

Financial Accounting

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MGM611

Lecture (7) Financial Analysis



Chapter Outline

Learning Objectives

- LO 1** Apply horizontal and vertical analysis to financial statements.
- LO 2** Analyze a company's performance using ratio analysis.
- LO 3** Apply the concept of sustainable income.

Basics of Financial Statement Analysis

Apply horizontal and vertical analysis to financial statements.

Characteristics

- ◆ Liquidity
- ◆ Profitability
- ◆ Solvency

Comparison Bases

- ◆ Intracompany
- ◆ Industry averages
- ◆ Intercompany

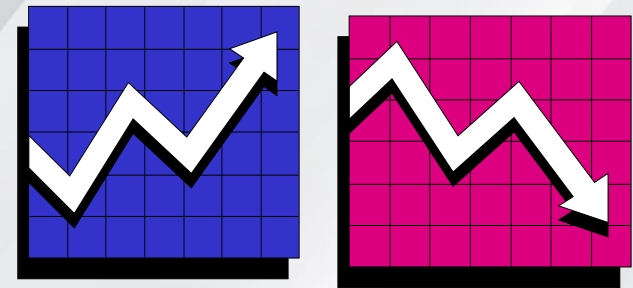
Tools of Analysis

- ◆ Horizontal
- ◆ Vertical
- ◆ Ratio

Horizontal Analysis

Horizontal analysis, also called **trend analysis**, is a technique for evaluating a series of financial statement data over a period of time.

- ◆ **Purpose** is to determine the increase or decrease.
- ◆ **Commonly applied to the**
 - ▶ statement of financial position,
 - ▶ income statement, and
 - ▶ statement of retained earnings.



Clover, Inc.
Comparative Balance Sheets
December 31,

	2007	2006	Dollar Change	Percent Change*
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	?	?
Accounts receivable, net	60,000	40,000		
Inventory	80,000	100,000		
Prepaid expenses	3,000	1,200		
Total current assets	\$ 155,000	\$ 164,700		
Property and equipment:				
Land	40,000	40,000		
Buildings and equipment, net	120,000	85,000		
Total property and equipment	\$ 160,000	\$ 125,000		
Total assets	\$ 315,000	\$ 289,700		

* Percent rounded to one decimal point.

Clover, Inc.
Comparative Balance Sheets
December 31,

	2007	2006	Dollar Change	Percent Change*
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	\$ (11,500)	?
Accounts receivable, net	60,000	40,000		
Inventory	80,000	100,000		
Prepaid expenses	3,000	1,200		
Total current assets				
Property and equipment:				
Land	40,000	40,000		
Buildings and equipment, net	120,000	85,000		
Total property and equipment	\$ 160,000	\$ 125,000		
Total assets	\$ 315,000	\$ 289,700		

$\$12,000 - \$23,500 = \$ (11,500)$



* Percent rounded to one decimal point.

Clover, Inc.
Comparative Balance Sheets
December 31,

	2007	2006	Dollar Change	Percent Change*
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	\$ (11,500)	-48.9%
Accounts receivable, net	60,000	40,000		
Inventory	80,000	100,000		
Prepaid expenses	2,000	1,200		
Total current assets	$(\$11,500 \div \$23,500) \times 100\% = 48.94\%$			
Property and equipment:				
Land	40,000	40,000		
Buildings and equipment, net	120,000	85,000		
Total property and equipment	\$ 160,000	\$ 125,000		
Total assets	\$ 315,000	\$ 289,700		

* Percent rounded to one decimal point.

**Complete the analysis
for the other assets.**

Clover, Inc.
Comparative Balance Sheets
December 31,

	2007	2006	Dollar Change	Percent Change*
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	\$ (11,500)	-48.9%
Accounts receivable, net	60,000	40,000	20,000	50.0%
Inventory	80,000	100,000	(20,000)	-20.0%
Prepaid expenses	3,000	1,200	1,800	150.0%
Total current assets	\$ 155,000	\$ 164,700	(9,700)	-5.9%
Property and equipment:				
Land	40,000	40,000	-	0.0%
Buildings and equipment, net	120,000	85,000	35,000	41.2%
Total property and equipment	\$ 160,000	\$ 125,000	35,000	28.0%
Total assets	\$ 315,000	\$ 289,700	\$ 25,300	8.7%

* Percent rounded to one decimal point.

