Operating Profit Margin Benchmarks

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This article examines trends in the operating profit margin for a sample of farms over a ten-year period and develops financial performance benchmarks. Specifically, using KFMA whole-farm data for farms with continuous data from 2008 to 2017, the operating profit margin ratio is computed for each farm and year. Also, the operating profit margin ratio and corresponding farm characteristics are compared across financial performance quartiles.

Variable Definitions and Summary Statistics

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 the 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 500 KFMA farms with continuous data from 2008 to 2017. Value of farm production averaged $592,485 and net farm income averaged $121,487. The average profit margin was 0.121 or 12.1 percent while the average asset turnover ratio was 0.241. The average total expense ratio, adjusted total expense ratio, and economic total expense ratio were 0.795, 0.913, and 1.111, respectively. As indicated by the percent of farms with an adjusted total expense ratio below 1.00, approximately 65 percent of the farms covered accrual expenses, depreciation, and unpaid family and operator labor. Approximately 16 percent of the farms covered all accrual and opportunity costs and thus were earning an economic profit. Approximately 1.0 percent of the farms were, on average, financially stressed.

Profit Margin Quartiles

Table 2 presents the summary statistics for each profit margin ratio quartile. These tables were created using ten-year average data for each farm. The first quartile represents farms in the bottom quartile while the fourth quartile represents farms in the top quartile. The farms in the top profit margin quartile had an average operating profit margin ratio of 0.234 or 23.4 percent. In contrast, the farms in the bottom profit margin quartile had an average operating profit margin ratio of -0.099. The farms in the bottom profit margin quartile had relatively high expense ratios. In fact, none of the farms in the bottom profit margin quartile were able to cover accrual expenses, depreciation, and unpaid family and operator labor, and only 83 percent of the farms covered accrual expenses and depreciation (i.e., had a total expense ratio below 1.00). Though their

performance was relatively low, only 3.2 percent of the farms in the bottom quartile were financially stressed. All of the farms in the top quartile covered accrual expenses, depreciation, and unpaid family and operator labor. Moreover, approximately 41 percent of the farms in the top profit quartile earned an economic profit. The farms in the top profit margin quartile tended to be larger than the farms in the bottom quartile. However, there were farms in each farm size category in the top quartile. Farms in the top quartile also tended to have a lower debt to asset ratio.

Figure 1 presents the average annual operating profit margin ratio for the entire sample of farms and for those farms in the top quartile. The average profit margin for the entire sample was negative in 2015 and 2016 and close to zero in 2017. For farms in the top quartile, the average profit margin ranged from 5 percent in 2015 to 15 percent in 2017 for these same years. Figure 1 also stresses the importance of using multiple years to benchmark farms. For example, a 20 percent profit margin was relatively easy to attain in 2008, 2010, and 2011. For 2015 to 2017, this benchmark would have been very difficult to achieve.

The results in table 2 are consistent with FINBIN data (University of Minnesota, Center for Farm Financial Management). Rather than using quartiles, FINBIN reports use deciles. Using FINBIN data from 2008 to 2017, farms in the bottom 20 percent and 30 percent had average operating profit margin ratios of -10.6 and -0.5 percent, respectively. Farms in the top 30 percent and 20 percent had an average operating profit margin ratio of 21.7 and 27.1 percent.

Profit Margin Persistence

In addition to examining the profit margin quartiles for the 10-year period, we examined how common it was for farms in the bottom or top profit margin quartile from 2008 to 2012 to also be in the bottom or top profit margin quartiles from 2013 to 2017. For the 10-year period, there were 125 farms in the bottom and top profit margin quartiles. Approximately 50 percent and 54 percent of the farms in the bottom and top quartiles, respectively, were in the bottom and top profit margin quartiles for both of the 5-year periods.

The characteristics of farms in the bottom and top profit margin quartiles from 2008 to 2012 and from 2013 to 2017 are presented in table 3. The operating profit margin for the farms that were consistently in the top profit margin was 0.257 or 25.7 percent. This group of farms tended to be larger, to have a higher asset turnover ratio, and to have a lower debt to asset ratio.

