

Managerial Accounting

Ninth Edition

Weygandt Kimmel Mitchell

Chapter 14

Financial Analysis: The Big Picture

Chapter Outline

Learning Objectives

- LO 1** Apply the concepts of sustainable income and quality of earnings.
- LO 2** Apply horizontal analysis and vertical analysis.
- LO 3** Analyze a company's performance using ratio analysis.

Sustainable Income and Quality of Earnings

LEARNING OBJECTIVE 1

Apply the concepts of sustainable income and quality of earnings.

Sustainable income is the most likely level of income to be obtained by a company in the future. It differs from actual net income by the amount of **unusual** revenues, expenses, gains, and losses included in the current year's income.

Information on unusual items such as gains or losses on discontinued items and components of other comprehensive income are disclosed.

These unusual items are reported **net of income taxes**.

Sustainable Income

A statement of comprehensive income includes

- net income and
- comprehensive income.

The two major unusual items in this statement are

- discontinued operations and
- other comprehensive income.

Discontinued operations and other comprehensive income are reported net of tax.

Discontinued Operations

- A. Disposal of a **significant component** of a business.
- B. Report income (loss) from discontinued operations in **two parts**:
 - 1. income (loss) from operations (net of tax) and
 - 2. gain (loss) on disposal (net of tax).

Discontinued Operations

Illustration

During 2022 Acro Energy Inc. has income before income taxes of \$800,000. During 2022, Acro discontinued and sold its unprofitable chemical division. The loss in 2022 from chemical operations (net of \$40,000 income tax savings) was \$160,000. The loss on disposal of the chemical division (net of \$20,000 income tax savings) was \$80,000. Assume a 20% tax rate on income.

Discontinued Operations

Statement presentation of discontinued operations

Illustration 14.1

Acro Energy Inc. Income Statement (partial) For the Year Ended December 31, 2022		
Income before income taxes		\$800,000
Income tax expense		<u>160,000</u>
Income from continuing operations		640,000
Discontinued operations		
Loss from operation of chemical division,		
net of \$40,000 income tax savings	\$160,000	
Loss from disposal of chemical division,		
net of \$20,000 income tax savings	<u>80,000</u>	<u>(240,000)</u>
Net income		<u><u>\$400,000</u></u>

Comprehensive Income

Comprehensive income is the sum of

- net income and
- other comprehensive income items as in certain gains and losses that bypass net income.
 - Example: Unrealized gains or losses on available-for-sale debt securities.

Comprehensive Income

Illustration

During 2022, Stassi Corporation purchased **IBM** bonds for \$10,500 as an investment, which it intends to sell sometime in the future. At the end of 2022, Stassi was still holding the investment, but the bonds' market price was now \$8,000. Stassi is required to reduce the recorded value of its IBM investment by the unrealized loss of \$2,500. Should Stassi include this \$2,500 “unrealized” loss in net income?

Trading securities: Unrealized gains and losses are reported in the “Other expenses and losses” section of the income statement.

Available-for-sale securities: Unrealized gains and losses are reported net of tax as “Other comprehensive income” in stockholders' equity.

Comprehensive Income

Lower portion of comprehensive income statement

If Stassi did not purchase the investment for trading purposes, it is classified as **available-for-sale**.

Illustration 14.2

Stassi Corporation	
Statement of Comprehensive Income	
For the Year Ended December 31, 2022	
Net income	\$300,000
Other comprehensive income	
Unrealized loss on available-for-sale securities, net of \$500 income tax savings	<u>2,000</u>
Comprehensive income	<u><u>\$298,000</u></u>

Comprehensive Income

Unrealized loss in stockholders' equity section

Assume Stassi has common stock of \$3,000,000, retained earnings of \$300,000, and accumulated other comprehensive loss of \$2,000. This illustration shows the balance sheet presentation of the accumulated other comprehensive loss.

