

FINANCIAL AND ECONOMIC BENCHMARKING



- Competitive Positioning
- Benchmarking
- Financial Analysis Spreadsheet
- Economic and Financial Measures
 - Liquidity
 - Solvency
 - Profitability
 - Financial Efficiency
 - Repayment Capacity
 - Financial Stress
 - Profit Margin Persistence

Module Name: Financial Analysis
Session Number: Session 4

Competitive Positioning



- Management Differences
 - Differences in management are a common explanation for differences in net farm income among farms, but this explanation is not very complete.
 - Unless the specific differences in management can be identified, there can be no precise recommendations for improving net farm income on the farms with “poor management”.

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Competitive Positioning



- Competitive Industry
 - Continuous improvements in performance are essential
 - Technical, economic, and financial measures can be used to measure performance and to benchmark

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Competitive Positioning



		Relative Price Per-Unit		
		Lower	Average	Higher
Relative Cost Per-Unit	Lower	1 Indeterminate Position	2 Competitive Advantage	3 Competitive Advantage
	Average	4 Competitive Disadvantage	5 Parity Position	6 Competitive Advantage
	Higher	7 Competitive Disadvantage	8 Competitive Disadvantage	9 Indeterminate Position

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Hunt, 2000

Benchmarking



- Benchmarking is an important component to a continuous improvement program
- Benchmarking can be used as an early warning signal that corrective action is needed

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Benchmarking



- Steps:
 - determine what to benchmark
 - form a benchmarking team
 - identify benchmarking targets
 - collect and analyze information and data
 - take action

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Internal Benchmarking



- Involves an internal examination of a firm's performance
- Benefits:
 - Establishes baseline of acceptable performance
 - Identifies gaps in existing performance

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External Benchmarking



- Competitive Benchmarking
 - Compare performance to that of primary competitors
- Industry Benchmarking
 - Compare performance to that of other firms in an industry

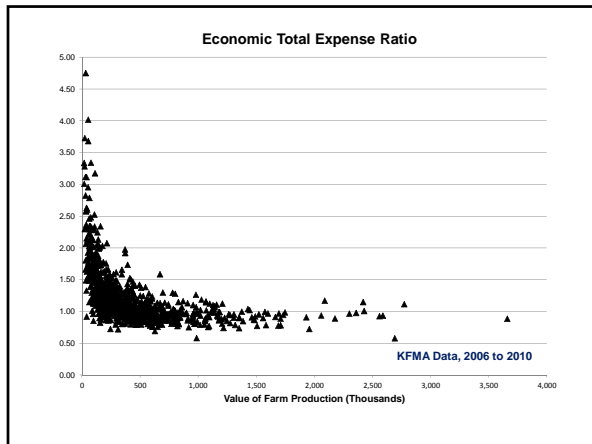
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External Benchmarking




- Best-in-Class Benchmarking
 - Used to identify best practices across a wide variety of industry settings
 - Usually focuses on one business area such as accounts receivable, personnel management, inventory management, or input purchasing

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Financial Analysis Spreadsheet



- Balance Sheet
- Income Statement
- Cash Flow Statement
- Sources and Uses of Funds Statement
- Ratios and Benchmarks

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Farm Benchmark Data



- The data used to illustrate the financial ratio computations below represents average data for KFMA farms with continuous data from 2006 to 2010.
- The benchmark measures represent data for farms in the top profit margin quartile.
- Some of the slides below use my farm finance scorecard (red; yellow; green).

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Financial Scorecard



- The charts pertaining to farm size and farm type below use a financial scorecard.
 - Red Light: Low Performance (Vulnerable)
 - Yellow Light: Medium Performance
 - Green Light: Good Performance (Strong)

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Economic and Financial Measures



- Liquidity
- Solvency
- Profitability
- Financial Efficiency
- Repayment Capacity
- Financial Stress
- Profit Margin Persistence

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Liquidity



- The ability of a business to meet its cash flow obligations as they come due is called "liquidity".
- Maintaining liquidity is important to keep the financial transactions of the business running smoothly.

