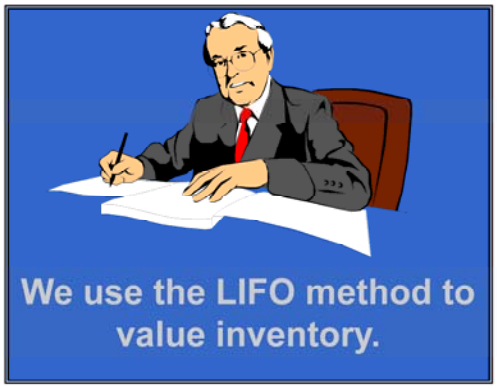
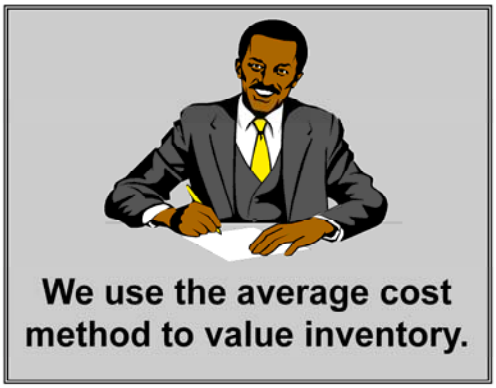
Financial Statement Analysis

This chapter focuses upon financial statement analysis which is used to assess the financial health of a company. It includes **examining trends in key financial data**, **comparing financial data across companies**, and **analyzing financial ratios**.

Limitations of Financial Statement Analysis

Differences in accounting methods between companies sometimes make comparisons difficult.



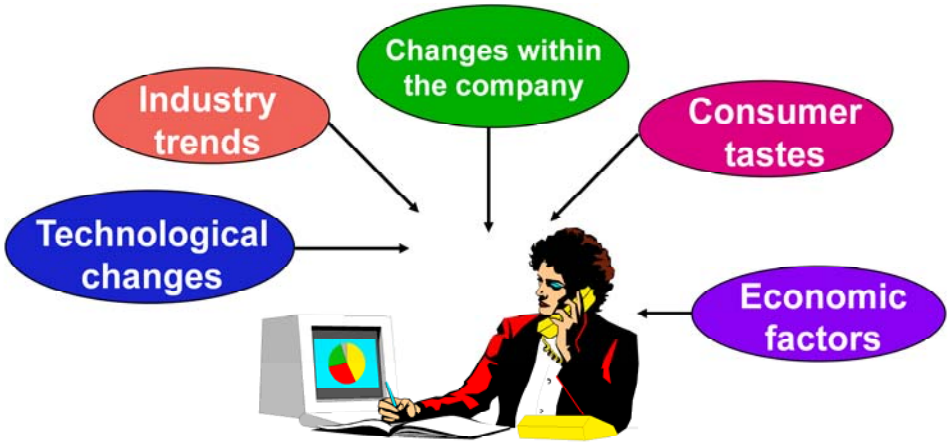


Differences in accounting methods between companies sometimes make it difficult to compare their financial data. For example:

If one company values its inventory using the **LIFO method** and another uses the **average cost method**, then direct comparisons of financial data such as inventory valuations and cost of goods sold may be **misleading**.

Even with this limitation in mind, comparing financial ratios with other companies or industry averages **can provide useful insights**.

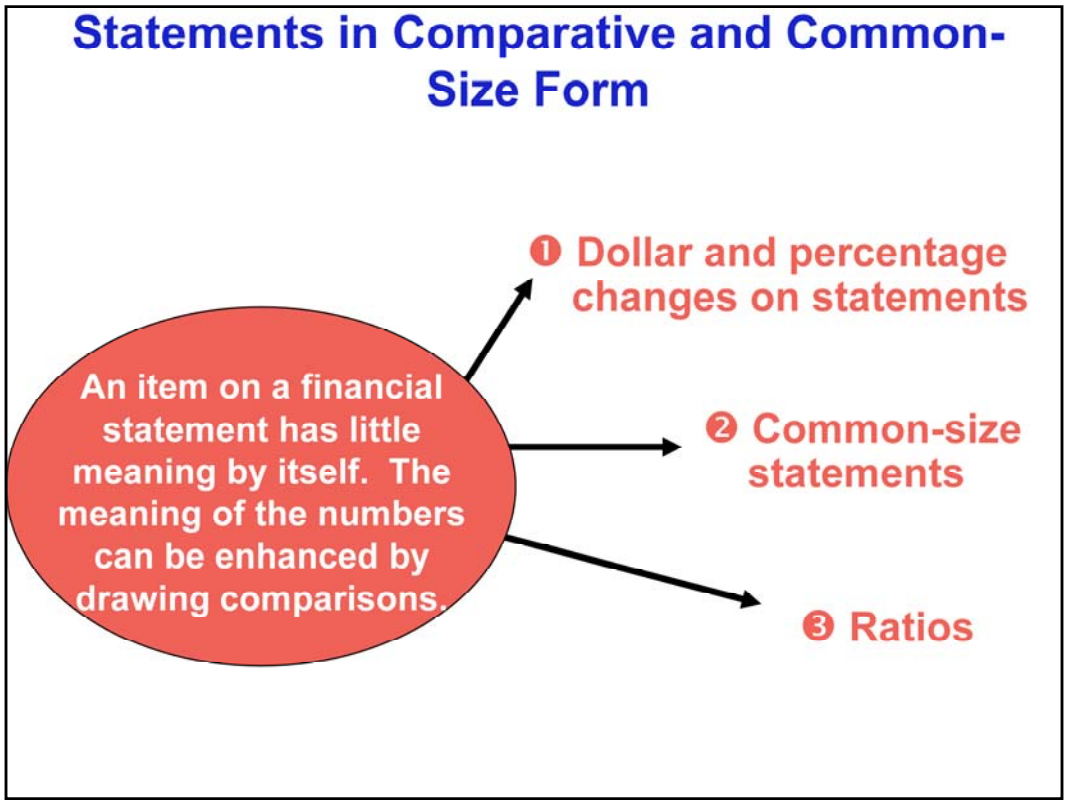
Limitations of Financial Statement Analysis



Analysts should look beyond the ratios.

Ratios should not be viewed as an end, but rather as a **starting point**. They raise many questions and point to opportunities for further analysis, but they **rarely answer questions by themselves**.

In addition to ratios, other sources of data should also be considered such as **industry trends**, **technological changes**, **changes in consumer tastes**, **changes in broad economic factors**, and **changes within the company itself**.



An item on a balance sheet or income statement has **little meaning by itself**. The meaning of the number can be enhanced by **drawing comparisons**. This chapter discusses three such means of enabling comparisons:

- **Dollar and percentage changes on statements** (also known as **horizontal analysis**),
- **Common-size statements** (also known as **vertical analysis**), and
- **Ratios**.

Dollar and Percentage Changes on Statements

Horizontal analysis (or trend analysis) shows the changes between years in the financial data in both dollar and percentage form.

Horizontal analysis (also known as **trend analysis**) involves analyzing financial data **over time**.

