

Appendix 13A**Comprehensive Illustration of Ratio Analysis****LEARNING OBJECTIVE****8**

Evaluate a company comprehensively using ratio analysis.

In previous chapters, we presented many ratios used for evaluating the financial health and performance of a company. In this appendix, we provide a comprehensive review of those ratios and discuss some important relationships among them. Since earlier chapters demonstrated the calculation of each of these ratios, in this appendix we instead focus on their interpretation. Page references to prior discussions point you to any individual ratios you feel you need to review.

We used the financial information in Illustrations 13A-1 through 13A-4 to calculate Chicago Cereal Company's 2011 ratios. You can use these data to review the computations.

Illustration 13A-1 Chicago Cereal Company's balance sheets

CHICAGO CEREAL COMPANY			
Balance Sheets			
December 31 (in thousands)			
<u>Assets</u>	<u>2011</u>	<u>2010</u>	
Current assets			
Cash	\$ 524	\$ 411	
Accounts receivable	1,026	945	
Inventory	924	824	
Prepaid expenses and other current assets	243	247	
Total current assets	2,717	2,427	
Property assets (net)	2,990	2,816	
Intangibles and other assets	5,690	5,471	
Total assets	\$11,397	\$10,714	
Liabilities and Stockholders' Equity			
Current liabilities	\$ 4,044	\$ 4,020	
Long-term liabilities	4,827	4,625	
Stockholders' equity—common	2,526	2,069	
Total liabilities and stockholders' equity	\$11,397	\$10,714	

Illustration 13A-2 Chicago Cereal Company's income statements

CHICAGO CEREAL COMPANY			
Condensed Income Statements			
For the Years Ended December 31 (in thousands)			
	<u>2011</u>	<u>2010</u>	
Net sales	\$11,776	\$10,907	
Cost of goods sold	6,597	6,082	
Gross profit	5,179	4,825	
Selling and administrative expenses	3,311	3,059	
Income from operations	1,868	1,766	
Interest expense	319	307	
Other income (expense), net	(2)	13	
Income before income taxes	1,547	1,472	
Income tax expense	444	468	
Net income	\$ 1,103	\$ 1,004	

CHICAGO CEREAL COMPANY
 Condensed Statements of Cash Flows
 For the Years Ended December 31 (in thousands)

Illustration 13A-3 Chicago Cereal Company's statements of cash flows

	<u>2011</u>	<u>2010</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 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>

Additional information:

	<u>2011</u>	<u>2010</u>
Average number of shares (thousands)	418.7	418.5
Stock price at year-end	\$52.92	\$50.06

Illustration 13A-4 Additional information for Chicago Cereal Company

As indicated in the chapter, we can classify ratios into three types for analysis of the primary financial statements:

- Liquidity ratios.** Measures of the short-term ability of the company to pay its maturing obligations and to meet unexpected needs for cash.
- Solvency ratios.** Measures of the ability of the company to survive over a long period of time.
- Profitability ratios.** Measures of the income or operating success of a company for a given period of time.

As a tool of analysis, ratios can provide clues to underlying conditions that may not be apparent from an inspection of the individual components of a particular ratio. But, a single ratio by itself is not very meaningful. Accordingly, in this discussion we use the following three comparisons.

- Intracompany comparisons** covering two years for Chicago Cereal Company (using comparative financial information from Illustrations 13A-1 through 13A-4).
- Intercompany comparisons** using General Mills as one of Chicago Cereal's competitors.

3. **Industry average comparisons** based on MSN.com median ratios for manufacturers of flour and other grain mill products and comparisons with other sources. For some of the ratios that we use, industry comparisons are not available. (These are denoted "na.")

LIQUIDITY RATIOS

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. The measures used to determine the company's short-term debt-paying ability are the current ratio, the current cash debt coverage, the accounts receivable turnover, the average collection period, the inventory turnover, and days in inventory.

1. **Current ratio.** The current ratio expresses the relationship of current assets to current liabilities, computed by dividing current assets by current liabilities. It is widely used for evaluating a company's liquidity and short-term debt-paying ability. The 2011 and 2010 current ratios for Chicago Cereal and comparative data are shown in Illustration 13A-5.