Illustration 14.3

Stassi Corporation	
Balance Sheet (partial)	
Stockholders' equity	
Common stock	\$3,000,000
Retained earnings	<u>300,000</u>
Total paid-in capital and retained earnings	3,300,000
Accumulated other comprehensive loss	<u>(2,000)</u>
Total stockholders' equity	<u><u>\$3,298,000</u></u>

Comprehensive Income

Complete income statement and statement of comprehensive income

Pace Corporation Income Statement For the Year Ended December 31, 2022		
Net sales		\$440,000
Cost of goods sold		<u>260,000</u>
Gross profit		180,000
Operating expenses		<u>110,000</u>
Income from operations		70,000
Other revenues and gains		5,600
Other expenses and losses		<u>9,600</u>
Income before income taxes		66,000
Income tax expense (\$66,000 × 30%)		<u>19,800</u>
Income from continuing operations		46,200
Discontinued operations		
Loss from operation of plastics division, net of income tax savings \$12,000 (\$60,000 × 20%)	\$48,000	
Gain on disposal of plastics division, net of \$10,000 income taxes (\$50,000 × 20%)	<u>40,000</u>	<u>(8,000)</u>
Net income		<u>\$38,200</u>

Pace Corporation Statement of Comprehensive Income For the Year Ended December 31, 2022		
Net income		\$38,200
Other comprehensive income		
Unrealized gain on available-for-sale securities, net of income taxes (\$15,000 × 20%)		<u>12,000</u>
Comprehensive income		<u>\$50,200</u>

Illustration 14.4

Changes in Accounting Principle

Occurs when the principle used in the current year is different from the one used in the preceding year.

- Example: Change in inventory costing methods (such as FIFO to average-cost)

Accounting rules permit a change when management can show that the new principle is preferable to the old principle.

Companies report most changes in accounting principle retroactively.

Quality of Earnings

A high **quality of earnings** provides full and transparent information that will not confuse or mislead users.

Alternative Accounting Methods

Variations among companies in the application of generally accepted accounting principles (GAAP) may hamper comparability and reduce quality of earnings.

- FIFO versus LIFO inventory cost flow
- Straight-line versus declining balance depreciation

Quality of Earnings

Pro Forma Income

Companies whose stock is publicly traded are required to present their income statement following GAAP.

Many companies have been also reporting pro forma income that usually excludes items that the company thinks are unusual or non-recurring (**pro forma income**).

Many analysts and investors are critical of using pro forma income because these numbers often make companies look better than they really are.

Quality of Earnings

Improper Recognition

Most common abuse is improper recognition of revenue.

- Channel stuffing (**Bristol-Myers Squibb**)

Another practice is improper capitalization of operating expenses.

- Capitalization of operating expenses (**WorldCom**)
- Failure to report liabilities (**Enron**)

DO IT! 1: Unusual Items

Problem data

In its proposed 2022 income statement, AIR Corporation reports income before income taxes \$400,000, unrealized gain on available-for-sale securities \$100,000, loss from operation of discontinued flower division \$50,000, and loss on disposal of discontinued flower division \$90,000. The income tax rate is 20%.

Prepare a correct partial income statement, beginning with “Income before income taxes,” and a statement of comprehensive income.

DO IT! 1: Unusual Items

Solution

AIR Corporation		
Income Statement (partial)		
For the Year Ended December 31, 2022		
Income before income taxes		\$400,000
Income tax expense		<u>80,000</u>
Income from continuing operations		320,000
Discontinued operations		
Loss from operation of flower division,		
net of \$10,000 income tax savings	\$40,000	
Loss on disposal of flower division,		
net of \$18,000 income tax savings	<u>72,000</u>	<u>(112,000)</u>
Net income		<u>\$208,000</u>

AIR Corporation		
Statement of Comprehensive Income		
For the Year Ended December 31, 2022		
Net income		\$208,000
Other comprehensive income		
Unrealized gain on available-for-sale		
securities, net of \$20,000 income taxes		<u>80,000</u>
Comprehensive income		<u>\$288,000</u>

LEARNING OBJECTIVE 2

Apply horizontal analysis and vertical analysis.