Quantifying **dollar changes** over time serves to highlight the changes that are the most important **economically**.

Quantifying **percentage changes** over time serves to highlight the changes that are the most **unusual**.

Horizontal Analysis

Example

The following slides illustrate a horizontal analysis of Clover Corporation's December 31, 2005 and 2004, comparative balance sheets and comparative income statements.

The following slides illustrate a horizontal analysis of Clover Corporation's December thirty first two thousand five and two thousand four comparative balance sheets and comparative income statements.

Horizontal Analysis

CLOVER CORPORATION Comparative Balance Sheets December 31				
			Increase (Decrease)	
	2005	2004	Amount	%
Assets				
Current assets:				
Cash	$ 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		

Assume the comparative asset account balances from the balance sheets as shown.

Horizontal Analysis

Calculating Change in Dollar Amounts

Dollar Change = Current Year Figure – Base Year Figure

The dollar amounts for 2004 become the "base" year figures.

The dollar change in account balances is calculated as the current year figure minus the base year figure. The dollar amounts for two thousand four become the "base" year figures.

Horizontal Analysis

Calculating Change as a Percentage

$$\text{Percentage Change} = \frac{\text{Dollar Change}}{\text{Base Year Figure}} \times 100\%$$

The percentage change in account balances is calculated as dollar change divided by the base year figure times one hundred percent.

Horizontal Analysis

CLOVER CORPORATION
Comparative Balance Sheets
December 31

	2005	2004	Increase (Decrease) Amount	%
Assets				
Current assets:				
Cash	$ 12,000	$ 23,500	$ (11,500)	(48.9)
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				
Buildings and equipm				
Total property and equipment	160,000	125,000		
Total assets	$ 315,000	$ 289,700		

$12,000 – $23,500 = $(11,500)

($11,500 ÷ $23,500) × 100% = 48.9%

The dollar and percentage changes in the **cash account** are computed as shown.

Horizontal Analysis

CLOVER CORPORATION
Comparative Balance Sheets
December 31

			Increase (Decrease)	
	2005	2004	Amount	%
Assets				
Current assets:				
Cash	$ 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

The dollar and percentage changes for the remaining asset accounts are as shown. Can you calculate these numbers?

Horizontal Analysis

We could do this for the liabilities and stockholder's equity, but instead let's look at the **income statement**.

Horizontal Analysis

CLOVER CORPORATION
Comparative Income Statements
For the Years Ended December 31

			Increase (Decrease)	
	2005	2004	Amount	%
Sales	$520,000	$480,000		
Cost of goods sold	360,000	315,000		
Gross margin	160,000	165,000		
Operating expenses	128,600	126,000		
Net operating income	31,400	39,000		
Interest expense	6,400	7,000		
Net income before taxes	25,000	32,000		
Less income taxes (30%)	7,500	9,600		
Net income	$ 17,500	$ 22,400		

Assume Clover has the comparative income statement amounts as shown.

Horizontal Analysis

CLOVER CORPORATION
Comparative Income Statements
For the Years Ended December 31

			Increase (Decrease)	
	2005	2004	Amount	%
Sales	$520,000	$480,000	$ 40,000	8.3
Cost of goods sold	360,000	315,000	45,000	14.3
Gross margin	160,000	165,000	(5,000)	(3.0)
Operating expenses	128,600	126,000	2,600	2.1
Net operating income	31,400	39,000	(7,600)	(19.5)
Interest expense	6,400	7,000	(600)	(8.6)
Net income before taxes	25,000	32,000	(7,000)	(21.9)
Less income taxes (30%)	7,500	9,600	(2,100)	(21.9)
Net income	$ 17,500	$ 22,400	$ (4,900)	(21.9)

The dollar and percentage changes for each account are as shown.

Horizontal Analysis

CLOVER CORPORATION
Comparative Income Statements
For the Years Ended December 31

	2005	2004	Increase (Decrease) Amount	Increase (Decrease) %
Sales	$520,000	$480,000	$ 40,000	8.3
Cost of goods sold	360,000	315,000	45,000	14.3
Gross margin			(5,000)	(3.0)
Operating expenses			2,600	2.1
Net income			(7,600)	(19.5)
Interest expense	6,400	7,000	(600)	(8.6)
Net income before taxes	25,000	32,000	(7,000)	(21.9)
Less income taxes (30%)	7,500	9,600	(2,100)	(21.9)
Net income	$ 17,500	$ 22,400	$ (4,900)	(21.9)

Sales increased by 8.3% yet net income decreased by 21.9%.

Sales increased by **eight point three percent** yet net income decreased by **twenty one point nine percent.**

Horizontal Analysis

There were increases in both cost of goods sold (14.3%) and operating expenses (2.1%). These increased costs more than offset the increase in sales, yielding an overall decrease in net income.

			crease crease)	
			nt	%
Sales	$520,000	$480,000	$ 40,000	8.3
Cost of goods sold	360,000	315,000	45,000	14.3
Gross margin	160,000	165,000	(5,000)	(3.0)
Operating expenses	128,600	126,000	2,600	2.1
Net operating income	31,400	39,000	(7,600)	(19.5)
Interest expense	6,400	7,000	(600)	(8.6)
Net income before taxes	25,000	32,000	(7,000)	(21.9)
Less income taxes (30%)	7,500	9,600	(2,100)	(21.9)
Net income	$ 17,500	$ 22,400	$ (4,900)	(21.9)

There were increases in cost of goods sold and operating expenses that offset the increase in sales. These increased costs more than offset the increase in sales, yielding an overall decrease in net income.

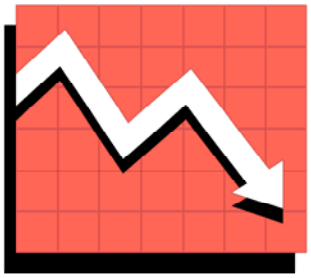
Trend Percentages

Trend percentages state several years' financial data in terms of a **base year**, which equals 100 percent.

Horizontal analysis can be even more useful when data from a number of years are used to compute **trend percentages**.

Trend Analysis

$$\text{Trend Percentage} = \frac{\text{Current Year Amount}}{\text{Base Year Amount}} \times 100\%$$



To compute a trend percentage, a base year is selected and the **data for all years are stated in terms of a percentage of that base year**.

The equation for computing a trend percentage is current year amount divided by base year amount times one hundred percent.

Trend Analysis

Example

Look at the income information for Berry Products for the years 2001 through 2005. We will do a trend analysis on these amounts to see what we can learn about the company.

Look at the income information for Berry Products for the years two thousand one through two thousand five. We will do a trend analysis on these amounts to see what we can learn about the company.

Trend Analysis

Berry Products
Income Information
For the Years Ended December 31

Item	Year				
	2005	2004	2003	2002	2001
Sales	$ 400,000	$ 355,000	$ 320,000	$ 290,000	$ 275,000
Cost of goods sold	285,000	250,000	225,000	198,000	190,000
Gross margin	115,000	105,000	95,000	92,000	85,000

The base year is 2001, and its amounts will equal 100%.