Illustration 13A-5
Current ratio

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$	Short-term debt-paying ability	.67	.60	1.00	1.20	52

What do the measures tell us? Chicago Cereal's 2011 current ratio of .67 means that for every dollar of current liabilities, it has \$0.67 of current assets. We sometimes state such ratios as .67:1 to reinforce this interpretation. Its current ratio—and therefore its liquidity—increased significantly in 2011. It is well below the industry average and that of General Mills.

2. **Current cash debt coverage.** A disadvantage of the current ratio is that it uses year-end balances of current asset and current liability accounts. These year-end balances may not represent the company's current position during most of the year. The current cash debt coverage partially corrects for this problem. It is the ratio of net cash provided by operating activities to average current liabilities. Because it uses net cash provided by operating activities rather than a balance at one point in time, it may provide a better representation of liquidity. Chicago Cereal's current cash debt coverage is shown in Illustration 13A-6.

Illustration 13A-6
Current cash debt coverage

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Current cash debt coverage	$\frac{\text{Net cash provided by operating activities}}{\text{Average current liabilities}}$	Short-term debt-paying ability (cash basis)	.37	.39	.54	na	559

This ratio decreased slightly in 2011 for Chicago Cereal. Is the coverage adequate? Probably so. Its operating cash flow coverage of average current liabilities is less than that of General Mills, but it approximates a commonly accepted threshold of .40. No industry comparison is available.

3. Accounts receivable turnover. Analysts can measure liquidity by how quickly a company converts certain assets to cash. Low values of the previous ratios can sometimes be compensated for if some of the company's current assets are highly liquid.

How liquid, for example, are the receivables? The ratio used to assess the liquidity of the receivables is the accounts receivable turnover, which measures the number of times, on average, a company collects receivables during the period. The accounts receivable turnover is computed by dividing net credit sales (net sales less cash sales) by average net accounts receivable during the year. The accounts receivable turnover for Chicago Cereal is shown in Illustration 13A-7.

Illustration 13A-7
Accounts receivable turnover

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Accounts receivable turnover	$\frac{\text{Net credit sales}}{\text{Average net accounts receivable}}$	Liquidity of receivables	11.9	12.0	12.4	11.2	357

We have assumed that all Chicago Cereal's sales are credit sales. Its accounts receivable turnover declined slightly in 2011. The turnover of 11.9 times is higher than the industry average of 11.2 times, and slightly lower than General Mills' turnover of 12.4 times.

4. Average collection period. A popular variant of the accounts receivable turnover converts it into an average collection period in days. This is done by dividing the accounts receivable turnover into 365 days. The average collection period for Chicago Cereal is shown in Illustration 13A-8.

Illustration 13A-8
Average collection period

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Average collection period	$\frac{365 \text{ days}}{\text{Accounts receivable turnover}}$	Liquidity of receivables and collection success	30.7	30.4	29.4	32.6	357

Chicago Cereal's 2011 accounts receivable turnover of 11.9 times is divided into 365 days to obtain approximately 31 days. This means that the average collection period for receivables is about 31 days. Its average collection period is longer than that of General Mills and shorter than that of the industry.

Analysts frequently use the average collection period to assess the effectiveness of a company's credit and collection policies. The general rule is that the collection period should not greatly exceed the credit term period (i.e., the time allowed for payment).

5. Inventory turnover. The inventory turnover measures the number of times average inventory was sold during the period. Its purpose is to measure the liquidity of the inventory. A high measure indicates that inventory is being sold and replenished frequently. The inventory turnover is computed by dividing the cost of goods sold by the average inventory during the period. Unless seasonal factors are significant, average inventory can be computed

from the beginning and ending inventory balances. Chicago Cereal's inventory turnover is shown in Illustration 13A-9.

