

Introduction to Finance

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MGM237

Lecture 4



Introduction To Finance

Lecture 4

MGM237 Financial Analysis
(Ratio analysis)

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Chapter

04

Ratio analysis





Chapter

4

Ratio analysis

Introduction to Financial Ratio Analysis

Identify Financial Ratio Classifications

Explain Liquidity Ratios.

Explain Profitability Analysis.

Explain solvency Analysis.

Introduction to Financial Ratio Analysis

Definition:

Financial Ratio Analysis is a **quantitative tool** used to evaluate the **relationships among various items** in a company's financial statements. By examining these ratios, stakeholders can gain valuable insights into different aspects of a company's **operational efficiency, liquidity, profitability, and solvency**.

This analysis involves comparing figures from the **balance sheet, income statement, and cash flow statement** to assess the overall financial performance and health of the organization.



Introduction to Financial Ratio Analysis

Purpose

The primary purpose of Financial Ratio Analysis is to **assess a company's performance and financial indicators** comprehensively. By distilling complex financial data into manageable ratios, it becomes easier to identify **trends**, **strengths**, and **weaknesses** within the business. This facilitates informed decision-making for various stakeholders.

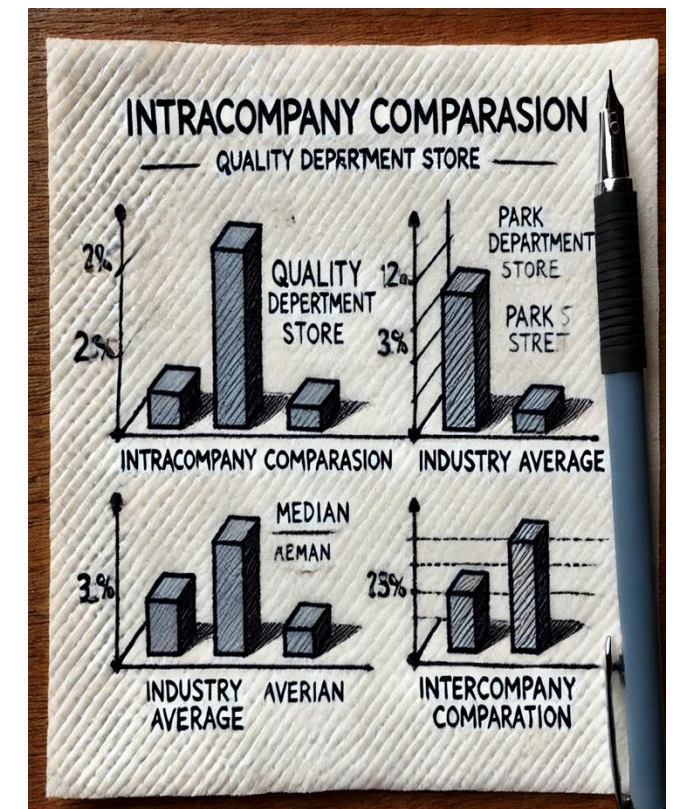


Ratio Analysis

A single ratio by itself is **not very meaningful**.

The discussion of ratios includes the following types of comparisons.

1. **Intracompany comparisons** for two years for Quality Department Store.
2. **Industry average comparisons** based on median ratios for department stores.
3. **Intercompany comparisons** based on **Park Street** as Quality Department Store's principal competitor.



Ratio Analysis

Ratio analysis expresses the relationship among selected items of financial statement data.

Financial Ratio Classifications

Liquidity

Measure's short-term ability of the company to pay its maturing obligations and to meet unexpected needs for cash.

Profitability

Measures the income or operating success of a company for a given period of time.

