CHAPTER ONE

1 OVERVIEW OF FINANCIAL STATEMENT ANALYSIS

A LOOK AT THIS CHAPTER

We begin our analysis of financial statements by considering its relevance in the broader context of business analysis. We use Colgate Palmolive Co. as an example to help us illustrate the importance of assessing financial performance in light of industry and economic conditions. This leads us to focus on financial statement users, their information needs, and how financial statement analysis addresses those needs. We describe major types of business activities and how they are reflected in financial statements. A preliminary financial analysis illustrates these important concepts.

A LOOK AHEAD

Chapter 2 describes the financial reporting environment and the information included in financial statements. Chapters 3 through 6 deal with accounting analysis, which is the task of analyzing, adjusting, and interpreting accounting numbers that make up financial statements. Chapters 7 through 11 focus on mastering the tools of financial statement analysis and valuation. A comprehensive financial statement analysis follows Chapter 11.

ANALYSIS OBJECTIVES

- Explain business analysis and its relation to financial statement analysis.
- Identify and discuss different types of business analysis.
- Describe component analyses that constitute business analysis.
- Explain business activities and their relation to financial statements.
- Describe the purpose of each financial statement and linkages between them.
- Identify the relevant analysis information beyond financial statements.
- Analyze and interpret financial statements as a preview to more detailed analyses.
- Apply several basic financial statement analysis techniques.
- Define and formulate some basic valuation models.
- Explain the purpose of financial statement analysis in an efficient market.

Something to Smile About?

NEW YORK, NY–Colgate has been creating smiles the world over for the past 200 years. However, the smiles are not limited to users of its immensely popular toothpaste. Colgate's financial and stock price performance during the past decade has given plenty for its shareholders to smile about. Stock price has more than doubled over this period, generating average returns for Colgate's stockholders to the tune of about 12.5% per year, almost double that on the S&P 500 over a comparable period. Earnings have doubled even though shareholder capital actually declined, indicating that the earnings growth has been fueled by improving productivity with which Colgate uses its capital.

One of the world's oldest corporations, Colgate today is a truly global company, with a presence in almost 200 countries and sales revenues of above $12 billion. Its brand name–most famously associated with its toothpaste–is one of the oldest and best recognized brands in the world. In fact, the brand has been so successful that "Colgate" has become a generic word for toothpaste in many countries, spawning imitations over which the company has been engaged in bitter legal disputes.

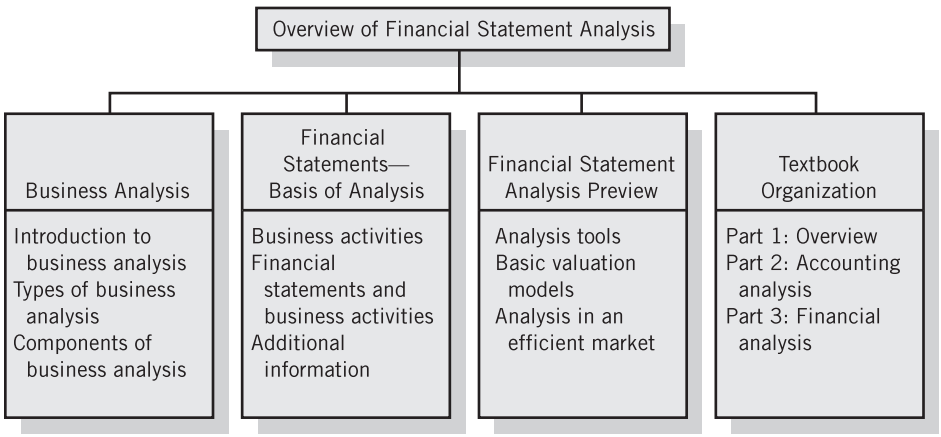
Colgate leverages the popularity of its brand as well as its international presence and implements a business strategy that focuses on attaining market leadership in certain key product categories and markets where its strengths lie. For example, Colgate controls almost a third of the world's toothpaste market where it has been gaining market share in the recent past! Such market leadership allows it pricing power in the viciously competitive consumer products' markets. A total consumer orientation, constant innovation, and relentless quest for improving cost efficiencies have been Colgate's hallmarks to success.

Another key feature in Colgate's strategy has been its extremely generous dividend policy; over the past 10 years Colgate has paid out almost $11 billion to its shareholders through cash dividends and stock buybacks, which is significantly more than the money it has raised from its shareholder's in its entire history! Colgate's dividend policy reflects its management philosophy of staying focused on generating superior shareholder returns rather than pursuing a strategy of misguided growth. Small, in Colgate's case, has certainly been beautiful!

Source: Company's 10 Ks.

PREVIEW OF CHAPTER 1

Financial statement analysis is an integral and important part of the broader field of business analysis. **Business analysis** is the process of evaluating a company's economic prospects and risks. This includes analyzing a company's business environment, its strategies, and its financial position and performance. Business analysis is useful in a wide range of business decisions such as whether to invest in equity or in debt securities, whether to extend credit through short- or long-term



loans, how to value a business in an initial public offering (IPO), and how to evaluate restructurings including mergers, acquisitions, and divestitures. **Financial statement analysis** is the application of analytical tools and techniques to general-purpose financial statements and related data to derive estimates and inferences useful in business analysis. Financial statement analysis reduces reliance on hunches, guesses, and intuition for business decisions. It decreases the uncertainty of business analysis. It does not lessen the need for expert judgment but, instead, provides a systematic and effective basis for business analysis. This chapter describes business analysis and the role of financial statement analysis. The chapter also introduces financial statements and explains how they reflect underlying business activities. We introduce several tools and techniques of financial statement analysis and apply them in a preliminary analysis of Colgate. We also show how business analysis helps us understand Colgate's prospects and the role of business environment and strategy for financial statement analysis.

BUSINESS ANALYSIS

This section explains business analysis, describes its practical applications, identifies separate analyses that make up business analysis, and shows how it all fits in with financial statement analysis.

Introduction to Business Analysis

Financial statement analysis is part of business analysis. Business analysis is the evaluation of a company's prospects and risks for the purpose of making business decisions. These business decisions extend to equity and debt valuation, credit risk assessment, earnings predictions, audit testing, compensation negotiations, and countless other decisions. Business analysis aids in making informed decisions by helping structure the decision task through an evaluation of a company's business environment, its strategies, and its financial position and performance.

To illustrate what business analysis entails we turn to Colgate. Much financial information about Colgate–including its financial statements, explanatory notes, and selected news about its past performance–is communicated in its *annual report* reproduced in Appendix A near the end of this book. The annual report also provides qualitative information about the Colgate's strategies and future plans, typically in the Management Discussion and Analysis, or MD&A, section.

An initial step in business analysis is to evaluate a company's business environment and strategies. We begin by studying Colgate's business activities and learn that it is a leading global consumer products company. Colgate has several internationally well-known brands that are primarily in the oral, personal, and home care markets. The company has brands in markets as varied as dental care, soaps and cosmetics, household cleaning products, and pet care and nutrition. The other remarkable feature of Colgate is its comprehensive global presence. More than 70% of Colgate's revenues are derived from international operations. The company operates in 200 countries around the world, with equal presence in every major continent! Exhibit 1.1 identifies Colgate's operating divisions.

Colgate's strengths are the popularity of its brands and the highly diversified nature of its operations. These strengths, together with the static nature of demand for consumer products, give rise to Colgate's financial stability, thereby reducing risk for its equity and debt investors. For example, Colgate's stock price weathered the bear market of 2000–2002, when the S&P 500 shed almost half its value (see Exhibit 1.2). The static nature of demand in the consumer products' markets, however, is a double-edged

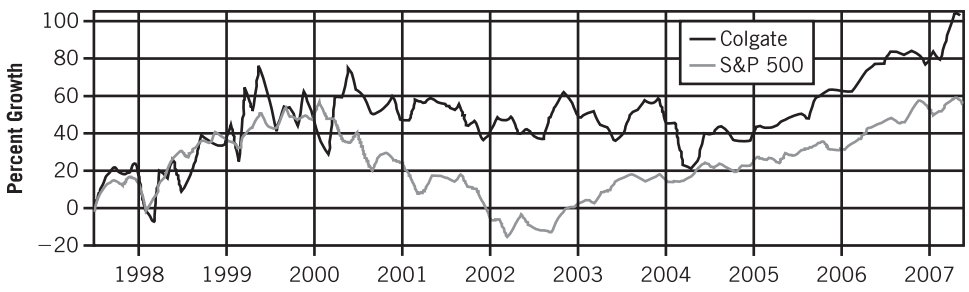
Colgate's Operating Divisions: Oral, Personal, and Home Care ***Exhibit 1.1***

	($ MILLION)		
	Net Sales	Operating Profit	Total Assets
North America*	$ 2,591	$ 550	$2,006
Latin America	3,020	873	2,344
Europe/South Pacific	2,952	681	2,484
Greater/South Pacific	2,006	279	1,505
Total oral, personal, home care	$10,569	$2,383	$8,339
Pet nutrition†	$ 1,669	$ 448	$ 647
Total operating divisions	$12,238	$2,831	$8,986
Corporate	N/A	($ 670)	$ 152
Total for company	$12,238	$2,161	$9,138

**North America net sales in the United States for oral, personal, and home care were $2,211, $2,124, and $2,000 in 2006, 2005, and 2004, respectively.*

†Net sales in the United States for pet nutrition were $898, $818, and $781 in 2006, 2005, and 2004, respectively.

Colgate Stock Price Growth versus S&P Growth ***Exhibit 1.2***



sword: while reducing sales volatility, it also fosters fierce competition for market share. Colgate has been able to thrive in this competitive environment by following a carefully defined business strategy that develops and increases market leadership positions in certain key product categories and markets that are consistent with the company's core strengths and competencies and through relentless innovation. For example, the company uses its valuable consumer insights to develop successful new products regionally, which are then rolled out on a global basis. Colgate also focuses on areas of the world where economic development and increasing consumer spending provides opportunities for growth. Despite these strategic overtures, Colgate's profit margins are continuously squeezed by competition. The company was thus forced to initiate a major restructuring program in 2004 to reduce costs by trimming its workforce by 12% and shedding several unprofitable product lines.

Colgate's brand leadership together with its international diversification and sensible business strategies have enabled it to become one of the most successful consumer products' companies in the world. In 2006, Colgate earned $1.35 billion on sales revenues of more than $12 billion. Its operating profit margin was in excess of 10% of sales, which translates to a return on assets of above 15%, suggesting that Colgate is fairly profitable. Colgate's small equity base, however, leverages its return on equity in 2006 to a spectacular 98%, one of the highest of all publicly traded companies. The stock market has richly rewarded Colgate's excellent financial performance and low risk: the company's price-to-earnings and its price-to-book ratios are, respectively, 26 and 23, and its stock price has doubled during the past 10 years.

In our previous discussion, we reference a number of financial performance measures, such as operating profit margins, return on assets, and return on equity. We also refer to certain valuation ratios such as price-to-earnings and price-to-book, which appear to measure how the stock market rewards Colgate's performance. Financial statements provide a rich and reliable source of information for such financial analysis. The statements reveal how a company obtains its resources (financing), where and how those resources are deployed (investing), and how effectively those resources are deployed (operating profitability). Many individuals and organizations use financial statements to improve business decisions. Investors and creditors use them to assess company prospects for investing and lending decisions. Boards of directors, as investor representatives, use them to monitor managers' decisions and actions. Employees and unions use financial statements in labor negotiations. Suppliers use financial statements in setting credit terms. Investment advisors and information intermediaries use financial statements in making buy-sell recommendations and in credit rating. Investment bankers use financial statements in determining company value in an IPO, merger, or acquisition.

To show how financial statement information helps in business analysis, let's turn to the data in Exhibit 1.3. These data reveal that over the past 10 years, Colgate's earnings

Exhibit 1.3 ***Colgate's Summary Financial Data (in billions, except per share data)***

	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
Net sales	$12.24	$11.40	$10.58	$9.90	$9.29	$9.08	$9.00	$8.80	$8.66	$8.79	$8.49
Gross profit	7.21	6.62	6.15	5.75	5.35	5.11	5.00	4.84	4.62	4.56	4.52
Operating income	1.46	1.44	1.41	1.51	1.39	1.28	1.19	1.09	0.99	0.90	0.80
Net income	1.35	1.35	1.33	1.42	1.29	1.15	1.06	0.94	0.85	0.74	0.64
Restructuring charge (after tax)	0.29	0.15	0.06	0.04							
Total assets	9.14	8.51	8.67	7.48	7.09	6.99	7.25	7.42	7.69	7.54	7.90
Total liabilities	7.73	7.16	7.43	6.59	6.74	6.14	5.78	5.59	5.60	5.36	5.89
Long-term debt	2.72	2.92	3.09	2.68	3.21	2.81	2.54	2.24	2.30	2.34	2.79
Shareholders' equity	1.41	1.35	1.25	0.89	0.35	0.85	1.47	1.83	2.09	2.18	2.03
Treasury stock at cost	8.07	7.58	6.97	6.50	6.15	5.20	4.04	3.06	2.33	1.68	1.47
Basic earnings per share	2.61	2.54	2.45	2.60	2.33	2.02	1.81	1.57	1.40	1.22	1.05
Cash dividends per share	1.25	1.11	0.96	0.90	0.72	0.68	0.63	0.59	0.55	0.53	0.47
Closing stock price	65.24	54.85	51.16	50.05	52.43	57.75	64.55	65.00	46.44	36.75	23.06
Shares outstanding (billions)	0.51	0.52	0.53	0.53	0.54	0.55	0.57	0.58	0.59	0.59	0.59

increased by 111%. This earnings growth was driven by both a 44% increase in revenues and an increase of approximately 30% in operating profit margin. Thus, Colgate has grown earnings rapidly, despite modest growth in revenues, through increased margins arising from cost reduction. Colgate pays generous dividends: over the past 10 years it has paid more than $4 billion in cash dividends and almost $7 billion through stock repurchases (see movement in treasury stock). Therefore, Colgate has returned around $11 billion to its shareholders over the past 10 years, which comprises most of its earnings during this period. By paying out most of its earnings, Colgate has been able to maintain a small equity base–shareholder's equity actually *decreased* over this period. All this makes Colgate's earnings growth story even more compelling: the company has grown earnings without increasing its invested capital. Its return on equity has consequently exploded from 35% in 1997 to 98% in 2006. One downside of maintaining a small equity base is Colgate's high leverage–for example, the company's ratio of total liabilities to equity is above 5. However, the extremely stable nature of Colgate's financial performance affords such structuring of the balance sheet to leverage returns for its equity shareholders.

Further examination of Exhibit 1.3 reveals that much of Colgate's earnings growth over the past decade has occurred primarily in the first seven years. The most recent three years' performance has been fairly lackluster. After dropping slightly in 2004, earnings have since remained stagnant and Colgate has been able to achieve modest growth in earnings per share over this period only by reducing its equity base. However, this earnings stagnation is partly because of costs related to Colgate's restructuring program that commenced in 2004; earnings grew 12% over the last three years after removing the costs related to restructuring activities.

Is the summary financial information sufficient to use as a basis for deciding whether or not to invest in Colgate's stock or in making other business decisions? The answer is clearly no. To make informed business decisions, it is important to evaluate Colgate's business activities in a more systematic and complete manner. For example, equity investors desire answers to the following types of questions before deciding to buy, hold, or sell Colgate stock:

- What are Colgate's future business prospects? Are Colgate's markets expected to grow? What are Colgate's competitive strengths and weaknesses? What strategic initiatives has Colgate taken, or does it plan to take, in response to business opportunities and threats?
- What is Colgate's earnings potential? What is its recent earnings performance? How sustainable are current earnings? What are the "drivers" of Colgate's profitability? What estimates can be made about earnings growth?
- What is Colgate's current financial condition? What risks and rewards does Colgate's financing structure portray? Are Colgate's earnings vulnerable to variability? Does Colgate possess the financial strength to overcome a period of poor profitability?
- How does Colgate compare with its competitors, both domestically and globally?
- What is a reasonable price for Colgate's stock?

FALLING STAR

Regulators slapped a fine on Merrill Lynch and banned one of its star analysts from the securities industry for life for privately questioning a telecom stock while he publicly boosted it.

Creditors and lenders also desire answers to important questions before entering into lending agreements with Colgate. Their questions include the following:

- What are Colgate's business plans and prospects? What are Colgate's needs for future financing?

- What are Colgate's likely sources for payment of interest and principal? How much cushion does Colgate have in its earnings and cash flows to pay interest and principal?
- What is the likelihood Colgate will be unable to meet its financial obligations? How volatile are Colgate's earnings and cash flows? Does Colgate have the financial strength to pay its commitments in a period of poor profitability?

Answers to these and other questions about company prospects and risks require analysis of both qualitative information about a company's business plans and quantitative information about its financial position and performance. Proper analysis and interpretation of information is crucial to good business analysis. This is the role of financial statement analysis. Through it, an analyst will better understand and interpret both qualitative and quantitative financial information so that reliable inferences are drawn about company prospects and risks.

Types of Business Analysis

Financial statement analysis is an important and integral part of business analysis. The goal of business analysis is to improve business decisions by evaluating available information about a company's financial situation, its management, its plans and strategies, and its business environment. Business analysis is applied in many forms and is an important part of the decisions of security analysts, investment advisors, fund managers, investment bankers, credit raters, corporate bankers, and individual investors. This section considers major types of business analysis.

Credit Analysis

Creditors lend funds to a company in return for a promise of repayment with interest. This type of financing is temporary since creditors expect repayment of their funds with interest. Creditors lend funds in many forms and for a variety of purposes. **Trade** (or operating) **creditors** deliver goods or services to a company and expect payment within a reasonable period, often determined by industry norms. Most trade credit is short term, ranging from 30 to 60 days, with cash discounts often granted for early payment. Trade creditors do not usually receive (explicit) interest for an extension of credit. Instead, trade creditors earn a return from the profit margins on the business transacted. **Nontrade creditors** (or debtholders) provide financing to a company in return for a promise, usually in writing, of repayment with interest (explicit or implicit) on specific future dates. This type of financing can be either short or long term and arises in a variety of transactions.

RATINGS INFO
One can find company debt ratings at **standardandpoors.com**, **moodys.com**, and **fitchratings.com.**

In pure credit financing, an important element is the fixed nature of benefits to creditors. That is, should a company prosper, creditors' benefits are limited to the debt contract's rate of interest or to the profit margins on goods or services delivered. However, creditors bear the *risk of default*. This means a creditor's interest and principal are jeopardized when a borrower encounters financial difficulties. This asymmetric relation of a creditor's risk and return has a major impact on the creditor's perspective, including the manner and objectives of credit analysis.

BOND FINANCING
The value of the U.S. bond market exceeds $21 trillion.

Credit analysis is the evaluation of the creditworthiness of a company. *Creditworthiness* is the ability of a company to honor its credit obligations. Stated differently, it is the ability of a company to pay its bills. Accordingly, the main focus of credit analysis is on risk, not profitability. Variability in profits, especially the sensitivity of profits to downturns

in business, is more important than profit levels. Profit levels are important only to the extent they reflect the margin of safety for a company in meeting its obligations.

Credit analysis focuses on downside risk instead of upside potential. This includes analysis of both liquidity and solvency. **Liquidity** is a company's ability to raise cash in the short term to meet its obligations. Liquidity depends on a company's cash flows and the makeup of its current assets and current liabilities. **Solvency** is a company's long-run viability and ability to pay long-term obligations. It depends on both a company's long-term profitability and its capital (financing) structure.

The tools of credit analysis and their criteria for evaluation vary with the term (maturity), type, and purpose of the debt contract. With short-term credit, creditors are concerned with current financial conditions, cash flows, and the liquidity of current assets. With long-term credit, including bond valuation, creditors require more detailed and forward-looking analysis. Long-term credit analysis includes projections of cash flows and evaluation of extended profitability (also called *sustainable earning power*). Extended profitability is a main source of assurance of a company's ability to meet long-term interest and principal payments.