Illustration 13A-9
Inventory turnover

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Inventory turnover	$\frac{\text{Cost of goods sold}}{\text{Average inventory}}$	Liquidity of inventory	7.5	7.9	6.5	6.7	253

Chicago Cereal's inventory turnover decreased slightly in 2011. The turnover of 7.5 times is higher than the industry average of 6.7 times and better than General Mills' 6.5 times. Generally, the faster the inventory turnover, the less cash is tied up in inventory and the less the chance of inventory becoming obsolete. Of course, a downside of high inventory turnover is that it sometimes results in lost sales because if a company keeps less inventory on hand, it is more likely to run out of inventory when it is needed.

6. **Days in inventory.** A variant of the inventory turnover is the **days in inventory**, which measures the average number of days inventory is held. The days in inventory for Chicago Cereal is shown in Illustration 13A-10.

Illustration 13A-10
Days in inventory

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Days in inventory	$\frac{365 \text{ days}}{\text{Inventory turnover}}$	Liquidity of inventory and inventory management	48.7	46.2	56.2	54.5	253

Chicago Cereal's 2011 inventory turnover of 7.5 divided into 365 is approximately 49 days. An average selling time of 49 days is faster than the industry average and faster than that of General Mills. Some of this difference might be explained by differences in product lines across the two companies, although in many ways the types of products of these two companies are quite similar.

Inventory turnovers vary considerably among industries. For example, grocery store chains have a turnover of 10 times and an average selling period of 37 days. In contrast, jewelry stores have an average turnover of 1.3 times and an average selling period of 281 days. Within a company, there may even be significant differences in inventory turnover among different types of products. Thus, in a grocery store the turnover of perishable items such as produce, meats, and dairy products is faster than the turnover of soaps and detergents.

To conclude, nearly all of these liquidity measures suggest that Chicago Cereal's liquidity changed little during 2011. Its liquidity appears acceptable when compared to the industry as a whole and when compared to General Mills.

SOLVENCY RATIOS

Solvency ratios measure the ability of the company to survive over a long period of time. Long-term creditors and stockholders are interested in a company's long-run solvency, particularly its ability to pay interest as it comes due and to repay the face value of debt at maturity. The debt to assets ratio, the times interest earned, and the cash debt coverage provide information about debt-paying ability. In addition, free cash flow provides information about the company's solvency and its ability to pay additional dividends or invest in new projects.

7. **Debt to assets ratio.** The debt to assets ratio measures the percentage of total financing provided by creditors. It is computed by dividing total liabilities (both current and long-term debt) by total assets. This ratio indicates the degree of financial leveraging. It also provides some indication of the company's ability to withstand losses without impairing the interests of its creditors. The higher the percentage of debt to assets, the greater the risk that the company may be unable to meet its maturing obligations. The lower the ratio, the more equity "buffer" is available to creditors if the company becomes insolvent. Thus, from the creditors' point of view, a low ratio of debt to assets is desirable. Chicago Cereal's debt to assets ratio is shown in Illustration 13A-11.

Illustration 13A-11
Debt to assets ratio

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in Textbook
			2011	2010	2011	2011	
Debt to assets ratio	$\frac{\text{Total liabilities}}{\text{Total assets}}$	Percentage of total assets provided by creditors	78%	81%	52%	49%	53

Chicago Cereal's 2011 ratio of 78% means that creditors have provided financing sufficient to cover 78% of the company's total assets. Alternatively, it says that it would have to liquidate 78% of its assets at their book value in order to pay off all of its debts. Its ratio is above the industry average of 49%, as well as that of General Mills. This suggests that it is less solvent than the industry average and General Mills. Chicago Cereal's solvency improved slightly during the year.

The adequacy of this ratio is often judged in light of the company's earnings. Generally, companies with relatively stable earnings, such as public utilities, have higher debt to assets ratios than cyclical companies with widely fluctuating earnings, such as many high-tech companies.

Another ratio with a similar meaning is the **debt to equity ratio**. It shows the relative use of borrowed funds (total liabilities) compared with resources invested by the owners. Because this ratio can be computed in several ways, be careful when making comparisons with it. Debt may be defined to include only the noncurrent portion of liabilities, and intangible assets may be excluded from stockholders' equity (which would equal tangible net worth). If debt and assets are defined as above (all liabilities and all assets), then when the debt to assets ratio equals 50%, the debt to equity ratio is 1:1.