Assume the financial results as shown for **two thousand one through two thousand five**. **The base year is two thousand one** and its amounts will equal **one hundred percent**.

Trend Analysis

Berry Products
Income Information
For the Years Ended December 31

Item	Year				
	2005	2004	2003	2002	2001
Sales				105%	100%
Cost of goods sold				104%	100%
Gross margin				108%	100%

2002 Amount ÷ 2001 Amount × 100%
($290,000 ÷ $275,000) × 100% = 105%
($198,000 ÷ $190,000) × 100% = 104%
($ 92,000 ÷ $ 85,000) × 100% = 108%

The **two thousand two results** restated in trend percentages would be computed as shown.

Trend Analysis

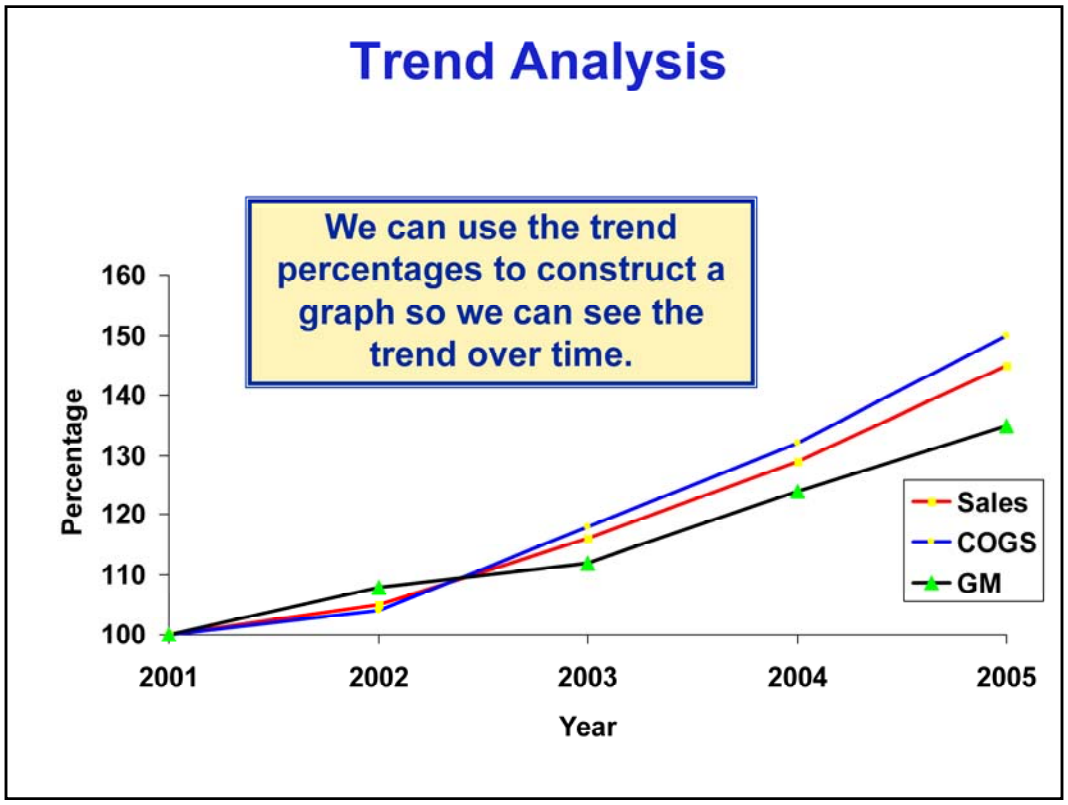
Berry Products
Income Information
For the Years Ended December 31

Item	Year				
	2005	2004	2003	2002	2001
Sales	145%	129%	116%	105%	100%
Cost of goods sold	150%	132%	118%	104%	100%
Gross margin	135%	124%	112%	108%	100%

By analyzing the trends for Berry Products, we can see that cost of goods sold is increasing faster than sales, which is slowing the increase in gross margin.

The trend percentages for the remaining years would be as shown.

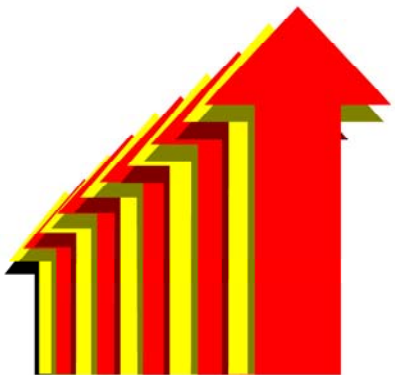
Notice that the cost of goods sold is increasing faster than sales, which is slowing the increase in gross margin.



The trend percentages can also be used to construct a graph as shown.

Common-Size Statements

Vertical analysis focuses on the relationships among financial statement items at a given point in time. A common-size financial statement is a vertical analysis in which each financial statement item is expressed as a percentage.



Vertical analysis focuses on the relationships among financial statement items **at a given point in time**. A common-size financial statement is a vertical analysis in which **each financial statement item is expressed as a percentage**.

Common-Size Statements

In income statements, all items are usually expressed as a percentage of sales.

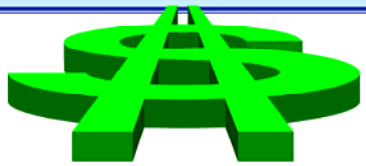
In **income statements**, all items are usually expressed as a **percentage of sales**.

Managers often pay close attention to the **gross margin percentage**, which is computed as shown on the next slide.

Gross Margin Percentage

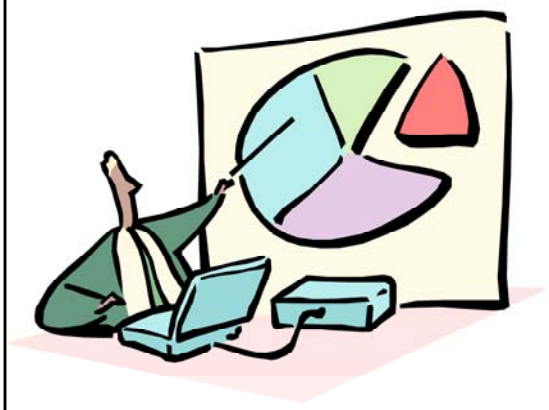
$$\text{Gross Margin Percentage} = \frac{\text{Gross Margin}}{\text{Sales}}$$

This measure indicates how much of each sales dollar is left after deducting the cost of goods sold to cover expenses and provide a profit.



The gross margin percentage tends to be more **stable** for **retailing companies** because cost of goods sold **excludes fixed costs**.

Common-Size Statements



In balance sheets, all items are usually expressed as a percentage of total assets.

In **balance sheets**, all items are usually expressed as a **percentage of total assets**.

Common-Size Statements

	Wendy's		McDonald's	
(dollars in millions)	Dollars	Percentage	Dollars	Percentage
2002 Net income	$ 219	8.00%	$ 893	5.80%

Common-size financial statements are particularly useful when comparing data from different companies.

Common-size financial statements are particularly useful **when comparing data from different companies**.