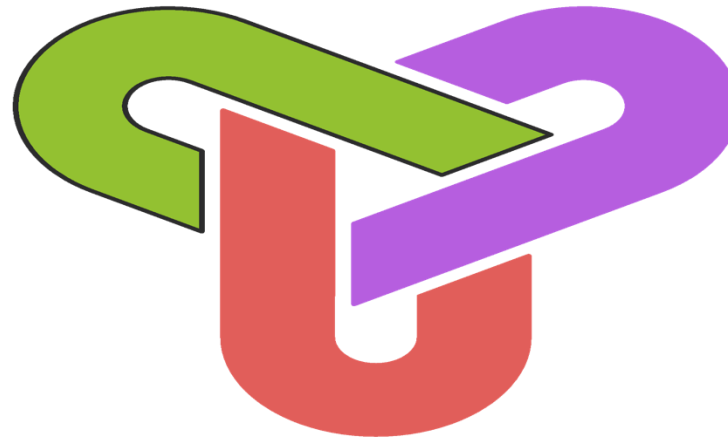
Solvency

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

Understanding Financial Ratio Analysis

Liquidity

stability
Assesses a
company's
ability to meet
short-term
obligations



Profitability

Measures a
company's ability
to generate profit

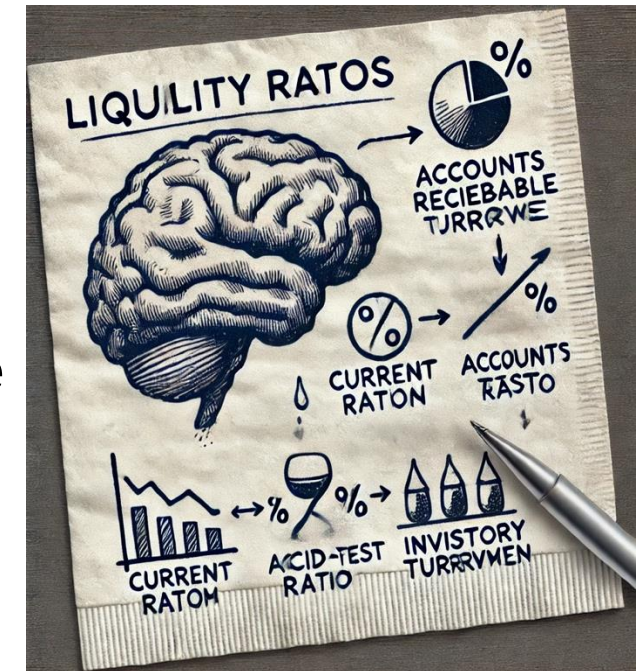
Solvency

Evaluates a
company's long-term
financial

Liquidity Ratios

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

- ◆ Short-term creditors such as bankers and suppliers are particularly interested in assessing liquidity.
- ◆ Ratios include the **current ratio**, the **acid-test ratio**, **accounts receivable turnover**, and **inventory turnover**.

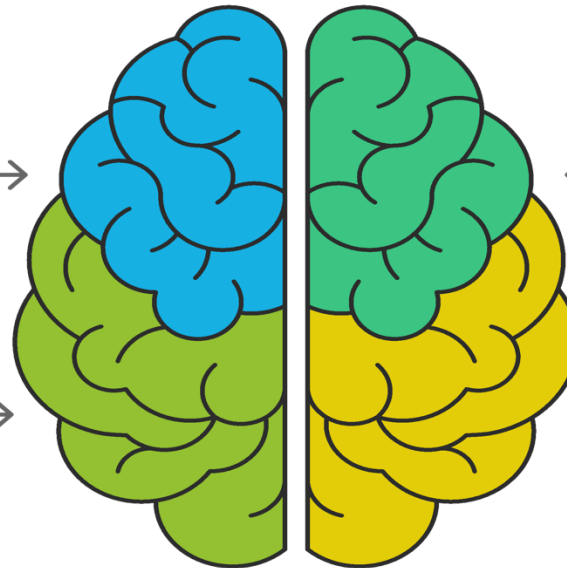


Understanding Liquidity Ratios

Current Ratio



**Accounts
Receivable
Turnover**



**Acid-Test
Ratio**



**Inventory
Turnover**

Liquidity Ratios

Current Ratio:

- **Purpose:** To evaluate a company's ability to meet its short-term obligations using its current assets.
- **Use:** The ratio is calculated as current assets divided by current liabilities. A higher current ratio indicates better liquidity, meaning the company can easily cover its short-term debts.

Acid-Test Ratio (Quick Ratio):

- **Purpose:** To assess the company's ability to meet its short-term liabilities without relying on inventory, which might take longer to convert into cash.
- **Use:** The ratio is calculated by dividing current assets (excluding inventory) by current liabilities. It provides a stricter test of liquidity compared to the current ratio.

Liquidity Ratios

Accounts Receivable Turnover:

- **Purpose:** To measure how efficiently a company collects cash from its credit sales.
- **Use:** This ratio is calculated by dividing net credit sales by the average accounts receivable. A higher turnover indicates that the company collects its receivables more quickly, which is a sign of efficient credit management.

Inventory Turnover:

- **Purpose:** To evaluate how efficiently a company manages its inventory and how quickly it sells through it.
- **Use:** The ratio is calculated by dividing the cost of goods sold by the average inventory. A higher turnover ratio suggests that inventory is being sold and replaced quickly, which can indicate strong sales or efficient inventory management.

QUALITY DEPARTMENT STORE Statement of Financial Position			QUALITY DEPARTMENT STORE Condensed Income Statements For the Years Ended December 31		
	2020	2019		2020	2019
Assets			Sales revenue	€2,195,000	€1,960,000
Intangible assets	€ 15,000	€ 17,500	Sales returns and allowances	98,000	123,000
Plant assets (net)	800,000	632,500	Net sales	2,097,000	1,837,000
Current assets	1,020,000	945,000	Cost of goods sold	1,281,000	1,140,000
Total assets	€1,835,000	€1,595,000	Gross profit	816,000	697,000
Equity			Selling expenses	253,000	211,500
Share capital—ordinary, €1 par	€ 275,400	€ 270,000	Administrative expenses	104,000	108,500
Retained earnings	727,600	525,000	Total operating expenses	357,000	320,000
Total equity	1,003,000	795,000	Income from operations	459,000	377,000
Liabilities			Other income and expense		
Non-current liabilities	€ 487,500	€ 497,000	Interest and dividends	9,000	11,000
Current liabilities	344,500	303,000	Interest expense	36,000	40,500
Total liabilities	832,000	800,000	Income before income taxes	432,000	347,500
			Income tax expense	168,200	139,000
			Net income	€ 263,800	€ 208,500

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

$$\frac{\text{€1,020,000}}{\text{€344,500}} = 2.96$$

Liquidity Ratios

1. CURRENT RATIO

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

Quality Department Store

$$\frac{\text{2020}}{\text{€1,020,000}} = \text{2.96:1}$$

$$\text{€344,500}$$

Industry average
1.70:1

$$\frac{\text{2019}}{\text{€945,000}} = \text{3.12:1}$$

$$\text{€303,000}$$

Park Street
2.05:1

Ratio of 2.96:1 means that for every euro of current liabilities, Quality has €2.96 of current assets.

