

Ch. 4 Analysis of Financial Statements



Topics

- Financial Ratios
- DuPont System
- Using Financial ratios

Financial Ratios



- **Financial Ratio Analysis:** Technique used to examine a company's financial statements.
 - Five areas
 - Profitability
 - Asset Management/Efficiency
 - Debt Management/Leverage
 - Liquidity
 - Market Value
- **Common size analysis:** Express a firm's I/S (and B/S) items in percentage of sales (and assets).
- **Percentage change analysis:** Focus on the growth rate of I/S and B/S items.

Profitability Ratios



Measures profit relative to revenue or an amount invested.

- Net profit margin
- Return on assets
- Return on equity
- Basic earning power

Profitability Ratios



$$\text{Net profit margin} = \frac{\text{net income}}{\text{sales}}$$

$$\text{Return on assets} = \frac{\text{net income}}{\text{total assets}}$$

$$\text{Return on equity} = \frac{\text{net income}}{\text{equity}}$$

$$\text{Basic earning power} = \frac{\text{EBIT}}{\text{total assets}}$$

Asset Management/Efficiency Ratios



Measures how effectively the business is using its assets.

- Total asset turnover
- Fixed asset turnover
- NWC turnover
- Inventory turnover
- Average collection period (Days sales outstanding)

Efficiency Ratios



$$\text{Total asset turnover ratio} = \frac{\text{sales}}{\text{total assets}}$$

$$\text{Fixed asset turnover ratio} = \frac{\text{sales}}{\text{net fixed assets}}$$

$$\text{NWC turnover ratio} = \frac{\text{sales}}{\text{net working capital}}$$

$$\text{Inventory turnover ratio} = \frac{\text{cost of goods sold}}{\text{inventory}}$$

$$\text{Average collection period} = \frac{\text{account receivables}}{(\text{annual sales}/365)}$$

Debt Management/Leverage Ratios



Measures the use of fixed cost financing.

- Total debt to total assets
- Debt to equity
- Coverage ratio (Times interest earned)
- Cash coverage ratio

Leverage Ratios



$$\text{Total debt ratio} = \frac{\text{total liabilities}}{\text{total assets}}$$

$$\text{Debt to equity ratio} = \frac{\text{total liabilities}}{\text{equity}}$$

$$\text{Times interest earned} = \frac{\text{EBIT}}{\text{interest payments}}$$

$$\text{Cash coverage ratio} = \frac{\text{EBIT} + \text{depreciation}}{\text{interest payments}}$$

Liquidity Ratios



Measure a firm's ability to pay its obligations.

- Current ratio
- Quick ratio - Acid test
- Cash ratio
- NWC to total assets ratio

Liquidity Ratios



$$\text{Current ratio} = \frac{\text{current assets}}{\text{current liab.}}$$

$$\begin{aligned} \text{Quick ratio} &= \frac{\text{current assets} - \text{inventories}}{\text{current liab.}} \\ &= \frac{\text{cash} + \text{marketable securities} + \text{receivables}}{\text{current liab.}} \end{aligned}$$

$$\text{Cash ratio} = \frac{\text{cash} + \text{marketable securities}}{\text{current liab.}}$$

$$\text{Net working capital to total assets ratio} = \frac{\text{net working capital}}{\text{total assets}}$$

Market Value Ratios



- P/E ratio
- Dividend yield
- Market-to-book ratio

Market Value Ratios



$$\text{PE Ratio} = \frac{\text{stock price}}{\text{earnings per share}}$$

$$\text{Dividend yield} = \frac{\text{dividend per share}}{\text{stock price}}$$

$$\text{Market to book} = \frac{\text{stock price}}{\text{book value of equity per share}}$$

Commonsize Analysis



- **Commonsize analysis**, also referred as **vertical analysis**, converts each item on balance sheet as a **percent of total assets**. For income statement, each item is shown as a **percent of sales**.
 - Commonsize analysis helps managers and investors to see how each item, relative to assets or sales, has changed over time.
 - It is also helpful when comparing firms with different sizes.

Percentage Change Analysis



- **Percentage change analysis**, also referred as **horizontal analysis**, computes the growth rate for each item over a period of time.
 - Percentage change analysis helps managers and investors to compare different growth rates for different items.
 - It also makes spotting long-term trends easier.

Two Period Example:

$$\text{Percentage change for sales}_t = \frac{\text{sales}_t - \text{sales}_{t-1}}{\text{sales}_{t-1}}$$

The DuPont System



- A breakdown of ROE and ROA into component ratios

$$\text{ROA} = \frac{\text{net income}}{\text{assets}}$$
$$\text{ROE} = \frac{\text{net income}}{\text{equity}}$$

The DuPont System



$$\text{ROA} = \frac{\text{sales}}{\text{assets}} \times \frac{\text{net income}}{\text{sales}}$$



The DuPont System



$$\text{ROE} = \frac{\text{assets}}{\text{equity}} \times \frac{\text{sales}}{\text{assets}} \times \frac{\text{net income}}{\text{sales}}$$



Financial Statement Analysis



Issues:

- Comparability: Industry, Benchmarking
- Interpretation and generalization
- Seasonal/cyclical data distortions and trend
- Accounting differences
- Window dressing
- Footnotes
- Inflation