Equity Analysis

Equity investors provide funds to a company in return for the risks and rewards of ownership. Equity investors are major providers of company financing. Equity financing, also called *equity* or *share capital,* offers a cushion or safeguard for all other forms of financing that are senior to it. This means equity investors are entitled to the distributions of a company's assets only after the claims of all other senior claimants are met, including interest and preferred dividends. As a result, equity investors are said to hold a *residual interest.* This implies equity investors are the first to absorb losses when a company liquidates, although their losses are usually limited to the amount invested. However, when a company prospers, equity investors share in the gains with unlimited upside potential. Thus, unlike credit analysis, equity analysis is symmetric in that it must assess both downside risks and upside potential. Because equity investors are affected by all aspects of a company's financial condition and performance, their analysis needs are among the most demanding and comprehensive of all users.

Individuals who apply active investment strategies primarily use technical analysis, fundamental analysis, or a combination. **Technical analysis,** or charting, searches for patterns in the price or volume history of a stock to predict future price movements. **Fundamental analysis,** which is more widely accepted and applied, is the process of determining the value of a company by analyzing and interpreting key factors for the economy, the industry, and the company. A main part of fundamental analysis is evaluation of a company's financial position and performance.

A major goal of fundamental analysis is to determine intrinsic value, also called *fundamental value.* **Intrinsic value** is the value of a company (or its stock) determined through fundamental analysis without reference to its market value (or stock price). While a company's market value can equal or approximate its intrinsic value, this is not necessary. An investor's strategy with fundamental analysis is straightforward: buy when a stock's intrinsic value exceeds its market value, sell when a stock's market value exceeds its intrinsic value, and hold when a stock's intrinsic value approximates its market value.

To determine intrinsic value, an analyst must forecast a company's earnings or cash flows and determine its risk. This is achieved through a comprehensive, in-depth analysis of a company's business prospects and its financial statements. Once a company's

GREATEST INVESTORS

The "top five" greatest equity investors of the 20th century, as compiled in a survey:

1. Warren Buffett, Berkshire Hathaway
2. Peter Lynch, Fidelity Funds
3. John Templeton, Templeton Group
4. Benjamin Graham & David Dodd, professors
5. George Soros, Soros Fund

future profitability and risk are estimated, the analyst uses a valuation model to convert these estimates into a measure of intrinsic value. Intrinsic value is used in many contexts, including equity investment and stock selection, initial public offerings, private placements of equity, mergers and acquisitions, and the purchase/sale of companies without traded securities.

Other Uses of Business Analysis

Business analysis and financial statement analysis are important in a number of other contexts.

- **Managers.** Analysis of financial statements can provide managers with clues to strategic changes in operating, investing, and financing activities. Managers also analyze the businesses and financial statements of competing companies to evaluate a competitor's profitability and risk. Such analysis allows for *interfirm comparisons,* both to evaluate relative strengths and weaknesses and to *benchmark* performance.
- **Mergers, acquisitions, and divestitures.** Business analysis is performed whenever a company restructures its operations, through mergers, acquisitions, divestitures, and spin-offs. Investment bankers need to identify potential targets and determine their values, and security analysts need to determine whether and how much additional value is created by the merger for both the acquiring and the target companies.
- **Financial management.** Managers must evaluate the impact of financing decisions and dividend policy on company value. Business analysis helps assess the impact of financing decisions on both future profitability and risk.
- **Directors.** As elected representatives of the shareholders, directors are responsible for protecting the shareholders' interests by vigilantly overseeing the company's activities. Both business analysis and financial statement analysis aid directors in fulfilling their oversight responsibilities.
- **Regulators.** The Internal Revenue Service applies tools of financial statement analysis to audit tax returns and check the reasonableness of reported amounts.
- **Labor unions.** Techniques of financial statement analysis are useful to labor unions in collective bargaining negotiations.
- **Customers.** Analysis techniques are used to determine the profitability (or staying power) of suppliers along with estimating the suppliers' profits from their mutual transactions.

MERGER BOOM
Nearly $4 trillion worth of mergers occurred during the dot-com era—more than in the entire preceding 30 years.

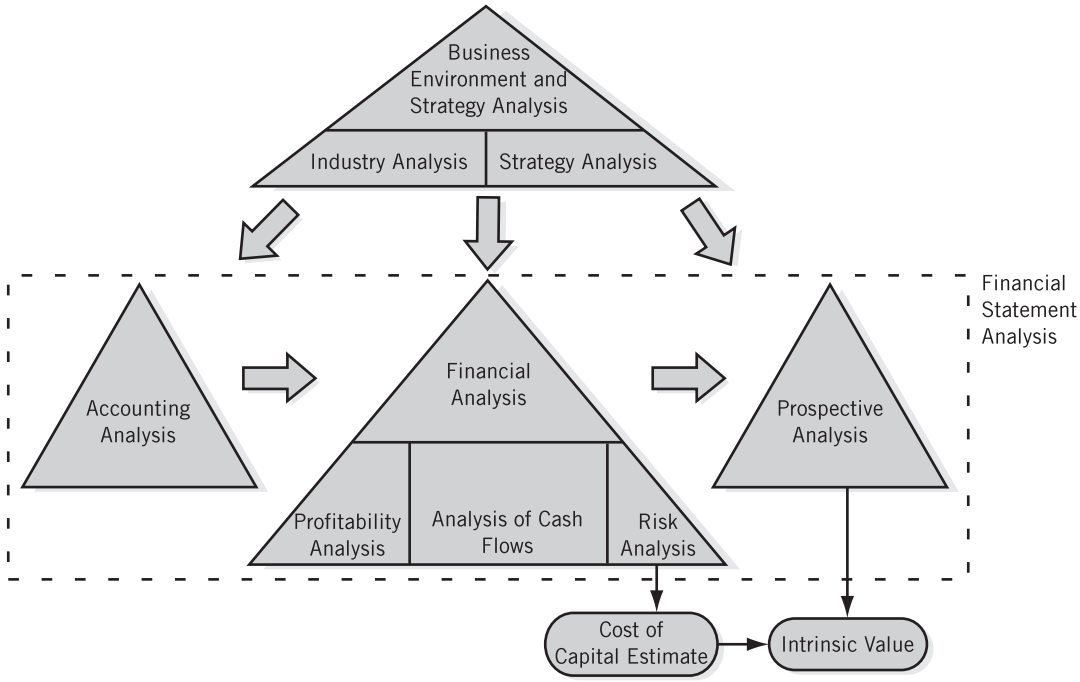
NEW DEALS
Experts say the *defining deals* for the next decade will be the alliance, the joint venture, and the partnership. Such deals will be more common in industries with rapid change.

PROFIT TAKERS
Microsoft's profitability levels encouraged recent antitrust actions against it.

Components of Business Analysis

Business analysis encompasses several interrelated processes. Exhibit 1.4 identifies these processes in the context of estimating company value–one of the many important applications of business analysis. Company value, or intrinsic value, is estimated using a valuation model. Inputs to the valuation model include estimates of future payoffs (prospective cash flows or earnings) and the cost of capital. The process of forecasting future payoffs is called *prospective analysis.* To accurately forecast future payoffs, it is important to evaluate both the company's business prospects and its financial statements. Evaluation of business prospects is a major goal of *business environment and strategy analysis.* A company's financial status is assessed from its financial statements using

Component Processes of Business Analysis ***Exhibit 1.4***



financial analysis. In turn, the quality of financial analysis depends on the reliability and economic content of the financial statements. This requires *accounting analysis* of financial statements. Financial statement analysis involves all of these component processes–accounting, financial, and prospective analyses. This section discusses each of these component processes in the context of business analysis.

Business Environment and Strategy Analysis

Analysis of a company's future prospects is one of the most important aims of business analysis. It also is a subjective and complex task. To effectively accomplish this task we must adopt an interdisciplinary perspective. This includes attention to analysis of the business environment and strategy. Analysis of the business environment seeks to identify and assess a company's economic and industry circumstances. This includes analysis of its product, labor, and capital markets within its economic and regulatory setting. Analysis of business strategy seeks to identify and assess a company's competitive strengths and weaknesses along with its opportunities and threats.

Business environment and strategy analysis consists of two parts–industry analysis and strategy analysis. **Industry analysis** is the usual first step since the prospects and structure of its industry largely drive a company's profitability. Industry analysis is often done using the framework proposed by Porter (1980, 1985) or value chain analysis. Under this framework, an industry is viewed as a collection of competitors that jockey for bargaining power with consumers and suppliers and that actively compete among

BENCHMARKING
The Web offers benchmarking info to help with analysis of business environment and strategy:

www.apqc.org
www.benchnet.com
www.bmpcoe.org

themselves and face threats from new entrants and substitute products. Industry analysis must assess both the industry prospects and the degree of actual and potential competition facing a company. **Strategy analysis** is the evaluation of both a company's business decisions and its success at establishing a competitive advantage. This includes assessing a company's expected strategic responses to its business environment and the impact of these responses on its future success and growth. Strategy analysis requires scrutiny of a company's competitive strategy for its product mix and cost structure.

BOARDROOM ETHICS
NYSE rules require that independent directors with "no material relationship" to the company be appointed to selected board committees.

Business environment and strategy analysis requires knowledge of both economic and industry forces. It also requires knowledge of strategic management, business policy, production, logistics management, marketing, and managerial economics. Because of its broad, multidisciplinary nature, it is beyond the scope of this book to cover all of these areas in the context of business environment and strategy analysis and how they relate to financial statements. Still, this analysis is necessary for meaningful business decisions and is implicit, if not explicit, in all analyses in this book.

Accounting Analysis

BOARDROOM CONTROL
The Sarbanes-Oxley Act requires companies to maintain an effective system of internal controls.

Accounting analysis is a process of evaluating the extent to which a company's accounting reflects economic reality. This is done by studying a company's transactions and events, assessing the effects of its accounting policies on financial statements, and adjusting the statements to both better reflect the underlying economics and make them more amenable to analysis. Financial statements are the primary source of information for financial analysis. This means the quality of financial analysis depends on the reliability of financial statements that in turn depends on the quality of accounting analysis. Accounting analysis is especially important for comparative analysis.

NUMBERS CRUNCH
In a survey, nearly 20% of CFO respondents admitted that CEOs pressured them to misrepresent results.

We must remember that accounting is a process involving judgment guided by fundamental principles. While accounting principles are governed by standards, the complexity of business transactions and events makes it impossible to adopt a uniform set of accounting rules for all companies and all time periods. Moreover, most accounting standards evolve as part of a political process to satisfy the needs of diverse individuals and their sometimes conflicting interests. These individuals include *users* such as investors, creditors, and analysts; *preparers* such as corporations, partnerships, and proprietorships; *regulators* such as the Securities and Exchange Commission and the Financial Accounting Standards Board; and still others such as auditors, lawyers, and educators. Accordingly, accounting standards sometimes fail to meet the needs of specific individuals. Another factor potentially impeding the reliability of financial statements is error from accounting estimates that can yield incomplete or imprecise information.

These accounting limitations affect the usefulness of financial statements and can yield at least two problems in analysis. First, lack of uniformity in accounting leads to comparability problems. **Comparability problems** arise when different companies adopt different accounting for similar transactions or events. Comparability problems also arise when a company changes its accounting across time, leading to difficulties with temporal comparability.

Second, discretion and imprecision in accounting can distort financial statement information. **Accounting distortions** are deviations of accounting information from the underlying economics. These distortions occur in at least three forms. (1) Managerial estimates can be subject to honest errors or omissions. This *estimation error* is

a major cause of accounting distortions. (2) Managers might use their discretion in accounting to manipulate or window-dress financial statements. This *earnings management* can cause accounting distortions. (3) Accounting standards can give rise to accounting distortions from a failure to capture economic reality. These three types of accounting distortions create accounting risk in financial statement analysis. **Accounting risk** is the uncertainty in financial statement analysis due to accounting distortions. A major goal of accounting analysis is to evaluate and reduce accounting risk and to improve the economic content of financial statements, including their comparability. Meeting this goal usually requires restatement and reclassification of financial statements to improve their economic content and comparability. The type and extent of adjustments depend on the analysis. For example, adjustments for equity analysis can differ from those for credit analysis.

Accounting analysis includes evaluation of a company's *earnings quality* or, more broadly, its accounting quality. Evaluation of earnings quality requires analysis of factors such as a company's business, its accounting policies, the quantity and quality of information disclosed, the performance and reputation of management, and the opportunities and incentives for earnings management. Accounting analysis also includes evaluation of earnings persistence, sometimes called *sustainable earning power.* We explain analysis of both earnings quality and persistence in Chapters 2 and 11.

Accounting analysis is often the least understood, appreciated, and effectively applied process in business analysis. Part of the reason might be that accounting analysis requires accounting knowledge. Analysts that lack this knowledge have a tendency to brush accounting analysis under the rug and take financial statements as reported. This is a dangerous practice because accounting analysis is crucial to any successful business or financial analysis. Chapters 3–6 of this book are devoted to accounting analysis.

ANALYSIS SNITCH

Filing a complaint with the SEC is easy online at **www.sec.gov**. E-mail the SEC with details of the suspected scam. Include website, newsgroup, and e-mail addresses; names of companies or people mentioned; and any information that can help the SEC track those involved. Your name, address, and phone number are optional.

Financial Analysis

Financial analysis is the use of financial statements to analyze a company's financial position and performance, and to assess future financial performance. Several questions can help focus financial analysis. One set of questions is future oriented. For example, does a company have the resources to succeed and grow? Does it have resources to invest in new projects? What are its sources of profitability? What is the company's future earning power? A second set involves questions that assess a company's track record and its ability to deliver on expected financial performance. For example, how strong is the company's financial position? How profitable is the company? Did earnings meet analyst forecasts? This includes an analysis of why a company might have fallen short of (or exceeded) expectations.

Financial analysis consists of three broad areas–profitability analysis, risk analysis, and analysis of sources and uses of funds. **Profitability analysis** is the evaluation of a company's return on investment. It focuses on a company's sources and levels of profits and involves identifying and measuring the impact of various profitability drivers. It also includes evaluation of the two major sources of profitability–margins (the portion of sales not offset by costs) and turnover (capital utilization). Profitability analysis also focuses on reasons for changes in profitability and the sustainability of earnings. The topic is discussed in detail in Chapter 8. **Risk analysis** is the evaluation of a company's ability to meet its commitments. Risk analysis involves assessing the solvency and liquidity of a company along with its earnings variability. Because risk

ANALYSTS' CONFLICTS

Regulators wrung a $100 million penalty from Merrill Lynch after revealing internal e-mails in which analysts privately disparaged as "junk" and "crap" stocks they were pushing to the public.

is of foremost concern to creditors, risk analysis is often discussed in the context of credit analysis. Still, risk analysis is important to equity analysis, both to evaluate the reliability and sustainability of company performance and to estimate a company's cost of capital. We explain risk analysis along with credit analysis in Chapter 10. Analysis of cash flows is the evaluation of how a company is obtaining and deploying its funds. This analysis provides insights into a company's future financing implications. For example, a company that funds new projects from internally generated cash (profits) is likely to achieve better future performance than a company that either borrows heavily to finance its projects or, worse, borrows to meet current losses. We explain analysis of cash flows in Chapter 7.

Prospective Analysis

Prospective analysis is the forecasting of future payoffs–typically earnings, cash flows, or both. This analysis draws on accounting analysis, financial analysis, and business environment and strategy analysis. The output of prospective analysis is a set of expected future payoffs used to estimate company value.

While quantitative tools help improve forecast accuracy, prospective analysis remains a relatively subjective process. This is why prospective analysis is sometimes referred to as an art, not a science. Still, there are many tools we can draw on to help enhance this analysis. We explain prospective analysis in detail in Chapter 9.

Valuation

Valuation is a main objective of many types of business analysis. Valuation refers to the process of converting forecasts of future payoffs into an estimate of company value. To determine company value, an analyst must select a valuation model and must also estimate the company's cost of capital. While most valuation models require forecasts of future payoffs, there are certain ad hoc approaches that use current financial information. We examine valuation in a preliminary manner later in this chapter and again in Chapter 11.

Financial Statement Analysis and Business Analysis

KNOW-NOTHING CEOs

The know-nothing defense of CEOs such as MCI's Bernie Ebbers was shattered by novel legal moves. Investigators proved that CEOs knew the internal picture was materially different than the external picture presented to shareholders.

Exhibit 1.4 and its discussion emphasizes that financial statement analysis is a collection of analytical processes that are part of business analysis. These separate processes share a common bond in that they all use financial statement information, to varying degrees, for analysis purposes. While financial statements do contain information on a company's business plans, analysis of a company's business environment and strategy is sometimes viewed outside of conventional financial statement analysis. Also, prospective analysis pushes the frontier of conventional financial statement analysis. Yet most agree that an important part of financial statement analysis is analyzing a company's business environment and strategy. Most also agree that valuation, which requires forecasts, is part of financial statement analysis. Therefore, financial statement analysis should be, and is, viewed as an important and integral part of business analysis and all of its component analyses. At the same time, it is important to understand the scope of financial statement analysis. Specifically, this book focuses on financial statement analysis and not on aspects of business analysis apart from those involving analysis of financial statements.

FINANCIAL STATEMENTS—BASIS OF ANALYSIS

Business Activities

A company pursues a number of activities in a desire to provide a salable product or service and to yield a satisfactory return on investment. Its financial statements and related disclosures inform us about the four major activities of the company: planning, financing, investing, and operating. It is important to understand each of these major business activities before we can effectively analyze a company's financial statements.

Planning Activities

A company exists to implement specific goals and objectives. For example, Colgate aspires to remain a powerful force in oral, personal, and home care products. A company's goals and objectives are captured in a **business plan** that describes the company's purpose, strategy, and tactics for its activities. A business plan assists managers in focusing their efforts and identifying expected opportunities and obstacles. Insight into the business plan considerably aids our analysis of a company's current and future prospects and is part of the analysis of business environment and strategy. We look for information on company objectives and tactics, market demands, competitive analysis, sales strategies (pricing, promotion, distribution), management performance, and financial projections. Information of this type, in varying forms, is often revealed in financial statements. It is also available through less formal means such as press releases, industry publications, analysts' newsletters, and the financial press.

Two important sources of information on a company's business plan are the Letter to Shareholders (or Chairperson's Letter) and Management's Discussion and Analysis (MD&A). Colgate, in the Business Strategy section of its 10-K filing with the SEC (its annual report), discusses various business opportunities and plans as reproduced here:

ANALYSIS EXCERPT

Executive Overview. Colgate-Palmolive Company seeks to deliver strong, consistent business results and superior shareholder returns by providing consumers, on a global basis, with products that make their lives healthier and more enjoyable. To this end, the Company is tightly focused on two product segments: Oral, Personal, and Home Care; and Pet Nutrition.

The Company competes in more than 200 countries and territories worldwide, with established businesses in all regions contributing to the Company's sales and profitability. This geographic diversity and balance helps to reduce the Company's exposure to business and other risks in any one country or part of the world.

To achieve its financial objectives, the Company focuses the organization on initiatives to drive growth and to fund growth. The Company seeks to capture significant opportunities for growth by identifying and meeting consumer needs within its core categories, in particular by deploying valuable consumer and shopper insights in the development of successful new products regionally which are then rolled out on a global basis. Growth opportunities are enhanced in those areas of the world in which economic development and rising consumer incomes expand the size and number of markets for the Company's products.

The investments needed to fund this growth are developed through continuous, corporate-wide initiatives to lower costs and increase effective asset utilization. The Company also continues to prioritize its investments toward its higher-margin businesses, specifically Oral Care, Personal Care, and Pet Nutrition.