Investors are interested in:

- Core or sustainable earnings of a company
- Making comparisons from period to period
 - Three types of comparisons:
 - Intracompany basis
 - Intercompany basis
 - Industry averages

Horizontal Analysis and Vertical Analysis

Three basic tools in financial statement analysis:

1. Horizontal analysis
2. Vertical analysis
3. Ratio 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

- Increase or decrease
- Expressed as either an amount or a percentage

Horizontal Analysis

Horizontal analysis of balance sheets

Illustration 14.8

Chicago Cereal Company				
Condensed Balance Sheets				
December 31 (in thousands)				
	2022	2021	Increase (Decrease) During 2022	
			Amount	Percent
<u>Assets</u>				
Current assets	\$ 2,717	\$ 2,427	\$290	11.9
Property, plant, and equipment (net)	2,990	2,816	174	6.2
Other assets	5,690	5,471	219	4.0
Total assets	<u>\$11,397</u>	<u>\$10,714</u>	<u>\$683</u>	<u>6.4</u>
<u>Liabilities and Stockholders' Equity</u>				
Current liabilities	\$ 4,044	\$ 4,020	\$ 24	0.6
Long-term liabilities	4,827	4,625	202	4.4
Total liabilities	8,871	8,645	226	2.6
Stockholders' equity				
Common stock	493	397	96	24.2
Retained earnings	3,390	2,584	806	31.2
Treasury stock (cost)	(1,357)	(912)	445	48.8
Total stockholders' equity	<u>2,526</u>	<u>2,069</u>	<u>457</u>	<u>22.1</u>
Total liabilities and stockholders' equity	<u>\$11,397</u>	<u>\$10,714</u>	<u>\$683</u>	<u>6.4</u>

Horizontal Analysis

Changes shown in comparative balance sheets

In the assets section:

- current assets increased \$290,000, or 11.9% ($\$290 \div \$2,427$)
- property assets (net) increased \$174,000, or 6.2%
- other assets increased \$219,000, or 4.0%

In the liabilities section:

- current liabilities increased \$24,000, or 0.6%
- long-term liabilities increased \$202,000, or 4.4%

In the stockholders' equity section:

- retained earnings increased \$806,000, or 31.2%

Horizontal Analysis

Horizontal analysis of income statements

Illustration 14.9

Chicago Cereal Company				
Condensed Income Statements				
For the Years Ended December 31 (in thousands)				
	2022	2021	Increase (Decrease) During 2022	
			Amount	Percent
Net sales	\$11,776	\$10,907	\$869	8.0
Cost of goods sold	6,597	6,082	515	8.5
Gross profit	5,179	4,825	354	7.3
Selling and administrative expenses	3,311	3,059	252	8.2
Income from operations	1,868	1,766	102	5.8
Interest expense	321	294	27	9.2
Income before income taxes	1,547	1,472	75	5.1
Income tax expense	444	468	(24)	(5.1)
Net income	<u>\$ 1,103</u>	<u>\$ 1,004</u>	<u>\$ 99</u>	9.9

Horizontal Analysis

Changes shown in comparative income statements

Analysis of the income statements shows the following changes.

- Net sales increased \$869,000, or 8.0% ($\$869 \div \$10,907$)
- Cost of goods sold increased \$515,000, or 8.5%
- Selling and administrative expenses increased \$252,000, or 8.2%
- Gross profit increased 7.3%
- Net income increased 9.9%

The increase in net income can be attributed to the increase in net sales and a decrease in income tax expense.

Vertical Analysis

Also called common-size analysis, is a technique that expresses each financial statement item as a percentage of a base amount.

- On a balance sheet we might express current assets as 22% of total assets (total assets being the base amount)
- On an income statement we might say that selling expenses are 16% of net sales (net sales being the base amount)

