

# Financial Statement Analysis – An Introduction to Ratio Analysis

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This material is inspired by Tom Taulli's new book  
*The EDGAR Online Guide to Financial Statement Analysis*

# Financial Analysis

- **Assessment of the firm's past, present and future financial conditions**
- **Done to find firm's financial strengths and weaknesses**
- **Primary Tools:**
  - **Financial Statements**
  - **Footnotes and Management Discussion and Analysis (MD&A) in filed SEC documents**
  - **Comparison of financial ratios to past, industry, and sector**



# Footnotes and MD&A

- **Every investor will benefit from reading and critically analyzing the Footnotes and MD&A of their portfolio company's SEC-filed documents**
- **If you read something that doesn't make sense to you (e.g. over-the-top revenue projections or an inordinate amount of potential lawsuit settlement liability), do three things - investigate, investigate and investigate**

# Sources of Data

- **Annual reports and other SEC-filed documents**
  - Via mail (if you're a shareholder) or go to the target company's website
- **Published collections of data**
  - e.g., Dun and Bradstreet or Robert Morris
- **Information sites on the web**
  - EDGAR Online ([www.edgaronlinepro.com](http://www.edgaronlinepro.com))

# The Basics: Major Balance Sheet Items

## Assets

- **Current assets:**
  - Cash & securities
  - Receivables
  - Inventories
- **Fixed assets:**
  - Tangible assets
  - Intangible assets

## Liabilities and Equity

- **Current liabilities:**
  - Accounts Payable
  - Short-term debt
- **Long-term (LT) liabilities**
- **Shareholders' equity**

# An Example: Dell Abbreviated Balance Sheet (2002)

- **Assets:**

– Current Assets:	\$8,924.00
– Non-Current Assets:	<u>\$6,546.00</u>
– Total Assets:	\$15,470.00

- **Liabilities:**

– Current Liabilities:	\$8,933.00
– LT Debt & Other LT Liab.:	\$1,664.00
– Equity:	<u>\$4,873.00</u>
– Total Liab. and Equity:	\$15,470.00

# The Basics: Major Income Statement Calculations

- **Gross Profit = Sales - Costs of Goods Sold**
- **EBITDA** (Earnings before Interest, Taxes, Depreciation and Amortization)  
**= Gross Profit - Cash Operating Expenses**
- **EBIT = EBITDA - Depreciation - Amortization**
- **EBT** (Earnings before Taxes) = **EBIT - Interest**
- **NI** (Net Income) = **EBT - Taxes**
- **Net Income is a primary determinant of the firm's cashflows and, thus, the value of the firm's shares**

# An Example: Dell

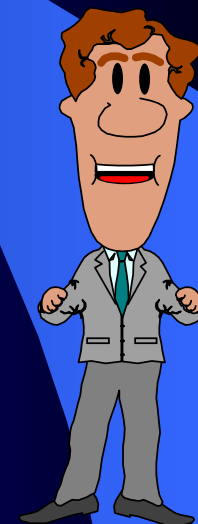
## Abbreviated Income Statement (2002)

Sales	\$35,404.00
Costs of Goods Sold	<u>-\$29,055.00</u>
Gross Profit	\$6,349.00
Cash Used in Operating Expenses	<u>-\$3,294.00</u>
EBITDA	\$3,055.00
Depreciation & Amortization	-\$211.00
Other Income (Net)	<u>+\$183.00</u>
EBIT	\$3,027.00
Interest	<u>-\$0.00</u>
EBT	\$3,027.00
Income Taxes	-\$905.00
Special Income/Charges	<u>\$0.00</u>
Net Income	\$2,122.00



# Objectives of Ratio Analysis

- **Standardize financial information for comparisons**
- **Evaluate current operations**
- **Compare current performance with past performance**
- **Compare performance against other firms or industry standards**
- **Study the efficiency of operations**
- **Study the risk of operations**



# Rationale Behind Ratio Analysis

- **Ratios**
  - **Measure relationships between resources and financial flows**
  - **Show ways in which firm's situation deviates from**
    - **Its own past**
    - **Other firms**
    - **The industry**
    - **All firms**