Horizontal Analysis

Quality Department Store Condensed Statements of Financial Position December 31

	2020	2019	Increase or (Decrease) during 2020	
			Amount	Percent
Assets				
Intangible assets	€ 15,000	€ 17,500	€ (2,500)	(14.3%)
Plant assets (net)	800,000	632,500	167,500	26.5%
Current assets	1,020,000	945,000	75,000	7.9%
Total assets	<u>€1,835,000</u>	<u>€1,595,000</u>	<u>€240,000</u>	<u>15.0%</u>
Equity				
Share capital—ordinary, €1 par	€ 275,400	€ 270,000	€ 5,400	2.0%
Retained earnings	727,600	525,000	202,600	38.6%
Total equity	<u>1,003,000</u>	<u>795,000</u>	<u>208,000</u>	<u>26.2%</u>
Liabilities				
Non-current liabilities	€ 487,500	€ 497,000	€ (9,500)	(1.9%)
Current liabilities	344,500	303,000	41,500	13.7%
Total liabilities	<u>832,000</u>	<u>800,000</u>	<u>32,000</u>	<u>4.0%</u>
Total equity and liabilities	<u>€1,835,000</u>	<u>€1,595,000</u>	<u>€240,000</u>	<u>15.0%</u>

Illustration 18.5

Horizontal analysis of statements of financial position

Changes suggest that the company expanded its asset base during 2020 and financed this expansion primarily by retaining income rather than assuming additional long-term debt.

DO IT! 1 | Horizontal Analysis

Summary financial information for Rosepatch NV is as follows.

	<u>December 31, 2020</u>	<u>December 31, 2019</u>
Plant assets (net)	€756,000	€420,000
Current assets	<u>234,000</u>	<u>180,000</u>
Total assets	<u>€990,000</u>	<u>€600,000</u>

Compute the amount and percentage changes in 2020 using horizontal analysis, assuming 2019 is the base year.

Solution

	<u>Increase in 2020</u>	
	<u>Amount</u>	<u>Percent</u>
Plant assets (net)	€336,000	
Current assets	<u>54,000</u>	
Total assets	<u>€390,000</u>	

Vertical Analysis

Vertical analysis, also called **common-size analysis**, is a technique that expresses each financial statement item as a percent of a base amount (see Decision Tools).

- ◆ On an **income statement**, we might say that selling expenses are 16% of net sales.
- ◆ Vertical analysis is commonly applied to the
 - ▶ statement of financial position and
 - ▶ income statement.

Clover, inc.
Comparative Balance Sheets
December 31,

Complete the common-size analysis for the other assets.

**Common-size
Percents***

	2007	2006	2007	2006
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	3.8%	8.1%
Accounts receivable, net	60,000	40,000		
Inventory	80,000	100,000		
Prepaid expenses	2,000	1,200		
Total current assets				
Property and equipment:				
Land				
Buildings and equipment, net	120,000	85,000		
Total property and equipment	\$ 160,000	\$ 125,000		
Total assets	\$ 315,000	\$ 289,700	100.0%	100.0%

$$(\$12,000 \div \$315,000) \times 100\% = 3.8\%$$

$$(\$23,500 \div \$289,700) \times 100\% = 8.1\%$$

* Percent rounded to first decimal point.

Clover, Inc.
Comparative Balance Sheets
December 31,

			Common-size Percents*	
	2007	2006	2007	2006
Assets				
Current assets:				
Cash and equivalents	\$ 12,000	\$ 23,500	3.8%	8.1%
Accounts receivable, net	60,000	40,000	19.0%	13.8%
Inventory	80,000	100,000	25.4%	34.6%
Prepaid expenses	3,000	1,200	1.0%	0.4%
Total current assets	\$ 155,000	\$ 164,700	49.2%	56.9%
Property and equipment:				
Land	40,000	40,000	12.7%	13.8%
Buildings and equipment, net	120,000	85,000	38.1%	29.3%
Total property and equipment	\$ 160,000	\$ 125,000	50.8%	43.1%
Total assets	\$ 315,000	\$ 289,700	100.0%	100.0%