Vertical Analysis

Vertical analysis of balance sheets

Illustration 14.10

Chicago Cereal Company				
Condensed Balance Sheets				
December 31 (in thousands)				
	2022		2021	
	Amount	Percent*	Amount	Percent*
Assets				
Current assets	\$ 2,717	23.8	\$ 2,427	22.6
Property, plant, and equipment (net)	2,990	26.2	2,816	26.3
Other assets	5,690	50.0	5,471	51.1
Total assets	<u>\$11,397</u>	<u>100.0</u>	<u>\$10,714</u>	<u>100.0</u>
	2022		2021	
	Amount	Percent*	Amount	Percent*
Liabilities and Stockholders' Equity				
Current liabilities	\$ 4,044	35.5	\$ 4,020	37.5
Long-term liabilities	4,827	42.4	4,625	43.2
Total liabilities	8,871	77.9	8,645	80.7
Stockholders' equity				
Common stock	493	4.3	397	3.7
Retained earnings	3,390	29.7	2,584	24.1
Treasury stock (cost)	(1,357)	(11.9)	(912)	(8.5)
Total stockholders' equity	2,526	22.1	2,069	19.3
Total liabilities and stockholders' equity	<u>\$11,397</u>	<u>100.0</u>	<u>\$10,714</u>	<u>100.0</u>
*Numbers have been rounded to total 100%.				

Vertical Analysis

Changes shown by vertical analysis of bal. sheet

- Current assets increased \$290,000 from 2021 to 2022, and they increased from 22.6% to 23.8% of total assets
- Property assets (net) decreased from 26.3% to 26.2% of total assets
- Other assets decreased from 51.1% to 50.0% of total assets
- Retained earnings increased by \$806,000 from 2021 to 2022
- Total stockholders' equity increased from 19.3% to 22.1% of total liabilities and stockholders' equity

Vertical Analysis

Vertical analysis of income statements

Illustration 14.11

Chicago Cereal Company				
Condensed Income Statements				
For the Years Ended December 31 (in thousands)				
	2022		2021	
	<u>Amount</u>	<u>Percent*</u>	<u>Amount</u>	<u>Percent*</u>
Net sales	\$11,776	100.0	\$10,907	100.0
Cost of goods sold	<u>6,597</u>	<u>56.0</u>	<u>6,082</u>	<u>55.8</u>
Gross profit	5,179	44.0	4,825	44.2
Selling and administrative expenses	<u>3,311</u>	<u>28.1</u>	<u>3,059</u>	<u>28.0</u>
Income from operations	1,868	15.9	1,766	16.2
Interest expense	<u>321</u>	<u>2.7</u>	<u>294</u>	<u>2.7</u>
Income before income taxes	1,547	13.2	1,472	13.5
Income tax expense	<u>444</u>	<u>3.8</u>	<u>468</u>	<u>4.3</u>
Net income	<u>\$ 1,103</u>	<u>9.4</u>	<u>\$ 1,004</u>	<u>9.2</u>

*Numbers have been rounded to total 100%.

Vertical Analysis

Changes shown by vertical analysis of income stmt.

Analysis of the income statements shows the following changes.

- Cost of goods sold as a percentage of net sales increased from 55.8% to 56.0%
- Selling and administrative expenses increased from 28.0% to 28.1%
- Net income as a percentage of net sales increased from 9.2% to 9.4%

Increase in net income as a percentage of sales is due primarily to the decrease in income tax expense as a percentage of sales.

Vertical Analysis

Intercompany comparison by vertical analysis

Illustration 14.12

Condensed Income Statements For the Year Ended December 31, 2022				
	Chicago Cereal (in thousands)		Giant Mills, Inc. (in millions)	
	Amount	Percent*	Amount	Percent*
Net sales	\$11,776	100.0	\$17,910	100.0
Cost of goods sold	6,597	56.0	11,540	64.4
Gross profit	5,179	44.0	6,370	35.6
Selling and administrative expenses	3,311	28.1	3,474	19.4
Income from operations	1,868	15.9	2,896	16.2
Interest expense	321	2.7	196	1.1
Income before income taxes	1,547	13.2	2,700	15.1
Income tax expense	144	3.8	876	4.9
Net income	<u>\$ 1,103</u>	<u>9.4</u>	<u>\$ 1,824</u>	<u>10.2</u>
*Numbers have been rounded to total 100%.				