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Liquidity



- Current Ratio
 - $(\text{Current Assets}) / (\text{Current Liabilities})$
 - Measures the extent to which the claims of short-term creditors are covered by short-term assets.
 - Example (Ending Balance Sheet):
 - $(356,754) / (150,774) = 2.37$
 - Excludes deferred taxes

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Liquidity



- Working Capital
 - $(\text{Current Assets} - \text{Current Liabilities})$
 - Measures the extent to which the claims of short-term creditors are covered by short-term assets.
 - Example (Ending Balance Sheet):
 - $(356,754 - 150,774) = \$205,980$
 - Excludes deferred taxes

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Liquidity



- Working Capital as a Percentage of Gross Revenue
 - $(\text{Working Capital}) / (\text{Gross Revenue})$
 - Provides a relationship of the working capital to the size of farm business.
 - Gross revenue is computed by adding livestock purchases and accrual feed expense to value of farm production.
 - Example (Ending Balance Sheet):
 - $(205,980) / (542,569) = 0.3796$
 - Excludes deferred taxes

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Liquidity



- Tests for Liquidity Problems
 - Analyze the debt structure by calculating the percent of total liabilities classified as current and fixed
 - Compare changes in current assets over time, particularly inventories
 - Compare the purchases of capital assets to sales and depreciation
 - Compare the amount of operating debt carried over from one year to the next for a period of several years

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Liquidity



- If liquidity is unsatisfactory:
 - improve profitability
 - refinance current debt
 - slow expansion
 - liquidate assets

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Solvency



- Solvency measures examine the relationship between the assets owned by the business and debt
- Measures:
 - Debt/Asset Ratio
 - Equity/Asset Ratio
 - Debt/Equity Ratio

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Solvency



- Debt-to-Asset Ratio
 - $(\text{Total Debt}) / (\text{Total Assets})$
 - Measures the importance of borrowed funds in financing the firm's operations.
 - Example (Ending Balance Sheet):
 - $(360,841) / (1,368,652) = 0.2636$
 - Excludes deferred taxes

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Solvency



- If a firm's leverage position is unsatisfactory:
 - improve profitability
 - retain more net income
 - sell assets, reduce debt

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Profitability



- Even a business that is both solvent and liquid will not necessarily be profitable
- Financial and economic measures can be used to examine profitability
- Profitability can be measured in relation to income, assets, or equity

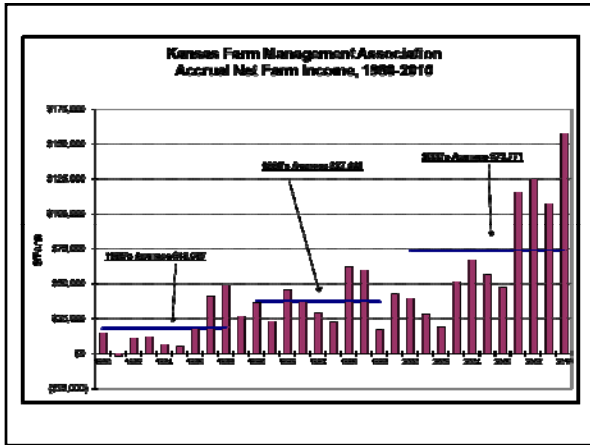
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Profitability



- Net Farm Income from Operations
 - A measure of return to equity capital, unpaid labor, and management
 - Value of farm production:
 - Operating expenses
 - Depreciation
 - Interest expense
 - Net farm income from operations
 - Example: \$108,994

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Profitability



- Net Farm Income
 - \$108,994
- Change in Farm Net Worth
 - \$79,771
- Difference?

