RATIO ANALYSIS: DUPONT ANALYSIS

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DuPont Ratio Analysis Framework

Return on Equity (ROE)
Net Income / Avg. Shareholders' Equity

How much return is generated for the shareholders?

de-levered Net Income.

Return on Assets (ROA)
Net Income / Avg. Total Assets

X

Financial Leverage
Avg. Total Assets / Avg. Shareholders' Equity

How effectively are resources (assets) used to generate profits?

How much debt is used to increase total assets?

Return on Sales (ROS)
Net Income / Sales

X

Asset Turnover
Sales / Avg. Total Assets

ROE = Net Income/Sales x Sales/Assets x Assets/Equity

= Profitability x Efficiency x Leverage

How much profit is earned on each dollar of sales?

How much sales are generated using the available assets?

How much debt is used to increase total assets?

ROA and Leverage

- **Ideally, ROA would measure operating performance independent of the company's financing decisions**
- **But, the numerator of ROA, Net Income, includes Interest Expense**
  - **More leverage => higher Interest Expense => lower Net Income**
- **To truly remove all financing effects from ROA, we must de-lever Net Income**
- **ROA = De-Levered Net Income / Avg. Assets**
  - **De-levered Net Income = Net Income + (1-t) x Interest Expense**

	Woof Junction					
Ratio Analysis	2012	2013	2014	2015	**Avg**	
Return on Equity	27.0%	31.9%	36.1%	40.2%	**33.8%**	Return on Equity = Net Income / Avg. Stockholders' Equity
Return on Assets	16.6%	18.8%	21.5%	24.2%	**20.3%**	Return on Assets = De-levered Net Income / Avg. Total Assets
Financial Leverage	1.67	1.73	1.69	[illegible]	**1.69**	Financial Leverage = Avg. Total Assets / Avg. Stockholders' Equity
Correction Factor	0.98	0.98	1.00	0.99	**0.99**	Correction Factor = Net Income / De-levered Net Income
Return on Assets						
Return on Sales	6.1%	6.3%	7.5%	9.2%	**7.3%**	Return on Sales = De-levered Net Income / Sales
Asset turnover	2.74	2.99	2.85	2.62	**2.80**	Asset turnover = Sales / Avg. Total Assets

ROA Example

De-levering NI removes effects of capital structure:

			No debt	Some debt
Pretax, pre-interest income	300		300	
Interest expense		0		(50)
Pretax income		300		250
Taxes (35%)		(105)		(87.5)
Net income		195		162.5
De-levered Net Income	195		195 [162.5+50(1-.35)]	

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Quick note on finding comparison firms

- One approach is to look at standard classification schemes for industries
  - SIC Codes: https://www.osha.gov/pls/imis/sic_manual.html
  - NAICS Codes: http://www.census.gov/cgi-bin/sssd/naics/naicsrch?chart=2012
- Another approach is to look at who analysts and data services use as comparisons for the company
  - Analyst reports will often mention competitors
  - Google Finance (and others) give a list of “Related Companies”
  - Reuters gives Industry and Sector comparisons
- In the end, use your judgment on whether companies are competitors based on a detailed look at business and segments

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