Vertical Analysis

Vertical analysis used to compare companies

- Chicago net sales are much less than those of Giant, vertical analysis eliminates the impact of this size difference
- Chicago has a higher gross profit percentage 44.0%, compared to 35.6% for Giant
- But Chicago's selling and administrative expenses are 28.1% of net sales, while those of Giant Mills are 19.4%
- Chicago's net income as a percentage of net sales is 9.4%, compared to 10.2% for Giant

DO IT! 2: Horizontal Analysis

Summary financial information for Rosepatch Company.

	<u>December 31, 2022</u>	<u>December 31, 2021</u>
Current assets	\$234,000	\$180,000
Plant assets (net)	<u>756,000</u>	<u>420,000</u>
Total assets	<u>\$990,000</u>	<u>\$600,000</u>

Compute the amount and percentage changes in 2022 using horizontal analysis, assuming 2021 is the base year.

	<u>Increase in 2022</u>	
	<u>Amount</u>	<u>Percent</u>
Current assets	\$ 54,000	30% [(\$234,000 – \$180,000) ÷ \$180,000]
Plant assets (net)	<u>336,000</u>	80% [(\$756,000 – \$420,000) ÷ \$420,000]
Total assets	<u>\$390,000</u>	65% [(\$990,000 – \$600,000) ÷ \$600,000]

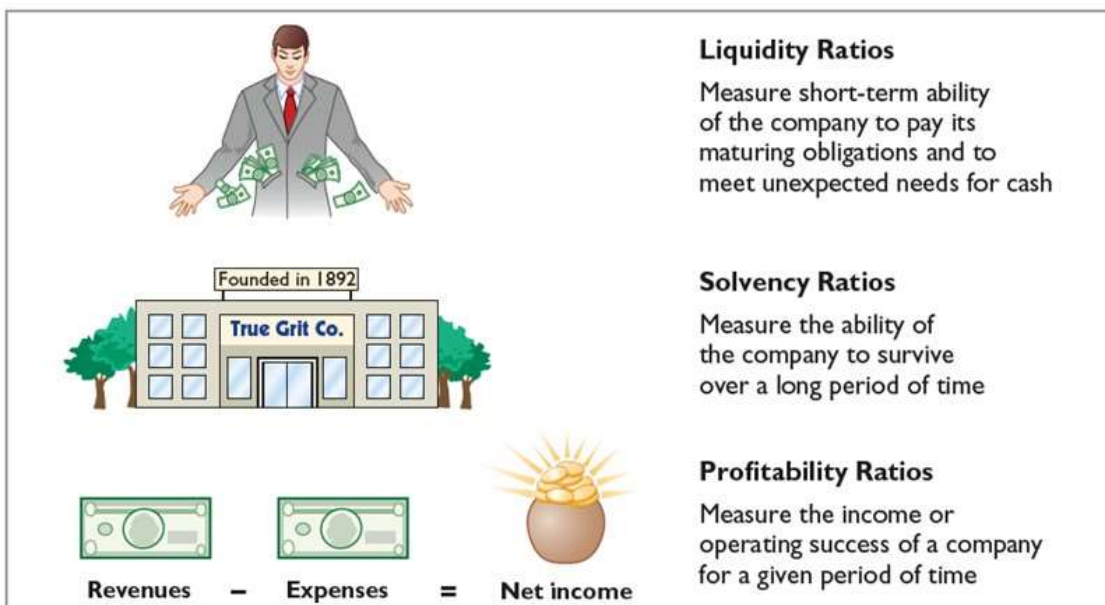
Ratio Analysis

LEARNING OBJECTIVE 3

Analyze a company's performance using ratio analysis.

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

Illustration 14.13



Ratio Analysis

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

We will use the following types of comparisons.

- 1. Intracompany comparisons** for two years for Chicago Cereal.
- 2. Industry average comparisons** based on median ratios for the industry.
- 3. Intercompany comparisons** based on Giant Mills as Chicago Cereal's principal competitor.