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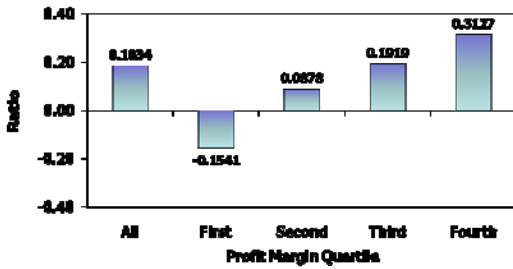
Profitability



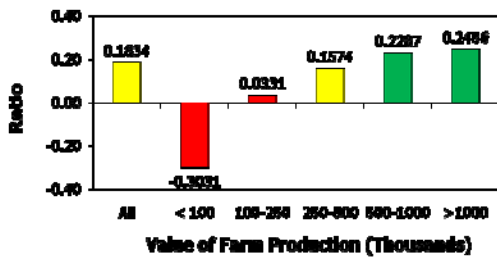
- Operating Profit Margin Ratio
 - (Net Farm Income from Operations + Interest – Unpaid Labor) / (Value of Farm Production)
 - Example:
 - $(108,994 + 20,908 - 50,945) / (430,427) = 0.1834$
 - Benchmark:
 - **0.3127**

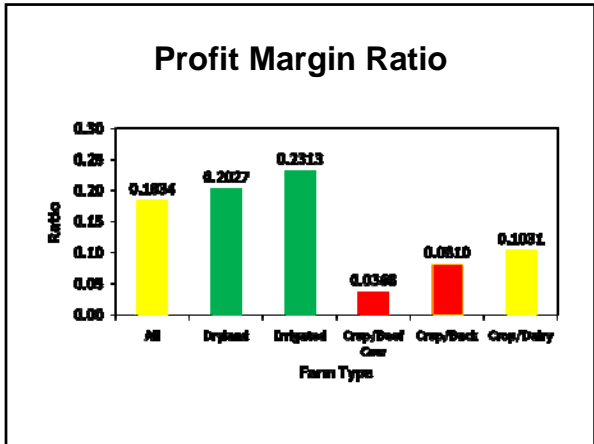
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Profit Margin Ratio




Profit Margin Ratio






Profitability



- Rate of Return on Farm Assets
 - $(\text{Net Farm Income from Operations} + \text{Interest} - \text{Unpaid Labor}) / (\text{Average Total Assets})$
 - Example:
 - $(108,994 + 20,908 - 50,945) / (1,320,806) = 0.0598$
 - Benchmark:
 - **0.1084**

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Profitability



- Rate of Return on Farm Equity
 - $(\text{Net Farm Income from Operations} - \text{Unpaid Labor}) / (\text{Average Equity})$
 - Example:
 - $(108,994 - 50,945) / (967,926) = 0.0600$
 - Benchmark:
 - **0.1244**

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Profitability



- When the return on assets is greater than the interest rate, profits will increase and equity will grow.
 - $ROE > ROA$
- When the return on assets is less than the interest rate, return on equity is decreased by using leverage, and can even be negative.
 - $ROE < ROA$

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Profitability



Comparison of Return on Assets and Return on Equity	Example	Benchmark
Return on Assets	0.0598	0.1084
Return on Equity	0.0600	0.1244

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Profitability



- Measures of profitability can be used to identify the existence of a problem.
- However, these measures do not identify the exact source of the problem.
- Further analysis is often needed to clarify the cause of the problem and suggest corrective action needed.

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Profitability



- If profitability is unsatisfactory examine:
 - Volume of production and resources
 - Cost management
 - Examine expense and net income ratios
 - Compare major cost items to benchmarks
 - Evaluate competitiveness of individual outputs or enterprises

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Financial Efficiency



- Financial efficiency measures are used to judge how efficiently a firm is using its assets and the firm's ability to manage costs
- Measures:
 - Asset Turnover Ratio
 - Expense and Net Farm Income Ratios

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Financial Efficiency



- Sources of Financial Inefficiency
 - technical inefficiency
 - inefficient allocation of inputs
 - inefficient combination of outputs
 - inefficient scale of operation
 - relatively higher input prices
 - relatively lower output prices