Liquidity Ratios

2. ACID-TEST RATIO

Quality Department Store Statement of Financial Position (partial)		
	2020	2019
Current assets		
Prepaid expenses	€ 50,000	€ 40,000
Inventory	620,000	500,000
Accounts receivable (net*)	230,000	180,000
Short-term investments	20,000	70,000
Cash	100,000	155,000
Total current assets	<u>€1,020,000</u>	<u>€945,000</u>
*Allowance for doubtful accounts is €10,000 at the end of each year.		

QUALITY DEPARTMENT STORE
Statement of Financial Position

	2020	2019
Assets		
Intangible assets	€ 15,000	€ 17,500
Plant assets (net)	800,000	632,500
Current assets	1,020,000	945,000
Total assets	€1,835,000	€1,595,000
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	727,600	525,000
Total equity	1,003,000	795,000
Liabilities		

QUALITY DEPARTMENT STORE
Statement of Financial Position

	2020	2019
Current assets		
Prepaid expenses	€ 50,000	€ 40,000
Inventory	620,000	500,000
Accounts receivable (net*)	230,000	180,000
Short-term investments	20,000	70,000
Cash	100,000	155,000
Total current assets	€1,020,000	€945,000

*Allowance for doubtful accounts is €10,000 at the end of each year.

$$\text{Acid-Test Ratio} = \frac{\text{Cash} + \text{Short-Term Investments} + \text{Accounts Receivable (Net)}}{\text{Current Liabilities}}$$

$$\underline{\quad\quad\quad} + \underline{\quad\quad\quad} =$$

Ratio Analysis

Liquidity Ratios

2. ACID-TEST RATIO

$$\text{Acid-Test Ratio} = \frac{\text{Cash} + \text{Short-Term Investments} + \text{Accounts Receivable (Net)}}{\text{Current Liabilities}}$$

Quality Department Store			
<u>2020</u>		<u>2019</u>	
$\frac{€100,000 + €20,000 + €230,000}{€344,500}$	= 1.02:1	$\frac{€155,000 + €70,000 + €180,000}{€303,000}$	= 1.34:1
<u>Industry average</u>		<u>Park Street</u>	
0.70:1		1.05:1	

Acid-test ratio measures immediate liquidity.

QUALITY DEPARTMENT STORE
Statement of Financial Position

	2020	2019
Current assets		
Prepaid expenses	€ 50,000	€ 40,000
Inventory	620,000	500,000
Accounts receivable (net*)	230,000	180,000
Short-term investments	20,000	70,000
Cash	100,000	155,000
Total current assets	€1,020,000	€945,000

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QUALITY DEPARTMENT STORE
Condensed Income Statements
For the Years Ended December 31

	2020	2019
Sales revenue	€2,195,000	€1,960,000
Sales returns and allowances	98,000	123,000
Net sales	2,097,000	1,837,000
Cost of goods sold	1,281,000	1,140,000
Gross profit	816,000	697,000
Selling expenses	253,000	211,500
Administrative expenses	104,000	108,500
Total operating expenses	357,000	320,000
Income from operations	459,000	377,000
Other income and expense		
Interest and dividends	9,000	11,000

$$\text{Accounts Receivable Turnover} = \frac{\text{Net Credit Sales}}{\text{Average Net Accounts Receivable}}$$

$$\left[\frac{\text{Net Credit Sales}}{\text{Average Net Accounts Receivable}} \right] =$$

3. ACCOUNTS RECEIVABLE TURNOVER

$$\text{Accounts Receivable Turnover} = \frac{\text{Net Credit Sales}}{\text{Average Net Accounts Receivable}}$$

Quality Department Store

$$\frac{\frac{\text{€2,097,000}}{\left[\frac{\text{€180,000} + \text{€230,000}}{2} \right]}}{\text{Industry average}} = 10.2 \text{ times}$$

Industry average
46.4 times

$$\frac{\frac{\text{€1,837,000}}{\left[\frac{\text{€200,000} + \text{€180,000}}{2} \right]}}{\text{Park Street}} = 9.7 \text{ times}$$

Park Street
37.2 times

Measures the number of times, on average, the company collects receivables during the period.

3. ACCOUNTS RECEIVABLE TURNOVER

$$\frac{€2,097,000}{(€180,000 + €230,000) / 2} = 10.2 \text{ times}$$

A **variant** of the accounts receivable turnover ratio is to convert it to an **average collection period** in terms of days.

$$365 \text{ days} / 10.2 \text{ times} = \text{every } 35.78 \text{ days}$$

Accounts receivable are collected on average every 36 days.

QUALITY DEPARTMENT STORE
Statement of Financial Position

	2020	2019
Current assets		
Prepaid expenses	€ 50,000	€ 40,000
Inventory	620,000	500,000
Accounts receivable (net*)	230,000	180,000
Short-term investments	20,000	70,000
Cash	100,000	155,000
Total current assets	€1,020,000	€945,000

*Allowance for doubtful accounts is €10,000 at the end of each year.

