9. A Financial Tool You Can Use: The DuPont Profitability Model

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Brian Briggeman is an Associate Professor in Agricultural Economics at KSU, and the Director of the Arthur Capper Cooperative Center. His research and extension program include topics on agricultural finance, agribusiness and cooperative management and macroeconomic implications for U.S. agriculture. He also teaches agricultural finance. Prior to joining KSU, Brian was an economist with the Federal Reserve Bank of Kansas City. He holds a bachelor’s degree in agribusiness from KSU, an M.S. degree in agricultural economics from Texas A&M University and a Ph.D. degree in agricultural economics from Purdue University. He is originally from Iuka, Kansas where his parents own and operate the family farm.

Abstract/Summary

Making sound financial decisions about your farming operation is critical to near and long-term success. These decisions can become quite complex because one financial decision can have a ripple effect, positive or negative, throughout your entire farm. While unraveling and discussing all of these decisions can take days if not months to figure out, there is one straightforward financial model that can help start the process of identifying financial areas to fix and/or growth opportunities. In this session, Dr. Brian Briggeman will introduce and apply the DuPont Model to Kansas farmers by discussing the fundamentals of maximizing return on equity (ROE). For more, please read the following article:

http://www.agweb.com/topproducer/article/financial_decisions_made_easy_NAA_Ed_Clark/
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Profitability Analysis

Is It From Operations? Finances?

Equity (ROE)?

Advantage in Maximizing Return on What's Our Approach / Competitive Advantage in Maximizing Return on Equity (ROE)?

The Importance of Understanding ROE

According to Warren Buffett, ROE is one of the most important factors in making successful stock investments. When I think about ensuring the long-term profitability of any firm, it is all about ROI and generating sufficient returns to equity is critical for any firm to continue to generate efficient and sustainable returns.

Also, ROE tells the financial story of the firm.
### Financial Linkage Model

Developed in 1919 by DuPont

Needed a way to easily assess financial position

Links key financial ratios we have discussed

- American Express
- Chesapeake Energy Corporation
- Walmart
- Average Kansas Farmer (2010 KFMA data)

### DuPont Analysis

\[ \text{ROE} = \text{Earnings} \times \text{Turns} \times \text{Leverage} \]

Breaking down ROE tells us a lot...

<table>
<thead>
<tr>
<th>Firm</th>
<th>Earnings</th>
<th>Turns</th>
<th>ROA</th>
<th>Leverage</th>
<th>ROE</th>
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<td>2.17</td>
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</tr>
<tr>
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<td>0.312</td>
<td>6.49%</td>
<td>0.31</td>
<td>7.33%</td>
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</tbody>
</table>

Name that Firm!
Focusing on Operating Performance

The ultimate measure of operating performance is return on assets or ROA. Operating performance primarily focuses on:

- Efficiently turning assets
- Margins earned

The first set of calculations in the DuPont model is return on assets or ROA.

Operating Profit Margin = Net Income / Gross Revenues

Asset Turnover Ratio = Total Assets / Total Revenues

DuPont Analysis

Operating Performance
DuPont Analysis
Operating Performance

- ROA

Focusing on Financial Performance

- ROE

Financial Performance

- ROA = (Net Income / Total Equity) x Asset Turnover x (1 + Average Cost of Debt)

Return on Equity (ROE)

Earnings = ROA x Asset Turnover

Operational Performance

HOW CAN FIRMS USE DEBT TO INCREASE THEIR EQUITY?

The second set of calculations in the DuPont model focuses on financial performance primarily. Financial performance primarily focuses on:

- Capital structure
- Cost of debt
- Interest expense

Combining financial performance measures with the operating performance measures return on equity or ROE:

\[ \text{ROE} = \text{Operating Profit Margin} \times \text{Asset Turnover} \times \text{Return on Assets (ROA)} \]
Relationship between ROA and ROE

• A key financial relationship exists between ROA and ROE.

Since ROA includes farm interest expense and ROE includes farm interest expense and COD, the cost of debt provides a link between the two. Let's walk through the Du Pont Analysis using KFMA data.
Enter the data for your business in the "Data Input Area" cells below. The spreadsheet will automatically calculate all other cells.

Gross Revenues
#DIV/0!

Variable Expense
#DIV/0!

Fixed Expense
#DIV/0!

Interest Expense
#DIV/0!

Other Income
#DIV/0!

Total Assets
#DIV/0!

Total Liabilities

*Spread = ROA - Cost of Debt

1

Gross Revenue
(-)

Fixed Expense
(-)

Variable Expense
(=)

Net Operating Income

$0 $0 $0 $0

Net Operating Income
(+)

Other Income
(-)

Interest Expense
(=)

Net Income

$0 $0 $0 $0

Net Income
(+)

Interest Expense

Gross Revenue
(=) Operating Profit Margin

$0 $0

#DIV/0!

2

Gross Revenue

Total Assets
(=) Turnover Ratio

$0 $0

#DIV/0!

3

Oper. Profit Margin
(x)

Turnover Ratio
(=) Return on Assets

#DIV/0! #DIV/0! #DIV/0! #DIV/0!

4

Total Liabilities

Total Equity
(=)

Debt/Equity Ratio

Leverage Ratio

#DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0!

Return on Assets
(+)

Return on Assets
(-)

Interest Cost

Debt/Equity Ratio
(=) Return on Equity

#DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0! #DIV/0!

Asset Turnover Ratio

Return on Assets (ROA)

Return on Equity (ROE)

DuPont Analysis
Implications

- If ROE > ROA
  - Cost of Debt (COD) less than ROA
  - Making money on borrowed money
  - Increase operating performance (ROA)

- If ROE < ROA
  - Cost of Debt (COD) greater than ROA
  - Losing money on borrowed money
  - Reduce interest cost
  - Reduce debt
  - Improve operating performance (ROA)

Improving Performance

- Ways to enhance operating performance (ROA)
  - Increase volume per dollar invested or capital
  - Increase operating profit margin

- Ways to enhance equity return (ROE)
  - Leverage – more debt (but be careful)
  - Reduce financing costs
  - Enhance operating performance
  - Ways to enhance equity return (ROE)

Decisions and Rates of Return

- Look for ways to increase the revenues from existing assets.
- Re-evaluate:
  - Throughput
  - Product Mix
  - Marketing Program
  - Resource Use

- Look for non-performing assets to cull.
- Re-evaluate:
  - Leasing vs Owning
  - Sharing Assets

Needs Improvement

- Look at Cost Controls.
- Look for ways to decrease expenses without reducing revenues.
- Re-evaluate:
  - Production costs
  - Rents
  - Capital Spending Plans
  - Purchasing Practices
  - Inventory Management
  - Outsourcing
  - Control Procedures
  - Management Priorities

Acceptable Operating Profit Margin

Acceptable

If both Asset Turnover and Operating Margin are acceptable, increase size.
Thank you