Comprehensive Ratio Analysis

Chicago Cereal Company's income statements

Illustration 14.18

Chicago Cereal Company		
Condensed Income Statements		
For the Years Ended December 31 (in thousands)		
	<u>2022</u>	<u>2021</u>
Net sales	\$11,776	\$10,907
Cost of goods sold	<u>6,597</u>	<u>6,082</u>
Gross profit	5,179	4,825
Selling and administrative expenses	<u>3,311</u>	<u>3,059</u>
Income from operations	1,868	1,766
Interest expense	<u>321</u>	<u>294</u>
Income before income taxes	1,547	1,472
Income tax expense	<u>444</u>	<u>468</u>
Net income	<u>\$ 1,103</u>	<u>\$ 1,004</u>

Comprehensive Ratio Analysis

Chicago Cereal Company's balance sheets

Illustration 14.17

Chicago Cereal Company Balance Sheets December 31 (in thousands)		
	<u>2022</u>	<u>2021</u>
<u>Assets</u>		
Current assets		
Cash	\$ 524	\$ 411
Accounts receivable (net)	1,026	945
Inventory	924	824
Prepaid expenses and other current assets	<u>243</u>	<u>247</u>
Total current assets	2,717	2,427
Property, plant, and equipment (net)	2,990	2,816
Other assets	<u>5,690</u>	<u>5,471</u>
Total assets	<u><u>\$11,397</u></u>	<u><u>\$10,714</u></u>
	<u>2022</u>	<u>2021</u>
<u>Liabilities and Stockholders' Equity</u>		
Current liabilities	\$ 4,044	\$ 4,020
Long-term liabilities	4,827	4,625
Stockholders' equity—common	<u>2,526</u>	<u>2,069</u>
Total liabilities and stockholders' equity	<u><u>\$11,397</u></u>	<u><u>\$10,714</u></u>

Comprehensive Ratio Analysis

Chicago Cereal Company's statements of cash flows

Illustration 14.19

Chicago Cereal Company		
Condensed Statements of Cash Flows		
For the Years Ended December 31 (in thousands)		
	<u>2022</u>	<u>2021</u>
Cash flows from operating activities		
Cash receipts from operating activities	\$11,695	\$10,841
Cash payments for operating activities	<u>(10,192)</u>	<u>(9,431)</u>
Net cash provided by operating activities	<u>1,503</u>	<u>1,410</u>
Cash flows from investing activities		
Purchases of property, plant, and equipment	(472)	(453)
Other investing activities	<u>(129)</u>	<u>8</u>
Net cash used in investing activities	<u>(601)</u>	<u>(445)</u>
Cash flows from financing activities		
Issuance of common stock	163	218
Issuance of debt	2,179	721
Reductions of debt	(2,011)	(650)
Payment of cash dividends	(475)	(450)
Repurchase of common stock and other items	<u>(645)</u>	<u>(612)</u>
Net cash provided (used) by financing activities	<u>(789)</u>	<u>(773)</u>
Increase (decrease) in cash and cash equivalents	113	192
Cash and cash equivalents at beginning of year	<u>411</u>	<u>219</u>
Cash and cash equivalents at end of year	<u>\$ 524</u>	<u>\$ 411</u>

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.

1. Current Ratio

Illustration 14.21

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$	$\frac{\$2,717}{\$4,044} = .67$.60	.67	1.06

Chicago has **\$0.67** of current assets for every dollar of current liabilities.

2. Accounts Receivable Turnover

Illustration 14.22

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Accounts receivable turnover	$\frac{\text{Net credit sales}}{\text{Average net accounts receivable}}$	$\frac{\$11,776}{(\$1,026 + \$945) \div 2} = 11.9$	12.0	12.2	11.2

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

3. Average Collection Period

Illustration 14.23

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Average collection period	$\frac{365 \text{ days}}{\text{Accounts receivable turnover}}$	$\frac{365}{11.9} = 30.7$	30.4	29.9	32.6

Analysts frequently use average collection period to assess the effectiveness of a company's credit and collection policies.

4. Inventory Turnover

Illustration 14.24

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Inventory turnover	$\frac{\text{Cost of goods sold}}{\text{Average inventory}}$	$\frac{\$6,597}{(\$924 + \$824) \div 2} = 7.5$	7.9	7.4	6.7

The faster the inventory turnover, the less cash is tied up in inventory and less chance of inventory becoming obsolete.

