

Ratio Analysis: Look Among the Numbers

by Dr. Paul Ellinger

Ratios are among the best-known and most widely used tools by agricultural lenders. Ratios enable a lender to make comparisons of a farm over time or to other farms with similar characteristics. When properly interpreted, ratios can expose relationships and conditions of a borrower that could not have been revealed by the assessment of the individual components of the ratio.

In 1919, the DuPont Company began to use an approach to analyze a firm by evaluating the interrelationships among many of the performance measures. Variations of their approach, termed DuPont analysis, are commonly used in evaluating the financial and operating performance of businesses.

Figure 1 illustrates the interaction among the profitability, leverage and asset utilization (asset turnover) ratios. It is important to examine a farm's rate of return on farm assets (ROA) in terms of profit margin and asset turnover. The profit margin measures the profit earned per dollar of gross revenue but does not consider the amount of assets used to generate the revenue.

A farm's rate of return on farm equity (ROE) is related to ROA through the interest-expense-to-average-asset ratio and a leverage ratio – the asset-to-equity ratio, often termed the equity multiplier. Thus, you can determine the impact of ROE of changes in leverage as well as changes in farm operations and efficiency.

For example, suppose farms A and B each have a 2 percent ROE. The components of the ratios indicate that the sources of the weaknesses of the farms are different (Table 1). Farmer A has a stronger profit margin ratio but lower asset turnover than Farmer B. Furthermore, Farmer A has a higher

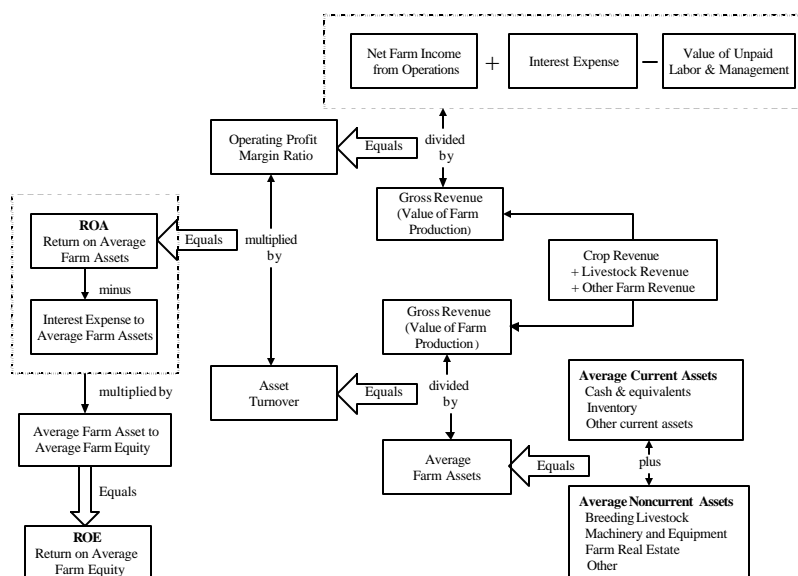
leverage ratio than Farmer B. The next step in the analysis would be to decompose the weak ratios for each farm into components and determine the potential sources of the weaknesses. To improve asset turnover, the farm must increase production efficiency or price levels or reduce current or noncurrent asset levels. To increase profit margins, the farm must increase production efficiency or price levels more than costs or reduce costs more than revenue.

Table 1. DuPont Analysis for Two Farms

	Farmer A	Farmer B
1. Operating profit margin ratio	0.30	0.12
2. Asset turnover	0.20	0.36
3. ROA (1x2)	0.060	0.043
4. Interest expense to average farm assets	0.05	0.03
5. Average farm assets to average farm equity	2.00	1.50
6. ROE (3-4) x 5	0.020	0.020

DuPont analysis is an excellent method to determine the strengths and weaknesses of a farm. A low or declining ROE is a signal that there may be a weakness. However, using DuPont analysis, you may be able to determine the source of the weakness. Asset management, expense control, production efficiency or marketing could be the potential weakness within the farm. Expressing the individual components rather than interpreting ROE itself, may identify these weaknesses more readily.

Figure 1 Du Pont Analysis for Farm Operations.



Paul Ellinger is an associate professor at the University of Illinois. He can be reached at 217/333-5503 pelling@uiuc.edu

Article originally appeared in Doane Agricultural Service *AgLender*.
Subscription inquiries: 314-569-2700
AgLender@doane.com