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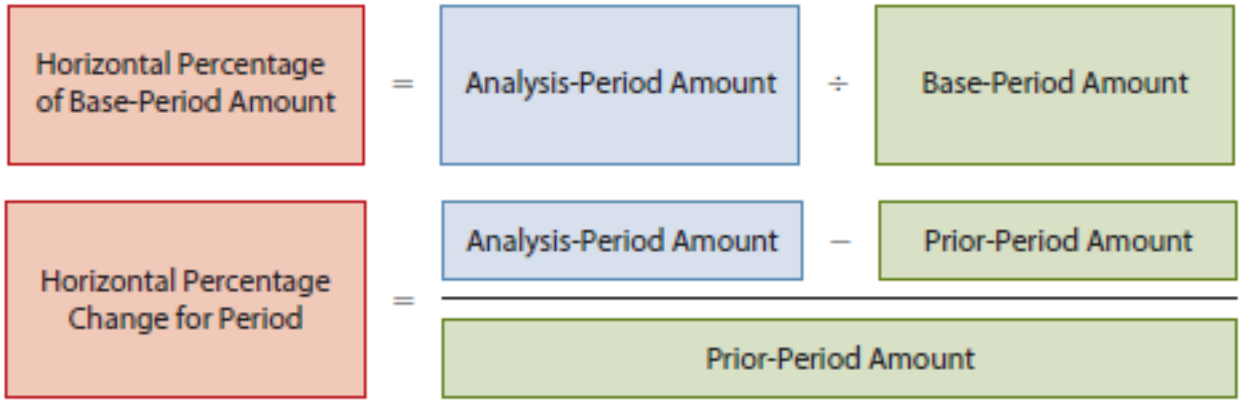
# Chapter 14- Performance Measurement

## Comparative Analysis

- Horizontal analysis (trend analysis)
  - A technique to determine the change over time
    - Percentage of base-period amount
    - Percentage change for the period
- Vertical Analysis (common size analysis)

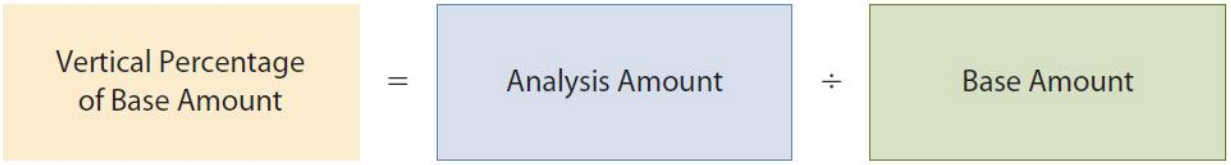
**Horizontal Analysis**




| | 2012 | 2011 | 2010 | 2009 |
|---|---|---|---|---|
| Net sales | $4,077.0 | $3,849.6 | $3,718.2 | $3,619.7 |
| % of base-year (2009) amount | 112.6% | 106.4% | 102.7% | 100.0% |
| % change for the year | 5.9% | 3.5% | 2.7% | – |

**Vertical Analysis**

Expresses each item in a financial statement as a percent of a base amount (total assets or net sales)




Three types of comparisons:
- Intracompany basis—comparisons ***within*** a company
- Intercompany basis—comparisons ***between*** one or more competitor companies
- Industry Averages

*Example*

Comparative data from the statement of financial position of a company are shown below. a) using horizontal analysis, calculate the percentage of the base year amount, using 2013 as he year. b) using vertical analysis calculate the percentage of the base year amount for each year

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| Current Assets | 1,530,000 | 1,175,000 | 1,225,000 |
| PPE | 3,130,000 | 2,800,000 | 2,850,000 |
| Goodwill | 90,000 | 10,000 | 0 |
| Total Assets | 4,750,000 | 4,075,000 | 4,075,000 |

a) 1,530,000/1,225,000
= 1.24
= 124%

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| **Current Assets** | 125% | 96% | 100% |
| **PPE** | 110% | 98% | 100% |
| **Goodwill** | | | |
| **Total Assets** | 117% | 100% | 100% |

| | 2015 | 2015 |
|---|---|---|
| | AMOUNT | PERCENTAGE |
| **Current Assets** | 1,530,000 | 32.2% |
| **PPE** | 3,130,000 | 65.9% |
| **Goodwill** | 90,000 | 1.9% |
| **Total Assets** | 4,750,000 | 100% |
| | **2014** | **2014** |
| **Current Assets** | 1,175,000 | 28.8% |
| **PPE** | 2,800,000 | 65.9% |
| **Goodwill** | 100,000 | 1.9% |
| **Total Assets** | 4,075,000 | 100% |
| | **2013** | **2013** |
| **Current Assets** | 1,225,000 | 30.1% |
| **PPE** | 2,850,000 | 69.9% |

| | 2015 | 2015 |
|---|---|---|
| **Goodwill** | | 0% |
| **Total Assets** | 4,075,000 | 100% |