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Condensed Income Statements
For the Years Ended December 31

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Total operating expenses	357,000	320,000
Income from operations	459,000	377,000
Other income and expense		
Interest and dividends	9,000	11,000
Interest expense	25,000	40,500

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

$$\left[\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} \right] = \text{Inventory Turnover}$$

4. INVENTORY TURNOVER

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

Quality Department Store

$$\frac{\begin{array}{c} \text{2020} \\ \hline \text{€1,281,000} \\ \hline \text{€500,000} + \text{€620,000} \\ \hline 2 \end{array}}{\text{Industry average}} = 2.3 \text{ times}$$

Industry average
4.3 times

$$\frac{\begin{array}{c} \text{2019} \\ \hline \text{€1,140,000} \\ \hline \text{€450,000} + \text{€500,000} \\ \hline 2 \end{array}}{\text{Park Street}} = 2.4 \text{ times}$$

Park Street
3.1 times

Measures the number of times, on average, the inventory is sold during the period.

4. INVENTORY TURNOVER

$$\frac{€1,281,000}{(€500,000 + €620,000) / 2} = 2.3 \text{ times}$$

A **variant** of inventory turnover is the **days in inventory**.

$$365 \text{ days} / 2.3 \text{ times} = \text{every } 159 \text{ days}$$

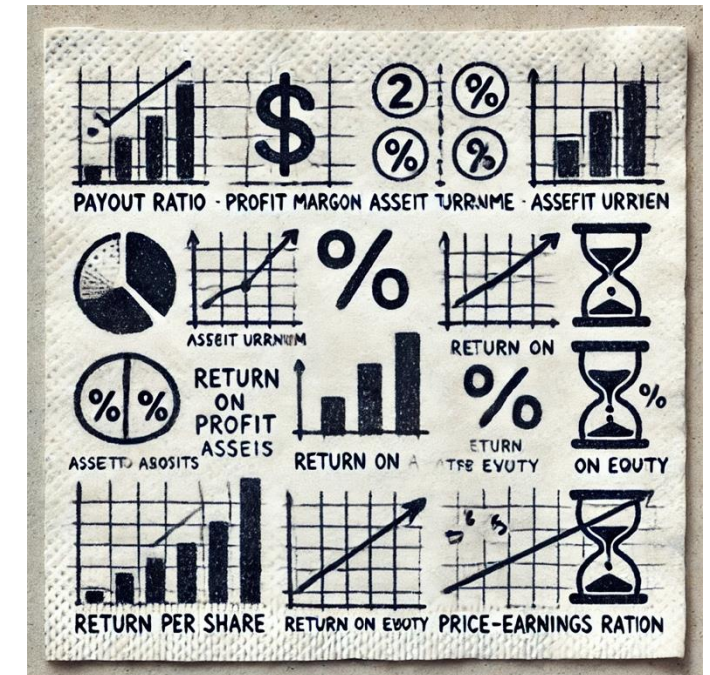
Inventory turnover ratios vary considerably among industries.

Profitability Ratios

Profitability Ratios

Measure the income or operating success of a company for a given period of time.

- ◆ Income affects the company's ability to obtain debt and equity financing, their liquidity position, and their ability to grow.
- ◆ Ratios include the **profit margin**, **asset turnover**, **return on assets**, **return on ordinary shareholders' equity**, **earnings per share**, **price-earnings ratio**, and **payout ratio**.





Profitability Ratios

Payout Ratio

Shows the proportion of earnings distributed as dividends.



Profit Margin

Measures the percentage of revenue that exceeds costs.



Price-Earnings Ratio

Compares a company's share price to its earnings per share.



Earnings per Share

Represents the portion of a company's profit allocated to each share.



Asset Turnover

Indicates how efficiently assets generate revenue.



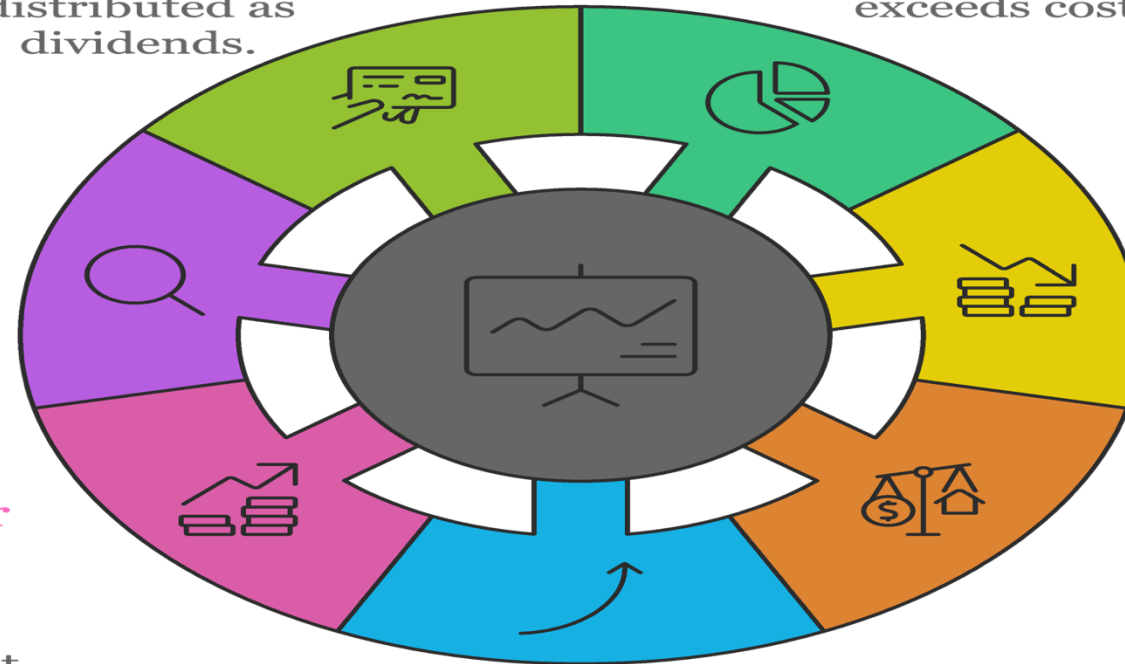
Return on Assets

Evaluates how effectively assets produce profit.