Additional discussion appears in the Management's Discussion and Analysis section of Colgate's annual report. These two sources are excellent starting points in constructing a company's business plan and in performing a business environment and strategy analysis.

It is important to stress that business planning is not cast in stone and is fraught with uncertainty. Can Colgate be certain of the future of consumer and business computing needs? Can Colgate be certain its raw material costs will not increase? Can Colgate be sure how competitors will react? These and other questions add risk to our analysis. While all actions involve risk, some actions involve more risk than others. Financial statement analysis helps us estimate the degree of risk, or uncertainty, and yields more informed and better decisions. While information taken from financial statements does not provide irrefutable answers, it does help us to gauge the soundness of a company's business opportunities and strategies and to better understand its financing, investing, and operating activities.

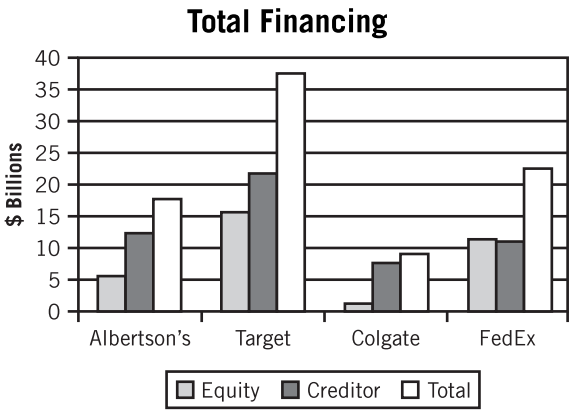
SERIAL ACQUIRERS

CEOs who built up their companies with a blitz of deals include GE's Jack Welch who did 534 deals, and AutoNation's H. Wayne Huizenga with 114 deals.

Financing Activities

A company requires financing to carry out its business plan. Colgate needs financing for purchasing raw materials for production, paying its employees, acquiring complementary companies and technologies, and for research and development. **Financing activities** refer to methods that companies use to raise the money to pay for these needs. Because of their magnitude and their potential for determining the success or failure of a venture, companies take care in acquiring and managing financial resources.

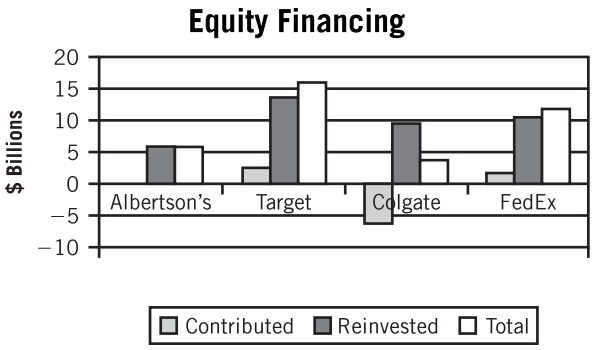
There are two main sources of external financing–equity investors (also called owners or shareholders) and creditors (lenders). Decisions concerning the composition of financing activities depend on conditions existing in financial markets. Financial markets are potential sources of financing. In looking to financial markets, a company considers several issues, including the amount of financing necessary, sources of financing (owners or creditors), timing of repayment, and structure of financing agreements. Decisions on these issues determine a company's organizational structure, affect its growth, influence its exposure to risk, and determine the power of outsiders in business decisions. The chart in the margin shows the makeup of total financing for selected companies.



Equity investors are a major source of financing. Colgate's balance sheet shows it raised $1.95 billion by issuing stock to equity investors. Investors provide financing in a desire for a return on their investment, after considering both expected return and risk. **Return** is the equity investor's share of company earnings in the form of either earnings distribution or earnings reinvestment. **Earnings distribution** is the payment of dividends to shareholders. Dividends can be paid directly in the form of cash or stock dividend, or indirectly through stock repurchase. **Dividend payout** refers to the proportion of earnings distributed. It is often expressed as a ratio or a percentage of net earnings. **Earnings reinvestment** (or earnings retention) refers to retaining earnings within the company for use in its business; this is also called *internal financing*. Earnings reinvestment is often measured by a retention ratio. The **earnings retention ratio,** reflecting the proportion of earnings retained, is defined as one less the dividend payout ratio.

Equity financing can be in cash or any asset or service contributed to a company in exchange for equity shares. Private offerings of shares usually involve selling shares to one

or more individuals or organizations. Public offerings involve selling shares to the public. There are significant costs with public offerings of shares, including government regulatory filings, stock exchange listing requirements, and brokerage fees to selling agents. The main benefit of public offerings of shares is the potential to raise substantial funds for business activities. Many corporations offer their shares for trading on organized exchanges like the New York, Tokyo, Singapore, and London stock markets. Colgate's common stock trades on NYSE under the symbol CL. The chart in the margin above shows the makeup of equity financing for selected companies. Negative amounts of contributed capital for Colgate indicate that repurchases of common stock (called treasury stock) have exceeded capital contributions.



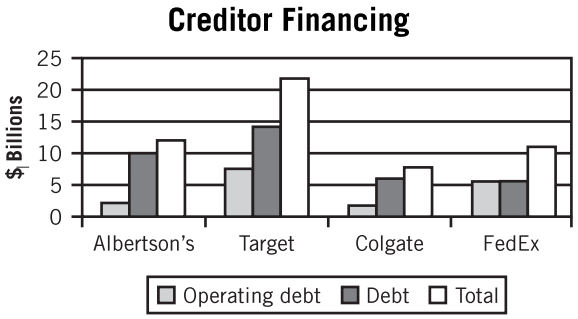
Companies also obtain financing from creditors. Creditors are of two types: (1) debt creditors, who directly lend money to the company, and (2) operating creditors, to whom the company owes money as part of its operations. Debt financing often occurs through loans or through issuance of securities such as bonds. Debt financers include organizations like banks, savings and loans, and other financial or nonfinancial institutions. Operating creditors include suppliers, employees, the government, and any other entity to whom the company owes money. Even employees who are paid periodically, say weekly or monthly, are implicitly providing a form of credit financing until they are paid for their efforts. Colgate's balance sheet shows total creditor financing of $7.73 billion, which is about 85% of its total financing. Of this amount, around $3.67 billion is debt financing, while the remaining $4.06 billion is operating creditor financing.

SCAM SOURCING

According to regulators, the five most common ways investors get duped are (1) unlicensed securities dealers, (2) unscrupulous stockbrokers, (3) research analyst conflicts, (4) fraudulent promissory notes, and (5) prime bank schemes.

Creditor financing is different from equity financing in that an agreement, or contract, is usually established that requires repayment of the loan with interest at specific dates. While interest is not always expressly stated in these contracts, it is always implicit. Loan periods are variable and depend on the desires of both creditors and companies. Loans can be as long as 50 years or more, or as short as a week or less.

Like equity investors, creditors are concerned with return and risk. Unlike equity investors, creditors' returns are usually specified in loan contracts. For example, a 20-year, 10%, fixed-rate loan means that creditors receive a 10% annual return on their investment for 20 years. Colgate's long-term loans are due from 2007 to 2011 and carry different interest rates. The returns of equity investors are not guaranteed and depend on the level of future earnings. Risk for creditors is the possibility a business will default in repaying its loans and interest. In this situation, creditors might not receive their money due, and bankruptcy or other legal remedies could ensue. Such remedies impose costs on creditors.

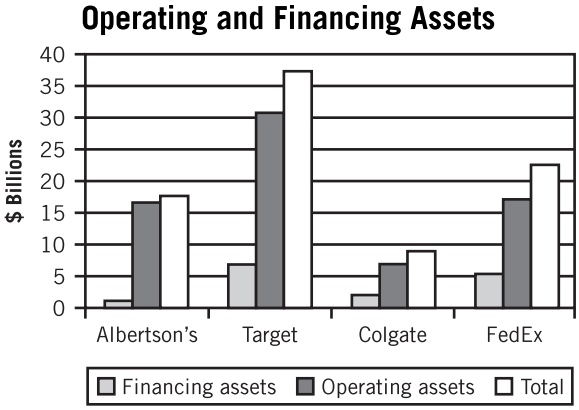


ANALYSIS VIEWPOINT ***. . . YOU ARE THE CREDITOR***

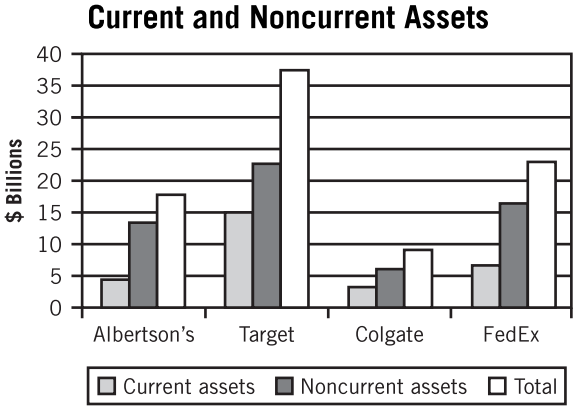
Colgate requests a $500 million loan from your bank. How does the composition of Colgate's financing sources (creditor and equity) affect your loan decision? Do you have any reluctance making the loan to Colgate given its current financing composition? *[Note: Solutions to Viewpoints are at the end of each chapter.]*

Investing Activities

Investing activities refer to a company's acquisition and maintenance of investments for purposes of selling products and providing services, and for the purpose of investing excess cash. Investments in land, buildings, equipment, legal rights (patents, licenses, copyrights), inventories, human capital (managers and employees), information systems, and similar assets are for the purpose of conducting the company's business operations. Such assets are called **operating assets.** Also, companies often temporarily or permanently invest excess cash in securities such as other companies' equity stock, corporate and government bonds, and money market funds. Such assets are called **financial assets.** Colgate's balance sheet shows its 2006 investment, or asset, base is $9.14 billion, of which $7.13 billion is in operating assets and the rest is in financial assets. The chart in the margin shows the operating and financial assets of selected companies.



Information on both financing and investing activities assists us in evaluating business performance. Note the value of investments always equals the value of financing obtained. Any excess financing not invested is simply reported as cash (or some other noncash asset). Companies differ in the amount and composition of their investments. Many companies demand huge investments in acquiring, developing, and selling their products, while others require little investment. Size of investment does not necessarily determine company success. It is the efficiency and effectiveness with which a company carries out its operations that determine earnings and returns to owners.



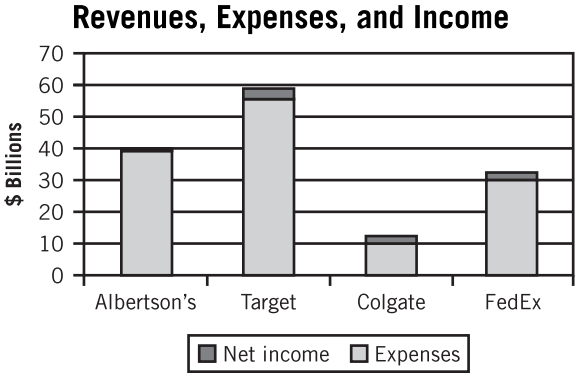
Investing decisions involve several factors such as type of investment necessary (including technological and labor intensity), amount required, acquisition timing, asset location, and contractual agreement (purchase, rent, and lease). Like financing activities, decisions on investing activities determine a company's organizational structure (centralized or decentralized), affect growth, and influence riskiness of operations. Investments in short-term assets are called **current assets.** These assets are expected to be converted to cash in the short term. Investments in long-term assets are called **noncurrent assets.** Colgate invests $3.30 billion in current assts (36% of total assets) and $2.70 billion in plant and machinery (30% of total assets). Its remaining assets include other long-term assets and intangibles.

Operating Activities

One of the more important areas in analyzing a company is operating activities. **Operating activities** represent the "carrying out" of the business plan given its financing and investing activities. Operating activities involve at least five possible components: research and development, procurement, production, marketing, and administration. A proper mix of the components of operating activities depends on the

type of business, its plans, and its input and output markets. Management decides on the most efficient and effective mix for the company's competitive advantage.

Operating activities are a company's primary source of earnings. Earnings reflect a company's success in buying from input markets and selling in output markets. How well a company does in devising business plans and strategies, and deciding the mix of operating activities, determines its success or failure. Analysis of earnings figures, and their component parts, reflects a company's success in efficiently and effectively managing business activities.



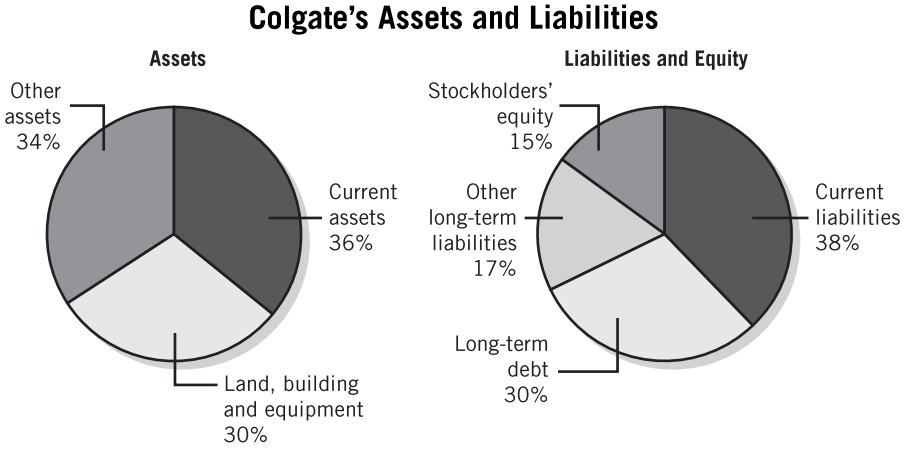
Colgate earned $1.383 billion in 2006. This number by itself is not very meaningful. Instead, it must be compared with the level of investment used to generate these earnings. Colgate's return on beginning-of-year total assets of $8.51 billion is 15.9% ($1.353 billion/$8.510 billion)–a superior return by any standard, and especially so when considering the highly competitive nature of the consumer products industry.

Financial Statements Reflect Business Activities

At the end of a period–typically a quarter or a year–financial statements are prepared to report on financing and investing activities at that point in time, and to summarize operating activities for the preceding period. This is the role of financial statements and the object of analysis. It is important to recognize that financial statements report on financing and investing activities at a point in time, whereas they report on operating activities for a period of time.

Balance Sheet

The **accounting equation** (also called the balance sheet identity) is the basis of the accounting system: Assets = Liabilities + Equity. The left-hand side of this equation relates to the resources controlled by a company, or **assets.** These resources are investments that are expected to generate future earnings through operating activities. To engage in operating activities, a company needs financing to fund them. The right-hand side of this equation identifies funding sources. **Liabilities** are funding from creditors and represent obligations of a company or, alternatively, claims of creditors on assets. **Equity** (or shareholders' equity) is the total of (1) funding invested or contributed by owners (contributed capital) and (2) accumulated earnings in excess of distributions to owners (retained earnings) since



inception of the company. From the owners', or shareholders', point of view, equity represents their claim on company assets. A slightly different way to describe the accounting equation is in terms of sources and uses of funds. That is, the right-hand side represents sources of funds (either from creditors or shareholders, or internally generated) and the left-hand side represents uses of funds.

Assets and liabilities are separated into current and noncurrent amounts. **Current assets** are expected to be converted to cash or used in operations within one year or the operating cycle, whichever is longer. **Current liabilities** are obligations the company is expected to settle within one year or the operating cycle, whichever is longer. The difference between current assets and current liabilities is called **working capital.**

It is revealing to rewrite the accounting equation in terms of business activities–namely, investing and financing activities: Total investing = Total financing; or alternatively: Total investing = Creditor financing + Owner financing.

Remember the accounting equation is a balance sheet identity reflecting a *point* in time. Operating activities arise over a *period* of time and are not reflected in this identity. However, operating activities can affect both sides of this equation. That is, if a company is profitable, both investing (assets) and financing (equity) levels increase. Similarly, when a company is unprofitable, both investing and financing decline.

The balance sheet of Colgate is reproduced in Exhibit 1.5. Colgate's total investments (assets) on December 31, 2006, are $9.14 billion. Of this amount, creditor financing totals $7.73 billion, while the remaining $1.41 billion represents claims of shareholders.

Income Statement

An income statement measures a company's financial performance between balance sheet dates. It is a representation of the operating activities of a company. The income statement provides details of revenues, expenses, gains, and losses of a company for a time period. The bottom line, **earnings** (also called *net income*), indicates the profitability of the company. Earnings reflects the return to equity holders for the period under consideration, while the line items of the statement detail how earnings are determined. Earnings approximate the increase (or decrease) in equity before considering distributions to and contributions from equity holders. For income to exactly measure change in equity, we need a slightly different definition of income, called *comprehensive income,* which we discuss in the section on links between financial statements later in this chapter.

PRO FORMA MESS

Some companies have convinced investors that they should measure performance not by earnings but by pro forma earnings. Pro forma earnings adjust GAAP income by adding back certain expense items. One example is the popular EBITDA, which adds back depreciation and amortization expense. Pro forma earnings shelter companies from the harsh judgment of a net income calculation. For example, the S&P 500's pro forma earnings were 77% higher than GAAP net income for a recent year.

The income statement includes several other indicators of profitability. **Gross profit** (also called *gross margin*) is the difference between sales and cost of sales (also called *cost of goods sold*). It indicates the extent to which a company is able to cover costs of its products. This indicator is not especially relevant for service and technology companies where production costs are a small part of total costs. **Earnings from operations** refers to the difference between sales and all operating costs and expenses. It usually excludes financing costs (interest) and taxes. **Earnings before taxes,** as the name implies, represents earnings from continuing operations before the provision for income tax. **Earnings from continuing operations** is the income from a company's continuing business after interest and taxes. It is also called *earnings before extraordinary items and discontinued operations.* We discuss these alternative earnings definitions in Chapter 6.

Earnings are determined using the **accrual basis** of accounting. Under accrual accounting, revenues are recognized when a company sells goods or renders services,

Colgate's Consolidated Balance Sheets ***Exhibit 1.5***

As of December 31,	2006	2005
Assets		
Current Assets		
Cash and cash equivalents	**$ 489.5**	$ 340.7
Receivables (net of allowances of $46.4 and $41.7, respectively)	**1,523.2**	1,309.4
Inventories	**1,008.4**	855.8
Other current assets	**279.9**	251.2
Total current assets	**3,301.0**	2,757.1
Property, plant and equipment, net	**2,696.1**	2,544.1
Goodwill, net	**2,081.8**	1,845.7
Other intangible assets, net	**831.1**	783.2
Other assets	**228.0**	577.0
Total assets	**$ 9,138.0**	$ 8,507.1
Liabilities and Shareholders' Equity		
Current Liabilities		
Notes and loans payable	**$ 174.1**	$ 171.5
Current portion of long-term debt	**776.7**	356.7
Accounts payable	**1,039.7**	876.1
Accrued income taxes	**161.5**	215.5
Other accruals	**1,317.1**	1,123.2
Total current liabilities	**3,469.1**	2,743.0
Long-term debt	**2,720.4**	2,918.0
Deferred income taxes	**309.9**	554.7
Other liabilities	**1,227.7**	941.3
Total liabilities	**7,727.1**	7,157.0
Commitments and contingent liabilities	**—**	—
Shareholders' Equity		
Preference stock	**222.7**	253.7
Common stock, $1 par value (1,000,000,000 shares authorized, 732,853,180 shares issued)	**732.9**	732.9
Additional paid-in capital	**1,218.1**	1,064.4
Retained earnings	**9,643.7**	8,968.1
Accumulated other comprehensive income	**(2,081.2)**	(1,804.7)
	9,736.2	9,214.4
Unearned compensation	**(251.4)**	(283.3)
Treasury stock, at cost	**(8,073.9)**	(7,581.0)
Total shareholders' equity	**1,410.9**	1,350.1
Total liabilities and shareholders' equity	**$ 9,138.0**	$ 8,507.1

regardless of when it receives cash. Similarly, expenses are matched to these recognized revenues, regardless of when it pays cash. The income statement of Colgate, titled consolidated statement of income, for the preceding three years is shown in Exhibit 1.6. Colgate's 2006 revenues totaled $12.238 billion. Of this amount, $10.885 billion are costs of operations and other expenses, yielding net income of $1.353 billion. Colgate's

Exhibit 1.6 *Colgate's Consolidated Statements of Income*

For the years ended December 31,	2006	2005	2004
Net sales	$12,237.7	$11,396.9	$10,584.2
Cost of sales	5,536.1	5,191.9	4,747.2
Gross profit	6,701.6	6,205.0	5,837.0
Selling, general and administrative expenses	4,355.2	3,920.8	3,624.6
Other (income) expense, net	185.9	69.2	90.3
Operating profit	2,160.5	2,215.0	2,122.1
Interest expense, net	158.7	136.0	119.7
Income before income taxes	2,001.8	2,079.0	2,002.4
Provision for income taxes	648.4	727.6	675.3
Net income	$ 1,353.4	$ 1,351.4	$ 1,327.1
Earnings per common share, basic	$ 2.57	$ 2.54	$ 2.45
Earnings per common share, diluted	$ 2.46	$ 2.43	$ 2.33

earnings have been stagnant during these three years despite a healthy increase in revenues, suggesting that the company is still struggling to keep its costs under control.