For example: In two thousand two, Wendy's net income was **two hundred nineteen million dollars**, whereas McDonald's was **eight hundred ninety three million dollars**. This comparison is misleading because of the **different sizes** of the two companies.

Wendy's **net income as a percent of sales** was about **eight percent** and McDonald's was about **five point eight percent.** In this light, McDonald's performance does not compare favorably with Wendy's.

Common-Size Statements

Example

Let's take another look at the information from the comparative income statements of Clover Corporation for 2005 and 2004.

This time let's prepare common-size statements.

Let's take another look at the information from the comparative income statements of Clover Corporation for two thousand five and two thousand four.

This time let's prepare common-size statements.

Common-Size Statements

CLOVER CORPORATION
Comparative Income Statements
For the Years Ended December 31

			Common-Size Percentages	
	2005	2004	2005	2004
Sales	$ 520,000	$ 480,000	100.0	100.0
Cost of goods sold	360,000	315,000		
Gross margin	160,000	165,000		
Operating expenses	128,600	126,000		
Net operating income	31,400	39,000		
Interest expense	6,400	7,000		
Net income before taxes	25,000	32,000		
Less income taxes (30%)	7,500	9,600		
Net income	$ 17,500	$ 22,400		

Sales is usually the base and is expressed as 100%.

Here are the **comparative income statements** for Clover Corporation for two thousand five and two thousand four.

Common-Size Statements

CLOVER CORPORATION
Comparative Income Statements
For the Years Ended December 31

			Common-Size Percentages	
	2005	2004	2005	2004
Sales	$520,000	$480,000	100.0	100.0
Cost of goods sold	360,000	315,000	69.2	65.6
Gross margin	160,000	165,000		
Ope				
Net				
Inte				
Net income				
Less income				
Net income				

2005 Cost ÷ 2005 Sales × 100%
($360,000 ÷ $520,000) × 100% = 69.2%

2004 Cost ÷ 2004 Sales × 100%
($315,000 ÷ $480,000) × 100% = 65.6%

The **cost of goods sold as a percentage of sales** for two thousand four is sixty five point six percent and for two thousand five it is sixty nine point two percent.

Common-Size Statements

CLOVER CORPORATION
Comparative Income Statements
For the Years Ended December 31

What conclusions can we draw?

			Common-Size Percentages	
	2005	2004	2005	2004
Sales	$520,000	$480,000	100.0	100.0
Cost of goods sold	360,000	315,000	69.2	65.6
Gross margin	160,000	165,000	30.8	34.4
Operating expenses	128,600	126,000	24.8	26.2
Net operating income	31,400	39,000	6.0	8.2
Interest expense	6,400	7,000	1.2	1.5
Net income before taxes	25,000	32,000	4.8	6.7
Less income taxes (30%)	7,500	9,600	1.4	2.0
Net income	$ 17,500	$ 22,400	3.4	4.7

The common-size percentages for the remaining items on the income statement are as shown.

Quick Check ✓

Which of the following statements describes horizontal analysis?

a. A statement that shows items appearing on it in percentage and dollar form.

b. A side-by-side comparison of two or more years' financial statements.

c. A comparison of the account balances on the current year's financial statements.

d. None of the above.

Which of the following statements describes horizontal analysis?

Quick Check ✓

Which of the following statements describes horizontal analysis?

a. A statement that shows items appearing on it in percentage and dollar form.

b. A side-by-side comparison of two or more years' financial statements.

Horizontal analysis shows the changes between years in the financial data in both dollar and percentage form.

The answer is B. Horizontal analysis shows the changes between years in the financial data in both dollar and percentage form.

We are going to examine ratios that are useful to **common stockholders**, **short-term creditors**, and **long-term creditors**.

To facilitate our discussion, we are going to use two thousand four and two thousand five financial data from Norton Corporation.

NORTON CORPORATION Balance Sheets December 31		
	2005	2004
Assets		
Current assets:		
Cash	$ 30,000	$ 20,000
Accounts receivable, net	20,000	17,000
Inventory	12,000	10,000
Prepaid expenses	3,000	2,000
Total current assets	65,000	49,000
Property and equipment:		
Land	165,000	123,000
Buildings and equipment, net	116,390	128,000
Total property and equipment	281,390	251,000
Total assets	$ 346,390	$ 300,000

The asset side of Norton's balance sheets is as shown.

NORTON CORPORATION Balance Sheets December 31		
	2005	2004
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 39,000	$ 40,000
Notes payable, short-term	3,000	2,000
Total current liabilities	42,000	42,000
Long-term liabilities:		
Notes payable, long-term	70,000	78,000
Total liabilities	112,000	120,000
Stockholders' equity:		
Common stock, $1 par value	27,400	17,000
Additional paid-in capital	158,100	113,000
Total paid-in capital	185,500	130,000
Retained earnings	48,890	50,000
Total stockholders' equity	234,390	180,000
Total liabilities and stockholders' equity	$ 346,390	$ 300,000

The liabilities and stockholder's equity side of Norton's balance sheets is as shown.

NORTON CORPORATION Income Statements For the Years Ended December 31		
	2005	2004
Sales	$ 494,000	$ 450,000
Cost of goods sold	140,000	127,000
Gross margin	354,000	323,000
Operating expenses	270,000	249,000
Net operating income	84,000	74,000
Interest expense	7,300	8,000
Net income before taxes	76,700	66,000
Less income taxes (30%)	23,010	19,800
Net income	$ 53,690	$ 46,200

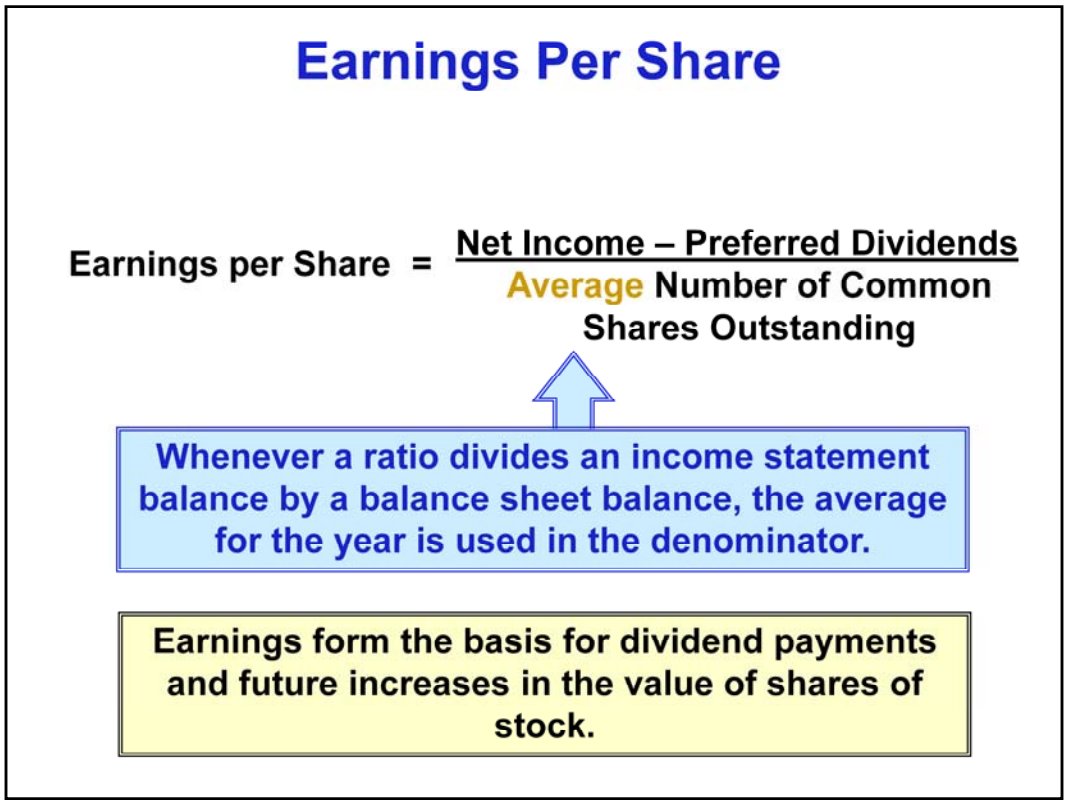
The income statements for Norton is as shown.