8. **Times interest earned.** The times interest earned (also called interest coverage) indicates the company's ability to meet interest payments as they come due. It is computed by dividing income before interest expense and income taxes by interest expense. Note that this ratio uses income before interest expense and income taxes because this amount represents what is available to cover interest. Chicago Cereal's times interest earned is shown in Illustration 13A-12.

Illustration 13A-12
Times interest earned

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in Textbook
			2011	2010	2011	2011	
Times interest earned	$\frac{\text{Net Income} + \text{Interest expense} + \text{Tax expense}}{\text{Interest expense}}$	Ability to meet interest payments as they come due	5.8	5.8	7.2	19.6	453

For Chicago Cereal, the 2011 interest coverage was 5.8, which indicates that income before interest and taxes was 5.8 times the amount needed for interest expense. This is less than the rate for General Mills, and it is significantly less than the average rate for the industry. The debt to assets ratio decreased for Chicago Cereal during 2011, and its times interest earned held constant.

9. **Cash debt coverage.** The ratio of net cash provided by operating activities to average total liabilities, called the cash debt coverage, is a cash-basis measure of solvency. This ratio indicates a company's ability to repay its liabilities from net cash generated from operating activities without having to liquidate the assets used in its operations. Illustration 13A-13 shows Chicago Cereal's cash debt coverage.

Illustration 13A-13

Cash debt coverage

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in Textbook
			2011	2010	2011	2011	
Cash debt coverage	$\frac{\text{Net cash provided by operating activities}}{\text{Average total liabilities}}$	Long-term debt-paying ability (cash basis)	.17	.17	.13	na	560

An industry average for this measure is not available. Chicago Cereal's .17 is higher than General Mills' .13, and it remained unchanged from 2010. One way of interpreting this ratio is to say that net cash generated from one year of operations would be sufficient to pay off 17% of its total liabilities. If 17% of this year's liabilities were retired each year, it would take approximately 5.9 years to retire all of its debt. It would take General Mills approximately 7.7 years to do so. A general rule of thumb is that a cash debt coverage above .20 is acceptable.

10. **Free cash flow.** One indication of a company's solvency, as well as of its ability to pay dividends or expand operations, is the amount of excess cash it generated after investing in capital expenditures and paying dividends. This amount is referred to as free cash flow. For example, if you generate \$100,000 of net cash provided by operating activities but you spend \$30,000 on capital expenditures and pay \$10,000 in dividends, you have \$60,000 ($\$100,000 - \$30,000 - \$10,000$) to use either to expand operations, pay additional dividends, or pay down debt. Chicago Cereal's free cash flow is shown in Illustration 13A-14.

Illustration 13A-14

Free cash flow

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in Textbook
			2011	2010	2011	2011	
Free cash flow	$\frac{\text{Net cash provided by operating activities} - \text{Capital expenditures} - \text{Cash dividends}}{\text{Cash available for paying dividends or expanding operations}}$	Cash available for paying dividends or expanding operations	\$556 (in thousands)	\$507	\$686 (in millions)	na	54

Chicago Cereal's free cash flow increased slightly from 2010 to 2011. During both years, the net cash provided by operating activities was more than enough to allow it to acquire additional productive assets and maintain dividend payments. It could have used the remaining cash to reduce debt if necessary. Given that Chicago Cereal is much smaller than General Mills, we would expect its free cash flow to be substantially smaller, which it is.

PROFITABILITY RATIOS

Profitability ratios measure the income or operating success of a company for a given period of time. A company's income, or the lack of it, affects its ability to obtain debt and equity financing, its liquidity position, and its ability to grow. As a consequence, creditors and investors alike are interested in evaluating profitability. Analysts frequently use profitability as the ultimate test of management's operating effectiveness.

Throughout this textbook, we have introduced numerous measures of profitability. The relationships among measures of profitability are very important. Understanding them can help management determine where to focus its efforts to improve profitability. Illustration 13A-15 diagrams these relationships. Our discussion of Chicago Cereal's profitability is structured around this diagram.