Statement of Shareholders' Equity

The statements of retained earnings, comprehensive income and changes in capital accounts are often called the statements of changes in shareholders' equity. (In this section, we will use the title statement of changes in shareholders' equity). This statement is useful in identifying reasons for changes in equity holders' claims on the assets of a company. Colgate's statement of changes in shareholders' equity for the most recent year is shown in Exhibit 1.7. During this period, shareholders' equity changes were due mainly to the issuing stock (mainly related to employee stock options), repurchasing stock (treasury shares) and reinvesting earnings. Colgate details these changes under five columns: Common Shares, Additional Paid-in Capital, Treasury Stock, Retained Earnings, and Accumulated Other Comprehensive Income (Loss). Common Shares and Additional Paid-In Capital together represent Contributed Capital and are often collectively called *share capital* (many analysts also net Treasury Stock in the computation of share capital). The change in Colgate's retained earnings is especially important because this account links consecutive balance sheets through the income statement. For example, consider Colgate's collective retained earnings increase from $8.968 billion in 2005 to $9.643 billion in 2006. This increase of $0.675 billion is explained by net earnings of $1.353 billion minus dividends of $0.678 billion. Because dividends almost always are distributed from retained earnings, the retained earnings balance often represents an upper limit on the amount of potential dividend distributions.

Colgate includes a separate column for comprehensive income. Comprehensive income is a measure of the ultimate "bottom line" income, that is, changes to shareholder's equity excluding transactions involving exchanges with shareholders. Colgate's 2006 comprehensive income is $1.458 billion. In addition to net income, comprehensive income includes certain adjustments classified as other comprehensive income. The two

Colgate's Consolidated Statements of Retained Earnings, Comprehensive Income, and Changes in Capital Accounts *Exhibit 1.7*

	Common Shares		Additional Paid-in	Treasury Shares			Accumulated Other Compre-	Compre-
	Shares	Amount	Capital	Shares	Amount	Retained Earnings	hensive Income	hensive Income
Balance, December 31, 2005	516 ,170,957	$732.9	$1,064.4	216,682,223	$(7,581.0)	$8,968.1	$(1,804.7)	
Net income						1,353.4		$1,353.4
Other comprehensive income:								
Cumulative translation adjustment							89.1	89.1
Adjustment to initially apply SFAS 158, net of taxes							(380.7)	
Minimum Pension liability adjustment, net of tax							19.2	19.2
Other							(4.1)	(4.1)
Total comprehensive income								$1,457.6
Dividends declared:								
Series B Convertible Preference Stock, net of taxes						(28.7)		
Common stock						(649.1)		
Stock-based compensation expense			116.9					
Shares issued for stock options	7,095,538		107.7	(7,095,538)	227.7			
Treasury stock acquired	(14,982,242)			14,982,242	(884.7)			
Other	4,374,334		(70.9)	(4,374,334)	164.1			
Balance, December 31, 2006	**512,658,587**	**$732.9**	**$1,218.1**	**220,194,593**	**$(8,073.9)**	**$9,643.7**	**$(2,081.2)**	

major adjustments included in comprehensive income are the cumulative (foreign currency) translation adjustment ($0.089 billion) and the minimum pension liability adjustment ($0.019 billion). The largest constituent of other comprehensive income, however, is adjustment for the initial application of *SFAS 158*–a new pension standard that became applicable only in 2006–to the tune of $0.381. This amount is not included in comprehensive income for the year. Also the cumulative total of the other comprehensive income adjustments are shown under the column "accumulated other comprehensive income". All items–including the effect of *SFAS 158* application–affect the change in accumulated comprehensive income, from $1.805 billion in 2005 to $2.081 billion in 2006. While most companies show accumulated comprehensive income as a separate line item within shareholder's equity, conceptually it is just part of a company's retained earnings. We discuss comprehensive income in detail in Chapter 6.

The third heading in the statement of shareholders' equity shows details of treasury stock. Treasury stock is discussed in Chapter 3. For now, it is sufficient to view the treasury stock amount as the difference between cash paid for share repurchases and the proceeds from reselling those shares. The treasury stock amount reduces equity. Colgate's treasury stock at the end of 2006 is more than $8 billion, which is above 80% of its shareholder's equity (before treasury stock) of $9.485 billion. Much of the treasury

stock amount is attributable to stock repurchases–in 2006 alone Colgate repurchased $0.885 billion of its stock. Colgate's treasury share amount largely explains its small equity base.

Statement of Cash Flows

Earnings do not typically equal net cash flows, except over the life of a company. Because accrual accounting yields numbers different from cash flow accounting, and we know that cash flows are important in business decisions, there is a need for reporting on cash inflows and outflows. For example, analyses involving reconstruction and interpretation of business transactions often require the statement of cash flows. Also, certain valuation models use cash flows. The statement of cash flows reports cash inflows and outflows separately for a company's operating, investing, and financing activities over a period of time.

Colgate's statement of cash flows is reproduced in Exhibit 1.8. Colgate's 2006 cash balance increases by $0.149 billion, from $0.341 billion to $0.490 billion. Of this increase in net cash, Colgate's operating activities provided $1.822 billion, its investing activities used $0.620 billion, and its financing activities used $1.059 billion.

Links between Financial Statements

Financial statements are linked at points in time and across time. These links are portrayed in Exhibit 1.9 using Colgate's financial statements. Colgate began 2006 with the investing and financing amounts reported in the balance sheet on the left side of Exhibit 1.9. Its investments in assets, comprising both cash ($0.341 billion) and noncash assets ($8.166 billion), total $8.507 billion. These investments are financed by both creditors ($7.157 billion) and equity investors ($1.350), the latter comprising preference and equity share capital ($2.051 billion) and retained earnings ($6.880 billion, which includes accumulated comprehensive income and other items) less treasury stock ($7.581 million). Colgate's operating activities are shown in the middle column of Exhibit 1.9. The statement of cash flows explains how operating, investing, and financing activities increase Colgate's cash balance from $0.341 billion at the beginning of the year to $0.490 billion at year end. This end-of-year cash amount is reported in the year-end balance sheet on the right side of Exhibit 1.9. Colgate's net income of $1.353 billion, computed as revenues less cost of sales and expenses, is reported in the income statement. Net income less dividends paid explain movement in retained earnings reported in the statement of shareholder's equity. In addition, movement in accumulated comprehensive income is explained by other comprehensive income during the year. Finally, movement in treasury stock arises both from issue and repurchase of treasury stock.

To recap, Colgate's balance sheet is a listing of its investing and financing activities at a *point in time*. The three statements that report on (1) cash flows, (2) income, and (3) shareholders' equity, explain changes (typically from operating activities) over a *period of time* for Colgate's investing and financing activities. Every transaction captured in these three latter statements impacts the balance sheet. Examples are (1) revenues and expenses affecting earnings and their subsequent reporting in retained earnings, (2) cash transactions in the statement of cash flows that are summarized in the cash balance on the balance sheet, and (3) all revenue and expense accounts that affect one or more balance sheet accounts. In sum, financial statements are linked by design: the period-of-time statements (income statement, statement of cash flows, and statement of shareholders' equity) explain point-in-time balance sheets. This is known as the *articulation* of financial statements.

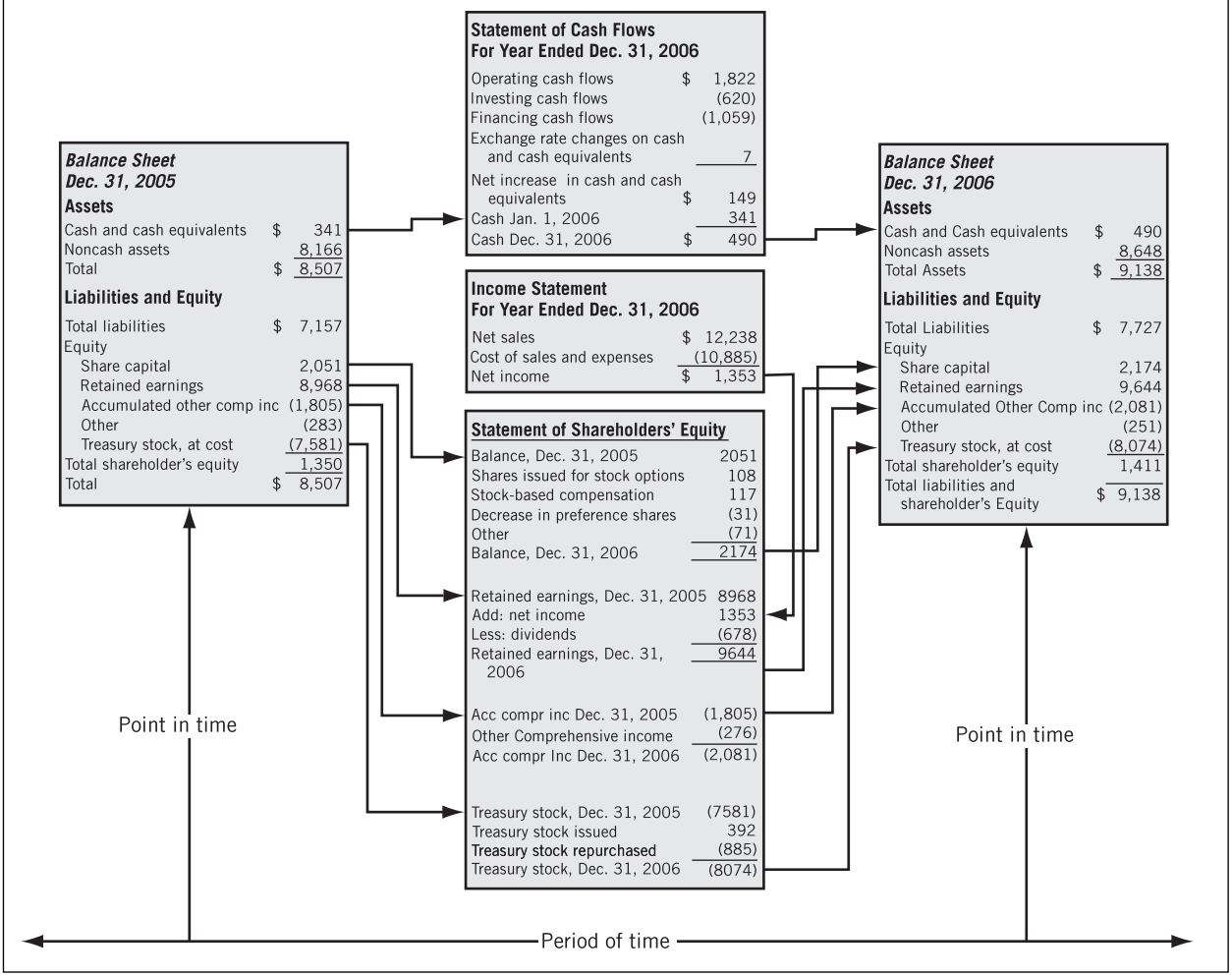
Colgate's Consolidated Statements of Cash Flows — *Exhibit 1.8*

For the years ended December 31,	2006	2005	2004
Operating Activities			
Net income	**$ 1,353.4**	$ 1,351.4	$ 1,327.1
Adjustments to reconcile net income to net cash provided by operations:			
Restructuring, net of cash	**145.4**	111.6	38.3
Depreciation and amortization	**328.7**	329.3	327.8
Gain before tax on sale of noncore product lines	**(46.5)**	(147.9)	(26.7)
Stock-based compensation expense	**116.9**	41.1	29.3
Cash effects of changes in:			
Receivables	**(116.0)**	(24.1)	(5.6)
Inventories	**(118.5)**	(46.8)	(76.1)
Accounts payable and other accruals	**149.9**	152.7	80.1
Other noncurrent assets and liabilities	**8.2**	17.1	60.1
Net cash provided by operations	**1,821.5**	1,784.4	1,754.3
Investing Activities			
Capital expenditures	**(476.4)**	(389.2)	(348.1)
Payment for acquisitions, net of cash acquired	**(200.0)**	(38.5)	(800.7)
Sale of noncore product lines	**55.0**	215.6	37.0
Purchases of marketable securities and investments	**(1.2)**	(20.0)	(127.7)
Proceeds from sales of marketable securities and investments	**—**	10.0	147.3
Other	**2.2**	1.4	1.8
Net cash used in investing activities	**(620.4)**	(220.7)	(1,090.4)
Financing Activities			
Principal payments on debt	**(1,332.0)**	(2,100.3)	(753.9)
Proceeds from issuance of debt	**1,471.1**	2,021.9	1,246.5
Payments to outside investors	**—**	(89.7)	—
Dividends paid	**(677.8)**	(607.2)	(536.2)
Purchases of treasury shares	**(884.7)**	(796.2)	(637.9)
Proceeds from exercise of stock options and excess tax benefits	**364.4**	47.1	70.4
Net cash used in financing activities	**(1,059.0)**	(1,524.4)	(611.1)
Effect of exchange rate changes on cash and cash equivalents	**6.7**	(18.2)	1.5
Net increase in cash and cash equivalents	**148.8**	21.1	54.3
Cash and cash equivalents at beginning of year	**340.7**	319.6	265.3
Cash and cash equivalents at end of year	**$ 489.5**	$ 340.7	$ 319.6
Supplemental Cash Flow Information			
Income taxes paid	**$ 647.9**	$ 584.3	$ 593.8
Interest paid	**168.3**	149.9	123.2
Principal payments on ESOP debt, guaranteed by the Company	**45.0**	37.0	29.8

ANALYSIS VIEWPOINT *. . . YOU ARE THE INVESTOR*

You are considering buying Colgate stock. As part of your preliminary review of Colgate, you examine its financial statements. What information are you attempting to obtain from each of these statements to aid in your decision?

Exhibit 1.9 ***Financial Statement Links—Colgate***



Additional Information

Financial statements are not the sole output of a financial reporting system. Additional information about a company is also communicated. A thorough financial statement analysis involves examining this additional information.

- **Management's Discussion and Analysis (MD&A).** Companies with publicly traded debt and equity securities are required by the Securities and Exchange Commission to file a Management's Discussion and Analysis (MD&A). Management must highlight any favorable or unfavorable trends and identify significant events and uncertainties that affect a company's liquidity, capital resources, and results of operations. They must also disclose prospective information involving material events and uncertainties known to cause reported financial information to be less indicative of future operating activities or financial condition. The MD&A for Colgate shown in Appendix A includes a year-by-year analysis along with an evaluation of its liquidity and capital resources by business activities.

EDGAR WHO?

EDGAR is the database of documents that public companies are required to file electronically with the SEC. Several websites offer easy-to-use interfaces (most are free), making it a snap to find most public info on a company—see **www.freeedgar.com,** or **www.edgar-online.com**.

- **Management Report.** The purposes of this report are to reinforce: (1) senior management's responsibilities for the company's financial and internal control system and (2) the shared roles of management, directors, and the auditor in preparing financial statements. Colgate's report, titled Report of Management, discusses its policies and procedures to enhance the reliability of its financial records. Its report also highlights the role of its audit committee of the board of directors in providing added assurance for the reliability of financial statements.
- **Auditor Report.** An external auditor is an independent certified public accountant hired by management to provide an opinion on whether or not the company's financial statements are prepared in conformity with generally accepted accounting principles. Financial statement analysis requires a review of the auditor's report to ascertain whether the company received an unqualified opinion. Anything less than an unqualified opinion increases the risk of analysis. Colgate's Report of Independent Accountants, prepared by PricewaterhouseCoopers, is reproduced in Appendix A. Colgate received an unqualified opinion. We discuss audit reports in Appendix 2A.
- **Explanatory Notes.** Explanatory notes that accompany financial reports play an integral part in financial statement analysis. Notes are a means of communicating additional information regarding items included or excluded from the body of the statements. The technical nature of notes creates a need for a certain level of accounting knowledge on the part of financial statement analysts. Explanatory notes include information on: (1) accounting principles and methods employed, (2) detailed disclosures regarding individual financial statement items, (3) commitments and contingencies, (4) business combinations, (5) transactions with related parties, (6) stock option plans, (7) legal proceedings, and (8) significant customers. The notes for Colgate follow its financial statements in Appendix A.
- **Supplementary Information.** Supplemental schedules to the financial statement notes include information on: (1) business segment data, (2) export sales, (3) marketable securities, (4) valuation accounts, (5) short-term borrowings, and (6) quarterly financial data. Several supplemental schedules appear in the annual report of Colgate. An example is the information on segment operations included as note 14 in Colgate's annual report.
- **Proxy Statements.** Shareholder votes are solicited for the election of directors and for corporate actions such as mergers, acquisitions, and authorization of securities. A **proxy** is a means whereby a shareholder authorizes another person to act for him or her at a meeting of shareholders. A **proxy statement** contains information necessary for shareholders in voting on matters for which the proxy is solicited. Proxy statements contain a wealth of information regarding a company including the identity of shareholders owning 5% or more of outstanding shares, biographical information on the board of directors, compensation arrangements with officers and directors, employee benefit plans, and certain transactions with officers and directors. Proxy statements are not typically part of the annual report.

DOUBLE TROUBLE
PricewaterhouseCoopers earned $13 million from audit fees and $18 million from tax fees it charged to scandal-ridden Tyco International Ltd. in 2001. The Sarbanes-Oxley Act now limits the consulting work that may be performed by a company's auditors.

GREEN REPORT CARD
About one-half of the 250 largest global companies produce corporate responsibility reports.

FINANCIAL STATEMENT ANALYSIS PREVIEW

A variety of tools designed to fit specific needs are available to help users analyze financial statements. In this section, we introduce some basic tools of financial analysis and apply them to Colgate's annual report. Specifically, we apply comparative financial statement analysis, common-size financial statement analysis, and ratio analysis. We

also briefly describe cash flow analysis. This preview to financial analysis is mainly limited to some common analysis tools, especially as pertaining to ratio analysis. Later chapters describe more advanced, state-of-the-art techniques, including accounting analysis, that considerably enhance financial statement analysis. This section concludes with an introduction to valuation models.