Ratio Analysis – The Common Stockholder

The ratios that are of the most interest to stockholders include those ratios that focus on net income, dividends, and stockholders' equities.

NORTON CORPORATION 2005	
Number of common shares outstanding	
Beginning of year	17,000
End of year	27,400
Net income	$ 53,690
Stockholders' equity	
Beginning of year	180,000
End of year	234,390
Dividends per share	2
Dec. 31 market price per share	20
Interest expense	7,300
Total assets	
Beginning of year	300,000
End of year	346,390

The ratios that are of the most interest to stockholders include those ratios that focus on net income, dividends, and stockholder's equities. The information shown for Norton Corporation will be used to calculate ratios of interest to common stockholders.



Earnings per share is computed as shown.

The **average** number of common shares outstanding is computed by adding the shares outstanding at the **beginning of the year** to the shares outstanding at the **end of the year** and **dividing by two**.

Investors are interested in this ratio because earnings form the basis for **dividend payments** and future **increases in the value of shares of stock**.

Earnings Per Share

$$\text{Earnings per Share} = \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Average Number of Common Shares Outstanding}}$$

$$\text{Earnings per Share} = \frac{\$53{,}690 - \$0}{(\$17{,}000 + \$27{,}400)/2} = \$2.42$$

This measure indicates how much income was earned for each share of common stock outstanding.

Norton Corporation's earning per share for two thousand five is two dollars and forty two cents. This measure indicates how much income was earned for each share of common stock outstanding.

Price-Earnings Ratio

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

$$\text{Price-Earnings Ratio} = \frac{\$20.00}{\$2.42} = 8.26 \text{ times}$$

A higher price-earnings ratio means that investors are willing to pay a premium for a company's stock because of optimistic future growth prospects.

The price-earnings ratio is computed as shown.

A higher price-earnings ratio means that investors are willing to pay a **premium** for a company's stock because of its **optimistic future growth prospects**.

Norton Corporation's price earnings ratio for two thousand five is eight point two six times.

Dividend Payout Ratio

$$\text{Dividend Payout Ratio} = \frac{\text{Dividends Per Share}}{\text{Earnings Per Share}}$$

$$\text{Dividend Payout Ratio} = \frac{\$2.00}{\$2.42} = 82.6\%$$

This ratio gauges the portion of current earnings being paid out in dividends. Investors seeking dividends (market price growth) would like this ratio to be large (small).

The dividend payout ratio is computed as shown.

Investors who seek **market price growth** would like this ratio to be **small**, whereas investors who seek **dividends** prefer it to be **large**.

Norton Corporation's dividend payout ratio for two thousand five is eighty two point six percent.

Dividend Yield Ratio

$$\text{Dividend Yield Ratio} = \frac{\text{Dividends Per Share}}{\text{Market Price Per Share}}$$

$$\text{Dividend Yield Ratio} = \frac{\$2.00}{\$20.00} = 10.00\%$$

This ratio identifies the return, in terms of cash dividends, on the current market price of the stock.

The dividend yield ratio is computed as shown.

This ratio measures the rate of return (in the form of cash dividends only) that would be **earned by an investor who buys common stock at the current market price**.

Norton Corporation's dividend yield ratio for two thousand five is ten percent.

Return on Total Assets

$$\text{Return on Total Assets} = \frac{\text{Net Income + [Interest Expense} \times \text{(1 – Tax Rate)]}}{\text{Average Total Assets}}$$

$$\text{Return on Total Assets} = \frac{\$53{,}690 + [\$7{,}300 \times (1 - .30)]}{(\$300{,}000 + \$346{,}390) \div 2} = 18.19\%$$

Adding interest expense back to net income enables the return on assets to be compared for companies with different amounts of debt or over time for a single company that has changed its mix of debt and equity.

The return on total assets is computed as shown.

Adding interest expense back to net income enables the return on assets to be **compared** for companies with different amounts of debt or over time for a single company that has changed its mix of debt and equity.

Norton Corporation's return on assets for two thousand five is eighteen point one nine percent.

Return on Common Stockholders' Equity

$$\text{Return on Common Stockholders' Equity} = \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Average Stockholders' Equity}}$$

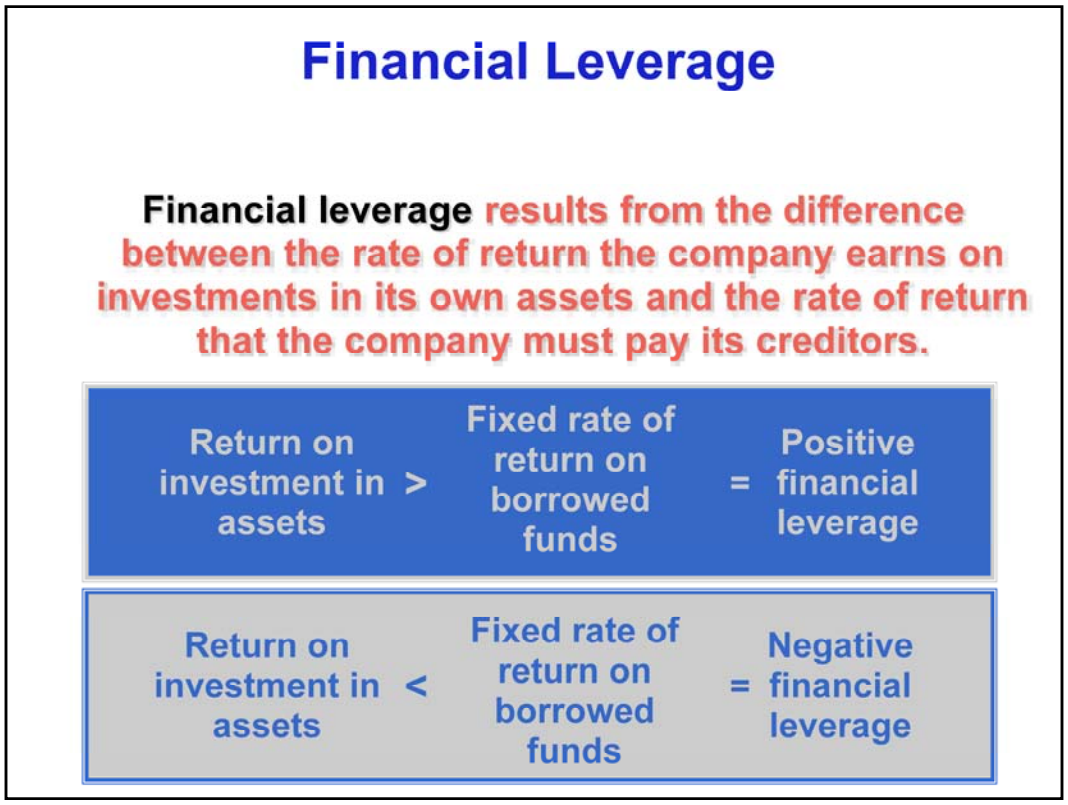
$$\text{Return on Common Stockholders' Equity} = \frac{\$53{,}690 - \$0}{(\$180{,}000 + \$234{,}390) \div 2} = 25.91\%$$