## Ratio Analysis

1. **Liquidity Ratios**

- Measures *short-term ability* of the company to pay its maturing obligations and to meet unexpected needs for cash

2. **Solvency Ratios**

- Measures the ability of the company to survive *over a long period of time*

3. **Profitability Ratios**

- Measure the earnings or operating success of a company for a *given period of time*

## Liquidity Ratios

- Short-term lenders and other creditors such as bankers and suppliers are particularly interested in assessing liquidity.
- Main liquidity measures:
  1. Working capital
  2. Current ratio
  3. Cash current debt coverage
  4. Receivables turnover
  5. Average collection period
  6. Inventory turnover
  7. Days in inventory

### 1. Working Capital

- Measure of short term ability to pay obligations

$$\text{Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

- Positive working capital indicates the likelihood for paying current liabilities is favourable

### 2. Current ratio

- Measure of short term ability to pay obligations
- More dependable indicator of liquify than working capital

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

### 3. Cash current debt coverage

- Better indicator of liquidity because it uses cash provided (or used) by operating activities that covers a period of time, rather than current assets that represent a balance at a point in time.

$$\text{Cash Current Debt Coverage} = \frac{\text{Cash Provided (Used) by Operating Activities}}{\text{Average Current Liabilities}}$$

### 4. Receivables turnover

- The ratio measures the number of times, on average, that receivables are collected during the year.

$$\text{Receivables Turnover} = \frac{\text{Net Credit Sales}}{\text{Average Gross Receivables}}$$

### 5. Average collection period

$$\text{Average Collection Period} = \frac{\text{365 Days}}{\text{Receivables Turnover}}$$

### 6. Inventory turnover

- The ratio measures the number of times, on average, that inventory is sold during the period.

$$\text{Inventory Turnover} = \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

### 7. Days in inventory

- Indicates the average age of the inventory

$$\text{Days in Inventory} = \frac{\text{365 Days}}{\text{Inventory Turnover}}$$

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# Solvency Ratios

- Long-term creditors and shareholders are interested in a company's long-run solvency, particularly its ability to pay interest as it comes due and to repay the face value of debt at maturity.
- Main measures:

1. Debt to total assets
2. Times interest earned
3. Cash total debt coverage
4. Free cash flow

## 1. Debt to total assets

- Measures the percentage of assets financed by lenders and other creditors
- The higher the percentage of debt financing, the risker the business and the lower a company's solvency

$$\text{Debt to Total Assets} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

## 2. Times interest earned

- An indication of a company's ability to meet interest payments as they come due

$$\text{Times Interest Earned} = \frac{\text{Profit + Interest Expense + Income Tax Expense (EBIT)}}{\text{Interest Expense}}$$

## 3. Cash total debt coverage

- Indicates the company's ability to repay its liabilities from cash generated from operating activities (without having to liquidate productive assets).
- The higher the cash total debt coverage ratio is, the more solvent a company is.

$$\text{Cash Total Debt Coverage} = \frac{\text{Cash Provided (Used) by Operating Activities}}{\text{Average Total Liabilities}}$$

## 4. Free cash flow

- Describes the cash remaining from operating activites after adjusting for capital expenditures and dividends

$$\text{Net Cash Provided (Used) by Operating Activities} - \text{Net Capital Expenditures} - \text{Dividends Paid} = \text{Free Cash Flow}$$

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# Profitability Ratios

- Profitability ratios are important because a company's profits or lack of it, affects its ability to obtain debt and equity financing, its liquidity position, and its growth
- Creditors and investors are interested in evaluating profitability
- Profitability is frequently used as the ultimate test of management's operating effectiveness
- Common measures:

1. Return on common shareholders' equity
2. Return on assets
3. Profit margin
4. Asset turnover
5. Gross profit margin
6. Earnings per share (EPS)
7. Price-earnings (P-E) ratio
8. Payout ratio
9. Dividend yield