Analysis Tools

This section gives preliminary exposure to five important sets of tools for financial analysis:

1. Comparative financial statement analysis
2. Common-size financial statement analysis
3. Ratio analysis
4. Cash flow analysis
5. Valuation

Comparative Financial Statement Analysis

Individuals conduct **comparative financial statement analysis** by reviewing consecutive balance sheets, income statements, or statements of cash flows from period to period. This usually involves a review of changes in individual account balances on a year-to-year or multiyear basis. The most important information often revealed from comparative financial statement analysis is trend. A comparison of statements over several periods can reveal the direction, speed, and extent of a trend. Comparative analysis also compares trends in related items. For example, a year-to-year 10% sales increase accompanied by a 20% increase in freight-out costs requires investigation and explanation. Similarly, a 15% increase in accounts receivable along with a sales increase of only 5% calls for investigation. In both cases we look for reasons behind differences in these interrelated rates and any implications for our analysis. Comparative financial statement analysis also is referred to as *horizontal analysis* given the left-right (or right-left) analysis of account balances as we review comparative statements. Two techniques of comparative analysis are especially popular: year-to-year change analysis and index-number trend analysis.

ANALYSIS RESOURCES

www.adr.com
www.bigcharts.com
www.bridge.com
www.cbsmarketwatch.com
www.financenter.com
www.freeedgar.com
www.ipomaven.com
www.marketguide.com
www.morningstar.com
www.nasdaq.com
www.quote.com
www.businessweek.com
www.10kwizard.com
www.wallstreetcity.com

Year-to-Year Change Analysis. Comparing financial statements over relatively short time periods–two to three years–is usually performed with analysis of year-to-year changes in individual accounts. A year-to-year change analysis for short time periods is manageable and understandable. It has the advantage of presenting changes in absolute dollar amounts as well as in percentages. Change analyses in both amounts and percentages are relevant since different dollar bases in computing percentage changes can yield large changes inconsistent with their actual importance. For example, a 50% change from a base amount of $1,000 is usually less significant than the same percentage change from a base of $100,000. Reference to dollar amounts is necessary to retain a proper perspective and to make valid inferences on the relative importance of changes.

Computation of year-to-year changes is straightforward. Still, a few rules should be noted. When a negative amount appears in the base and a positive amount in the next period (or vice versa), we cannot compute a meaningful percentage change. Also, when there is no amount for the base period, no percentage change is computable. Similarly, when the base period amount is small, a percentage change can be computed but the number must be interpreted with caution. This is because it can signal a large change merely because of the small base amount used in computing the change. Also, when an

Complications in comparative analysis and how we confront them are depicted in the following five cases:

ILLUSTRATION 1.1

			CHANGE ANALYSIS	
Item (in millions)	**Period 1**	**Period 2**	**Amount**	**Percent**
Net income (loss)	$(4,500)	$1,500	$ 6,000	—
Tax expense	2,000	(1,000)	(3,000)	—
Cash	10	2,010	2,000	20,000%
Notes payable	—	8,000	8,000	—
Notes receivable	10,000	—	(10,000)	(100%)

item has a value in the base period and none in the next period, the decrease is 100%. These points are underscored in Illustration 1.1.

Comparative financial statement analysis typically reports both the cumulative total for the period under analysis and the average (or median) for the period. Comparing yearly amounts with an average, or median, computed over a number of periods helps highlight unusual fluctuations.

Exhibit 1.10 shows a year-to-year comparative analysis using Colgate's income statements. This analysis reveals several items of note. First, net sales increased by 7.38% but cost of goods sold increased by only 6.63%, therefore increasing Colgate's gross profit by 8.01%, which is higher than its revenue increase. Overall, this suggests that Colgate has been able to control its production costs and therefore increase its profit margin on sale. Selling, general, and administrative expenses increased by 11.07%. In its MD&A section, Colgate attributes this increase to higher levels of advertising, charges related to the company's restructuring program, and incremental stock-based compensation expense recognized as a result of adopting the new accounting standard, *SFAS 123R*. Colgate's R&D declined slightly since 2004, partially attributable to the company's

Colgate's Comparative Income Statements

Exhibit 1.10

	($ MILLION)			
	2006	**2005**	**Change**	**% Change**
Net sales	$12,238	$11,397	$841	7.38%
Cost of sales	5,536	5,192	344	6.63
Gross profit	6,702	6,205	497	8.01
Selling, general, and administrative expenses	4,355	3,921	434	11.07
Other expense, net	186	69	117	169.57
Operating profit	2,161	2,215	(54)	–2.44
Interest expense, net	159	136	23	16.91
Income before income taxes	2,002	2,079	(77)	–3.70
Provision for income taxes	648	728	(80)	–10.99
Net income	$ 1,354	$ 1,351	$ 3	0.22

strategy of outsourcing a portion of its R&D activities. Pretax income decreased by 3.70%, but tax expense decreased by 10.99%, thereby increasing net income by 0.22%. Colgate reports that the increased tax expense is primarily the result of a tax incentive provided by the American Jobs Creation Act of 2004, which allowed the company the incremental repatriation of $780 million of foreign earnings, as well as the lower effective tax rate on charges incurred in connection with the company's 2004 restructuring program. In sum, Colgate is performing well in a tough competitive environment.

Index-Number Trend Analysis. Using year-to-year change analysis to compare financial statements that cover more than two or three periods is sometimes cumbersome. A useful tool for long-term trend comparisons is *index-number trend analysis.* Analyzing data using index-number trend analysis requires choosing a base period, for all items, with a preselected index number usually set to 100. Because the base period is a frame of reference for all comparisons, it is best to choose a normal year with regard to business conditions. As with computing year-to-year percentage changes, certain changes, like those from negative amounts to positive amounts, cannot be expressed by means of index numbers.

When using index numbers, we compute percentage changes by reference to the base period as shown in Illustration 1.2.

ILLUSTRATION 1.2

CenTech's cash balance (in thousands) at December 31, Year 1 (the base period), is $12,000. Its cash balance at December 31, Year 2, is $18,000. Using 100 as the index number for Year 1, the index number for Year 2 equals 150 and is computed as:

$$\frac{\text{Current year balance}}{\text{Base year balance}} \times 100 = \frac{\$18{,}000}{\$12{,}000} \times 100 = 150$$

The cash balance of CenTech at December 31, Year 3, is $9,000. The index for Year 3 is 75 and is computed as:

$$\frac{\$9{,}000}{\$12{,}000} \times 100 = 75$$

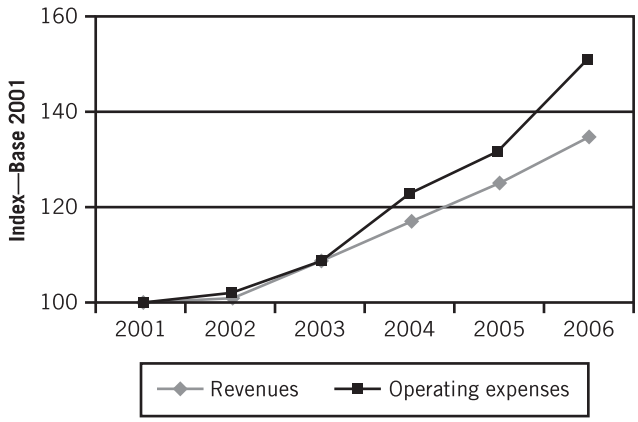
The change in cash balance between Year 1 and Year 2 for this illustration is 50% (150 − 100), and is easily inferred from the index numbers. However, the change from Year 2 to Year 3 is not 75% (150 − 75), as a direct comparison might suggest. Instead, it is 50%, computed as $9,000/$18,000. This involves computing the Year 2 to Year 3 change by reference to the Year 2 balance. The percentage change is, however, computable using index numbers only. For example, in computing this change, we take 75/150 = 0.50, or a change of 50%.

For index-number trend analysis, we need not analyze every item in financial statements. Instead, we want to focus on significant items. We also must exercise care in using index-number trend comparisons where changes might be due to economy or industry factors. Moreover, interpretation of percentage changes, including those using index-number trend series, must be made with an awareness of potentially inconsistent applications of accounting principles over time. When possible, we adjust for these inconsistencies. Also, the longer the time period for comparison, the more distortive are effects of any price-level changes. One outcome of trend analysis is its power to convey

insight into managers' philosophies, policies, and motivations. The more diverse the environments constituting the period of analysis, the better is our picture of how managers deal with adversity and take advantage of opportunities.

Results of index-number trend analysis on selected financial statement items for Colgate are reported in Exhibit 1.11. Sales have been steadily increasing since 2002 but followed by a slower increase in operating expenses.

Colgate's Index Number Trend ***Exhibit 1.11***



Common-Size Financial Statement Analysis

Financial statement analysis can benefit from knowing what proportion of a group or subgroup is made up of a particular account. Specifically, in analyzing a balance sheet, it is common to express total assets (or liabilities plus equity) as 100%. Then, accounts within these groupings are expressed as a percentage of their respective total. In analyzing an income statement, sales are often set at 100% with the remaining income statement accounts expressed as a percentage of sales. Because the sum of individual accounts within groups is 100%, this analysis is said to yield **common-size financial statements.** This procedure also is called *vertical analysis* given the up-down (or down-up) evaluation of accounts in common-size statements. Common-size financial statement analysis is useful in understanding the internal makeup of financial statements. For example, in analyzing a balance sheet, a common-size analysis stresses two factors:

1. Sources of financing–including the distribution of financing across current liabilities, noncurrent liabilities, and equity.
2. Composition of assets–including amounts for individual current and noncurrent assets.

Common-size analysis of a balance sheet is often extended to examine the accounts that make up specific subgroups. For example, in assessing liquidity of current assets, it is often important to know what proportion of current assets is composed of inventories, and not simply what proportion inventories are of total assets. Common-size analysis of an income statement is equally important. An income statement readily lends itself to common-size analysis, where each item is related to a key amount such as sales.

To varying degrees, sales impact nearly all expenses, and it is useful to know what percentage of sales is represented by each expense item. An exception is income taxes, which is related to pre-tax income and not sales.

Temporal (time) comparisons of a company's common-size statements are useful in revealing any proportionate changes in accounts within groups of assets, liabilities, expenses, and other categories. Still, we must exercise care in interpreting changes and trends as shown in Illustration 1.3.

ILLUSTRATION 1.3

The recent three years' account balances for both Patents and Total Assets of Meade Co. are:

	2006	2005	2004
Patents	$ 50,000	$ 50,000	$ 50,000
Total assets	$1,000,000	$750,000	$500,000
Patents/Total assets	5%	6.67%	10%

While the dollar amount for patents remains unchanged for this period, increases in total assets progressively reduce patents as a percentage of total assets. Since this percent varies with both the change in the absolute dollar amount of an item and the change in the total balance for its category, interpretation of common-size analysis requires examination of both the amounts for the accounts under analysis and the bases for their computations.

Common-size statements are especially useful for intercompany comparisons because financial statements of different companies are recast in common-size format. Comparisons of a company's common-size statements with those of competitors, or with industry averages, can highlight differences in account makeup and distribution. Reasons for such differences should be explored and understood. One key limitation of common-size statements for intercompany analysis is their failure to reflect the relative sizes of the companies under analysis. A comparison of selected accounts using common-size statements along with industry statistics is part of the comprehensive case following Chapter 11.

Colgate's common-size income statements are shown in Exhibit 1.12. In 2006, Colgate earned around 11 cents per dollar of sales, in contrast to almost 14 cents in 2002, a drop of 3 cents per dollar of sales. *Prima facie,* this is not a good sign because it suggests the inability of the company to pass its costs on to its customers. Further analysis shows the following. Income tax provision decreased by more than 1% of sales in 2006; a large part of this decrease is due to changes in tax laws. Therefore, on a pretax basis the picture is worse: between 2002 and 2006 Colgate's income before taxes dropped by 3.7% of revenues, from 20.1% to 16.4%. What accounts for this decrease? First, Colgate's cost of sales has remained roughly proportional to sales revenue since 2002, resulting in a stable gross profit margin. This is a remarkable achievement, considering the significant increase over this period in the prices of several commodities that are raw materials for Colgate's products. Therefore, Colgate's cost of production has remained under control. Second, SG&A expenses, as a proportion of sales revenue, have been increasing steadily by almost 3% since 2002. In addition, other expenses have gone up by 1% of sales since 2002, with much of the increase occurring in 2006. Together, these two items explain the decrease in income before taxes. While some of this increase is attributable to increasing advertising and marketing costs to combat increasing competition, much of this increase in both SG&A and other

Colgate's Common-Size Income Statements ***Exhibit 1.12***

Common size	2006	2005	2004	2003	2002
Net revenue	100.0	100.0	100.0	100.0	100.0
Cost of sales	45.2	45.6	44.9	45.0	45.4
Gross profit	54.8	54.4	55.1	55.0	54.6
Selling, general, and administrative expenses	35.6	34.4	34.2	33.3	32.6
Other (income) expense, net	1.5	0.6	0.9	(0.2)	0.2
Operating profit	17.7	19.4	20.0	21.9	21.7
Interest expense, net	1.3	1.2	1.1	1.3	1.5
Income before income taxes	16.4	18.2	18.9	20.6	20.1
Provision for income taxes	5.3	6.4	6.4	6.3	6.3
Net income	11.1	11.9	12.5	14.4	13.9

expenses is attributable to costs related to Colgate's 2004 restructuring program (see Appendix A for details), which accounts for about 3% of revenues on a pretax basis. If we exclude restructuring costs, Colgate's net income in 2006 is 13% of revenues, which is only marginally lower than that in 2002.

Common-size analysis of Colgate's balance sheets is in Exhibit 1.13. Because Colgate is a manufacturing company, PP&E constitutes almost 30% of its total assets. The share of PP&E has dropped from around 35% in 2002, partly because of depreciation of aging assets and because of increasing outsourcing of its manufacturing operations. Intangible assets and goodwill account for 31.9% of its assets, indicating significant acquisitions in the past. In comparison, 36% of Colgate's assets are current, up from 31.4% in 2002. While receivables are the largest component of current assets, much of the increase in current assets is explained by increases in cash and in inventory. Current liabilities are 38.4% of assets, which is larger than its current assets. This does not bode well for Colgate's liquidity. Current portion of long-term debt constitutes 8.5% of its current liabilities. Colgate's operating working capital (operating current assets less operating current assets) is 3% of its assets, suggesting that Colgate has not tied up much money in its working capital. A lion's share of Colgate's financing is debt: total liabilities are almost 85% of assets, of which more than 38% is long-term debt (including current portion). Colgate's shareholder's equity makes interesting reading. Just 21% of Colgate's assets have been financed by equity share capital, retained earnings (net of accumulated comprehensive income) are 83% of assets and a whopping 88% of its assets are treasury stock, which suggests significant stock repurchases. Because of the significant stock repurchase activity, Colgate's share of net equity financing is just 15% of assets. For most companies, such a small share of equity financing may be cause for concern, but in Colgate's case it just reflects its generous payout to shareholders.

Ratio Analysis

Ratio analysis is among the most popular and widely used tools of financial analysis. Yet its role is often misunderstood and, consequently, its importance often overrated. A ratio expresses a mathematical relation between two quantities. A ratio of 200 to 100 is expressed as 2:1, or simply 2. While computation of a ratio is a simple arithmetic

Exhibit 1.13 **Colgate's Common-Size Balance Sheets**

	2006	2005	2004	2003	2002
Assets					
Current assets					
Cash and cash equivalents	5.4	4.0	3.7	3.6	2.4
Receivables, net	16.7	15.4	15.2	16.3	16.2
Inventories	11.0	10.1	9.7	9.3	9.5
Other current assets	3.1	3.0	2.9	3.9	3.4
Total current assets	36.1	32.4	31.6	33.4	31.4
Property, plant, and equipment, net	29.5	29.9	30.5	34.0	35.2
Goodwill, net	22.8	21.7	21.8	17.4	16.7
Other intangible assets, net	9.1	9.2	9.6	8.0	8.6
Other assets	2.5	6.8	6.5	7.3	8.1
Total assets	100.0	100.0	100.0	100.0	100.0
Liabilities and Shareholders' Equity					
Current liabilities					
Notes and loans payable	1.9	2.0	1.5	1.4	1.3
Current portion of long-term debt	8.5	4.2	5.2	4.2	4.2
Accounts payable	11.4	10.3	10.0	10.1	10.3
Accrued income taxes	1.8	2.5	1.8	2.5	1.7
Other accruals	14.4	13.2	13.0	14.6	12.8
Total current liabilities	38.4	32.2	31.5	32.7	30.3
Long-term debt	29.8	34.3	35.6	35.9	45.3
Deferred income taxes	3.4	6.5	5.9	6.1	6.9
Other liabilities	13.4	9.9	12.7	13.4	12.5
Total liabilities	84.6	84.1	85.6	88.3	95.1
Shareholders' Equity					
Preferred stock	2.4	3.0	3.2	3.9	4.6
Common stock	8.0	8.6	8.5	9.8	10.3
Additional paid-in capital	13.3	12.5	12.6	15.1	16.0
Retained earnings	105.5	105.4	94.8	99.4	91.8
Accumulated other comprehensive income	(22.8)	(21.2)	(20.8)	(25.0)	(26.3)
Unearned compensation	(2.8)	(3.3)	(3.5)	(4.4)	(4.8)
Treasury stock, at cost	(88.4)	(89.1)	(80.3)	(86.9)	(86.8)
Total shareholders' equity	15.4	15.9	14.4	11.7	4.9
Total liabilities and shareholders' equity	100.0	100.0	100.0	100.0	100.0

operation, its interpretation is more complex. To be meaningful, a ratio must refer to an economically important relation. For example, there is a direct and crucial relation between an item's sales price and its cost. Accordingly, the ratio of cost of goods sold to sales is important. In contrast, there is no obvious relation between freight costs and the balance of marketable securities. The example in Illustration 1.4 highlights this point.

ILLUSTRATION 1.4

Consider interpreting the ratio of gasoline consumption to miles driven, referred to as miles per gallon (mpg). On the basis of the ratio of gas consumption to miles driven, person X claims to have the superior performer, that is, 28 mpg compared to person Y's 20 mpg. Is person X's vehicle superior in minimizing gas consumption? To answer that question there are several factors affecting gas consumption that require analysis before we can properly interpret these results and identify the superior performer. These factors include: (1) weight load, (2) type of terrain, (3) city or highway driving, (4) grade of fuel, and (5) travel speed. Numerous as the factors influencing gas consumption are, evaluating a gas consumption ratio is a simpler analysis than evaluating financial statement ratios. This is because of the interrelations in business variables and the complexity of factors affecting them.

We must remember that ratios are tools to provide us with insights into underlying conditions. They are one of the starting points of analysis, not an end point. Ratios, properly interpreted, identify areas requiring further investigation. Analysis of a ratio can reveal important relations and bases of comparison in uncovering conditions and trends difficult to detect by inspecting the individual components that make up the ratio. Still, like other analysis tools, ratios often are most useful when they are future oriented. This means we often adjust the factors affecting a ratio for their probable future trend and magnitude. We also must assess factors potentially influencing future ratios. Therefore, the usefulness of ratios depends on our skillful application and interpretation of them, and these are the most challenging aspects of ratio analysis.

Factors Affecting Ratios. Beyond the internal operating activities that affect a company's ratios, we must be aware of the effects of economic events, industry factors, management policies, and accounting methods. Our discussion of accounting analysis later in the book highlights the influence of these factors on the measurements underlying ratios. Any limitations in accounting measurements impact the effectiveness of ratios.

Prior to computing ratios, or similar measures like trend indices or percent relations, we use accounting analysis to make sure the numbers underlying ratio computations are appropriate. For example, when inventories are valued using LIFO (see Chapter 4) and prices are increasing, the current ratio is understated because LIFO inventories (the numerator) are understated. Similarly, certain lease liabilities are often unrecorded and disclosed in notes only (see Chapter 3). We usually want to recognize lease liabilities when computing ratios like debt to equity. We also need to remember that the usefulness of ratios depends on the reliability of the numbers. When a company's internal accounting controls or other governance and monitoring mechanisms are less reliable in generating credible figures, the resulting ratios are equally less reliable.