This measure indicates how well the company used the owners' investments to earn income.

The return on common stockholder's equity is computed as shown.

This measure indicates how well the company used the owners' investments to earn net income.

Norton Corporation's return on common stockholder's equity for two thousand five is twenty five point nine one percent.



Financial leverage results from the **difference** between the rate of return the company earns on **investments in its own assets** and the rate of return that the company must **pay its creditors**.

Positive financial leverage exists if the rate of return on the company's assets **exceeds** the rate of return the company pays its creditors. In this case, having some debt in a company's capital structure can **benefit** its shareholders.

Negative financial leverage exists if the rate of return on the company's assets is less than the rate of return the company pays its creditors. In this case, the common stockholder **suffers** by having debt in the capital structure.

Quick Check ✓

Which of the following statements is true?

a. Negative financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.

b. Positive financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.

c. Financial leverage is the expression of several years' financial data in percentage form in terms of a base year.

Which of the following statements is true?

Quick Check ✓

Which of the following statements is true?

a. Negative financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.

b. Positive financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.

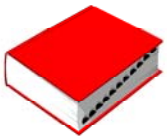
c. Financial leverage is the expression of several years' financial data in percentage form in terms of a base year.

The answer is A. Negative financial leverage is when the fixed return to a company's creditors and preferred stockholders is greater than the return on total assets.

Book Value Per Share

$$\text{Book Value per Share} = \frac{\text{Common Stockholders' Equity}}{\text{Number of Common Shares Outstanding}}$$

$$\text{Book Value per Share} = \frac{\$234{,}390}{27{,}400} = \$\ 8.55$$



This ratio measures the amount that would be distributed to holders of each share of common stock if all assets were sold at their balance sheet carrying amounts and if all creditors were paid off.

The book value per share is computed as shown.

It measures the amount that would be **distributed to holders of each share of common stock** if all assets were sold at their **balance sheet carrying amounts** and if all **creditors were paid off**. This measure is based entirely on **historical cost**.

Norton Corporation's book value per share at the end of two thousand five is eight dollars and fifty five cents.

Book Value Per Share

$$\text{Book Value per Share} = \frac{\text{Common Stockholders' Equity}}{\text{Number of Common Shares Outstanding}}$$

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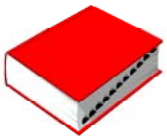


Notice that the book value per share of $8.55 does not equal the market value per share of $20. This is because the market price reflects expectations about future earnings and dividends, whereas the book value per share is based on historical cost.

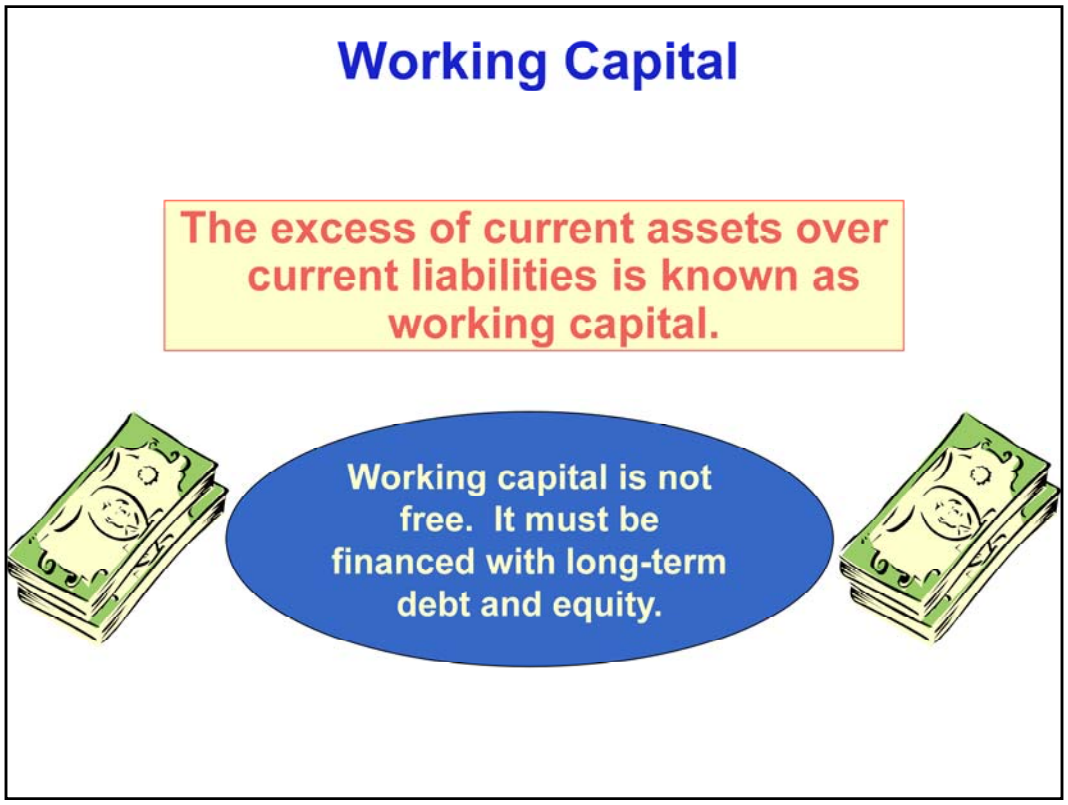
The book value per share of **eight dollars and fifty five cents** does not equal the market value per share of **twenty dollars**. This is because the **market price reflects expectations about future earnings and dividends**, whereas **the book value per share is based on historical cost**.

Ratio Analysis – The Short–Term Creditor

Short-term creditors, such as suppliers, want to be paid on time. Therefore, they focus on the company's cash flows and working capital.

