

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

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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/



Financial Decisions Made Easy

JANUARY 29, 2014

By: Ed Clark, Top Producer Business and Issues Editor



Use the DuPont ratio to analyze investment options

When making investment decisions for your farm, it's easy to feel overwhelmed by the more than 20 financial models some experts advise you to run numbers through, some highly complex.

One of the best financial models is the DuPont ratio, and it's surprisingly easy to use. It doesn't require fancy software, and bottom line calculations can be done in a matter of minutes.

If you haven't heard about it, you're not alone. Experts estimate that only about 1% to 10% of farmers actually use it. Bob Wade farms 4,500 acres of corn, soybeans and wheat in Sonora, Ky., and is one of the few farmers who uses the DuPont model for key financial measurements.

"A farm has a lot of moving parts, and the DuPont ratio tells me return on assets and return on equity so I can make better business decisions," Wade says. "Because capital is a scarce resource with competing uses, you have take care of your cash, and the DuPont model can help."

Last year, Wade needed a pickup and priced a new one at \$35,000 and a used one for \$16,000. While it would have been nice to have a new one, the DuPont model showed that return on the additional capital for the new pickup was zero, so he opted for the used one. That left \$19,000 to invest somewhere else.

"I was better off taking that capital and putting it into irrigation equipment or auto-steer," Wade explains. "We have invested heavily in irrigation equipment the past two years." This investment generates a high rate of return by boosting yields.

Wade also used the DuPont model to compare the return of owning versus leasing a combine.

"It showed me that leasing was a better use of capital," he says. "I don't have \$450,000 tied up, which would not be a good use of capital for an asset that is only used a small percentage of the year."

Annual leases allow Wade to access new or one-year-old units at a far cheaper cost than owning, which frees up capital for other investments.



To best allocate capital, Bob Wade uses the DuPont model.

Compare Asset Returns. The DuPont model can isolate your return from all possible asset purchases.

"Some assets are overpriced," Wade points out. One of the beauties of the DuPont model is that by comparing economic returns for any investment, it removes emotion, which is not your friend when it comes to purchases. "Taking the emotion out of investing is DuPont's greatest advantage," he says.

Additionally, it doesn't require a lot of number crunching, and the calculations can be made from data already present on the balance sheet.

Wade is a student of Warren Buffett. "He says to be wary of people in suits with Greek formulas," Wade says. "The biggest mistake people make is to make financial management too complicated."

Brian Briggeman, a Kansas State University ag economist, says the DuPont model can be built in Excel. While it's simple, the DuPont model, like anything else in farming, has a learning curve. "You have to learn to connect the dots," he says.

So what is the DuPont model? Net income divided by sales, sales divided by total assets, and an equity multiplier—assets divided by total equity. By multiplying these three ratios together, you get return on equity (ROE).

"It's all about earns (margin on sales), turns (how often an investment generates sales) and leverage," says Briggeman. "It's a great way to look at the entire operation quickly."

The DuPont model allows farmers to not only compare the returns of competing investment options, but also compare investments already in play. Briggeman explains that the higher the ratio, the higher the return on investment.

Historically, farmers have not used a lot of debt financing relative to other businesses; however, the DuPont model can show when borrowing money is a better strategy, says Michael Gunderson, a Purdue University ag economist.

"If you can get an 8% return on an asset and the bank lends you money at 4%, you're better off to borrow money," Gunderson says. "Do you want to gamble with your money or the bank's?"

It might make more sense to borrow money to pay for assets and keep a stronger cash position, he says, noting that sometimes, paying off debt quickly is not the best strategy.

Low Adoption. So why do so few farmers use the model? Briggeman says that farming is possibly the last major industry to adopt the DuPont model, which is used by virtually all Fortune 500 companies, as well as many agribusinesses.

Many farmers have not been exposed to it, although that's slowly changing, Briggeman says.

"The real benefit of the DuPont model is its value as a trend tool—the ability to look five years backward and forward," says Greg Wolf, an agricultural consultant with Kennedy and Coe LLC. "That's invaluable when making important management decisions."

Wolf expects more producers to use the DuPont model moving forward. "In recent years, the exposure to DuPont has increased, and farmers are responding," he says.

Additionally, he believes tighter margins will drive increasing numbers of farmers to create more detailed



"The real benefit of the model is its value as a trend tool—the ability to look five years backward and forward."—Greg Wolf, Kennedy and Coe LLC

financial analysis. DuPont can show farmers where to make additional farm investments because it provides a portfolio approach to viewing opportunities, Wolf says.

One advantage of using the DuPont model right now is that farmers can easily look at how lower crop prices influence ROE, explains Joshua Detre, a Louisiana State University ag economist. The ratios can point out when assets become non-performing, if returns are less than interest rates on debt.