SEC CHARGES

The SEC has charged numerous individuals and companies with fraud and/or abuses of financial reporting. The SEC chairman said, "Our enforcement team will continue to root out and aggressively act on abuses of the financial reporting process."

Ratio Interpretation. Ratios must be interpreted with care because factors affecting the numerator can correlate with those affecting the denominator. For instance, companies can improve the ratio of operating expenses to sales by reducing costs that stimulate sales (such as advertising). However, reducing these types of costs is likely to yield long-term declines in sales or market share. Thus, a seemingly short-term improvement in profitability can damage a company's future prospects. We must interpret such changes appropriately. Many ratios have important variables in common with other ratios. Accordingly, it is not necessary to compute all possible ratios to analyze a situation. Ratios, like most techniques in financial analysis, are not relevant in isolation. Instead, they are usefully interpreted in comparison with (1) prior ratios, (2) predetermined standards, and (3) ratios of competitors. Finally, the variability of a ratio across time is often as important as its trend.

Illustration of Ratio Analysis. We can compute numerous ratios using a company's financial statements. Some ratios have general application in financial analysis, while others are unique to specific circumstances or industries. This section presents ratio analysis as applied to three important areas of financial statement analysis:

1. **Credit (Risk) Analysis**
   a. **Liquidity.** To evaluate the ability to meet short-term obligations.
   b. **Capital structure and solvency.** To assess the ability to meet long-term obligations.
2. **Profitability Analysis**
   a. **Return on investment.** To assess financial rewards to the suppliers of equity and debt financing.
   b. **Operating performance.** To evaluate profit margins from operating activities.
   c. **Asset utilization.** To assess effectiveness and intensity of assets in generating sales, also called *turnover.*
3. **Valuation**
   a. To estimate the intrinsic value of a company (stock).

Exhibit 1.14 reports results for selected ratios having applicability to most companies. A more complete listing of ratios is located on the book's inside cover. Data used in this illustration are from Colgate's annual report in Appendix A, although most ratios can be computed from informations in the financial statements presented in Exhibits 1.5 through 1.8.

Exhibit 1.14 ***Financial Statement Ratios for Colgate (2006)***

Liquidity

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} = \frac{\$3{,}301.0}{\$3{,}469.1} = 0.95$$

$$\text{Acid-test ratio} = \frac{\text{Cash and cash equivalents} + \text{Marketable securities} + \text{Accounts receivable}}{\text{Current liabilities}}$$

$$= \frac{\$489.5 + \$1{,}523.2}{\$3{,}469.1} = 0.58$$

$$\text{Collection period} = \frac{\text{Average accounts receivable}}{\text{Sales}/360} = \frac{(\$1{,}523.2 + \$1{,}309.4)/2}{12{,}237.7/360} = 41.66 \text{ days}$$

$$\text{Days to sell inventory} = \frac{\text{Average inventory}}{\text{Cost of sales}/360} = \frac{(\$1{,}008.4 + \$855.8)/2}{\$5{,}536.1/360} = 60.61 \text{ days}$$

Capital Structure and Solvency

$$\text{Total debt to equity} = \frac{\text{Total liabilities}}{\text{Shareholder's equity}} = \frac{\$7{,}727.1}{\$1{,}410.9} = 5.48$$

$$\text{Long-term debt to equity} = \frac{\text{Long-term liabilities}}{\text{Shareholders' equity}} = \frac{\$4{,}258.0}{\$1{,}410.9} = 3.02$$

$$\text{Times interest earned} = \frac{\text{Income before income taxes and interest expense}}{\text{Interest expense}} = \frac{\$2{,}001.8 + \$158.7}{\$158.7} = 13.61$$

(continued)

***Financial Statement Ratios for Colgate** (concluded)*

Return on Investment

$$\text{Return on assets} = \frac{\text{Net income} + \text{interest expense} \times (1 - \text{Tax rate})}{\text{Average total assets}}$$

$$= \frac{\$1{,}353.4 + \$158.7(1 - 0.35)}{(\$9{,}138.0 + \$8{,}507.1)/2} = 16.51\%$$

$$\text{Return on common equity} = \frac{\text{Net income}}{\text{Average shareholders' equity}} = \frac{\$1{,}353.4}{(\$1{,}410.9 + \$1{,}350.1)/2} = 98.04\%$$

Operating Performance

$$\text{Gross profit margin} = \frac{\text{Sales} - \text{Cost of sales}}{\text{Sales}} = \frac{\$12{,}237.7 - \$5{,}536.1}{\$12{,}237.7} = 54.76\%$$

$$\text{Operating profit margin (pretax)} = \frac{\text{Income from operations}}{\text{Sales}} = \frac{\$2{,}160.5}{\$12{,}237.7} = 17.65\%$$

$$\text{Net profit margin} = \frac{\text{Net income}}{\text{Sales}} = \frac{\$1{,}353.4}{\$12{,}237.7} = 11.01\%$$

Asset Utilization

$$\text{Cash turnover} = \frac{\text{Sales}}{\text{Average cash and equivalents}} = \frac{\$12{,}237.7}{(\$489.5 + \$340.7)/2} = 29.48$$

$$\text{Accounts receivable turnover} = \frac{\text{Sales}}{\text{Average accounts receivable}} = \frac{\$12{,}237.7}{(\$1{,}523.2 + \$1{,}309.4)/2} = 8.64$$

$$\text{Inventory turnover} = \frac{\text{Cost of sales}}{\text{Average inventory}} = \frac{\$5{,}536.1}{(\$1{,}008.4 + \$855.8)/2} = 5.94$$

$$\text{Working capital turnover} = \frac{\text{Sales}}{\text{Average working capital}} = \frac{\$12{,}237.7}{[(\$3{,}301.0 - \$3{,}469.1) + (\$2{,}757.1 - \$2{,}743.0)]/2} = -158.93$$

$$\text{PPE turnover} = \frac{\text{Sales}}{\text{Average PPE}} = \frac{\$12{,}237.7}{(\$2{,}696.1 + \$2{,}544.1)/2} = 4.67$$

$$\text{Total asset turnover} = \frac{\text{Sales}}{\text{Average total assets}} = \frac{\$12{,}237.7}{(\$9{,}138.0 + \$8{,}507.1)/2} = 1.39$$

Market Measures

$$\text{Price-to-earnings} = \frac{\text{Market price per share}}{\text{Earnings per share}} = \frac{\$65.24}{\$2.57} = 25.39$$

$$\text{Earnings yield} = \frac{\text{Earnings per share}}{\text{Market price per share}} = \frac{\$2.57}{\$65.24} = 3.94\%$$

$$\text{Dividend yield} = \frac{\text{Cash dividends per share}}{\text{Market price per share}} = \frac{\$1.25}{\$65.24} = 1.92\%$$

$$\text{Dividend payout rate} = \frac{\text{Cash dividends per share}}{\text{Earnings per share}} = \frac{\$1.25}{\$2.57} = 48.64\%$$

$$\text{Price-to-book} = \frac{\text{Market price per share}}{\text{Book value per share}} = \frac{\$65.24}{\$2.81} = 23.22$$

Credit Analysis. First, we focus on *liquidity*. Liquidity refers to the ability of an enterprise to meet its short-term financial obligations. An important liquidity ratio is the *current ratio,* which measures current assets available to satisfy current liabilities. Colgate's current ratio of 0.95 implies there are 95 cents of current assets available to meet each $1 of currently maturing obligations. A more stringent test of short-term liquidity, based on the *acid-test ratio,* uses only the most liquid current assets: cash, short-term investments, and accounts receivable. Colgate has 58 cents of such liquid assets to cover each $1 of current liabilities. Both these ratios suggest that Colgate's liquidity situation is cause for concern. Still, we need more information to draw definite conclusions about liquidity. The length of time needed for conversion of receivables and inventories to cash also provides useful information regarding liquidity. Colgate's *collection period* for receivables is approximately 42 days, and its *days to sell inventory* is 61. Neither of these indicates any liquidity problems. However, these measures are more useful when compared over time (i.e., changes in these measures are more informative about liquidity problems than levels). Overall, our brief analysis of liquidity suggests that while Colgate's composition of current assets and current liabilities are cause for concern, its receivables and inventory periods coupled with its excellent cash flow from operations (see later discussion) indicate that there is not much cause for concern.

DEBT TRIGGER

GM's bloated pension obligations and poor earnings resulted in a downgrade of its $300 billion in debt. This reflects a higher probability of default. Debt-rating downgrades usually result in higher interest rates for the borrower and can trigger bond default.

Analysis of Solvency. Solvency refers to the ability of an enterprise to meet its long-term financial obligations. To assess Colgate's long-term financing structure and credit risk, we examine its *capital structure and solvency*. Its *total debt-to-equity ratio* of 5.48 indicates that for each $1 of equity financing, $5.48 of financing is provided by creditors. Its *long-term debt-to-equity ratio* is 3.02, revealing $3.02 of long-term debt financing to each $1 of equity. Both these ratios are extremely high for a manufacturing company; such high ratios are more typical for a financial institution! On their own, they do raise concerns about Colgate's ability to service its debt and remain solvent in the long run. However, these ratios do not consider Colgate's excellent profitability. Another ratio that also considers profitability in addition to capital structure is the *times interest earned ratio* (or *interest coverage ratio*), which is the ratio of a company's earnings before interest to its interest payment. Colgate's 2006 earnings are 13.61 times its fixed (interest) commitments. This ratio indicates that Colgate will have no problem meeting its fixed-charge commitments. In sum, given Colgate's high (and stable) profitability, its solvency risk is low.

Profitability Analysis. We begin by assessing different aspects of return on investment. Colgate's *return on assets* of 16.51% implies that a $1 asset investment generates 16.51 cents of annual earnings prior to subtracting after-tax interest. Equity holders are especially interested in management's performance based on equity financing, so we also look at the return on equity. Colgate's *return on common equity* (or more commonly termed as *return on equity*) of 98.04% suggests it earns 98.04 cents annually for each $1 of equity investment. Both of these ratios are significantly higher than the average for publicly traded companies of approximately 7% and 12%, respectively. Colgate's return on equity, in particular, is probably one of the highest among U.S. companies.

Another part of profitability analysis is evaluation of *operating performance.* This is done by examining ratios that typically link income statement line items to sales. These ratios are often referred to as *profit margins,* for example, gross profit margin (or more concisely gross margin). These ratios are comparable to results from common-size income statement analysis. The operating performance ratios for Colgate in Exhibit 1.14

reflect a remarkable operating performance in the face of a highly competitive environment. Colgate's *gross profit margin* of 54.7% reflects its inherent ability to sell well above its cost of production, despite the intensely competitive consumer products' markets. Its pre-tax *operating profit margin* of 17.65% and *net profit margin* of 11.01% is well above average for U.S. companies. In sum, Colgate's pricing power and superior control of production costs make it a very profitable company.

Asset utilization analysis is closely linked with profitability analysis. Asset utilization ratios, which relate sales to different asset categories, are important determinants of return on investment. These ratios for Colgate indicate above average performance. For example, Colgate's total asset turnover of 1.39 is higher than the average for all publicly traded companies in the United States. Also Colgate's working capital turnover is negative, because its current assets are below its current liabilities. This indicates that Colgate has not invested in working capital.

Valuation. Exhibit 1.14 also includes five valuation measures. Colgate's price-to-earnings ratio of 25.39 and price-to-book of 23.22 are high and reflect the market's favorable perception of Colgate as a solid performer. Colgate's dividend payout rate of 48.64% is high, indicating that Colgate chooses to pay out a large proportion of its profits.

Ratio analysis yields many valuable insights as is apparent from our preliminary analysis of Colgate. We must, however, keep in mind that these computations are based on numbers reported in Colgate's financial statements. We stress in this book that our ability to draw useful insights and make valid intercompany comparisons is enhanced by our adjustments to reported numbers prior to their inclusion in these analyses. We also must keep in mind that ratio analysis is only one part of financial analysis. An analyst must dig deeper to understand the underlying factors driving ratios and to effectively integrate different ratios to evaluate a company's financial position and performance.

Cash Flow Analysis

Cash flow analysis is primarily used as a tool to evaluate the sources and uses of funds. Cash flow analysis provides insights into how a company is obtaining its financing and deploying its resources. It also is used in cash flow forecasting and as part of liquidity analysis.

Colgate's statement of cash flows reproduced in Exhibit 1.8 is a useful starting point for cash flow analysis. Colgate generated $1.822 billion from operating activities. It then used $620 million for investing activities, primarily for capital expenditure and payment for acquisitions. Colgate also paid $1.332 million for debt retirement, which it financed by issuing fresh debt to the tune of $1.471 billion. The remaining cash flow was primarily returned to its shareholders, in the form of common dividends ($0.678 billion) and repurchase of common stock ($0.885 billion). Overall, Colgate's financing activities resulted in a net cash outflow to the tune of $1.059 million. After accounting for foreign currency exchange rate fluctuations, Colgate's cash flow increased by $148 million during 2006.

This preliminary analysis shows that Colgate generated copious cash flows from its operations. After using some of it for capital expenditure and acquisitions, the rest of the generated cash was paid back to shareholders through dividends and stock repurchases. While this simple analysis of the statement of cash flows conveys much information about the sources and uses of funds at Colgate, it is important to analyze cash flows in more detail for a more thorough investigation of Colgate's business and financial activities. We return to cash flow analysis in Chapters 7 and 9.

Valuation Models

IPO MISDEALS
Investment banking institutions have recently been investigated for allegedly allocating hot-selling IPO shares to favored executives to cut more investment-banking deals instead of selling them to the highest bidders.

Valuation is an important outcome of many types of business and financial statement analysis. **Valuation** normally refers to estimating the intrinsic value of a company or its stock. The basis of valuation is **present value theory.** This theory states the value of a debt or equity security (or for that matter, any asset) is equal to the sum of all expected future payoffs from the security that are discounted to the present at an appropriate *discount rate*. Present value theory uses the concept of *time value of money*–it simply states an entity prefers present consumption more than future consumption. Accordingly, to value a security an investor needs two pieces of information: (1) expected future payoffs over the life of the security and (2) a discount rate. For example, future payoffs from bonds are principal and interest payments. Future payoffs from stocks are dividends and capital appreciation. The discount rate in the case of a bond is the prevailing interest rate (or more precisely, the *yield to maturity*), while in the case of a stock it is the risk-adjusted *cost of capital* (also called the *expected rate of return*).

This section begins with a discussion of valuation techniques as applied to debt securities. Because of its simplicity, debt valuation provides an ideal setting to grasp key valuation concepts. We then conclude this section with a discussion of equity valuation.

Debt Valuation

The value of a security is equal to the present value of its future payoffs discounted at an appropriate rate. The future payoffs from a debt security are its interest and principal payments. A bond contract precisely specifies its future payoffs along with the investment horizon. The value of a bond at time t, or B_t, is computed using the following formula:

$$B_t = \frac{I_{t+1}}{(1+r)^1} + \frac{I_{t+2}}{(1+r)^2} + \frac{I_{t+3}}{(1+r)^3} + \cdots + \frac{I_{t+n}}{(1+r)^n} + \frac{F}{(1+r)^n}$$

MUTUAL FUNDS
The mutual-fund industry has more than $6 trillion in equity, bond, and money-market funds.

where I_{t+n} is the interest payment in period $t + n$, F is the principal payment (usually the debt's face value), and r is the investor's required interest rate, or yield to maturity. When valuing bonds, we determine the expected (or desired) yield based on factors such as current interest rates, expected inflation, and risk of default. Illustration 1.5 offers an example of debt valuation.

ILLUSTRATION 1.5

On January 1, Year 1, a company issues $100 of eight-year bonds with a year-end interest (coupon) payment of 8% per annum. On January 1, Year 6, we are asked to compute the value of this bond when the yield to maturity on these bonds is 6% per annum.

Solution: These bonds will be redeemed on December 31, Year 8. This means the remaining term to maturity is three years. Each year-end interest payment on these bonds is $8, computed as 8% × $100, and the end of Year 8 principal payment is $100. The value of these bonds as of January 1, Year 6, is computed as:

$$\$8/(1.06) + \$8/(1.06)^2 + \$8/(1.06)^3 + \$100/(1.06)^3 = \$105.35$$

Equity Valuation

Basis of Equity Valuation. The basis of equity valuation, like debt valuation, is the present value of future payoffs discounted at an appropriate rate. Equity valuation, however, is more complex than debt valuation. This is because, with a bond, the future

payoffs are specified. With equity, the investor has no claim on predetermined payoffs. Instead, the equity investor looks for two main (uncertain) payoffs–dividend payments and capital appreciation. Capital appreciation denotes change in equity value, which in turn is determined by future dividends, so we can simplify this task to state that the value of an equity security at time t, or V_t, equals the sum of the present values of all future expected dividends:

$$V_t = \frac{E(D_{t+1})}{(1+k)^1} + \frac{E(D_{t+2})}{(1+k)^2} + \frac{E(D_{t+3})}{(1+k)^3} + \cdots$$

where D_{t+n} is the dividend in period $t + n$, and k is the cost of capital. This model is called the **dividend discount model.** This equity valuation formula is in terms of *expected* dividends rather than *actual* dividends. We use expectations instead of actual dividends because, unlike interest and principal repayments in the case of a bond, future dividends are neither specified nor determinable with certainty. This means our analysis must use forecasts of future dividends to get an estimate of value.

Alternatively, we might define value as the present value of future cash flows. This definition is problematic for at least two reasons. First, the term *cash flows* is vague. There are many different types of cash flows: operating cash flows, investing cash flows, financing cash flows, and net cash flows (change in cash balance). Hence, which type of cash flows should one use? Second, while we can rewrite the equity valuation formula in terms of one type of cash flows, called *free cash flows*, it is incorrect to define value in terms of cash flows. This is because dividends are the actual payoffs to equity investors and, therefore, the only appropriate valuation attribute. Any other formula is merely a derived form of this fundamental formula. While the free cash flow formula is technically exact, it is simply one derived formula from among several. One can also derive an exact valuation formula using accounting variables independent of cash flows.

Practical Considerations in Valuation. The dividend discount model faces practical obstacles. One main problem is that of infinite horizon. Practical valuation techniques must compute value using a finite forecast horizon. However, forecasting dividends is difficult in a finite horizon. This is because dividend payments are discretionary, and different companies adopt different dividend payment policies. For example, some companies prefer to pay out a large portion of earnings as dividends, while other companies choose to reinvest earnings. This means actual dividend payouts are not indicative of company value except in the very long run. The result is that valuation models often replace dividends with earnings or cash flows. This section introduces two such valuation models–the free cash flow model and the residual income model.

The **free cash flow to equity model** computes equity value at time t by replacing expected dividends with expected free cash flows to equity:

$$V_t = \frac{E(FCFE_{t+1})}{(1+k)^1} + \frac{E(FCFE_{t+2})}{(1+k)^2} + \frac{E(FCFE_{t+3})}{(1+k)^3} + \cdots$$

where $FCFE_{t+n}$ is free cash flow to equity in period $t + n$, and k is cost of capital. *Free cash flows to equity* are defined as cash flows from operations less capital expenditures plus increases (minus decreases) in debt. They are cash flows that are free to be paid to equity investors and, therefore, are an appropriate measure of equity investors' payoffs.

Free cash flows also can be defined for the *entire* firm. Specifically, free cash flows to the firm (or simply *free cash flows*) equal operating cash flows (adjusted for interest expense and revenue) less investments in operating assets. Then, the value of the entire firm equals

DECIMAL PRICING

Wall Street long counted money in the same units that 17th century pirates used—pieces of eight. But fractional pricing—pricing stocks in eighths, sixteenths, and the occasional thirty-secondth of a dollar—went the way of Spanish doubloons; stock and options markets now use decimal pricing.

the discounted expected future free cash flows using the weighted average cost of capital. (Note, the value of equity equals the value of the entire firm less the value of debt.)