Return on Equity

Assesses returns generated on shareholders' equity.



Profitability Ratios

Profitability Ratios

Profit Margin:

- **Purpose:** To measure how much of a company's revenue is converted into profit.
- **Use:** The formula is net income divided by revenue. A higher profit margin indicates greater profitability. This ratio helps investors and managers assess the company's efficiency in controlling costs and generating profit from sales.

Asset Turnover:

- **Purpose:** To evaluate how efficiently a company uses its assets to generate sales.
- **Use:** It is calculated by dividing net sales by average total assets. A higher asset turnover ratio indicates that the company is effectively using its assets to drive revenue.

Profitability Ratios

Profitability Ratios

Return on Assets (ROA):

- **Purpose:** To assess how effectively a company is using its assets to generate profits.
- **Use:** This ratio is calculated as net income divided by average total assets. A higher ROA means that the company is generating more profit per dollar of assets, indicating operational efficiency.

Return on Ordinary Shareholders' Equity (ROE):

- **Purpose:** To measure the profitability relative to shareholders' equity.
- **Use:** ROE is calculated by dividing net income by shareholders' equity. It shows how effectively the company is generating profit with the money shareholders have invested. A higher ROE indicates more efficient use of equity capital.

Profitability Ratios

Profitability Ratios

Earnings Per Share (EPS):

- **Purpose:** To indicate the portion of a company's profit allocated to each outstanding share of common stock.
- **Use:** EPS is calculated as net income minus preferred dividends divided by the weighted average of shares outstanding. Investors use EPS to gauge profitability on a per-share basis, which influences the stock price.

Price-Earnings (P/E) Ratio:

- **Purpose:** To measure a company's stock price relative to its earnings.
- **Use:** This ratio is calculated by dividing the market price per share by earnings per share. A high P/E ratio indicates that investors are willing to pay more for each dollar of earnings, which could signal expectations of future growth or overvaluation.

Profitability Ratios

Payout Ratio:

- **Purpose:** To assess the proportion of earnings paid out as dividends to shareholders.
- **Use:** The payout ratio is calculated by dividing dividends per share by earnings per share. A higher payout ratio means a company is returning more earnings to shareholders in the form of dividends, while a lower ratio indicates more reinvestment back into the company.

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
Assets		
Intangible assets	€ 15,000	€ 17,500
Plant assets (net)	800,000	632,500
Current assets	1,020,000	945,000
Total assets	€1,835,000	€1,595,000
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	727,600	525,000
Total equity	1,003,000	795,000
Liabilities		

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

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For the Years Ended December 31

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Selling expenses	253,000	211,500
Administrative expenses	104,000	108,500
Total operating expenses	357,000	320,000
Income from operations	459,000	377,000
Other income and expense		
Interest and dividends	9,000	11,000
Interest expense	36,000	40,500
Income before income taxes	432,000	347,500
Income tax expense	168,200	139,000
Net income	€ 263,800	€ 208,500

5. PROFIT MARGIN

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

Quality Department Store

$$\frac{\text{2020}}{\text{€263,800}} = 12.6\%$$

$$\frac{\text{Industry average}}{8.0\%}$$

$$\frac{\text{2019}}{\text{€208,500}} = 11.4\%$$

$$\frac{\text{Park Street}}{1.4\%}$$

Measures the percentage of each euro of sales that results in net income.

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
Assets		
Intangible assets	€ 15,000	€ 17,500
Plant assets (net)	800,000	632,500
Current assets	1,020,000	945,000
Total assets	€1,835,000	€1,595,000
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
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Other income and expense		
Interest and dividends	9,000	11,000
Interest expense	36,000	40,500
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$$\text{Asset Turnover} = \frac{\text{Net Sales}}{\text{Average Total Assets}}$$

$$\left[\frac{\text{Net Sales}}{\text{Average Total Assets}} \right] =$$

6. ASSET TURNOVER

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

Quality Department Store

$$\frac{\frac{\text{€2,097,000}}{\left[\frac{\text{€1,595,000} + \text{€1,835,000}}{2} \right]}}{\text{Industry average}} = 1.2 \text{ times}$$

Industry average
1.4 times

$$\frac{\frac{\text{€1,837,000}}{\left[\frac{\text{€1,446,000} + \text{€1,595,000}}{2} \right]}}{\text{Park Street}} = 1.2 \text{ times}$$

Park Street
1.4 times

Measures how efficiently a company uses its assets to generate sales.