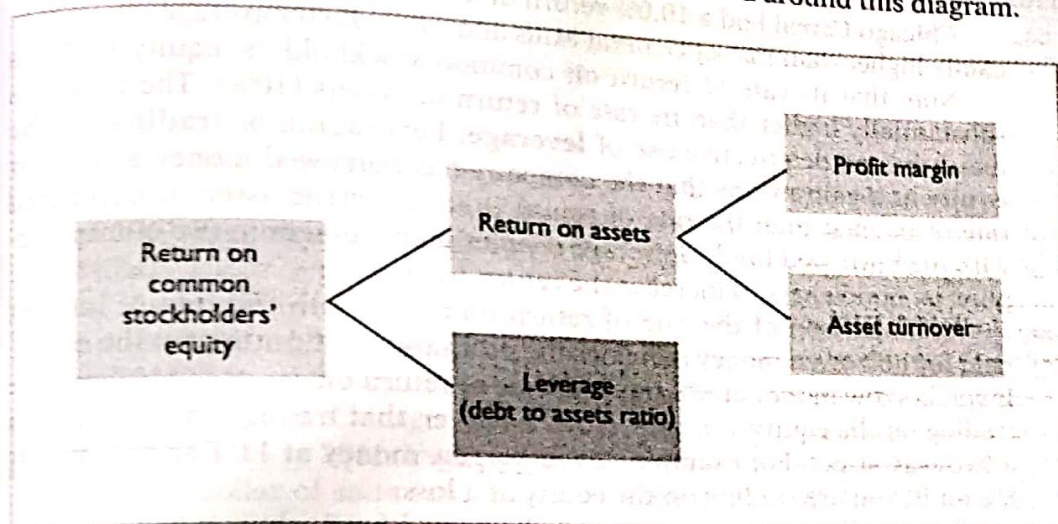


Illustration 13A-15
Relationships among profitability measures

11. **Return on common stockholders' equity (ROE).** A widely used measure of profitability from the common stockholder's viewpoint is the return on common stockholders' equity (ROE). This ratio shows how many dollars of net income the company earned for each dollar invested by the owners. It is computed by dividing net income minus any preferred dividends—that is, income available to common stockholders—by average common stockholders' equity. The return on common stockholders' equity for Chicago Cereal is shown in Illustration 13A-16.

Illustration 13A-16 Return on common stockholders' equity

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in Textbook
			2011	2010	2011	2011	
Return on common stockholders' equity	$\frac{\text{Net Income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}}$	Profitability of common stockholders' investment	48%	46%	24%	24%	516

Chicago Cereal's 2011 rate of return on common stockholders' equity is unusually high at 48%. The industry average is 24% and General Mills' return is 24%. In the subsequent sections, we investigate the causes of this high return.

12. **Return on assets.** The return on common stockholders' equity is affected by two factors: the return on assets and the degree of leverage. The return on assets measures the overall profitability of assets in terms of the income

earned on each dollar invested in assets. It is computed by dividing net income by average total assets. Chicago Cereal's return on assets is shown in Illustration 13A-17.

Illustration 13A-17
Return on assets

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Return on assets	$\frac{\text{Net income}}{\text{Average total assets}}$	Overall profitability of assets	10.0%	9.4%	7.4%	8.7%	399

Chicago Cereal had a 10.0% return on assets in 2011. This rate is significantly higher than that of General Mills and the industry average.

Note that its rate of return on common stockholders' equity (48%) is substantially higher than its rate of return on assets (10%). The reason is that it has made effective use of **leverage**. Leveraging or trading on the equity at a gain means that the company has borrowed money at a lower rate of interest than the rate of return it earns on the assets it purchased with the borrowed funds. Leverage enables management to use money supplied by nonowners to increase the return to owners.

A comparison of the rate of return on assets with the rate of interest paid for borrowed money indicates the profitability of trading on the equity. If you borrow money at 8% and your rate of return on assets is 11%, you are trading on the equity at a gain. Note, however, that trading on the equity is a two-way street: For example, if you borrow money at 11% and earn only 8% on it, you are trading on the equity at a loss.

