratio	-0.911	-0.041	0.056	0.176
Asset Turnover Ratio	0.044	0.232	0.236	0.237
Debt to Asset Ratio	0.202	0.235	0.227	0.173
Percent of Farms with Positive Net Cash Flow	85.09%	98.76%	98.12%	99.38%
Percent of Farms Financially Stressed	3.73%	1.86%	1.88%	0.00%
Percent of Farms with TER less than 1.000	52.17%	89.44%	99.38%	100.00%
Percent of Farms with ATER less than 1.000	0.00%	2.48%	73.13%	98.76%
Percent of Farms with ETER less than 1.000	0.00%	0.00%	3.13%	34.78%
Percent of Farms with VFP less than \$100,000	10.56%	1.24%	1.88%	1.86%
Percent of Farms with VFP between \$100,000 and \$250,000	45.34%	19.25%	10.00%	12.42%
Percent of Farms with VFP between \$250,000 and \$500,000	32.92%	37.28%	35.62%	19.88%
Percent of Farms with VFP between \$500,000 and \$1,000,000	8.07%	30.43%	36.87%	41.00%
Percent of Farms with VFP greater than \$1,000,000	3.11%	11.80%	15.63%	24.84%

<sup>a</sup> The first quartile is represented by farms with the lowest operating profit margin ratio. The fourth quartile is represented by farms with the highest operating profit margin ratio.

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