# Types of Ratios

- **Financial Ratios:**
  - **Liquidity Ratios**
    - Assess ability to cover current obligations
  - **Leverage Ratios**
    - Assess ability to cover long-term debt obligations
- **Operational Ratios:**
  - **Activity (Turnover) Ratios**
    - Assess amount of sales activity relative to amount of resources used
  - **Profitability Ratios**
    - Assess profits relative to amount of resources used
- **Valuation Ratios:**
  - Assess market price relative to assets or earnings



# Liquidity Ratio Examples: Dell

- **Current Ratio:**

$$\text{CurrentRatio} = \frac{\text{CurrentAssets}}{\text{CurrentLiabilities}} = \frac{\$8,924}{\$8,933} = .998$$

- **Quick (Acid Test) Ratio:**

$$\text{AcidTestRatio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}} = \frac{\$8,924 - \$391}{\$8,933} = .955$$

**\*Note:** These ratios, by themselves, may be misleading unless they are compared to the financial ratios of the past, the industry and the sector.

# Ratio Comparison: Current Ratio



# Profitability Ratio Examples: Dell

- Return on Assets (ROA):

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}} = \frac{\$ 2,122}{\$ 15,470} = 13.72\%$$

- Return on Equity (ROE):

$$\text{ROE} = \frac{\text{Net Income}}{\text{Total Common Equity}} = \frac{\$ 2,122}{\$ 4,873} = 43.55\%$$

# Profitability Ratio Examples: Dell

- **Net Profit Margin:**

$$\text{Net Profit Margin} = \frac{\text{EBIT}}{\text{Sales}} = \frac{\$3,207}{\$35,404} = 9.06\%$$

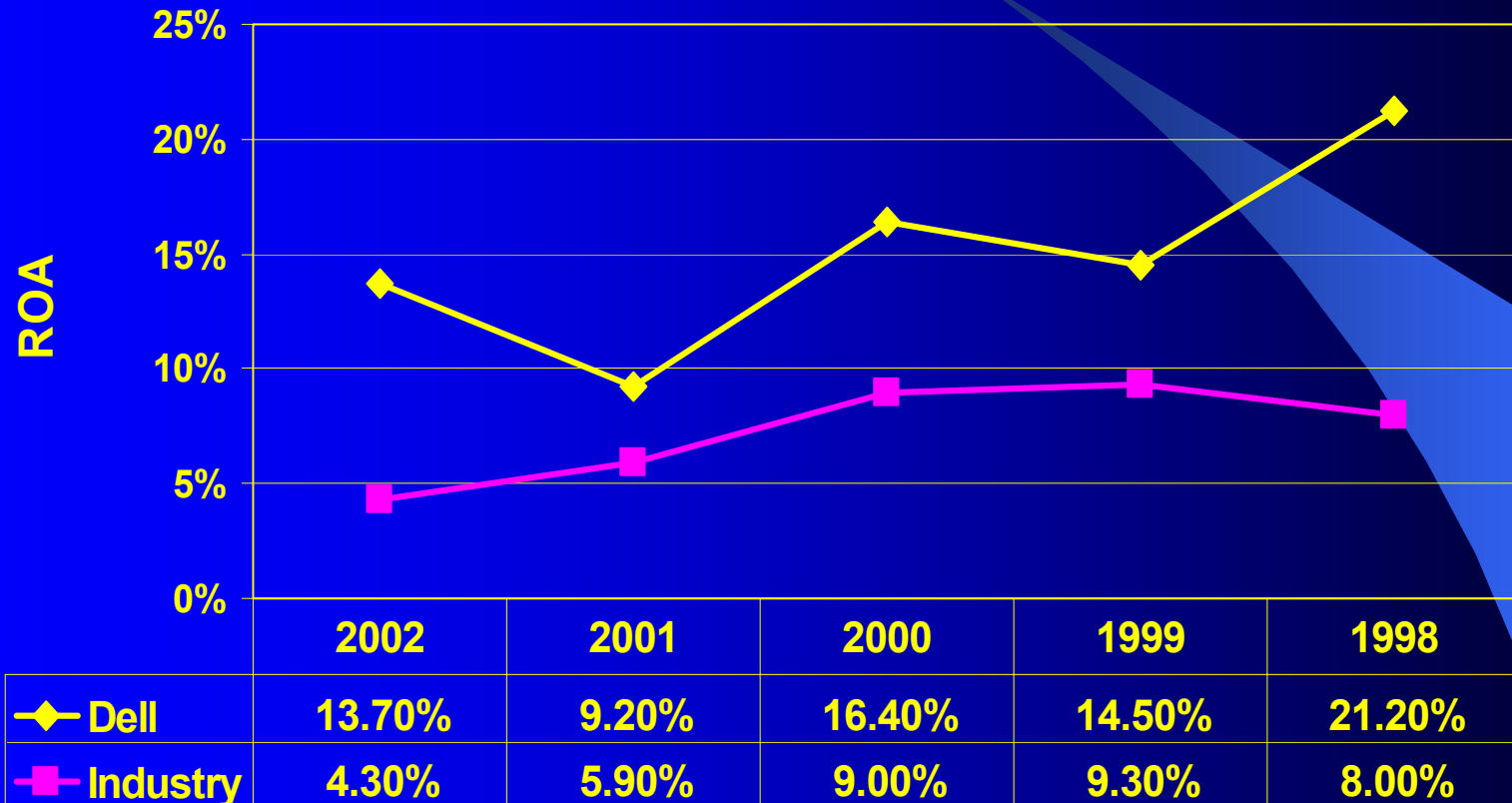
- **Remember that EBIT is earnings before subtracting interest expense and taxes, therefore this figure can give a good sense of a company's operational efficiency without regards to how the operations are financed (i.e. whether by debt or equity)**