Concluding Comments

In summary, this paper examined the financial performance for a sample of KFMA farms over a ten-year period. Farms in the bottom quartile had a negative operating profit margin ratio indicating that they were not able to fully cover accrual expenses, depreciation, and unpaid family and operator labor. The average operating profit margin ratio for the sample of farms was 12.1 percent. In contrast, the average operating profit margin ratio for farms in the top profit margin quartile was 23.4 percent, or 11.3 percent higher than the average profit margin. For farms that were in the top quartile during the 2008 to 2012 and 2013 to 2017 periods, the average profit margin was 25.7 percent. Based on the results in this paper, farms are encouraged to use an operating profit margin ratio of at least 20 percent as their benchmark.

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 500 KFMA Farms with Continuous Data from 2008-2017.

Item	Average
Value of Farm Production (VFP)	$592,485
Net Farm Income	$121,487
Interest	$20,149
Unpaid Family and Operator Labor	$69,683
Total Assets	$2,455,194
Total Debt	$459,464
Total Expense Ratio (TER)	0.795
Adjusted Total Expense Ratio (ATER)	0.913
Economic Total Expense Ratio (ETER)	1.111
Operating Profit Margin Ratio	0.121
Asset Turnover Ratio	0.241
Debt to Asset Ratio	0.187
Percent of Farms with Positive Net Cash Flow	98.0%
Percent of Farms Financially Stressed	1.0%
Percent of Farms with TER less than 1.000	95.6%
Percent of Farms with ATER less than 1.000	64.8%
Percent of Farms with ETER less than 1.000	15.8%
Percent of Farms with VFP less than $100,000	3.6%
Percent of Farms with VFP between $100,000 and $250,000	20.8%
Percent of Farms with VFP between $250,000 and $500,000	31.4%
Percent of Farms with VFP between than $500,000 and $1,000,000	30.4%
Percent of Farms with VFP greater than $1,000,000	13.8%

Source: Kansas Farm Management Association 2017 Databank.

Table 2. Summary Statistics for Operating Profit Margin Ratio Quartiles.[a]

	Profit Margin Quartile			
Item	First	Second	Third	Fourth
Value of Farm Production (VFP)	$279,561	$523,309	$733,294	$833,775
Net Farm Income	$22,366	$73,406	$145,816	$244,363
Interest	$13,585	$18,318	$27,021	$21,671
Unpaid Family and Operator Labor	$63,623	$67,268	$76,889	$70,952
Total Assets	$1,260,460	$2,000,042	$2,957,493	$3,602,782
Total Debt	$262,676	$408,988	$626,141	$540,052
Total Expense Ratio (TER)	0.920	0.860	0.801	0.707
Adjusted Total Expense Ratio (ATER)	1.148	0.988	0.906	0.792
Economic Total Expense Ratio (ETER)	1.358	1.167	1.093	1.008
Operating Profit Margin Ratio	-0.099	0.047	0.131	0.234
Asset Turnover Ratio	0.222	0.262	0.248	0.231
Debt to Asset Ratio	0.208	0.204	0.212	0.150
Percent of Farms with Positive Net Cash Flow	92.8%	100.0%	100.0%	99.2%
Percent of Farms Financially Stressed	3.2%	0.8%	0.0%	0.0%
Percent of Farms with TER less than 1.000	83.2%	99.2%	100.0%	100.0%
Percent of Farms with ATER less than 1.000	0.0%	59.2%	100.0%	100.0%
Percent of Farms with ETER less than 1.000	0.0%	3.2%	19.2%	40.8%
Percent of Farms with VFP less than $100,000	12.0%	0.0%	0.0%	2.4%
Percent of Farms with VFP between $100,000 and $250,000	48.8%	16.0%	10.4%	8.0%
Percent of Farms with VFP between $250,000 and $500,000	29.6%	48.8%	28.0%	19.2%
Percent of Farms with VFP between $500,000 and $1,000,000	6.4%	29.6%	41.6%	44.0%
Percent of Farms with VFP greater than $1,000,000	3.2%	5.6%	20.0%	26.4%

[a] 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.

Table 3. Summary Statistics for Farms in Bottom and Top Operating Profit Margin Quartiles from 2008-2012 and 2013-2017.

	Profit Margin Quartile	
Item	Bottom	Top
Value of Farm Production (VFP)	$205,482	$913,400
Net Farm Income	$7,889	$283,877
Interest	$9,914	$20,919
Unpaid Family and Operator Labor	$59,361	$69,804
Total Assets	$1,178,054	$3,933,688
Total Debt	$189,712	$536,919
Operating Profit Margin Ratio	-0.202	0.257
Asset Turnover Ratio	0.174	0.232
Debt to Asset Ratio	0.161	0.136

Figure 1. Operating Profit Margin for KFMA Farms