Chicago Cereal earns more on its borrowed funds than it has to pay in interest. Thus, the return to stockholders exceeds the return on assets because of the positive benefit of leverage. Recall from our earlier discussion that Chicago Cereal's percentage of debt financing, as measured by the ratio of debt to assets (or debt to equity), was higher than General Mills' and the industry average. It appears that Chicago Cereal's high return on common stockholders' equity is due in part to its use of leverage.

13. **Profit margin.** The return on assets is affected by two factors, the first of which is the profit margin. The profit margin, or rate of return on sales, is a measure of the percentage of each dollar of sales that results in net income. It is computed by dividing net income by net sales for the period. Chicago Cereal's profit margin is shown in Illustration 13A-18.

Illustration 13A-18
Profit margin

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Profit margin	$\frac{\text{Net income}}{\text{Net sales}}$	Net income generated by each dollar of sales	9.4%	9.2%	9.1%	8.8%	210

Chicago Cereal experienced a slight increase in its profit margin from 2010 to 2011 of 9.2% to 9.4%. Its profit margin was higher than the industry average and that of General Mills.

High-volume (high inventory turnover) businesses such as grocery stores and pharmacy chains generally have low profit margins. Low-volume businesses such as jewelry stores and airplane manufacturers have high profit margins.

14. **Asset turnover.** The other factor that affects the return on assets is the asset turnover. The **asset turnover** measures how efficiently a company uses its assets to generate sales. It is determined by dividing net sales by average total assets for the period. The resulting number shows the dollars of sales produced by each dollar invested in assets. Illustration 13A-19 shows the asset turnover for Chicago Cereal.

Illustration 13A-19
Asset turnover

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry 2011	Page in Textbook
			2011	2010	2011		
Asset turnover	$\frac{\text{Net sales}}{\text{Average total assets}}$	How efficiently assets are used to generate sales	1.07	1.02	.80	1.00	400

The asset turnover shows that in 2011, Chicago Cereal generated sales of \$1.07 for each dollar it had invested in assets. The ratio rose from 2010 to 2011. Its asset turnover is above the industry average and that of General Mills.

Asset turnover varies considerably among industries. The average asset turnover for utility companies is .45, for example, while the grocery store industry has an average asset turnover of 3.49.

In summary, Chicago Cereal's return on assets increased from 9.4% in 2010 to 10.0% in 2011. Underlying this increase was an increased profitability on each dollar of sales (as measured by the profit margin) and a rise in the sales-generating efficiency of its assets (as measured by the asset turnover). We can analyze the combined effects of profit margin and asset turnover on return on assets for Chicago Cereal as shown in Illustration 13A-20.

Illustration 13A-20
Composition of return on assets

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					
2011	9.4%	×	1.07 times	=	10.1%*
2010	9.2%	×	1.02 times	=	9.4%

*Difference from value on page 624 due to rounding.

15. **Gross profit rate.** One factor that strongly influences the profit margin is the gross profit rate. The **gross profit rate** is determined by dividing gross profit (net sales less cost of goods sold) by net sales. This rate indicates a company's ability to maintain an adequate selling price above its cost of goods sold.

As an industry becomes more competitive, this ratio declines. For example, in the early years of the personal computer industry, gross profit rates were quite high. Today, because of increased competition and a belief that most brands of personal computers are similar in quality, gross profit rates

have become thin. Analysts should closely monitor gross profit rates over time. Illustration 13A-21 shows Chicago Cereal's gross profit rate.

Illustration 13A-21
Gross profit rate

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Gross profit rate	$\frac{\text{Gross profit}}{\text{Net sales}}$	Margin between selling price and cost of goods sold	44%	44%	36%	12%	209

Chicago Cereal's gross profit rate remained constant from 2010 to 2011.

16. **Earnings per share (EPS).** Stockholders usually think in terms of the number of shares they own or plan to buy or sell. Expressing net income earned on a per share basis provides a useful perspective for determining profitability. Earnings per share is a measure of the net income earned on each share of common stock. It is computed by dividing net income by the average number of common shares outstanding during the year.