NORTON CORPORATION 2005	
Cash	$ 30,000
Accounts receivable, net	
Beginning of year	17,000
End of year	20,000
Inventory	
Beginning of year	10,000
End of year	12,000
Total current assets	65,000
Total current liabilities	42,000
Sales on account	494,000
Cost of goods sold	140,000

Short-term creditors, such as suppliers, want to be paid on time. Therefore, they focus on the company's cash flows and on its working capital. The information shown for Norton Corporation will be used to calculate ratios of interest to short-term creditors.



The **excess of current assets over current liabilities is known as working capital**.

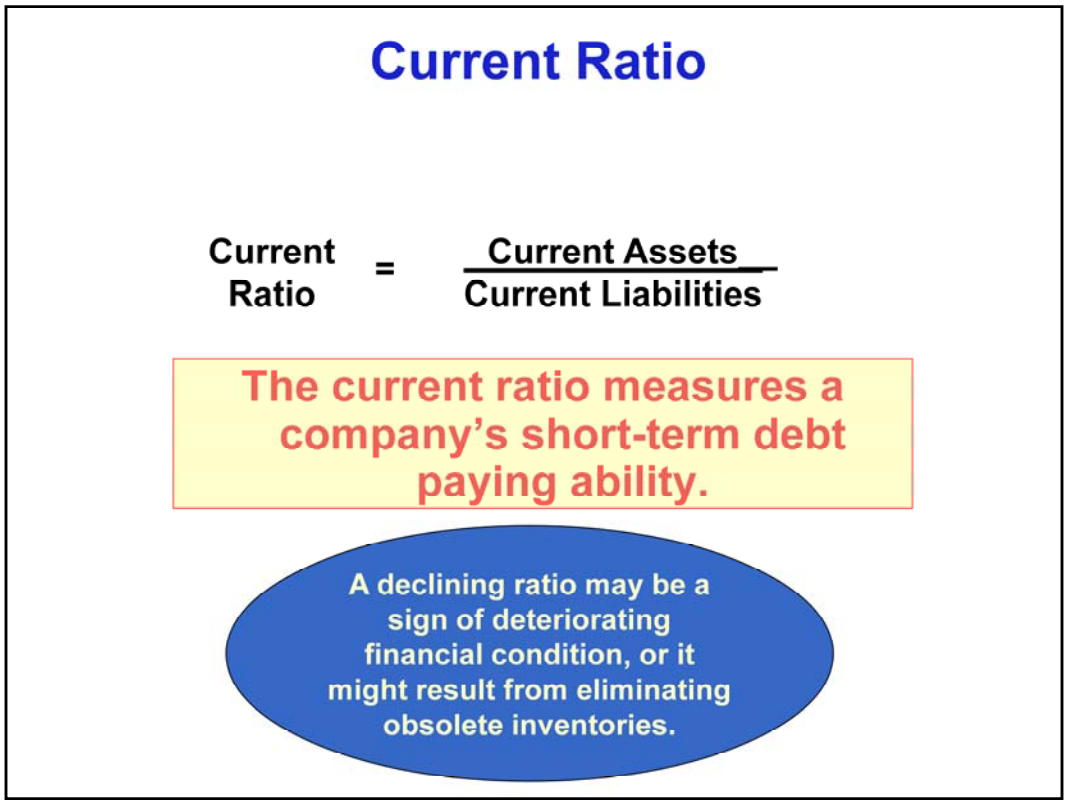
Working capital is **not free**. It must be financed with long-term debt and equity. Therefore, managers often seek to **minimize** working capital.

A large and growing working capital balance **may not be a good sign**. For example, it could be the result of unwarranted growth in inventories.

Working Capital

	December 31, 2005
Current assets	$ 65,000
Current liabilities	(42,000)
Working capital	$ 23,000

Norton Corporation's working capital is calculated as shown.



The current ratio is computed as shown.

It measures a company's **short-term debt paying ability**.

It must be interpreted with care. For example, a declining ratio may be a sign of **deteriorating financial condition**, or it might result from **eliminating obsolete inventories** or other stagnant current assets.

Current Ratio

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

$$\text{Current Ratio} = \frac{\$65{,}000}{\$42{,}000} = 1.55$$

Norton Corporation's current ratio of is calculated as shown.

Acid-Test (Quick) Ratio

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

$$\text{Acid-Test Ratio} = \frac{\$50{,}000}{\$42{,}000} = 1.19$$

Quick assets include Cash, Marketable Securities, Accounts Receivable and current Notes Receivable.

This ratio measures a company's ability to meet obligations without having to liquidate inventory.

The acid-test ratio is computed as shown.

It is a **more rigorous** measure of short-term debt paying ability because it only includes **cash**, **marketable securities**, **accounts receivable**, and **current notes receivable**.

It measures a company's ability to meet its obligations **without having to liquidate its inventory**.

Norton Corporation's acid-test ratio is one point one nine.

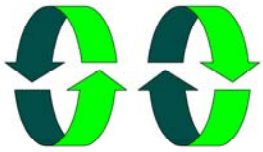
Each dollar of liabilities should be backed by **at least one dollar of quick assets**. Norton satisfies this condition.

Accounts Receivable Turnover

$$\text{Accounts Receivable Turnover} = \frac{\text{Sales on Account}}{\text{Average Accounts Receivable}}$$

$$\text{Accounts Receivable Turnover} = \frac{\$494{,}000}{(\$17{,}000 + \$20{,}000) \div 2} = 26.7 \text{ times}$$

This ratio measures how many times a company converts its receivables into cash each year.



The accounts receivable turnover is calculated as shown.

It measures how **quickly credit sales are converted to cash**.

Norton Corporation's accounts receivable turnover is twenty six point seven.

Average Collection Period

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

$$\text{Average Collection Period} = \frac{365 \text{ Days}}{26.7 \text{ Times}} = 13.67 \text{ days}$$

This ratio measures, on average, how many days it takes to collect an account receivable.

A related measure called the **average collection period** is computed as shown.

It measures **how many days, on average, it takes to collect an accounts receivable**.

It should be interpreted **relative to the credit terms offered to customers**.

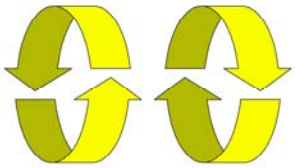
Norton Corporation's average collection period is thirteen point six seven days.

Inventory Turnover

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

This ratio measures how many times a company's inventory has been sold and replaced during the year.

If a company's inventory turnover Is less than its industry average, it either has excessive inventory or the wrong sorts of inventory.



The inventory turnover is computed as shown.

It measures how many times a company's inventory **has been sold and replaced during the year**.

It should **increase** for companies that adopt **just-in-time methods**.

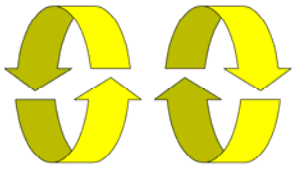
It should be interpreted **relative to a company's industry**. For example, grocery stores turn their inventory over **quickly**, whereas jewelry stores tend to turn their inventory over **slowly**.

If a company's inventory turnover is **less than** its industry average, it either has **excessive inventory** or the **wrong sorts of inventory**.