# Ratio Comparison: ROE





# Ratio Comparison: ROA



# Ratio Comparison: Profit Margin



# Activity (Turnover) Ratio

## Examples: Dell

- **Total Asset Turnover Ratio:**

$$\text{Total Asset Turnover} : \frac{\text{Sales}}{\text{Total Assets}} = \frac{\$ 35,404}{\$ 15,470} = 2.29$$

- **Inventory Turnover Ratio:**

$$\text{Inventory Turnover} : \frac{\text{Sales}}{\text{Inventory}} = \frac{\$ 35,404}{\$ 306} = 115.7$$

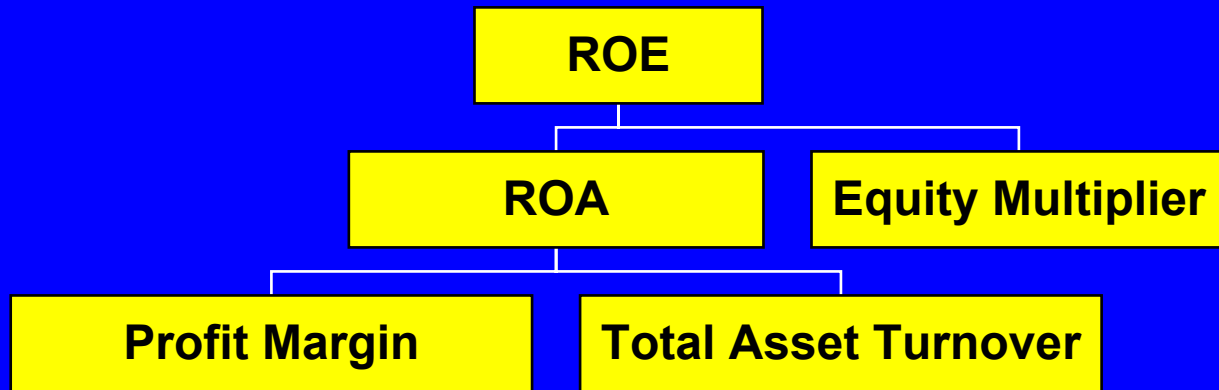
# Ratio Comparison: Asset Turnover



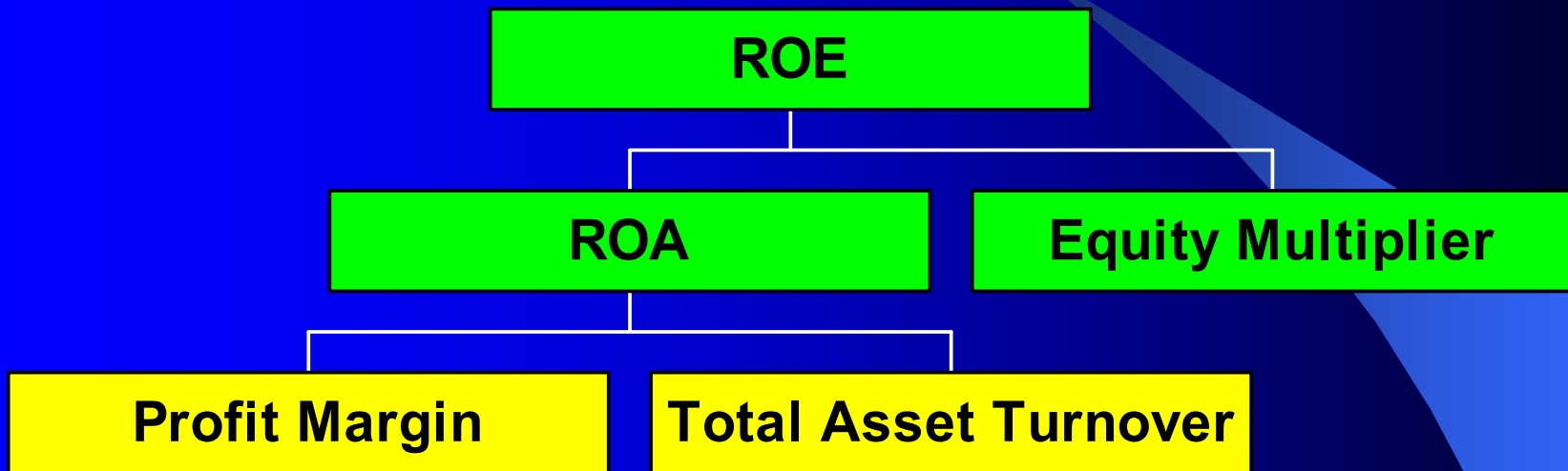