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
Assets		
Intangible assets	€ 15,000	€ 17,500
Plant assets (net)	800,000	632,500
Current assets	1,020,000	945,000
Total assets	€1,835,000	€1,595,000
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	727,600	525,000
Total equity	1,003,000	795,000

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

Total equity and
liabilities

€1,835,000

QUALITY DEPARTMENT STORE
Condensed Income Statements
For the Years Ended December 31

	2020	2019
Sales revenue	€2,195,000	€1,960,000
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Income tax expense	168,200	139,000
Net income	€ 263,800	€ 208,500

7. RETURN ON ASSETS

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

Quality Department Store

$$\frac{\begin{array}{c} \text{2020} \\ \hline \text{€263,800} \\ \hline \left[\frac{\text{€1,595,000} + \text{€1,835,000}}{2} \right] \end{array}}{\text{Industry average}} = 15.4\%$$

Industry average
8.9%

$$\frac{\begin{array}{c} \text{2019} \\ \hline \text{€208,500} \\ \hline \left[\frac{\text{€1,446,000} + \text{€1,595,000}}{2} \right] \end{array}}{\text{Park Street}} = 13.7\%$$

Park Street
2.4%

An overall measure of profitability.

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
Assets		
Intangible assets	€ 15,000	€ 17,500
Plant assets (net)	800,000	632,500
Current assets	<u>1,020,000</u>	<u>945,000</u>

**Return on Ordinary
Shareholders' Equity**

=

Net Income - Preference Dividends
Average Ordinary Shareholders' Equity

Liabilities		
Non-current liabilities	€ 487,500	€ 497,000
Current liabilities	<u>344,500</u>	<u>303,000</u>
Total liabilities	<u>832,000</u>	<u>800,000</u>
Total equity and liabilities	<u>€1,835,000</u>	<u>€1,595,000</u>

QUALITY DEPARTMENT STORE
Condensed Income Statements
For the Years Ended December 31

	2020	2019
Sales revenue	€2,195,000	€1,960,000
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Net sales	2,097,000	1,837,000
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Income from operations	432,000	377,000
Other income and expense		
Interest and dividends	9,000	11,000
Interest expense	<u>36,000</u>	<u>40,500</u>
Income before income taxes	432,000	347,500
Income tax expense	<u>168,200</u>	<u>139,000</u>
Net income	<u>€ 263,800</u>	<u>€ 208,500</u>

$$\frac{\text{Net Income} - \text{Preference Dividends}}{\text{Average Ordinary Shareholders' Equity}} = \text{Return on Ordinary Shareholders' Equity}$$

8. RETURN ON ORDINARY SHAREHOLDERS' EQUITY

$$\text{Return on Ordinary Shareholders' Equity} = \frac{\text{Net Income} - \text{Preference Dividends}}{\text{Average Ordinary Shareholders' Equity}}$$

Quality Department Store

$$\frac{\frac{\text{€263,800} - \text{€0}}{\frac{\text{€795,000} + \text{€1,003,000}}{2}}}{2} = 29.3\%$$

Industry average
18.3%

$$\frac{\frac{\text{€208,500} - \text{€0}}{\frac{\text{€667,000} + \text{€795,000}}{2}}}{2} = 28.5\%$$

Park Street
6.4%

Shows how many euros of net income the company earned for each euro invested by the owners.

Profitability Ratios

8. RETURN ON ORDINARY SHAREHOLDERS' EQUITY

With Preference Shares

- ◆ Deduct preferred dividend from net income.

$$\text{Return on Ordinary Shareholders' Equity} = \frac{\text{Net Income} - \text{Preference Dividends}}{\text{Average Ordinary Shareholders' Equity}}$$

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
--	------	------

**Earnings
per Share**

=

Net Income – Preference Dividends
Weighted-Average Ordinary Shares Outstanding

Equity

Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	727,600	525,000
Total equity	1,003,000	795,000

Liabilities

Non-current liabilities	€ 487,500	€ 497,000
Current liabilities	344,500	303,000
Total liabilities	832,000	800,000
Total equity and liabilities	€1,835,000	€1,595,000

QUALITY DEPARTMENT STORE
Condensed Income Statements
For the Years Ended December 31

	2020	2019
Sales revenue	€2,195,000	€1,960,000

Selling expenses	255,000	211,500
Administrative expenses	104,000	108,500
Total operating expenses	357,000	320,000
Income from operations	459,000	377,000
Other income and expense		
Interest and dividends	9,000	11,000
Interest expense	36,000	40,500
Income before income taxes	432,000	347,500
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Net income	€ 263,800	€ 208,500

9. EARNINGS PER SHARE (EPS)

$$\text{Earnings per Share} = \frac{\text{Net Income} - \text{Preference Dividends}}{\text{Weighted-Average Ordinary Shares Outstanding}}$$

Quality Department Store

$\frac{\begin{array}{c} \text{2020} \\ \hline \text{€263,800} - \text{€0} \\ \hline \left[\frac{270,000 + 275,400}{2} \right] \end{array}}{\quad} = \text{€0.97}$	$\frac{\begin{array}{c} \text{2019} \\ \hline \text{€208,500} - \text{€0} \\ \hline 270,000 \end{array}}{\quad} = \text{€0.77}$
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A measure of the net income earned on each ordinary share.

