

## Limitations of Ratio Analysis

### Not Cash Flows or Market Values

Most involve only income statement or balance sheet

### Accounting Problems

Inflation/seasonal factors distort ratios

Different/changing accounting practices complicate interpretation/comparison

Window dressing

### Interpretation Requires Context

Ratio alone means little: compare with historical values, industry "norm" or firm's plans

### Issues with Industry Averages

Diversified firms: Which industry?

What's so special about the average, anyway?

### Ambiguity

What level is appropriate? To whom? Example: liquidity ratios

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## DuPont Model

### What determines shareholders' returns?

Control of expenses

Utilization of assets

Use of debt

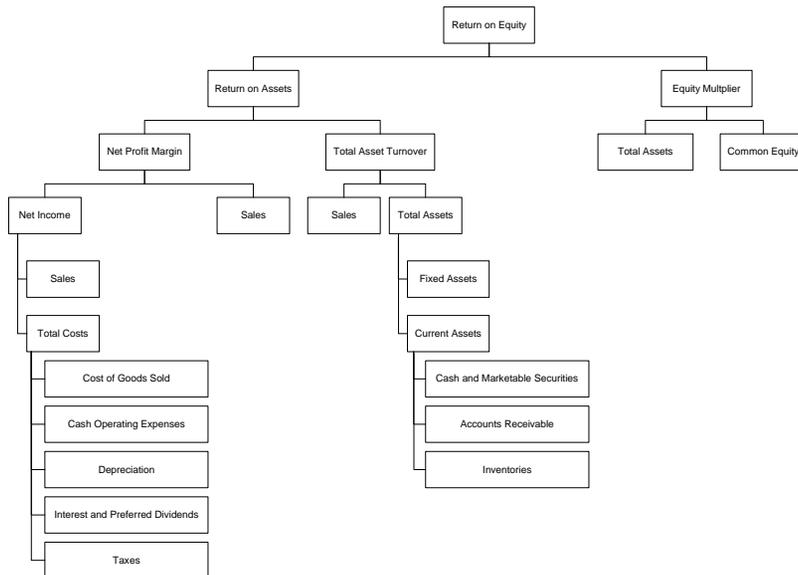
$$ROE = \frac{\text{Net Income}}{\text{Common Equity}}$$

$$= \underbrace{\frac{\text{Net Income}}{\text{Total Assets}}}_{ROA} \times \underbrace{\frac{\text{Total Assets}}{\text{Common Equity}}}_{\text{Equity Multiplier}}$$

$$= \underbrace{\frac{\text{Net Income}}{\text{Sales}}}_{\text{Net Profit Margin}} \times \underbrace{\frac{\text{Sales}}{\text{Total Assets}}}_{\text{Total Asset Turnover}} \times \underbrace{\frac{\text{Total Assets}}{\text{Common Equity}}}_{\text{Equity Multiplier}}$$

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## DuPont Model: Detail



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## Selected Ratios: Liquidity

### Firm's ability to meet current obligations

Of particular interest to lenders and suppliers (may conflict with shareholders' goals)

Units: times per year

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick or Acid Test Ratio} = \frac{\text{Current Assets} - \text{Inventories}}{\text{Current Liabilities}}$$

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## Selected Ratios: Asset Management

### How efficiently firm uses assets

Units: days or times per year

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$

$$\text{Fixed Asset Turnover} = \frac{\text{Sales}}{\text{Net Fixed Assets}}$$

$$\text{Inventory Turnover} = \frac{\text{CoGS (or Sales)}}{\text{Inventory}}$$

$$\text{Average Collection Period (ACP) or Days Sales Outstanding (DSO)} = \frac{\text{Accounts Receivable}}{\text{Daily (Credit) Sales}}$$

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## Selected Ratios: Debt Management (1)

### Leverage ratios

Use of "other people's money"

Financing, financial risk

Of interest to shareholders, creditors

Units: percent, proportion (e.g., 3:1)

$$\text{Debt Ratio} = \frac{\text{Total Debt}}{\text{Total Assets}}$$

$$\text{Debt-Equity Ratio} = \frac{\text{Long-term Debt}}{\text{Common Equity}}$$

$$\text{"Equity Multiplier"} = \frac{\text{Total Assets}}{\text{Common Equity}}$$

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## Selected Ratios: Profitability (1)

### Performance

Overall success of firm, shareholders

Of interest to shareholders, lenders

Units: percent

$$\text{Net Profit Margin (NPM)} = \frac{\text{Net Income}}{\text{Sales}}$$

$$\text{Return on Assets (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}}$$

$$\text{Return on Equity (ROE)} = \frac{\text{Net Income}}{\text{Common Equity}}$$

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## Selected Ratios: Profitability (Extensions)

### Performance

Overall success of firm, shareholders and other investors

Of interest to shareholders, lenders

Units: percent

$$\text{Basic Earning Power (BEP) or Operating Income Return on Investment (OIROI)} = \frac{\text{EBIT}}{\text{Total Assets}}$$

$$\text{ROE} = \text{BEP} + (\text{BEP} - \text{cost of debt}) \left( \frac{\text{Total Debt}}{\text{Common Equity}} \right)$$

$$\text{Return on Capital Employed (ROCE)} = \frac{\text{EBIT}(1 - T_C)}{\text{Debt} + \text{Equity}}$$

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## Selected Ratios: Market Value

Investors' view of firm's prospects

$$\begin{aligned}\text{Price/Earnings Ratio (P/E)} &= \frac{\text{Price per Share}}{\text{Earnings per Share}} \\ &= \frac{\text{Price per Share}}{\left( \frac{\text{Net Income}}{\text{Shares Outstanding}} \right)}\end{aligned}$$

$$\begin{aligned}\text{Market to Book Value Ratio} &= \frac{\text{Price per Share}}{\text{Book Value per Share}} \\ &= \frac{\text{Price per Share}}{\left( \frac{\text{Common Equity}}{\text{Shares Outstanding}} \right)}\end{aligned}$$