# The DuPont System

- **Method to breakdown ROE into:**
  - **Return on Assets (ROA) and Equity Multiplier**
- **ROA is further broken down as:**
  - **Profit Margin and Asset Turnover**
- **Helps to identify sources of strength and weakness in current performance**
- **Helps to focus attention on value drivers**

# The DuPont System

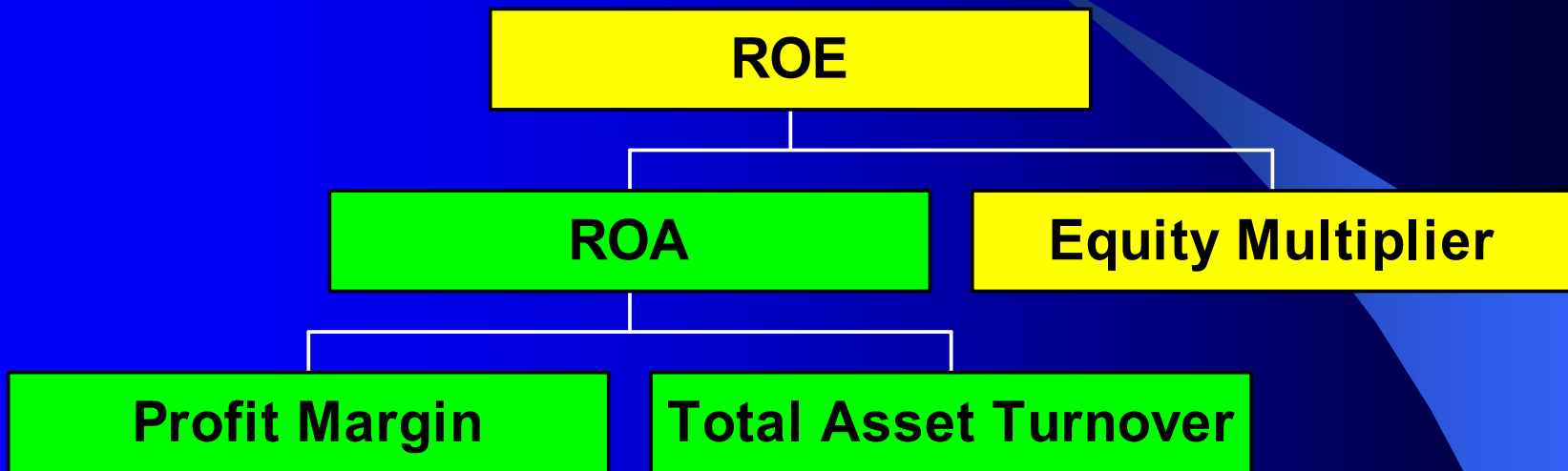


# The DuPont System



$$\begin{aligned} \text{ROE} &= \text{ROA} \times \text{Equity Multiplier} \\ &= \frac{\text{Net Income}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Common Equity}} \end{aligned}$$