5. Days in Inventory

Illustration 14.25

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Days in inventory	$\frac{365 \text{ days}}{\text{Inventory turnover}}$	$\frac{365}{7.5} = 48.7$	46.2	49.3	54.5

Measures the average number of days inventory is held.

Solvency Ratios

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

- **Debt to assets ratio** and **times interest earned** provide information about debt-paying ability
- **Free cash flow** provides information about solvency and ability to pay additional dividends or invest in new projects

6. Debt to Assets Ratio

Illustration 14.26

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Debt to assets ratio	$\frac{\text{Total liabilities}}{\text{Total assets}}$	$\frac{\$8,871}{\$11,397} = 78\%$	81%	55%	55%

Provides some indication of company's ability to withstand losses without impairing the interests of its creditor.

7. Times Interest Earned

Illustration 14.27

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
				2022	
Times interest earned	$\frac{\text{Net Income} + \text{Interest expense} + \text{Income tax expense}}{\text{Interest expense}}$	$\frac{\$1,103 + \$321 + \$444}{\$321} = 5.8$	2021 6.0	9.9	5.5

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

8. Free Cash Flow

Illustration 14.28

Ratio	Formula			Chicago Cereal		Giant Mills	Industry Average
				2021	2022	2022	
Free cash flow	Net cash provided by operating activities	– Capital expenditures	– Cash dividends	$\$1,503 - \$472 - \$475 = \556 (in thousands)		\$507 (in millions)	na

One indication of solvency is the amount of excess cash generated after investing in capital expenditures and paying dividends.

Profitability Ratios

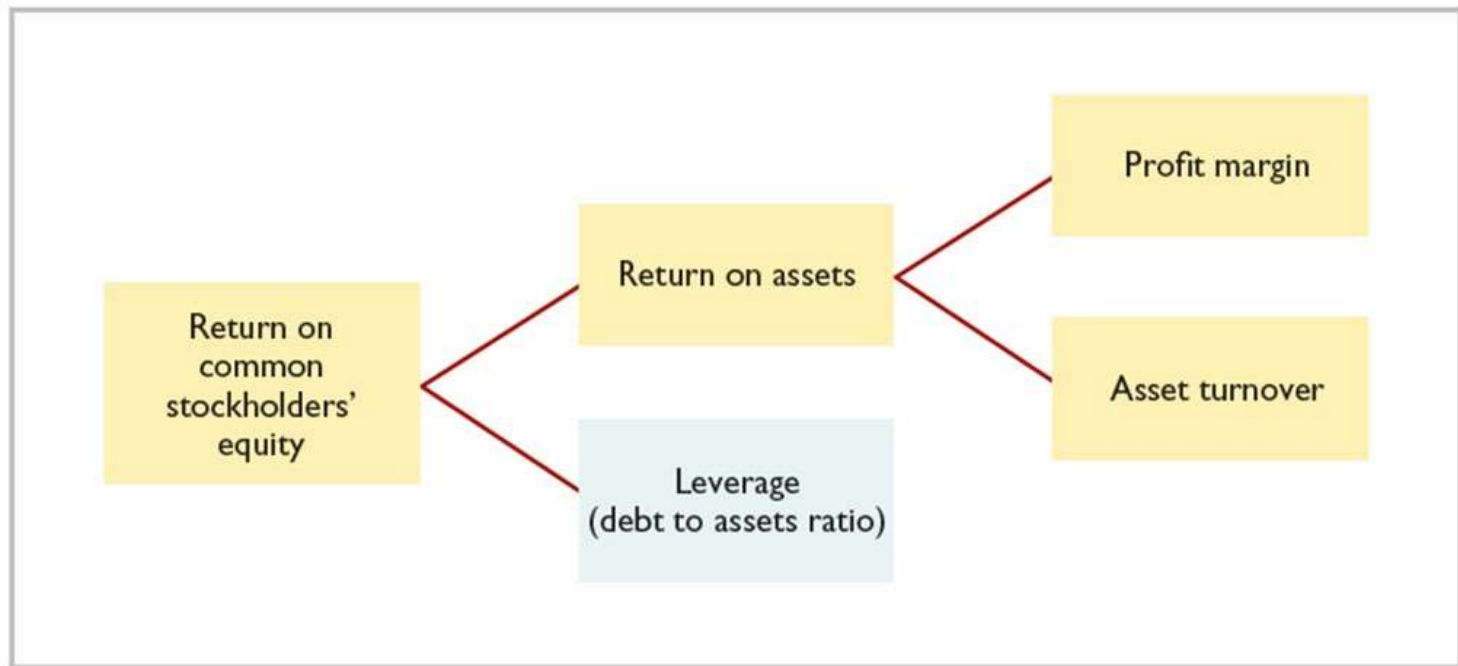
Measure the income or operating success of a company for a given period of time.