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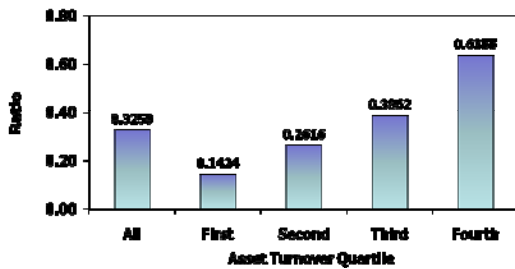
Financial Efficiency



- Asset Turnover Ratio
 - (Value of Farm Production) / (Average Total Assets)
 - Measures the effectiveness of the firm in utilizing assets
 - Example:
 - $(430,427) / (1,320,806) = 0.3259$
 - Benchmark:
 - 0.3466

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Financial Efficiency



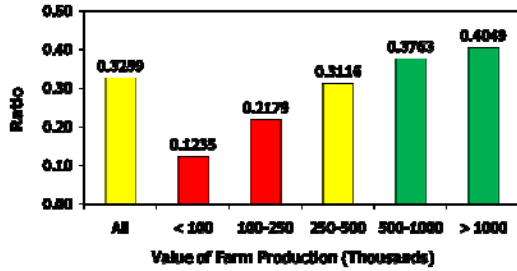
Asset Turnover Ratio



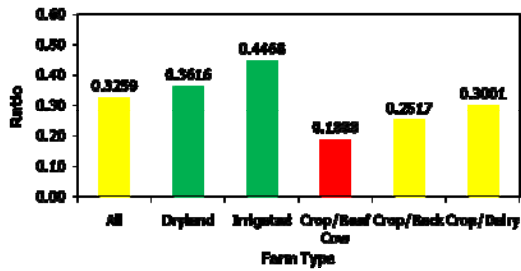
- Extra caution should be used when comparing the asset turnover ratio across farms.
- The asset turnover ratio varies considerably by farm type and is very sensitive to changes in percentage of acres owned.
- For instance, farms in the first quartile in previous chart own 60 percent of their acres. In contrast, farms in the fourth quartile own only 11 percent of their acres.

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Asset Turnover Ratio



Asset Turnover Ratio



Financial Efficiency



- Operating Expense Ratio
 - (Total Operating Expenses - Depreciation) / (Value of Farm Production)
 - Example:
 - $(300,525 - 33,595) / (430,427) = 0.6202$
 - Benchmark
 - 0.5294

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Financial Efficiency



- Depreciation Expense Ratio
 - (Depreciation) / (Value of Farm Production)
 - Example:
 - $(33,595) / (430,427) = 0.0781$
 - Benchmark:
 - **0.0751**

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Financial Efficiency



- Interest Expense Ratio
 - (Interest) / (Value of Farm Production)
 - Example:
 - $(20,908) / (430,427) = 0.0486$
 - Benchmark:
 - **0.0375**

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Financial Efficiency



- Total Expense Ratio
 - (Total Farm Expenses) / (Value of Farm Production)
 - Example:
 - $(321,433) / (430,427) = 0.7468$
 - Benchmark:
 - **0.6420**

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Financial Efficiency



- Net Farm Income Ratio
 - (Net Farm Income from Operations) / (Value of Farm Production)
 - Example:
 - $(108,994) / (430,427) = 0.2532$
 - Benchmark:
 - **0.3580**

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Financial Efficiency



Expense and Net Farm Income Ratios	Example	Benchmark
Operating	0.6202	0.5294
Depreciation	0.0781	0.0751
Interest	0.0486	0.0375
Total Expense	0.7468	0.6420
Net Farm Income	0.2532	0.3580

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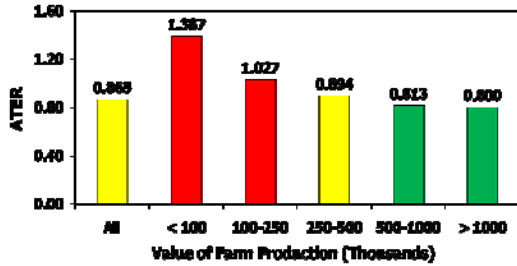
Financial Efficiency