The **residual income model** computes value using accounting variables. It defines equity value at time t as the sum of current book value and the present value of all future expected residual income:

$$V_t = BV_t + \frac{E(RI_{t+1})}{(1+k)^1} + \frac{E(RI_{t+2})}{(1+k)^2} + \frac{E(RI_{t+3})}{(1+k)^3} + \cdots$$

where BV_t is book value at the end of period t, RI_{t+n} is residual income in period $t + n$, and k is cost of capital. **Residual income** at time t is defined as comprehensive net income minus a charge on beginning book value, that is, $RI_t = NI_t - (k \times BV_{t-1})$.

While both of these models overcome some problems in using dividends, they still are defined in terms of an infinite horizon. To derive value using a finite horizon (say, 5 or 10 years), we must replace the present value of future dividends beyond a particular future date by an estimate of **continuing value** (also called **terminal value**). Unlike forecasts of payoffs for the finite period that often are derived using detailed prospective analysis, a forecast of continuing value is usually based on simplifying assumptions for growth in payoffs. While forecasting continuing value often is a source of much error, its estimation is required in equity valuation.

Note that all three models–dividend discount, free cash flow to equity, and residual income–are identical and exact in an infinite horizon. Therefore, choosing a valuation model is based on practical considerations in a finite horizon setting. Moreover, an important criterion is to choose a valuation model least dependent on continuing value. While the free cash flow to equity and dividend discount models work well under certain circumstances in finite horizons, the residual income model usually outperforms both. Illustration 1.6 shows the mechanics of applying the dividend discount model, the free cash to equity model, and the residual income model. Still, a complete understanding of these valuation models, the implications of finite horizons, and the practical considerations of alternative models is beyond the scope of this chapter. We return to these issues in Chapter 11.

ILLUSTRATION 1.6

At the end of year 2004, Pitbull Co. owns 51% of the equity of Labrador, an entirely equity-financed company. By agreement with Labrador's shareholders, Pitbull agrees to acquire the remaining 49% of Labrador shares at the end of year 2009 at a price of $25 per share. Labrador also agrees to maintain annual cash dividends at $1 per share through 2009. An analyst makes the following projections for Labrador:

(in $ per share)	2004	2005	2006	2007	2008	2009
Dividends	—	$1.00	$1.00	$1.00	$1.00	$1.00
Operating cash flows	—	1.25	1.50	1.50	2.00	2.25
Capital expenditures	—	—	—	1.00	1.00	—
Increase (decrease) in long-term debt	—	(0.25)	(0.50)	0.50	—	(1.25)
Net income	—	1.20	1.30	1.40	1.50	1.65
Book value	$5.00	—	—	—	—	—

At this same time (end of year 2004), we wish to compute the intrinsic value of the remaining 49% of Labrador's shares using the alternative valuation models (assume a cost of capital of 10%).

Solution: Since Pitbull will acquire Labrador at the end of 2009 for $25 per share, the terminal value is set–this spares us the task of estimating continuing (or terminal) value. Using the **dividend discount model,** we determine intrinsic value at the end of year 2004 as:

$$\text{Intrinsic value} = \frac{\$1}{(1.1)^1} + \frac{\$1}{(1.1)^2} + \frac{\$1}{(1.1)^3} + \frac{\$1}{(1.1)^4} + \frac{\$1}{(1.1)^5} + \frac{\$25}{(1.1)^5} = 19.31$$

Next, to apply the free cash flow to equity model, we compute the following amounts for Labrador:

(in $ per share)		2005	2006	2007	2008	2009
	Operating cash flows*	$1.25	$1.50	$1.50	$2.00	$2.25
−	Capital expenditures*	—	—	(1.00)	(1.00)	—
+/−	Debt increase (decrease)	(0.25)	(0.50)	0.50	—	(1.25)
=	Free cash flow to equity	$1.00	$1.00	$1.00	$1.00	$1.00

*Amounts taken from analyst's projections.

The excess cash flows not needed for the payment of dividends are used to reduce long-term debt. The free cash flows to equity, then, are the cash flows available to pay the dividend requirement of $1. Then, using the free cash flows to equity model, we determine the value of the firm as:

$$\text{FCFE value} = \frac{\$1}{(1.1)^1} + \frac{\$1}{(1.1)^2} + \frac{\$1}{(1.1)^3} + \frac{\$1}{(1.1)^4} + \frac{\$1}{(1.1)^5} + \frac{\$25}{(1.1)^5} = 19.31$$

The free cash flows to equity model values the cash flows generated by the firm, whether or not paid out as dividends.

Finally, to apply the residual income model, we compute the following amounts for Labrador:

(in $ per share)	2005	2006	2007	2008	2009
Net income*	$1.20	$1.30	$1.40	$1.50	$ 1.65
− Capital charge (10% of beg. book value*)	(0.50)	(0.52)	(0.55)	(0.59)	(0.64)
= Residual income	$0.70	$0.78	$0.85	$0.91	$ 1.01
+ Gain on sale of equity to Pitbull (terminal value)					$17.95†

*Amounts taken from analyst's projections.

†$25 − $7.05.

Using the **residual income model,** we compute intrinsic value at the end of year 2004 as:

$$\text{Intrinsic value} = \$5.00 + \frac{\$0.70}{(1.1)^1} + \frac{\$0.78}{(1.1)^2} + \frac{\$0.85}{(1.1)^3} + \frac{\$0.91}{(1.1)^4} + \frac{\$1.01}{(1.1)^5} + \frac{\$17.95}{(1.1)^5} = \$19.31$$

All three models yield the same intrinsic value.

Analysis in an Efficient Market

Market Efficiency

BEATING THE (FOOTBALL) ODDS

An article in *Journal of Business* looks at the efficiency of the pro football-betting market. Efficiency tests are applied to movements in point spreads. Results show it's possible to make some money by adopting a contrarian strategy—that is, waiting till the last minute and then betting against point-spread shifts. But such a strategy is only marginally profitable after accounting for the casinos' fee. That is, the football-betting market appears inefficient, but not enough for investors to capitalize on its inefficiencies.

The **efficient market hypothesis,** or EMH for short, deals with the reaction of market prices to financial and other information. There are three common forms of EMH. The *weak form* EMH asserts that prices reflect fully the information contained in historical price movements. The *semistrong form* EMH asserts that prices reflect fully all publicly available information. The *strong form* EMH asserts that prices reflect *all* information including inside information. There is considerable research on EMH. Early evidence so strongly supported both weak and semistrong form EMH that efficiency of capital markets became a generally accepted hypothesis. More recent research, however, questions the generality of EMH. A number of stock price anomalies have been uncovered suggesting investors can earn excess returns using simple trading strategies. Nevertheless, as a first approximation, current stock price is a reasonable estimate of company value.

Market Efficiency Implications for Analysis

EMH assumes the existence of competent and well-informed analysts using tools of analysis like those described in this book. It also assumes analysts are continually evaluating and acting on the stream of information entering the marketplace. Extreme proponents of EMH claim that if all information is instantly reflected in prices, attempts to reap consistent rewards through financial statement analysis is futile. This extreme position presents a paradox. On one hand, financial statement analysts are assumed capable of keeping markets efficient, yet these same analysts are assumed as unable to earn excess returns from their efforts. Moreover, if analysts presume their efforts in this regard are futile, the efficiency of the market ceases.

Several factors might explain this apparent paradox. Foremost among them is that EMH is built on aggregate, rather than individual, investor behavior. Focusing on aggregate behavior highlights average performance and ignores or masks individual performance based on ability, determination, and ingenuity, as well as superior individual timing in acting on information. Most believe that relevant information travels fast, encouraged by the magnitude of the financial stakes. Most also believe markets are rapid processors of information. Indeed, we contend the speed and efficiency of the market are evidence of analysts at work, motivated by personal rewards.

EMH's alleged implication regarding the futility of financial statement analysis fails to recognize an essential difference between information and its proper interpretation. That is, even if all information available at a given point in time is incorporated in price, this price does not necessarily reflect value. A security can be under- or overvalued, depending on the extent of an incorrect interpretation or faulty evaluation of available information by the aggregate market. Market efficiency depends not only on availability of information but also on its correct interpretation. Financial statement analysis is complex and demanding. The spectrum of financial statement users varies from an institutional analyst who concentrates on but a few companies in one industry to an unsophisticated chaser of rumors. All act on information, but surely not with the same insight and competence. A competent analysis of information entering the marketplace requires a sound analytical knowledge base and an information mosaic–one to fit new information to aid in evaluation and interpretation of a company's financial position and performance. Not all individuals possess the ability and determination to expend

Analysis Research

IS THE STOCK MARKET EFFICIENT?

The efficient markets hypothesis (EMH) has driven many investment strategies for the past three decades. While Wall Street has not embraced EMH as wholeheartedly as the academic community, it has won many converts. While no one maintains that markets are *strong form* efficient, there is a wealth of evidence suggesting that the stock markets (at least in the United States) are both *weak form* and *semistrong form* efficient. That is, stock prices are serially uncorrelated–meaning there are no predictable patterns in prices. Stock markets seemingly respond rapidly to information, such as earnings announcements and dividend changes. The markets also seem to filter information, making it difficult to fool the market with cosmetic accounting changes. For example, the markets seem to understand the implications of alternative accounting choices, such as LIFO and FIFO. Probably the strongest evidence in favor of market efficiency is the dismal performance of investment managers. A majority of investment funds underperform market indexes such as the S&P 500. Moreover, even those managers who outperform the indexes show little consistency over time. Further evidence that Wall Street has embraced EMH is the popularity of *buy-and-hold* (which assumes you can't time the market) and *indexing* (which assumes you can't identify winning stocks) strategies.

Still, there is growing evidence suggesting the market is not as efficient as presumed. This evidence on market efficiency, called *anomalies* by EMH believers, began surfacing in the past decade. Consider some of the more intriguing bits of evidence. First, stock markets exhibit some *weak form inefficiency.* For example, the market exhibits systematic "calendar" patterns. The well-known *January effect,* where stock prices (especially those of small companies) increase abnormally in the month of January, is the best known example. Another example is that the average return on the Dow Jones Industrial Average for the six months from November through April is more than four times the return for the other six-month period. Still another is that stock returns show patterns based on the day of the week–Monday is the worst day, while Wednesday and Friday are best. Second, there is evidence of *semistrong form inefficiency.* The P/E anomaly and the price-to-book effects–where stocks with low price-to-earnings or price-to-book ratios outperform those with high ratios–suggest the potential of value-based strategies to beat the market. Also, there are a number of accounting-based market anomalies. The best known is the post-earnings announcement drift, where stock prices of companies with good (bad) earnings news continue to drift upward (downward) for months after the earnings announcements. Recent evidence also suggests that managers might be able to "fool" the market with accrual manipulations–a strategy of buying stocks with low accruals and selling stocks with high accruals beats the market. Furthermore, evidence suggests the residual income valuation model can identify over- and undervalued stocks (as well as over- and undervaluation of the market as a whole). Evidence also suggests that investment strategies using analysts' consensus ratings can beat the market.

These findings of market inefficiency give rise to an alternative paradigm, called *behavioral finance,* suggesting that markets are prone to irrationalities and emotion. While the proliferation of evidence suggesting inefficiency does not necessarily imply that markets are irrational and chaotic, it does suggest that blind faith in market efficiency is misplaced.

the efforts and resources to create an information mosaic. Also, timing is crucial in the market.

Movement of new information, and its proper interpretation, flows from the well-informed and proficient segment of users to less-informed and inefficient users. This is consistent with a gradual pattern of processing new information. Resources necessary for competent analysis of a company are considerable and imply that certain market segments are more efficient than others. Securities markets for larger companies are more efficient (informed) because of a greater following by analysts due to potential rewards from information search and analysis compared to following smaller, less-prominent companies. Extreme proponents of EMH must take care in making sweeping generalizations. In the annual report of Berkshire Hathaway, its chairman and famed investor

SELLING SHORT
A short-seller sells shares that are borrowed, either from an institutional investor or from a retail brokerage firm, and then hopes to replace the borrowed shares at a lower price, pocketing the difference.

Warren Buffett expresses amazement that EMH is still embraced by some scholars and analysts. This, Buffett maintains, is because by observing correctly that the market is frequently efficient, they conclude incorrectly it is *always* efficient. Buffett declares, "the difference between these propositions is night and day."

Analysis Research

TITANIC EFFICIENCY

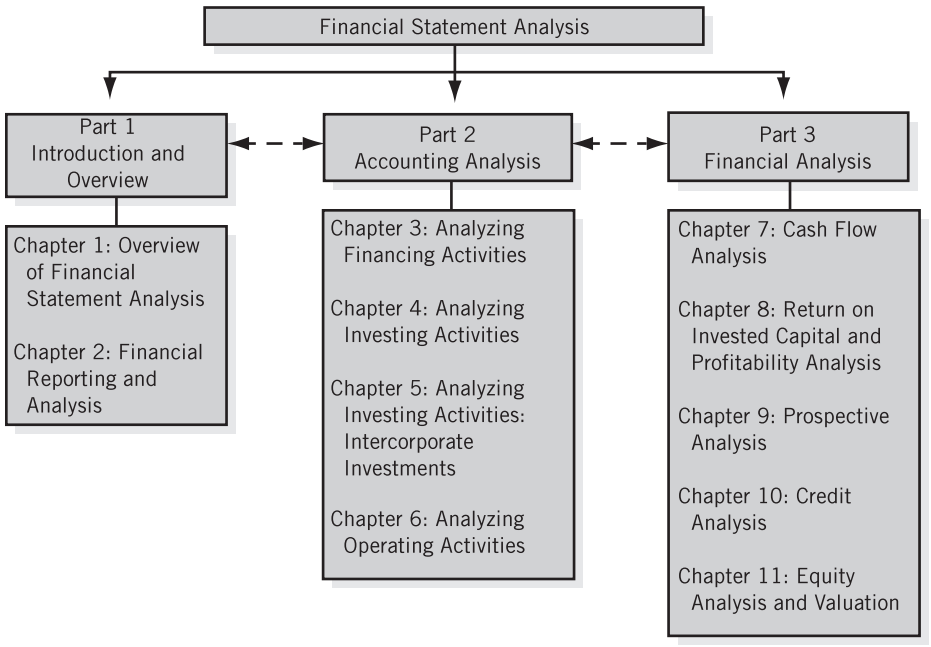
If the market's reaction to the sinking of the *Titanic* in 1912 is any guide, investors were pretty sharp even in the pre-"efficient market" era. The *Titanic* was owned by White Star Line, a subsidiary of International Mercantile Marine (IMM) that was traded on the NYSE. The ship cost $7.5 million and was insured by Lloyd's for $5 million, so the net loss to IMM was about $2.5 million. The two-day market-adjusted returns on IMM's stock (covering the day the news of the tragedy broke and the day after) reflect a decline of $2.6 million in the value of IMM–uncannily close to the $2.5 million actual net loss.

Source: BusinessWeek (1998)

BOOK ORGANIZATION

This book is organized into 11 chapters in three parts, see Exhibit 1.15. Part I, covering Chapters 1–2, introduces financial statement analysis. Chapter 1 examines business analysis and provides a preview of selected financial statement analysis techniques. Chapter 2 focuses on financial accounting–its objectives and its primary characteristics. It also explains the importance of accrual accounting, its superiority over cash flow accounting, and provides an overview of accounting analysis. Part II, covering

Exhibit 1.15 ***Organization of the Book***



Chapters 3–6, emphasizes accounting analysis. It describes accounting analysis for financing, investing, and operating activities. Part III, covering Chapters 7–11, focuses on financial analysis. Chapter 7 explains the analysis of cash flows, while Chapter 8 describes profitability analysis. Chapter 9 discusses forecasting and pro forma analysis, and Chapters 10–11 highlight two major applications of financial statement analysis–credit analysis and equity analysis.

The book concludes with a comprehensive case analysis of the financial statements of Campbell Soup Company. We apply and interpret many of the analysis techniques described in the book using this case. Appendix A reproduces annual report excerpts from two companies that are often referred to in the book: Colgate and Campbell Soup. Throughout this book, the relation of new material to topics covered in earlier chapters is described to reinforce how the material fits together in an integrated structure for financial statement analysis.

GUIDANCE ANSWERS TO ANALYSIS VIEWPOINTS

CREDITOR A creditor (or banker) is concerned about Colgate's ability to satisfy its loan obligations. Interest and principal payments must be paid, whereas dividends to owners (shareholders) are optional. Colgate has $5.48 of creditor financing for every dollar of equity financing. Moreover, more than half of the creditor financing is interest bearing debt. Prima facie, therefore there is some concern about Colgate's ability to pay interest and principal. However, Colgate's superior profitability suggests that such a concern is unwarranted: Colgate's earnings before interest and taxes are $2.15 billion, which is more than 13 times its interest bill of $158 million. Additionally Colgate's income over the past ten years has been very stable, which makes it more likely that Colgate will be able to meet interest and principal payments on its debt.

INVESTOR As a potential investor, your review of financial statements focuses on Colgate's ability to create and sustain net income. Each of the statements is important in this review. The income statement is especially important as it reveals management's current and past success in creating and sustaining income. The cash flow statement is important in assessing management's ability to meet cash payments and the company's cash availability. The balance sheet shows the asset base from which future income is generated, and it reports on liabilities and their due dates.

QUESTIONS

1–1. Describe business analysis and identify its objectives.

1–2. Explain the claim: *Financial statement analysis is an integral part of business analysis.*

1–3. Describe the different types of business analysis. Identify the category of users of financial statements that applies to each different type of business analysis.

1–4. What are the main differences between credit analysis and equity analysis? How do these impact the financial statement information that is important for each type of analysis?

1–5. What is fundamental analysis? What is its main objective?

1–6. What are the various component processes in business analysis? Explain with reference to equity analysis.

1–7. Describe the importance of accounting analysis for financial analysis.

1–8. Describe financial statement analysis and identify its objectives.

1–9. Identify at least five different internal and external users of financial statements.

1–10. Identify and discuss the four major activities of a business enterprise.

1–11. Explain how financial statements reflect the business activities of a company.

1–12. Identify and discuss the four primary financial statements of a business.

1–13. Explain why financial statements are important to the decision-making process in financial analysis. Also, identify and discuss some of their limitations for analysis purposes.

1–14. Identify at least seven additional sources of financial reporting information (beyond financial statements) that are useful for analysis.

1–15. Identify and discuss at least two areas of financial analysis.

1–16. Identify and describe at least four categories of financial analysis tools.

1–17. Comparative analysis is an important tool in financial analysis.
   a. Explain the usefulness of comparative financial statement analysis.
   b. Describe how financial statement comparisons are effectively made.
   c. Discuss the necessary precautions an analyst should take in performing comparative analysis.

1–18. Is past trend a good predictor of future trend? Justify your response.

1–19. Compare the "absolute amount of change" with the percent change as an indicator of change. Which is better for analysis?

1–20. Identify conditions that prevent computation of a valid percent change. Provide an example.

1–21. Describe criteria in selecting a base year for index-number trend analysis.

1–22. Explain what useful information is derived from index-number trend analysis.

1–23. Common-size analysis is an important tool in financial analysis.
   a. Describe a common-size financial statement. Explain how one is prepared.
   b. Explain what a common-size financial statement report communicates about a company.

1–24. What is a necessary condition for usefulness of a ratio of financial numbers? Explain.

1–25. Identify and describe limitations of ratio analysis.

1–26. Ratio analysis is an important tool in financial analysis. Identify at least four ratios using:
   a. Balance sheet data exclusively.
   b. Income statement data exclusively.
   c. Both balance sheet and income statement data.