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
Assets		
Intangible assets	€ 15,000	€ 17,500
Plant assets (net)	800,000	632,500
Current assets	1,020,000	945,000
Total assets	€1,835,000	€1,595,000
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	727,600	525,000
Total equity	1,003,000	795,000

QUALITY DEPARTMENT STORE
Condensed Income Statements
For the Years Ended December 31

	2020	2019
Sales revenue	€2,195,000	€1,960,000
Sales returns and allowances	98,000	123,000
Net sales	2,097,000	1,837,000
Cost of goods sold	1,281,000	1,140,000
Gross profit	816,000	697,000
Selling expenses	253,000	211,500
Administrative expenses	104,000	108,500
Total operating expenses	357,000	320,000
Income from operations	459,000	377,000
Other income and expense		

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

$$\frac{\text{Market Price per Share}}{\text{Earnings per Share}} = \frac{\text{€1,835,000}}{\text{€1,595,000}}$$

10. PRICE-EARNINGS RATIO

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

Quality Department Store

$$\frac{\text{€12.00}}{\text{€0.97}} = 12.4 \text{ times}$$

Industry average
21.3 times

$$\frac{\text{€8.00}}{\text{€0.77}} = 10.4 \text{ times}$$

Park Street
17.2 times

Reflects investors' assessments of a company's future earnings.

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
Assets		
Intangible assets	€ 15,000	€ 17,500
Plant assets (net)	800,000	632,500
Current assets	1,020,000	945,000
Total assets	€1,835,000	€1,595,000
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	727,600	525,000
Total equity	1,003,000	795,000
Liabilities		

$$\text{Payout Ratio} = \frac{\text{Cash Dividends}}{\text{Net Income}}$$

QUALITY DEPARTMENT STORE
Condensed Income Statements
For the Years Ended December 31

	2020	2019
Sales revenue	€2,195,000	€1,960,000
Sales returns and allowances	98,000	123,000
Net sales	2,097,000	1,837,000
Cost of goods sold	1,281,000	1,140,000
Gross profit	816,000	697,000
Selling expenses	253,000	211,500
Administrative expenses	104,000	108,500
Total operating expenses	357,000	320,000
Income from operations	459,000	377,000
Other income and expense		
Interest and dividends	9,000	11,000
Interest expense	36,000	40,500
Income before income taxes	432,000	347,500
Income tax expense	168,200	139,000
Net income	€ 263,800	€ 208,500

$$\frac{\text{Cash Dividends}}{\text{Net Income}} = \text{Payout Ratio}$$

11. PAYOUT RATIO

$$\text{Payout Ratio} = \frac{\text{Cash Dividends Declared on Ordinary Shares}}{\text{Net Income}}$$

Quality Department Store

$$\frac{\text{2020}}{\text{€61,200}} = 23.2\%$$

$$\frac{\text{Industry average}}{\text{16.1\%}}$$

$$\frac{\text{2019}}{\text{€60,000}} = 28.8\%$$

$$\frac{\text{Park Street}}{\text{63.0\%}}$$

Measures the percentage of earnings distributed in the form of cash dividends.

Solvency Ratios

Solvency ratios measure the ability of a company to survive over a long period of time.

- ◆ **Debt to Assets** and
- ◆ **Times Interest Earned**

are two ratios that provide information about debt-paying ability.



Solvency Ratios

Debt to Assets Ratio:

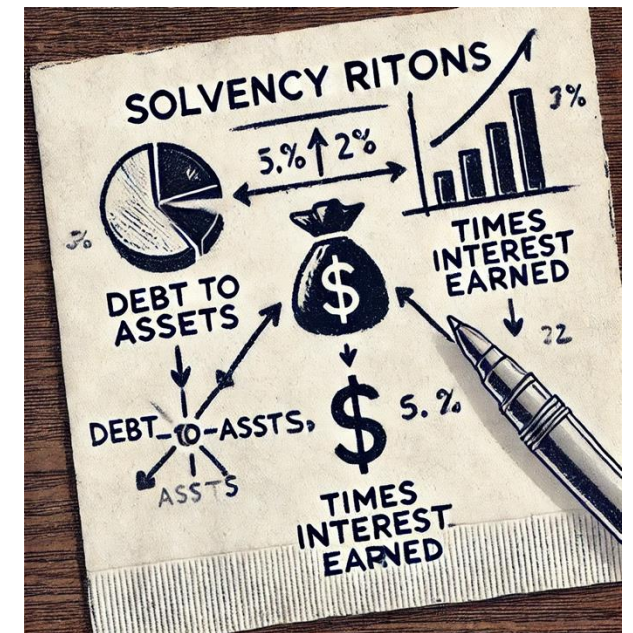
- **Purpose:** To assess the proportion of a company's assets that are financed by debt.
- A higher ratio indicates that a larger portion of the company's assets is funded by debt, which may suggest higher financial risk. Conversely, a lower ratio implies that the company is less reliant on debt to finance its assets, indicating a more conservative financial structure.



Solvency Ratios

Times Interest Earned (TIE):

- **Purpose:** To measure a company's ability to meet its interest obligations from its earnings before interest and taxes (EBIT).
- A higher TIE ratio indicates that the company is generating enough earnings to cover its interest payments multiple times over, suggesting lower risk of default on debt obligations. A lower ratio could indicate that the company might struggle to meet its interest obligations, which poses a financial risk.



QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
Assets		
Intangible assets	€ 15,000	€ 17,500
Plant assets (net)	800,000	632,500
Current assets	1,020,000	945,000
Total assets	<u>€1,835,000</u>	<u>€1,595,000</u>
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	727,600	525,000
Total equity	<u>1,003,000</u>	<u>795,000</u>
Liabilities		
Non-current liabilities	€ 487,500	€ 497,000
Current liabilities	344,500	303,000
Total liabilities	<u>832,000</u>	<u>800,000</u>
Total equity and liabilities	<u>€1,835,000</u>	<u>€1,595,000</u>

QUALITY DEPARTMENT STORE
Condensed Income Statements
For the Years Ended December 31

	2020	2019
Sales revenue	€2,195,000	€1,960,000
Sales returns and allowances	98,000	123,000
Net sales	2,097,000	1,837,000
Cost of goods sold	1,281,000	1,140,000
Gross profit	816,000	697,000
Selling expenses	253,000	211,500
Administrative expenses	104,000	108,500
Total operating expenses	357,000	320,000
Income from operations	459,000	377,000
Other income and expense		
Interest and dividends	9,000	11,000

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

1,003,000

=

1,835,000

12. DEBT TO TOTAL ASSETS RATIO

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

Quality Department Store

$$\frac{\text{2020}}{\text{€832,000}} = 45.3\%$$

$$\text{€1,835,000}$$

$$\frac{\text{Industry average}}{34.2\%}$$

$$\frac{\text{2019}}{\text{€800,000}} = 50.2\%$$

$$\text{€1,595,000}$$

$$\frac{\text{Park Street}}{62.0\%}$$

Measures the percentage of the total assets that creditors provide.

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	2020	2019
Assets		
Current assets	€ 15,000	€ 17,500
Property, plant, and equipment	1,835,000	1,595,000
Total assets	€1,850,000	€1,612,500

QUALITY DEPARTMENT STORE
Condensed Income Statements
For the Years Ended December 31

	2020	2019
Sales revenue	€2,195,000	€1,960,000
Sales returns and allowances	88,000	122,000
Net sales	€2,107,000	€1,838,000

$$\text{Times Interest Earned} = \frac{\text{Net Income} + \text{Interest Expense} + \text{Income Tax Expense}}{\text{Interest Expense}}$$

Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	727,600	525,000
Total equity	1,003,000	795,000
Liabilities		
Non-current liabilities	€ 487,500	€ 497,000
Current liabilities	344,500	303,000
Total liabilities	832,000	800,000
Total equity and liabilities	€1,835,000	€1,595,000

Interest Expense		
Selling expenses	200,000	211,000
Administrative expenses	104,000	108,500
Total operating expenses	357,000	320,000
Income from operations	459,000	377,000
Other income and expense		
Interest and dividends	9,000	11,000
Interest expense	36,000	40,500
Income before income taxes	432,000	347,500
Income tax expense	168,200	139,000
Net income	€ 263,800	€ 208,500

$$\frac{\text{Net Income} + \text{Interest Expense} + \text{Income Tax Expense}}{\text{Interest Expense}} = \text{Times Interest Earned}$$

13. TIMES INTEREST EARNED

$$\text{Times Interest Earned} = \frac{\text{Net Income} + \text{Interest Expense} + \text{Income Tax Expense}}{\text{Interest Expense}}$$

Quality Department Store	
2020	2019
$\frac{€263,800 + €36,000 + €168,200}{€36,000} = 13 \text{ times}$	$\frac{€208,500 + €40,500 + €139,000}{€40,500} = 9.6 \text{ times}$
<u>Industry average</u> 16.1 times	<u>Park Street</u> 2.9 times

Provides an indication of the company's ability to meet interest payments as they come due.

Alternative Terminology

Times interest earned is also called *interest coverage*.

Summary of Ratios

Ratio	Formula	Purpose or Use
Liquidity Ratios		
1. Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$	Measures short-term debt-paying ability.
2. Acid-test (quick) ratio	$\frac{\text{Cash} + \text{Short-term investments} + \text{Accounts receivable (net)}}{\text{Current liabilities}}$	Measures immediate short-term liquidity.
3. Accounts receivable turnover	$\frac{\text{Net credit sales}}{\text{Average net accounts receivable}}$	Measures liquidity of accounts receivable.
4. Inventory turnover	$\frac{\text{Cost of goods sold}}{\text{Average inventory}}$	Measures liquidity of inventory.
Profitability Ratios		
5. Profit margin	$\frac{\text{Net income}}{\text{Net sales}}$	Measures net income generated by each currency unit of sales.
6. Asset turnover	$\frac{\text{Net sales}}{\text{Average total assets}}$	Measures how efficiently assets are used to generate sales.

Summary of Ratios

Ratio	Formula	Purpose or Use
7. Return on assets	$\frac{\text{Net income}}{\text{Average total assets}}$	Measures overall profitability of assets.
8. Return on ordinary shareholders' equity	$\frac{\text{Net income} - \text{Preference dividends}}{\text{Average ordinary shareholders' equity}}$	Measures profitability of owners' investment.
9. Earnings per share (EPS)	$\frac{\text{Net income} - \text{Preference dividends}}{\text{Weighted-average ordinary shares outstanding}}$	Measures net income earned on each ordinary share.
10. Price-earnings (P-E) ratio	$\frac{\text{Market price per share}}{\text{Earnings per share}}$	Measures the ratio of the market price per share to earnings per share.
11. Payout ratio	$\frac{\text{Cash dividends declared on ordinary shares}}{\text{Net income}}$	Measures percentage of earnings distributed in the form of cash dividends.
Solvency Ratios		
12. Debt to assets ratio	$\frac{\text{Total liabilities}}{\text{Total assets}}$	Measures the percentage of total assets provided by creditors.
13. Times interest earned	$\frac{\text{Net income} + \text{Interest expense} + \text{Income tax expense}}{\text{Interest expense}}$	Measures ability to meet interest payments as they come due.



Thank You