- Adjusted Total Expense Ratio
 - (Total Farm Expenses + Unpaid Labor) / (Value of Farm Production)
 - Example:
 - $(321,433 + 50,945) / (430,427) = 0.8651$
 - Benchmark:
 - **0.7250**

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Adjusted Total Expense Ratio



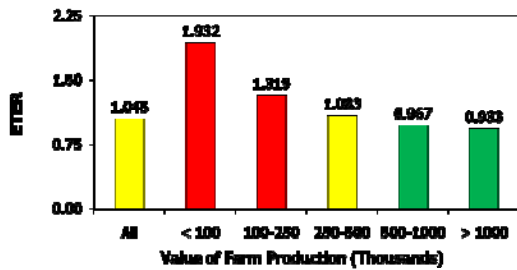
Financial Efficiency



- Economic Total Expense Ratio
 - (Total Farm Expenses + Unpaid Labor + Opportunity Charge on Owner Equity) / (Value of Farm Production)
 - Example:
 - Opportunity charge on owner equity = $(967,926 \times 0.08) = 77,434$
 - $(321,433 + 50,945 + 77,434) / (430,427) = 1.0450$
 - Benchmark:
 - **0.9020**

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Economic Total Expense Ratio



Financial Efficiency



Expense Ratios	Example	Benchmark
Total Expense Ratio	0.7468	0.6420
Adjusted Total Expense Ratio	0.8651	0.7250
Economic Total Expense Ratio	1.0450	0.9020

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Financial Efficiency



- Enterprise Budgets
 - Enterprise Revenue
 - Units produced
 - Gross income per unit
 - Enterprise Cost
 - Total cost per unit
 - Expense to income ratios for major cost items

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Repayment Capacity



- Repayment capacity measures are used to:
 - Determine whether a farm has the ability to cover principal and interest payments
 - Evaluate the farm's ability to acquire capital and service additional debt

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Repayment Capacity



- Operating Cash Flow
 - (Net Farm Income from Operations + Depreciation)
 - Measures a farm's ability to cover family living expenses, taxes, asset purchases, and term debt repayment
 - Example:
 - $(108,994 + 33,595) = \$142,589$

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Repayment Capacity



- Income Available for Capital Replacement and Term Debt Repayment
 - (Net Farm Income from Operations + Nonfarm Income + Depreciation – Income Taxes – Unpaid Labor)
 - Measures the firm's ability to replace capital and make term debt payments.
 - Example:
 - $(108,994 + 13,642 + 33,595 - 8,978 - 50,945) = \$96,308$

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Financial Stress



- Components of financial stress:
 - negative earnings
 - rate of return on farm equity
 - net farm income from operations minus opportunity cost for unpaid labor
 - debt to asset ratio above 0.70

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Financial Stress



- Percentage of KFMA Farms
 - Negative Return on Equity = 34.94%
 - High Debt = 6.79%
 - Financially Stressed = 4.43%

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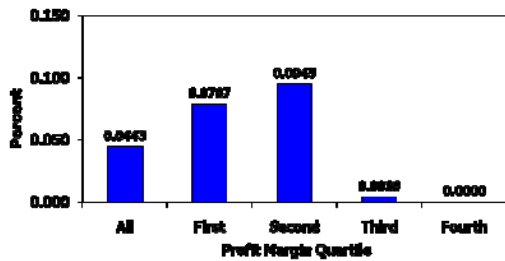
Financial Stress



KFMA Farms 2006-2010	Average	Benchmark
Negative ROE	34.94%	0.00%
High Debt	6.79%	0.00%
Financial Stress	4.43%	0.00%

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Financial Stress



Profit Margin Persistence



- It is a widely established fact that profitability, efficiency, and per-unit costs vary significantly among farms and ranches.
- Are these differences in performance due to random events such as weather or are these differences due to controllable factors such as managerial ability?

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Profit Margin Persistence



- The profit margin ratio was used to measure financial performance for each farm and year for KFMA farms with continuous data from 2006 to 2010.
- The number of years each farm was in the top or bottom quartile was computed.