Know When to Sell. "Divesting of such assets can improve asset utilization and strengthen the asset turnover ratio," Gunderson says. "If a farmer has overinvested in any asset, for example, grain bins, it might be worth selling it rather than holding on to it if returns are not positive."

Detre acknowledges that farmers do a good job managing variable costs; however, he says they struggle with fixed cost management and debt management.

"So the next step, in conjunction with decreases in revenue, is making adjustments to debt structure and fixed assets," Detre explains.

The DuPont model helps farmers better understand what's driving their operation's ROE. "It shows the linkage between managerial decisions and financial performance," he says.

Another advantage of the DuPont model is producers can determine if problems exist on the operational side or on the financing side.

Communicate Goals. From Gunderson's perspective, it's not enough for farmers to understand financial goals and ratios. To boost performance, it's important that financial goals the DuPont model can analyze be communicated with employees. This will help them better understand their own role in boosting ratios, he says.

Meanwhile, producers should also benchmark their DuPont ratios against data sets of other producers to determine how they stack up against competitors. The DuPont ratio is particularly useful when comparing 'what if' scenarios. "For example, the ratio can show the rate of return of each asset with \$5 corn versus \$4 corn," Gunderson says.

Grain farmers typically have lower asset turnover ratios than most other businesses, so they need a higher profit margin, he explains.

If land costs \$10,000 per acre and income generated from it is \$1,000 per acre, the turnover rate is 0.1, which is very low, Gunderson points out. Wal-Mart's asset turnover is three to five. "Because of that, successful farmers need profit margins of 20% to 30% if they only grow one crop per year."

To learn more about using the DuPont model to analyze investments, visit www.centrec.com/dupont-model.html

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The DuPont Model Simplifies Investment Decisions

$$\begin{array}{c}
 \text{ROE} \\
 \downarrow \\
 \frac{\text{Net Income}}{\text{Total Equity}}
 \end{array}
 =
 \begin{array}{c}
 \text{Earns} \\
 \downarrow \\
 \frac{\text{Net Income}}{\text{Sales}}
 \end{array}
 \times
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 \text{Turns} \\
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 \frac{\text{Sales}}{\text{Total Assets}}
 \end{array}
 \times
 \begin{array}{c}
 \text{Leverage} \\
 \downarrow \\
 \frac{\text{Total Assets}}{\text{Total Equity}}
 \end{array}$$

Return on Assets
↑ Ratio More Debt
↓ Ratio Less Debt

$$\text{Assets} = \text{Debt} + \text{Equity}$$

The model shows that return on equity (ROE) for each asset or potential investment is determined by earns (net income divided by sales) multiplied by turns (sales divided by total assets) times leverage (total assets divided by total equity). Source: Brian Briggeman, Kansas State University

DuPont Model Simplifies Return on Equity

$$\text{ROE} = \text{Earns} \times \text{Turns} \times \text{Leverage}$$

Using the DuPont model, Examples 1a and 1b show before and after returns from an irrigation investment. Without irrigation, return on investment with 196 bu. corn at \$5.80 is 11.3%, or with 120 bu. corn at \$8 per bushel and federal crop insurance, it's 9.8%. These numbers are based on Purdue's 2013 Crop Cost & Return Estimates.

Example 1a: 196 bu. per acre corn at \$5.80 per bushel

$$\begin{aligned} \frac{\$215}{\$1,891} &= \frac{\$215}{\$1,137} \times \frac{\$1,137}{\$2,087} \times \frac{\$2,087}{\$1,891} = 0.113 \text{ or } 11.3\% \\ &= 18.9\% \times 54.5\% \times 110\% = 0.113 \text{ or } 11.3\% \end{aligned}$$

Example 1b: 120 bu. per acre corn at \$8 per bushel and insurance

$$\begin{aligned} \frac{\$186}{\$1,891} &= \frac{\$186}{\$1,104} \times \frac{\$1,104}{\$2,087} \times \frac{\$2,087}{\$1,891} = 0.098 \text{ or } 9.8\% \\ &= 16.8\% \times 52.9\% \times 110\% = 0.098 \text{ or } 9.8\% \end{aligned}$$

Return on equity with an irrigation investment that boosts yields from 120 bu. in Example 2 to 160 bu. per acre provides a return on equity of 14.7% assuming cash financing, using the variables in the example. This can be compared against other potential uses for capital.

Example 2: 120 bu. per acre corn at \$8 per bushel with insurance and a center pivot installed a year prior yields a 40 bu. per acre boost (160 bu. per acre)

$$\begin{aligned} \frac{\$278}{\$1,891} &= \frac{\$278}{\$1,200} \times \frac{\$1,200}{\$2,087} \times \frac{\$2,087}{\$1,891} = 0.147 \text{ or } 14.7\% \\ &= 23.2\% \times 57.5\% \times 110\% = 0.147 \text{ or } 14.7\% \end{aligned}$$

Management, Financial Management, Risk Management, Economy

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