*** Percent rounded to first decimal point.**

Clover, Inc.
Comparative Balance Sheets
December 31,

			Common-size Percents*	
	2007	2006	2007	2006
Liabilities and Shareholders' Equity				
Current liabilities:				
Accounts payable	\$ 67,000	\$ 44,000	21.3%	15.2%
Notes payable	3,000	6,000	1.0%	2.1%
Total current liabilities	\$ 70,000	\$ 50,000	22.3%	17.3%
Long-term liabilities:				
Bonds payable, 8%	75,000	80,000	23.8%	27.6%
Total liabilities	\$ 145,000	\$ 130,000	46.1%	44.9%
Shareholders' equity:				
Preferred stock	20,000	20,000	6.3%	6.9%
Common stock	60,000	60,000	19.0%	20.7%
Additional paid-in capital	10,000	10,000	3.2%	3.5%
Total paid-in capital	\$ 90,000	\$ 90,000	28.5%	31.1%
Retained earnings	80,000	69,700	25.4%	24.0%
Total shareholders' equity	\$ 170,000	\$ 159,700	53.9%	55.1%
Total liabilities and shareholders' equity	\$ 315,000	\$ 289,700	100.0%	100.0%

* Percent rounded to first decimal point.

Clover, Inc.
Comparative Income Statements
For the Years Ended December 31,

			Common-size Percents*	
	2007	2006	2007	2006
Revenues	\$ 520,000	\$ 480,000	100.0%	100.0%
Costs and expenses:				
Cost of sales	360,000	315,000	69.2%	65.6%
Selling and admin.	128,600	126,000	24.7%	26.3%
Interest expense	6,400	7,000	1.2%	1.5%
Income before taxes	\$ 25,000	\$ 32,000	4.8%	6.7%
Income taxes (30%)	7,500	9,600	1.4%	2.0%
Net income	\$ 17,500	\$ 22,400	3.4%	4.7%
Net income per share	\$ 0.79	\$ 1.01		
Avg. # common shares	22,200	22,200		

*** Rounded to first decimal point.**

Ratio Analysis

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

Financial Ratio Classifications



Liquidity

Measures 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.

Ratio Analysis

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**.

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

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

$$\underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Ratio Analysis

Liquidity Ratios

1. CURRENT RATIO

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

Quality Department Store

$$\frac{\text{2020}}{\text{€1,020,000}} = \frac{\text{€344,500}}{\text{2.96:1}}$$

$$\frac{\text{Industry average}}{\text{1.70:1}}$$

$$\frac{\text{2019}}{\text{€945,000}} = \frac{\text{€303,000}}{\text{3.12:1}}$$

$$\frac{\text{Park Street}}{\text{2.05:1}}$$

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

Ratio Analysis

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	<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		

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	<u>€1,020,000</u>	<u>€945,000</u>

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

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

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

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

2020

$$\frac{€100,000 + €20,000 + €230,000}{€344,500} = 1.02:1$$

Industry average

0.70:1

2019

$$\frac{€155,000 + €70,000 + €180,000}{€303,000} = 1.34:1$$

Park Street

1.05:1

Acid-test ratio measures immediate liquidity.

QUALITY DEPARTMENT STORE
Statement of Financial Position

	<u>2020</u>	<u>2019</u>
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
Condensed Income Statements
For the Years Ended December 31

	<u>2020</u>	<u>2019</u>
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

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

=

Ratio Analysis

Liquidity Ratios

3. ACCOUNTS RECEIVABLE TURNOVER

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

Quality Department Store

2020

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

Industry average
46.4 times

2019

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

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.

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
Total other income and expense	9,000	11,000
Net income	468,000	388,000

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

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

Ratio Analysis

Liquidity Ratios

4. INVENTORY TURNOVER

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

Quality Department Store

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

Industry average
4.3 times

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

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.