Inventory Turnover

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

$$\text{Inventory Turnover} = \frac{\$140{,}000}{(\$10{,}000 + \$12{,}000) \div 2} = 12.73 \text{ times}$$



Norton Corporation's inventory turnover is twelve point seven three times.

Average Sale Period

$$\text{Average Sale Period} = \frac{\text{365 Days}}{\text{Inventory Turnover}}$$

$$\text{Average Sale Period} = \frac{\text{365 Days}}{\text{12.73 Times}} = \text{28.67 days}$$

This ratio measures how many days, on average, it takes to sell the inventory.

A related measure called the **average sale period** is computed as shown.

It measures the number of days being taken, on average, to **sell the entire inventory one time**.

Norton Corporation's average sale period is twenty eight point six seven days.

Ratio Analysis – The Long–Term Creditor

Long-term creditors are concerned with a company's ability to repay its loans over the long-run.

NORTON CORPORATION 2005	
Earnings before interest expense and income taxes	$ 84,000
Interest expense	7,300
Total stockholders' equity	234,390
Total liabilities	112,000

This is also referred to as net operating income.

Long-term creditors are concerned with a company's ability to **repay its loans over the long-run**. Creditors often seek protection by requiring that borrowers agree to various **restrictive covenants**, or rules. The information shown for Norton Corporation will be used to calculate ratios of interest to long-term creditors.

Times Interest Earned Ratio

$$\text{Times Interest Earned} = \frac{\text{Earnings before Interest Expense and Income Taxes}}{\text{Interest Expense}}$$

$$\text{Times Interest Earned} = \frac{\$84{,}000}{\$7{,}300} = 11.51 \text{ times}$$

This is the most common measure of a company's ability to provide protection for its long-term creditors. A ratio of less than 1.0 is inadequate.

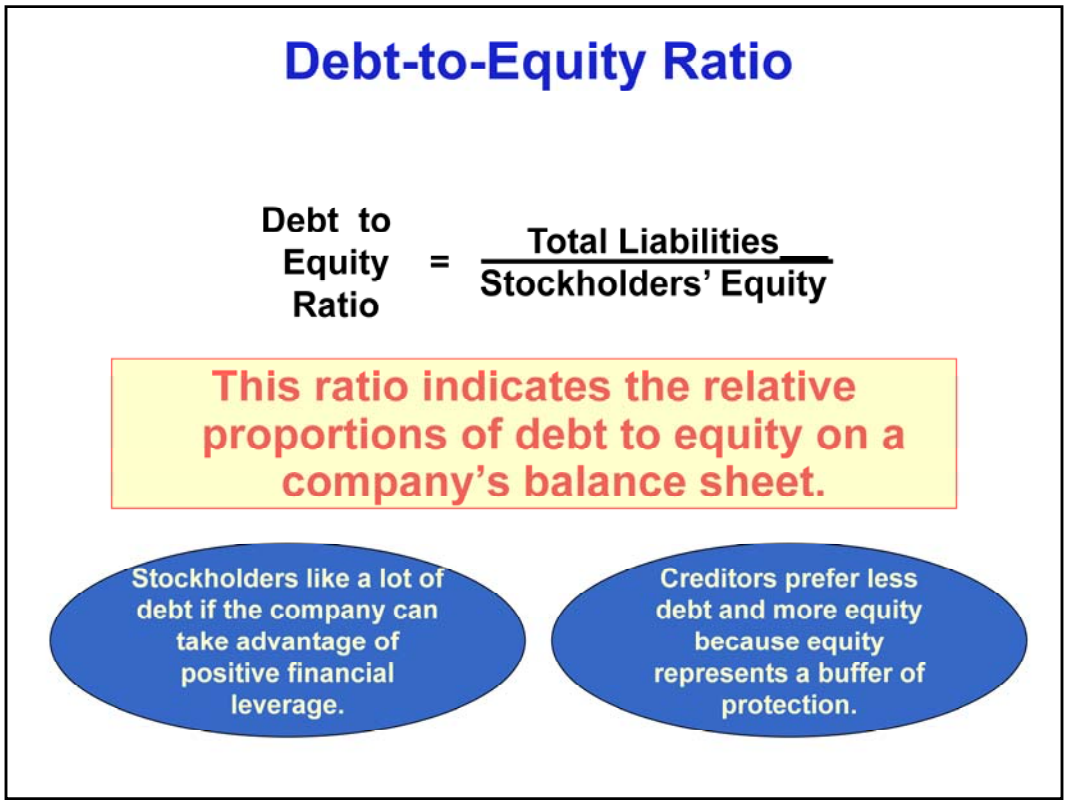
The times interest earned ratio is calculated as shown.

It is the **most common measure** of a company's ability to protect its long-term creditors.

It is based on earnings **before interest and income taxes** because that is the amount of earnings that is available for making interest payments.

A ratio of **less than one is inadequate**.

Norton Corporation's times interest earned ratio is eleven point five one times.



The debt-to-equity ratio is computed as shown.

It indicates the **relative proportions** of debt and equity on a company's balance sheet.

Creditors and stockholders have different views when defining the optimal debt-to-equity ratio.

Stockholders like a **lot of debt** if the company can take advantage of **positive financial leverage**.

Creditors prefer **less debt** and more equity because equity represents a **buffer of protection**.

In practice, **debt-to-equity ratios from point zero to three point zero are common**.

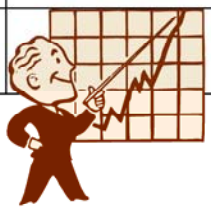
Debt-to-Equity Ratio

$$\text{Debt to Equity Ratio} = \frac{\text{Total Liabilities}}{\text{Stockholders' Equity}}$$

$$\text{Debt to Equity Ratio} = \frac{\$112{,}000}{\$234{,}390} = 0.48$$

Norton Corporation's debt-to-equity ratio is point four eight.

Sources of Financial Ratios	
Source	Source
Almanac of Business and Industrial Financial Ratios. Prentice-Hall. Published annually.	*Hoover's Online*. Hoovers, Inc. Web site that is updated continuously. www.hoovers.com
Annual Statement Studies. Robert Morris Associates. Published annually. www.rmahq.org/Ann_Studies/assstudies.html	*Key Business Ratios*. Dun & Bradstreet. Published annually.
Business & Company ASAP. Database that is updated continuously.	*Moody's Industrial Manual and Moody's Bank and Finance Manual*. Dun & Bradstreet. Published annually.
EDGAR. Securities and Exchange Commission. Web site that is updated continuously. www.sec.gov	*PricewaterhouseCoopers* Web site that is updated continuously. www.edgarscan.tc.pw.com
EBSCOhost (Business Source Elite index). EBSCO publishing. Database that is updated continuously.	*Standard & Poor's Industry Survey*. Standard & Poor's. Published annually.
FreeEDGAR. EDGAR Online, Inc. Web site that is updated continuously. www.freeedgar.com	



This slide contains a listing of **published sources** that provide **comparative ratio data organized by industry**.