## 1. Return on common shareholders' equity

- Widely used ratio that measures profitability from the common shareholders' viewpoint
- Profits available to the common shareholders are profits less any preferred dividends

$$\text{Return on Common Shareholders' Equity} = \frac{\text{Profit} - \text{Preferred Dividends}}{\text{Average Common Shareholders' Equity*}}$$

## 2. Return on assets

- An overall measure of profitability
- The return on assets ratio indicates the amount of profit generated by each dollar invested in assets

$$\text{Return on Assets} = \frac{\text{Profit}}{\text{Average Total Assets}}$$

## 3. Profit margin

- A measure of how much the selling price covers all expenses (including cost of goods sold)
- Measures the percentage of each dollar of sales that results in profit

$$\text{Profit Margin} = \frac{\text{Profit}}{\text{Net Sales}}$$

**4. Asset turnover**

- Indicates how efficiently a company is able to generate sales with a given amount of assets, in other words, how many dollars of sales are generated by each dollar invested in assets

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

**5. Gross profit margin**

- Expressed as a percentage
- Indicates a company's ability to maintain an adequate selling price above its cost of goods sold

$$\text{Gross Profit Margin} = \frac{\text{Gross Profit}}{\text{Net Sales}}$$

**6. Earnings per share (EPS)**

- Measures the profit earned on each common share
- Provides a useful perspective for determining investment return

$$\text{Earnings Per Share} = \frac{\text{Profit} - \text{Preferred Dividends}}{\text{Weighted Average Number of Common Shares}}$$

**7. Price-earnings (P-E) ratio**

- Measures the ratio of the market price of each common share to its earnings per share
- Commonly known as a market measure because it uses a company's share price, which reflects the stock market's (investors') expectations for the company

$$\text{Price-Earnings Ratio} = \frac{\text{Share Price}}{\text{Earnings Per Share}}$$

**8. Payout ratio**

- Measures the percentage of profits distributed in the form of cash dividends to common shareholders

**9. Dividend yield**

- Reports a rate of return a shareholder earned from dividends during the year
- Also known as a market measure, because of the use of the stock market prince in its calculations

$$\text{Dividend Yield} = \frac{\text{Dividend per Share}}{\text{Market Price per Share}}$$

## Limitations of Financial Analysis

Can be impacted by:
1. Alternative accounting policies
2. Professional judgment
3. Comprehensive income
4. Diversification
5. Inflation
6. Economic factors

**1. Alternative accounting policies**

- Variations among companies in the application of GAAP may lessen the comparability to their statements
  - Companies may choose from a large number of acceptable accounting policies. Different choices result in differing financial positions, which again affect how easily their results can be compared
  - Although different accounting policies may be detectable from reading the notes to the financial statements, adjusting the data to compensate for differences is difficult, if not impossible

**2. Professional jugement**

- Management must use professional judgment in choosing the most appropriate accounting principle for the circumstance
  - Management's choice may be biased in favour of a presentation that furthers certain company objectives
  - Estimates are used in determining the allowance for uncollectible receivables, estimated useful lives and residual values for depreciation, and the fair values of certain investment securities and properties
  - To the extent that these estimates are inaccurate or biased, ratios and percentages that are based on such information will also be inaccurate or biased

**3. Comprehensive income**

- Most financial ratios exclude total comprehensive income, or other comprehensive income, form the analysis
- There are no standard ratio formulas incorporating comprehensive income

## 4. Diversification

- Diversification can limit the usefulness of financial analysis. Many companies are so diversified that they cannot be classified by industry
- Deciding what industry a company is in can actually be one of the main challenges to an effective evaluation of its results
  - Companies may appear to be comparable but are not
  - When companies have significant operations in different lines of business, they are required to report additional disclosures in a segmented information note to their financial statements. There are specific revenue, profit, and asset tests to determine if a company is required to report segmented information or not.

## 5. Inflation

- Our accounting information system does not adjust data for price-level changes
  - Comparisons are still relevant because data that has not been adjusted for inflation are being used consistently for both revenues and expenses, and for each period
  - In Canada, inflation is not very significant

## 6. Economic factors

- Economic measures such as the rate of interest, unemployment, and changes in demand and supply can have a significant impact on a company's performance
- One must use this information, along with non-financial information, to try to assess what changes related to the economic situation and what changes related to factors that management can, or should be able to, control.

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EXAMM

125 University Gym

100% MC
- 1 mark questions: 10
- 2 mark questions: 45

FOCSUS ON 8,9,10, 11,13,14

(indirectly tested on 1-6)

NOT CHAPTER 12