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Profit Margin Persistence



- Five-Year Averages:
 - Value of Farm Production = \$430,427
 - Net Farm Income = \$108,994
 - Unpaid Labor = \$50,945
 - Operating Profit Margin = 0.1834
 - Asset Turnover Ratio = 0.3259
 - Total Expense Ratio = 0.747
 - Adjusted Total Expense Ratio = 0.865
 - Economic Total Expense Ratio = 1.045

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Profit Margin Persistence



Category	Top Profit Margin	Bottom Profit Margin
Zero Years	40.75%	45.87%
One Year	24.11%	20.96%
Two Years	16.04%	12.40%
Three Years	10.33%	8.56%
Four Years	6.00%	7.48%
Five Years	2.76%	4.72%

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Profit Margin Persistence



- Obviously, it was relatively difficult to consistently be in the top profit margin quartile. However, there were farms that had an above average profit margin using five-year average data.
 - Farms in the top quartile, using five-year averages, had a profit margin of 0.3127 (compared to the average profit margin of 0.1834). The farms in the bottom quartile had an average profit margin ratio of -0.1541.
 - The farms in the bottom profit margin quartile also had a relatively low asset turnover ratio and relatively high expense ratios. None of the farms in the bottom quartile was able to cover opportunity costs on family and operator labor.

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Profit Margin Persistence



- Results indicate that weather and other external factors made it difficult for a farm to consistently be in the top quartile over time. However, approximately 46 percent of the farms were able to stay out of the bottom profit margin quartiles during the five-year period.
- Results suggest that using one year of data to benchmark is problematic. However, given the large difference in financial performance among farms using five-year average data, it is essential that farms benchmark using average data for a longer time period.
- The results also suggest that it is possible for farms to have a competitive advantage.

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Summary



Liquidity

	Beginning	Ending
Current Ratio	2.17	2.37
Working Capital	\$168,812	\$205,980
Working Capital as a Percentage of Gross Revenue	31.11%	37.96%

Solvency

Debt/Asset Ratio	0.27	0.26
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Summary



Profitability

	Firm	Benchmark
Operating Profit Margin Ratio	0.1834	0.3127
Rate of Return on Farm Assets	0.0598	0.1084
Rate of Return on Farm Equity	0.0600	0.1244

Financial Efficiency

Asset Turnover Ratio	0.3259	0.3466
Net Farm Income Ratio	0.2532	0.3580
Operating Expense Ratio	0.6202	0.5294
Depreciation Expense Ratio	0.0781	0.0751
Interest Expense Ratio	0.0486	0.0375
Total Expense Ratio	0.7468	0.6420
Adjusted Total Expense Ratio	0.8651	0.7250
Economic Total Expense Ratio	1.0450	0.9020

Repayment Capacity

Income Available for Capital Replacement and Farm Debt Repayment	\$96,308	
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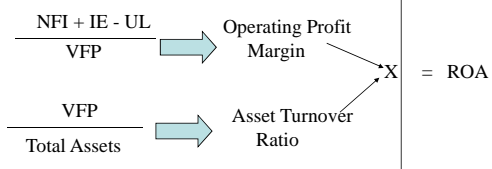
Summary



- Identifying the Problem
 - Liquidity
 - Solvency
 - Profitability
 - Financial Efficiency
 - Repayment capacity
 - Financial Stress

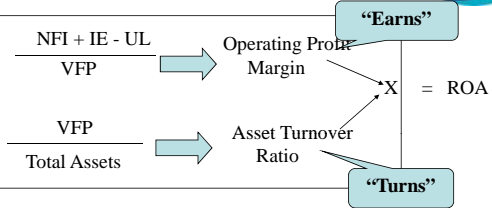
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Dupont Relationship



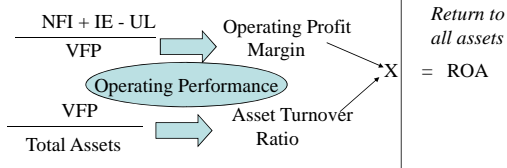
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