Ratio Analysis

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.**

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	<u>2020</u>	<u>2019</u>
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		

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

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

	<u>2020</u>	<u>2019</u>
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	<u>€ 263,800</u>	<u>€ 208,500</u>

Ratio Analysis

Profitability Ratios

5. PROFIT MARGIN

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

Quality Department Store

$$\frac{\text{2020}}{\frac{€263,800}{€2,097,000}} = 12.6\%$$

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

$$\frac{\text{2019}}{\frac{€208,500}{€1,837,000}} = 11.4\%$$

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

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

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	<u>2020</u>	<u>2019</u>
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>
Total assets	<u>€1,835,000</u>	<u>€1,595,000</u>
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	<u>727,600</u>	<u>525,000</u>
Total equity	<u>1,003,000</u>	<u>795,000</u>
Liabilities		

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

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

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

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

Ratio Analysis

Profitability Ratios

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

	<u>2020</u>	<u>2019</u>
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>
Total assets	<u>€1,835,000</u>	<u>€1,595,000</u>
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	<u>727,600</u>	<u>525,000</u>
Total equity	<u>1,003,000</u>	<u>795,000</u>

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

Total equity and
liabilities

€1,003,000

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

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

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

Ratio Analysis

Profitability Ratios

7. RETURN ON ASSETS

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

Quality Department Store

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

Industry average
8.9%

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

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>

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	<u>98,000</u>	<u>123,000</u>
Net sales	2,097,000	1,837,000
Cost of goods sold	<u>1,281,000</u>	<u>1,140,000</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>

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>

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

Ratio Analysis

Profitability Ratios

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.

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

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

2020 2019

Sales revenue €2,195,000 €1,960,000

**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

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
Income tax expense	168,200	139,000
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

$\frac{\frac{\text{€263,800} - \text{€0}}{270,000 + 275,400}}{2} = \text{€0.97}$	$\frac{\text{€208,500} - \text{€0}}{270,000} = \text{€0.77}$
2020	2019

A measure of the net income earned on each ordinary share.

QUALITY DEPARTMENT STORE
Condensed Statements of Financial Position

	<u>2020</u>	<u>2019</u>
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>
Total assets	<u>€1,835,000</u>	<u>€1,595,000</u>
Equity		
Share capital—ordinary, €1 par	€ 275,400	€ 270,000
Retained earnings	<u>727,600</u>	<u>525,000</u>
Total equity	<u>1,003,000</u>	<u>795,000</u>

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

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

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



10. PRICE-EARNINGS RATIO

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

Quality Department Store	
<u>2020</u>	<u>2019</u>
$\frac{€12.00}{€0.97} = 12.4 \text{ times}$	$\frac{€8.00}{€0.77} = 10.4 \text{ times}$
<u>Industry average</u>	<u>Park Street</u>
21.3 times	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	<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		

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

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	<u>€ 263,800</u>	<u>€ 208,500</u>

Ratio Analysis

Profitability Ratios

11. PAYOUT RATIO

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

Quality Department Store

$$\frac{\text{2020}}{\text{€61,200}} = \frac{\text{€263,800}}{\text{€263,800}} = 23.2\%$$

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

$$\frac{\text{2019}}{\text{€60,000}} = \frac{\text{€208,500}}{\text{€208,500}} = 28.8\%$$

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

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

Ratio Analysis

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.

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

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

12. DEBT TO TOTAL ASSETS RATIO

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

Quality Department Store

$$\frac{\text{2020}}{\frac{€832,000}{€1,835,000}} = 45.3\%$$

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

$$\frac{\text{2019}}{\frac{€800,000}{€1,595,000}} = 50.2\%$$

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

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	1,000,000	800,000
Intangible assets	100,000	100,000
Total assets	1,115,000	917,500
Liabilities		
Current liabilities	344,500	303,000
Non-current liabilities	487,500	497,000
Total liabilities	832,000	800,000
Equity		
Share capital—ordinary, €1 par	275,400	270,000
Retained earnings	727,600	525,000
Total equity	1,003,000	795,000
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
Sales returns and allowances	98,000	122,000
Cost of goods sold	1,000,000	850,000
Gross profit	1,097,000	966,000
Operating expenses	258,000	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

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

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

Operating expenses	258,000	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

_____ = _____

Ratio Analysis

Solvency Ratios

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

$$\frac{€263,800 + €36,000 + €168,200}{€36,000} = 13 \text{ times}$$

Industry average

16.1 times

2019

$$\frac{€208,500 + €40,500 + €139,000}{€40,500} = 9.6 \text{ times}$$

Park Street

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*.

Ratio Analysis

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