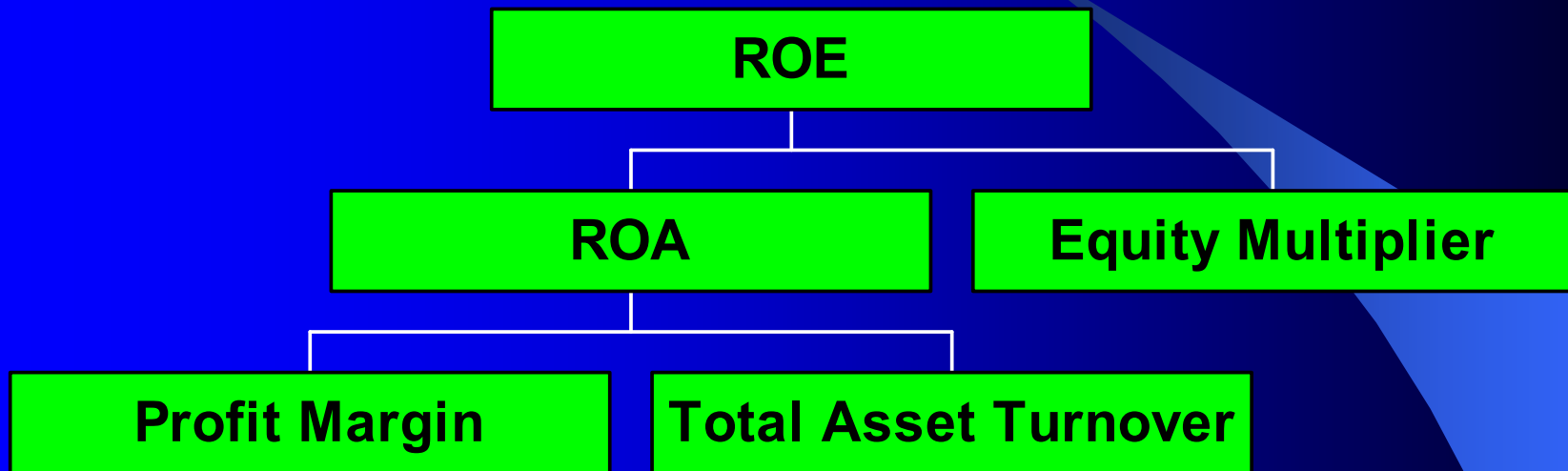
# The DuPont System



$$\begin{aligned} \text{ROA} &= \text{Profit Margin} \times \text{Total Asset Turnover} \\ &= \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \end{aligned}$$



# The DuPont System



$$\begin{aligned} \text{ROE} &= \text{Profit Margin} \times \text{Total Asset Turnover} \times \text{Equity Multiplier} \\ &= \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Common Equity}} \end{aligned}$$

# The DuPont System: Dell

$$\begin{aligned}\text{ROE} &= \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Common Equity}} \\ &= \text{Profit Margin} \times \text{Total Asset Turnover} \times \text{Equity Multiplier} \\ &= \text{ROA} \times \text{Equity Multiplier}\end{aligned}$$

$$\begin{aligned}\text{ROE} &= \frac{\$2,122}{\$35,404} \times \frac{\$35,404}{\$15,470} \times \frac{\$15,470}{\$4,873} \\ &= 0.0599 \times 2.288 \times 3.1746 \\ &= 0.0599 \times 7.2635 \\ &= 43.50\%\end{aligned}$$

# Summary of Financial Ratios

- **Ratios help to:**
  - Evaluate performance
  - Structure analysis
  - Show the connection between activities and performance
- **Benchmark with**
  - Past for the company
  - Industry
  - Sector
- **Ratios adjust for size differences**



# Limitations of Ratio Analysis

- A firm's industry category is often difficult to identify
- Published industry averages are only guidelines
- Accounting practices differ across firms
- Sometimes difficult to interpret deviations in ratios
- Industry ratios may not be desirable targets
- Seasonality affects ratios