The terms "net income per share" or "earnings per share" refer to the amount of net income applicable to each share of **common stock**. Therefore, when we compute earnings per share, if there are preferred dividends declared for the period, we must deduct them from net income to arrive at income available to the common stockholders. Chicago Cereal's earnings per share is shown in Illustration 13A-22.

Illustration 13A-22
Earnings per share

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Earnings per share (EPS)	$\frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common shares outstanding}}$	Net income earned on each share of common stock	\$2.63	\$2.40	\$2.35	na	48

Note that no industry average is presented in Illustration 13A-22. Industry data for earnings per share are not reported, and in fact the Chicago Cereal and General Mills ratios should not be compared. Such comparisons are not meaningful because of the wide variations in the number of shares of outstanding stock among companies. Chicago Cereal's earnings per share increased 23 cents per share in 2011. This represents a 9.6% increase from the 2010 EPS of \$2.40.

17. **Price-earnings ratio.** The price-earnings ratio is an oft-quoted statistic that measures the ratio of the market price of each share of common stock to the earnings per share. The price-earnings (P-E) ratio reflects investors' assessments of a company's future earnings. It is computed by dividing the market price per share of the stock by earnings per share. Chicago Cereal's price-earnings ratio is shown in Illustration 13A-23.

Illustration 13A-23
Price-earnings ratio

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in
			2011	2010	2011	2011	Textbook
Price-earnings ratio	$\frac{\text{Stock price per share}}{\text{Earnings per share}}$	Relationship between market price per share and earnings per share	20.1	20.9	16.3	22.8	612

At the end of 2011 and 2010, the market price of Chicago Cereal's stock was \$52.92 and \$50.06, respectively.

In 2011, each share of Chicago Cereal's stock sold for 20.1 times the amount that was earned on each share. Chicago Cereal's price-earnings ratio is higher than General Mills' ratio of 16.3 and lower than the industry average of 22.8 times. Its higher P-E ratio suggests that the market is more optimistic about Chicago Cereal than about General Mills. However, it might also signal that Chicago Cereal's stock is overpriced. That is a matter for the analyst to determine.

18. **Payout ratio.** The payout ratio measures the percentage of earnings distributed in the form of cash dividends. It is computed by dividing cash dividends declared on common stock by net income. Companies that have high growth rates are characterized by low payout ratios because they reinvest most of their net income in the business. The payout ratio for Chicago Cereal is shown in Illustration 13A-24.

Illustration 13A-24
Payout ratio

Ratio	Formula	Indicates	Chicago Cereal		General Mills	Industry	Page in Textbook
			2011	2010	2011	2011	
Payout ratio	Cash dividends declared on common stock Net income	Percentage of earnings distributed in the form of cash dividends	43%	45%	50%	37%	515

The 2011 and 2010 payout ratios for Chicago Cereal are slightly lower than that of General Mills (50%) but higher than the industry average (37%).

Management has some control over the amount of dividends paid each year, and companies are generally reluctant to reduce a dividend below the amount paid in a previous year. Therefore, the payout ratio will actually increase if a company's net income declines but the company keeps its total dividend payment the same. Of course, unless the company returns to its previous level of profitability, maintaining this higher dividend payout ratio is probably not possible over the long run.

Before drawing any conclusions regarding Chicago Cereal's dividend payout ratio, we should calculate this ratio over a longer period of time to evaluate any trends and also try to find out whether management's philosophy regarding dividends has changed recently. The "Selected Financial Data" section of Chicago Cereal's Management Discussion and Analysis shows that over a 5-year period, earnings per share rose 45%, while dividends per share grew only 19%.

In terms of the types of financial information available and the ratios used by various industries, what can be practically covered in this textbook gives you only the "Titanic approach." That is, you are seeing only the tip of the iceberg compared to the vast databases and types of ratio analysis that are available on computers. The availability of information is not a problem. The real trick is to be discriminating enough to perform relevant analysis and select pertinent comparative data.

Summary of Learning Objective for Appendix 13A

8 Evaluate a company comprehensively using ratio analysis. To evaluate a company, ratios (liquidity, solvency, and profitability) provide clues to underlying

conditions, but intracompany, intercompany industry average comparisons are also needed