- Income affects ability to obtain debt and equity financing, liquidity, and ability to grow
- Creditors and investors are interested in evaluating profitability
- Analysts use profitability as ultimate test of management's operating effectiveness

Profitability Ratios

Relationships among profitability measures

Illustration 14.29



9. Return on Common Stockholders' Equity

Illustration 14.30

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Return on common stockholders' equity	$\frac{\text{Net Income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}}$	$\frac{\$1,103 - \$0}{(\$2,526 + \$2,069) \div 2} = 48\%$	46%	25%	19%

Shows how many dollars of net income the company earned for each dollar invested by the owners.

10. Return on Assets

Illustration 14.31

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Return on assets	$\frac{\text{Net income}}{\text{Average total assets}}$	$\frac{\$1,103}{(\$11,397 + \$10,714) \div 2} = 10.0\%$	9.4%	6.2%	5.3%

Measures the overall profitability of assets in terms of the income earned on each dollar invested in assets.

11. Profit Margin

Illustration 14.32

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Profit margin	$\frac{\text{Net income}}{\text{Net sales}}$	$\frac{\$1,103}{\$11,776} = 9.4\%$	9.2%	8.2%	6.1%

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

12. Asset Turnover

Illustration 14.33

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Asset turnover	$\frac{\text{Net sales}}{\text{Average total assets}}$	$\frac{\$11,776}{(\$11,397 + \$10,714) \div 2} = 1.07$	1.02	.76	.87

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

Profitability Ratios

Composition of return on assets

Illustration 14.34

Ratios:	Profit Margin	×	Asset Turnover	=	Return on Assets
	$\frac{\text{Net Income}}{\text{Net Sales}}$	×	$\frac{\text{Net Sales}}{\text{Average Total Assets}}$	=	$\frac{\text{Net Income}}{\text{Average Total Assets}}$
Chicago Cereal					
2022	9.4%	×	1.07 times	=	10.1%*
2021	9.2%	×	1.02 times	=	9.4%

*Difference from value in Illustration 14.31 due to rounding.

13. Gross Profit Rate

Illustration 14.35

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Gross profit rate	$\frac{\text{Gross profit}}{\text{Net sales}}$	$\frac{\$5,179}{\$11,776} = 44\%$	44%	34%	30%

Indicates a company's ability to maintain an adequate selling price above its cost of goods sold.

14. Earnings Per Share

Illustration 14.36

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Earnings per share (EPS)	$\frac{\text{Net income} - \text{Preferred dividends}}{\text{Weighted-average common shares outstanding}}$	$\frac{\$1,103 - \$0}{418.7} = \$2.63$	\$2.40	\$2.90	na

A measure of the net income earned on each share of common stock.

15. Price Earnings Ratio

Illustration 14.37

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Price-earnings ratio	$\frac{\text{Market priceper share}}{\text{Earnings per share}}$	$\frac{\$52.92}{\$2.63} = 20.1$	20.9	24.3	35.8

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

16. Payout Ratio

Illustration 14.38

Ratio	Formula	Chicago Cereal		Giant Mills	Industry Average
		2022	2021	2022	
Payout ratio	$\frac{\text{Cash dividends paid on common stock}}{\text{Net income}}$	$\frac{\$475}{\$1,103} = 43\%$	45%	54%	37%

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

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