The Princeton Review®

CFA LEARNING OUTCOMES DECODED

In our series *Learning Outcomes Decoded* we break down a single Learning Outcome Statement (LOS) from the CFA level 1 curriculum. This article is written by John Mulcahy, CFA, a member of The Princeton Review team. John has taught CFA exam prep courses and has been a professor of finance at Hult International Business School.

FINANCIAL STATEMENT ANALYSIS: FINANCIAL ANALYSIS TECHNIQUES

LOS: Demonstrate the application of DuPont analysis of return on equity and calculate and interpret effects of changes in its components

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DuPont analysis breaks down a key ratio, Return on Equity, into its components to shed light on the strengths and weaknesses of a firm. Most textbooks, when explaining DuPont analysis, break ROE into three components. But we note that the CFA L1 reading extends the analysis further for a total of five ratios. Each of them adds to our understanding of the firm's performance. Let's step through the process.

Return on Equity (ROE):

$$\textit{Return on Equity} = \frac{\text{Net Income}}{\text{Average shareholder equity}}$$

ROE answers the question: How much value did I receive for my investment? That's fine, but it tells us *nothing* about *how* that performance was achieved. DuPont analysis helps us uncover the answers.

Suppose you are considering two companies in the same industry for a client's portfolio (all figures in thousands):

	Firm A	Firm B
Net Income	2,000	3,000
Sales Revenues	12,000	18,000
Interest Expense	0	200
Tax Expense	400	500
Average Total Assets	10,000	45,000
Average Total Debt	0	30,000
Average Shareholder Equity	10,000	15,000
Average Total Liabilities	10,000	45,000

The ROE measures for the two firms are the same:
ROE for Firm A = \$2,000/\$10,000 = **20.0%**; ROE for Firm B = \$3,000/\$15,000 = **20.0%**

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By this measure alone the investments are equally attractive. Let's take it further using DuPont analysis.

Step 1: Break ROE down to its three components

$$\text{ROE} = \text{Profitability factor} \times \text{Efficiency factor} \times \text{Leverage factor}$$

$$\frac{\text{Net Income}}{\text{Average Shareholder Equity}} = \frac{\text{Net Income}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Average Total Assets}} \times \frac{\text{Average Total Assets}}{\text{Average Shareholder Equity}}$$

$$\text{ROE}_A = \frac{\$2{,}000}{10{,}000} = \frac{2{,}000}{12{,}000} \times \frac{12{,}000}{10{,}000} \times \frac{10{,}000}{10{,}000} = 16.67\% \times 120.00\% \times 1.0 = 20.0\%$$

$$\text{ROE}_B = \frac{\$3{,}000}{15{,}000} = \frac{3{,}000}{18{,}000} \times \frac{18{,}000}{45{,}000} \times \frac{45{,}000}{15{,}000} = 16.67\% \times 40.00\% \times 3.0 = 20.0\%$$

Step 2: Compare each of the factors to uncover how each firm earned its 20% ROE

- We see that, with respect to profitability, the firms are even. Each brings 16.7% of every revenue dollar to net income.
- The efficiency measure shows a clear outperformance by Firm A. Its revenue is $1.20 per dollar of assets, while Firm B sells only $0.40 per dollar of assets.
- Regarding financial leverage, Firm A has none, thus its factor is 1.0. Firm B has a factor of 3.0. It relies heavily on leverage to achieve its 20% ROE.
- We have learned that Firm A is much more efficient in the use of its assets and that Firm A is much safer than Firm B in terms of financial risk.

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Step 3: Break down the profitability factor (net margin) to gain further insight

To measure the impact of taxes and interest, the net margin can be expressed as follows:

$$\frac{\text{Net Income}}{\text{Revenues}} = \frac{\text{Net Income}}{\text{Earnings Before Taxes}} \times \frac{\text{EBT}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Revenues}} = \text{Tax Burden} \times \text{Interest Burden} \times \text{EBIT Margin}$$

$$\text{Firm A} = \frac{2{,}000}{2{,}400} \times \frac{2{,}400}{2{,}400} \times \frac{2{,}400}{12{,}000} = 0.833 \text{ Tax Burden} \times 1.0 \text{ Interest Burden} \times 0.20 \text{ EBIT Margin} = 16.7\%$$

$$\text{Firm B} = \frac{3{,}000}{3{,}500} \times \frac{3{,}500}{3{,}700} \times \frac{3{,}700}{18{,}000} = 0.857 \text{ Tax Burden} \times 0.946 \text{ Interest Burden} \times 0.206 \text{ EBIT Margin} = 16.7\%$$

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PRACTICE QUESTION

The following information is provided for Jastro, Inc. and its peers (all figures in thousands):

	Jastro, Inc.	Peer Group Average
Net Income	1,500	1,350
Sales Revenues	20,000	16,000
Average Total Assets	13,000	10,000
Average Total Debt	6,000	2,000
Average Shareholders' Equity	7,000	8,000
Average Total Liabilities	13,000	10,000
Return on Equity	21.4%	16.9%

Using DuPont analysis, what is the primary driver of Jastro's higher ROE compared with its peer group?

A. Jastro's products are more profitable than those of its peer group.

B. Jastro's Return on Assets surpasses the ROA of its peer group.

C. Jastro's use of debt-financing is higher than that of its peer group.

C is correct. Jastro's leverage factor is: $\frac{\text{Avg Total Assets}}{\text{Avg Shareholders' Equity}} = \frac{13{,}000}{7{,}000} = 1.86$; its peer group's is 1.25.

A is incorrect. The profit margin on Jastro's products is below the peer group's profit margin.
B is incorrect. Jastro's ROA is less than the ROA of its peer-group.