1–27. Identify four specialized financial analysis tools.

1–28. What is meant by "time value of money"? Explain the role of this concept in valuation.

1–29. Explain the claim: *While we theoretically use the effective interest rate to compute a bond's present value, in practice it is the other way around.*

1–30. What is amiss with the claim: *The value of a stock is the discounted value of expected future cash flows*?

1–31. Identify and describe a technique to compute equity value only using accounting variables.

1–32. Explain how the efficient market hypothesis (EMH) depicts the reaction of market prices to financial and other data.

1–33. Discuss implications of the efficient market hypothesis (EMH) for financial statement analysis.

EXERCISES

EXERCISE 1–1
Discretion in Comparative Financial Statement Analysis

The preparation and analysis of comparative balance sheets and income statements are commonly applied tools of financial statement analysis and interpretation.

Required:

a. Discuss the inherent limitations of analyzing and interpreting financial statements for a single year. Include in your discussion the extent that these limitations are overcome by use of comparative financial statements computed over more than one year.

b. A year-to-year analysis of comparative balance sheets and income statements is a useful analysis tool. Still, without proper care, such analysis can be misleading. Discuss factors or conditions that contribute to such a possibility. How can additional information and supplementary data (beyond financial statements) help prevent this possibility?

EXERCISE 1–2
Computing Common-Size Percents

Express the following income statement information in common-size percents and assess whether this company's situation is favorable or unfavorable.

HARBISON CORPORATION
Comparative Income Statement
For Years Ended December 31, 2006 and 2005

	2006	2005
Sales	$720,000	$535,000
Cost of goods sold	475,200	280,340
Gross profit	244,800	254,660
Operating expenses	151,200	103,790
Net income	$ 93,600	$150,870

EXERCISE 1–3
Evaluating Short-Term Liquidity

Mixon Company's year-end balance sheets show the following:

	2006	2005	2004
Cash	$ 30,800	$ 35,625	$ 36,800
Accounts receivable, net	88,500	62,500	49,200
Merchandise inventory	111,500	82,500	53,000
Prepaid expenses	9,700	9,375	4,000
Plant assets, net	277,500	255,000	229,500
Total assets	$518,000	$445,000	$372,500
Accounts payable	$128,900	$ 75,250	$ 49,250
Long-term notes payable secured by mortgages on plant assets	97,500	102,500	82,500
Common stock, $10 par value	162,500	162,500	162,500
Retained earnings	129,100	104,750	78,250
Total liabilities and equity	$518,000	$445,000	$372,500

Required:

Compare the year-end short-term liquidity position of this company at the end of 2006, 2005, and 2004 by computing the: (*a*) current ratio and (*b*) acid-test ratio. Comment on the ratio results.

EXERCISE 1–4
Common-Size Percents

Refer to Mixon Company's balance sheets in Exercise 1–3. Express the balance sheets in common-size percents. Round to the nearest one-tenth of a percent.

EXERCISE 1–5
Evaluating Short-Term Liquidity

Refer to the information in Exercise 1–3 about Mixon Company. The company's income statements for the years ended December 31, 2006 and 2005 show the following:

	2006		2005	
Sales		$672,500		$530,000
Cost of goods sold	$410,225		$344,500	
Other operating expenses	208,550		133,980	
Interest expense	11,100		12,300	
Income taxes	8,525		7,845	
Total costs and expenses		(638,400)		(498,625)
Net income		$ 34,100		$ 31,375
Earnings per share		$ 2.10		$ 1.93

Required:

For the years ended December 31, 2006 and 2005, assume all sales are on credit and then compute the following: (*a*) collection period, (*b*) accounts receivable turnover, (*c*) inventory turnover, and (*d*) days' sales in inventory. Comment on the changes in the ratios from 2005 to 2006.

EXERCISE 1–6
Evaluating Risk and Capital Structure

Refer to the information in Exercises 1–3 and 1–5 about Mixon Company. Compare the long-term risk and capital structure positions of the company at the end of 2006 and 2005 by computing the following ratios: (*a*) total debt ratio and (*b*) times interest earned. Comment on these ratio results.

EXERCISE 1–7
Evaluating Efficiency and Profitability

Refer to the financial statements of Mixon Company in Exercises 1–3 and 1–5. Evaluate the efficiency and profitability of the company by computing the following: (*a*) net profit margin, (*b*) total asset turnover, and (*c*) return on total assets. Comment on these ratio results.

EXERCISE 1–8
Evaluating Profitability

Refer to the financial statements of Mixon Company in Exercises 1–3 and 1–5. The following additional information about the company is known:

Common stock market price, December 31, 2006	$15.00
Common stock market price, December 31, 2005	14.00
Annual cash dividends per share in 2006	0.60
Annual cash dividends per share in 2005	0.30

To help evaluate the profitability of the company, compute the following for 2006 and 2005: (*a*) return on common stockholders' equity, (*b*) price-earnings ratio on December 31, and (*c*) dividend yield.

EXERCISE 1–9
Determining Income Effects from Common-Size and Trend Percents

Common-size and trend percents for JBC Company's sales, cost of goods sold, and expenses follow:

	COMMON-SIZE PERCENTS			TREND PERCENTS		
	2006	2005	2004	2006	2005	2004
Sales	100.0%	100.0%	100.0%	104.4%	103.2%	100.0%
Cost of goods sold	62.4	60.9	58.1	112.1	108.2	100.0
Expenses	14.3	13.8	14.1	105.9	101.0	100.0

Determine whether net income increased, decreased, or remained unchanged in this three-year period.

EXERCISE 1–10
Analyzing Short-Term Financial Conditions

Huff Company and Mesa Company are similar firms that operate in the same industry. The following information is available:

	HUFF			MESA		
	2006	2005	2004	2006	2005	2004
Current ratio	1.6	1.7	2.0	3.1	2.6	1.8
Acid-test ratio	0.9	1.0	1.1	2.7	2.4	1.5
Accounts receivable turnover	29.5	24.2	28.2	15.4	14.2	15.0
Inventory turnover	23.2	20.9	16.1	13.5	12.0	11.6
Working capital	$60,000	$48,000	$42,000	$121,000	$93,000	$68,000

Write a one-half page report comparing Huff and Mesa using the available information. Your discussion should include their ability to meet current obligations and to use current assets efficiently.

EXERCISE 1–11
Computing Trend Percents

Compute index-number trend percents for the following accounts, using Year 1 as the base year. State whether the situation as revealed by the trends appears to be favorable or unfavorable.

	Year 5	Year 4	Year 3	Year 2	Year 1
Sales	$283,880	$271,800	$253,680	$235,560	$151,000
Cost of goods sold	129,200	123,080	116,280	107,440	68,000
Accounts receivable	19,100	18,300	17,400	16,200	10,000

EXERCISE 1–12
Computing Percent Changes

Compute the percent of increase or decrease for each of the following account balances:

	Year 2	Year 1
Short-term investments	$217,800	$165,000
Accounts receivable	42,120	48,000
Notes payable	57,000	0

EXERCISE 1–13
Debt Valuation (annual interest)

Compute the present value for each of the following bonds:

a. Priced at the end of its fifth year, a 10-year bond with a face value of $100 and a contract (coupon) rate of 10% per annum (payable at the end of each year) with an effective (required) interest rate of 14% per annum.

b. Priced at the beginning of its 10th year, a 14-year bond with a face value of $1,000 and a contract (coupon) rate of 8% per annum (payable at the end of each year) with an effective (required) interest rate of 6% per annum.

c. What is the answer to *b* if bond interest is payable in equal semiannual amounts?

EXERCISE 1–14
Valuation of Bonds (semiannual interest)

On January 1, Year 1, you are considering the purchase of $10,000 of Colin Company's 8% bonds. The bonds are due in 10 years, with interest payable semiannually on June 30 and effective December 31. Based on your analysis of Colin, you determine that a 6% (required) interest rate is appropriate.

Required:

a. Compute the price you will pay for the bonds using the present value model (round the answer to the nearest dollar).

b. Recompute the price in *a* if your required rate of return is 10%.

c. Describe risk and explain how it is reflected in your required rate of return.

EXERCISE 1–15
Residual Income Equity Valuation

On January 1, Year 1, you are considering the purchase of Nico Enterprises' common stock. Based on your analysis of Nico Enterprises, you determine the following:

1. Book value at January 1, Year 1, is $50 per share.
2. Predicted net income per share for Year 1 through Year 5 is $8, $11, $20, $40, and $30, respectively.
3. For Year 6 and continuing for all years after, predicted residual income is $0.
4. Nico is not expected to pay dividends.
5. Required rate of return (cost of capital) is 20%.

Required:

Determine the purchase price per share of Nico Enterprises' common stock as of January 1, Year 1, using the residual income valuation model (round your answer to the nearest cent). Comment on the strengths and limitations of this model for investment decisions.

PROBLEMS

PROBLEM 1–1
Analyzing Efficiency and Financial Leverage

Kampa Company and Arbor Company are similar firms that operate in the same industry. Arbor began operations in 2001 and Kampa in 1995. In 2006, both companies pay 7% interest on their debt to creditors. The following additional information is available:

	KAMPA COMPANY			ARBOR COMPANY		
	2006	2005	2004	2006	2005	2004
Total asset turnover	3.0	2.7	2.9	1.6	1.4	1.1
Return on total assets	8.9%	9.5%	8.7%	5.8%	5.5%	5.2%
Profit margin	2.3%	2.4%	2.2%	2.7%	2.9%	2.8%
Sales	$400,000	$370,000	$386,000	$200,000	$160,000	$100,000

Write a one-half page report comparing Kampa and Arbor using the available information. Your discussion should include their ability to use assets efficiently to produce profits. Also comment on their success in employing financial leverage in 2006.

PROBLEM 1–2
Calculation and Analysis of Trend Percents

Selected comparative financial statements of Cohorn Company follow:

COHORN COMPANY
Comparative Income Statement ($000)
For Years Ended December 31, 2000–2006

	2006	2005	2004	2003	2002	2001	2000
Sales	$1,594	$1,396	$1,270	$1,164	$1,086	$1,010	$828
Cost of goods sold	1,146	932	802	702	652	610	486
Gross profit	448	464	468	462	434	400	342
Operating expenses	340	266	244	180	156	154	128
Net income	$ 108	$ 198	$ 224	$ 282	$ 278	$ 246	$214

COHORN COMPANY
Comparative Balance Sheet ($000)
December 31, 2000–2006

	2006	2005	2004	2003	2002	2001	2000
Assets							
Cash	$ 68	$ 88	$ 92	$ 94	$ 98	$ 96	$ 99
Accounts receivable, net	480	504	456	350	308	292	206
Merchandise inventory	1,738	1,264	1,104	932	836	710	515
Other current assets	46	42	24	44	38	38	19
Long-term investments	0	0	0	136	136	136	136
Plant and equipment, net	2,120	2,114	1,852	1,044	1,078	960	825
Total assets	$4,452	$4,012	$3,528	$2,600	$2,494	$2,232	$1,800
Liabilities and Equity							
Current liabilities	$1,120	$ 942	$ 618	$ 514	$ 446	$ 422	$ 272
Long-term liabilities	1,194	1,040	1,012	470	480	520	390
Common stock	1,000	1,000	1,000	840	840	640	640
Other contributed capital	250	250	250	180	180	160	160
Retained earnings	888	780	648	596	548	490	338
Total liabilities and equ	$4,452	$4,012	$3,528	$2,600	$2,494	$2,232	$1,800

Required:

a. Compute trend percents for the individual items of both statements using 2000 as the base year.

b. Analyze and comment on the financial statements and trend percents from part *a*.

CHECK
2006, total assets trend, 247.3%

PROBLEM 1–3
Comparative Income Statement Analysis

Perform a comparative analysis of Eastman Corporation by completing the analysis below. Describe and comment on any significant findings in your comparative analysis.

EASTMAN CORPORATION
Income Statement ($ millions)
For Years Ended December 31

	Year 6	Year 5	Year 4	Cumulative Amount	Average Annual Amount
Net sales	$	$3,490	$2,860	$	$
Cost of goods sold	3,210				2,610
Gross profit	3,670	680	1,050		1,800
Operating expenses					
Income before taxes	2,740	215	105		
Net income	$1,485	$ 145	$ 58		

CHECK
Average net income, $563

PROBLEM 1–4
Index-Number Trend Analysis

Compute increases (decreases) in percents for both Years 6 and 7 by entering all the missing data in the table below. Analyze and interpret any significant results revealed from this trend analysis.

Statement Item	YEAR 7 Index No.	YEAR 7 Change in Percent	YEAR 6 Index No.	YEAR 6 Change in Percent	YEAR 5 Index No.
Net sales	_____	29%	100	_____%	90
Cost of goods sold	139	_____	100	_____	85
Gross profit	126	_____	100	_____	80
Operating expenses	_____	20	100	_____	65
Income before tax	_____	14	100	_____	70
Net income	129	_____	100	_____	75

CHECK
Year 6 net income percent, 33.3%

PROBLEM 1–5
Understanding Financial Statement Relations: Balance Sheet Construction

Assume you are an analyst evaluating Mesco Company. The following data are available in your financial analysis (unless otherwise indicated, all data are as of December 31, Year 5):

Retained earnings, December 31, Year 4	$98,000	Days' sales in receivables	18 days
Gross profit margin ratio	25%	Shareholders' equity to total debt	4 to 1
Acid-test ratio	2.5 to 1	Sales (all on credit)	$920,000
Noncurrent assets	$280,000	Common stock: $15 par value; 10,000 shares issued and outstanding; issued at $21 per share	
Days' sales in inventory	45 days		

Required:

Using these data, construct the December 31, Year 5, balance sheet for your analysis. Operating expenses (excluding taxes and cost of goods sold for Year 5) are $180,000. The tax rate is 40%. Assume a 360-day year in ratio computations. No cash dividends are paid in either Year 4 or Year 5. Current assets consist of cash, accounts receivable, and inventories.

CHECK
Total assets, $422,500

PROBLEM 1–6
Understanding Financial Statement Relations: Balance Sheet Construction

You are an analyst reviewing Foxx Company. The following data are available for your financial analysis (unless otherwise indicated, all data are as of December 31, Year 2):

Current ratio	2	Days' sales in inventory	36 days
Accounts receivable turnover	16	Gross profit margin ratio	50%
Beginning accounts receivable	$50,000	Expenses (excluding cost of goods sold)	$450,000
Return on end-of-year common equity	20%	Total debt to equity ratio	1
Sales (all on credit)	$1,000,000	Noncurrent assets	$300,000

Required:

Using these data, construct the December 31, Year 2, balance sheet for your analysis. Current assets consist of cash, accounts receivable, and inventory. Balance sheet classifications include cash, accounts receivable, inventory, total noncurrent assets, total current assets, total current liabilities, total noncurrent liabilities, and equity.

CHECK
Total assets, $500,000

PROBLEM 1–7
Understanding Financial Statement Relations: Dividend and Balance Sheet Construction

You are planning to analyze Voltek Company's December 31, Year 6, balance sheet. The following information is available:

1. Beginning and ending balances are identical for both accounts receivable and inventory.
2. Net income is $1,300.
3. Times interest earned is 5 (income taxes are zero). Company has 5% bonds outstanding and issued at par.
4. Net profit margin is 10%. Gross profit margin is 30%. Inventory turnover is 5.
5. Days' sales in receivables is 72 days.
6. Sales to end-of-year working capital is 4. Current ratio is 1.5.
7. Acid-test ratio is 1.0 (excludes prepaid expenses).
8. Plant and equipment (net) is $6,000. It is one-third depreciated.
9. Dividends paid on 8% nonparticipating preferred stock are $40. There is no change in common shares outstanding during Year 6. Preferred shares were issued two years ago at par.

10. Earnings per common share are $3.75.
11. Common stock has a $5 par value and was issued at par.
12. Retained earnings at January 1, Year 6, are $350.

Required:

a. Given the information available, prepare this company's balance sheet as of December 31, Year 6 (include the following account classifications: cash, accounts receivable, inventory, prepaid expenses, plant and equipment (net), current liabilities, bonds payable, and stockholders' equity).

b. Determine the amount of dividends paid on common stock in Year 6.

CHECK
Total assets, $15,750

PROBLEM 1–8
Financial Statement Ratio Analysis

The balance sheet and income statement for Chico Electronics are reproduced below (tax rate is 40%).

CHICO ELECTRONICS
Balance Sheet ($ thousands)
As of December 31

	Year 4	Year 5
Assets		
Current assets		
Cash	$ 683	$ 325
Accounts receivable	1,490	3,599
Inventories	1,415	2,423
Prepaid expenses	15	13
Total current assets	3,603	6,360
Property, plant and equipment, net	1,066	1,541
Other assets	123	157
Total assets	$4,792	$8,058
Liabilities and Shareholders' Equity		
Current liabilities		
Notes payable to bank	$ —	$ 875
Current portion of long-term debt	38	116
Accounts payable	485	933
Estimated income tax liability	588	472
Accrued expenses	576	586
Customer advance payments	34	963
Total current liabilities	1,721	3,945
Long-term debt	122	179
Other liabilities	81	131
Total liabilities	1,924	4,255
Shareholders' equity		
Common stock, $1.00 par value; 1,000,000 shares authorized; 550,000 and 829,000 outstanding, respectively	550	829
Preferred stock, Series A 10%; $25 par value; 25,000 authorized; 20,000 and 18,000 outstanding, respectively	500	450
Additional paid-in capital	450	575
Retained earnings	1,368	1,949
Total shareholders' equity	2,868	3,803
Total liabilities and shareholders' equity	$4,792	$8,058

CHICO ELECTRONICS
Income Statement ($ thousands)
For Years Ending December 31

	Year 4	Year 5
Net sales	$7,570	$12,065
Other income, net	261	345
Total revenues	7,831	12,410
Cost of goods sold	4,850	8,048
General, administrative, and marketing expense	1,531	2,025
Interest expense	22	78
Total costs and expenses	6,403	10,151
Net income before tax	1,428	2,259
Income tax	628	994
Net income	$ 800	$ 1,265

Required:

Compute and interpret the following financial ratios of the company for Year 5:

a. Acid-test ratio.
b. Return on assets.
c. Return on common equity.
d. Earnings per share.
e. Gross profit margin ratio.
f. Times interest earned.
g. Days to sell inventory.
h. Long-term debt to equity ratio.
i. Total debt to equity.
j. Sales to end-of-year working capital.

CHECK
(*d*) EPS, $1.77

(CFA Adapted)

PROBLEM 1–9
Financial Statement Ratio Computation and Interpretation

As a consultant to MCR Company, you are told it is considering the acquisition of Lakeland Corporation. MCR Company requests that you prepare certain financial statistics and analysis for Year 5 and Year 4 using Lakeland's financial statements that follow:

LAKELAND CORPORATION

Balance Sheet

December 31, Year 5 and Year 4

	Year 5	Year 4
Assets		
Current assets		
Cash	$ 1,610,000	$ 1,387,000
Marketable securities	510,000	—
Accounts receivable, less allowance for bad debts Year 5, $125,000; Year 4, $110,000	4,075,000	3,669,000
Inventories, at lower of cost or market	7,250,000	7,050,000
Prepaid expenses	125,000	218,000
Total current assets	13,570,000	12,324,000
Plant and equipment, at cost		
Land and buildings	13,500,000	13,500,000
Machinery and equipment	9,250,000	8,520,000
Total plant and equipment	22,750,000	22,020,000
Less: Accumulated depreciation	13,470,000	12,549,000
Total plant and equipment—net	9,280,000	9,471,000
Long-term receivables	250,000	250,000
Deferred charges	25,000	75,000
Total assets	$23,125,000	$22,120,000
Liabilities and Shareholders' Equity		
Current liabilities		
Accounts payable	$ 2,950,000	$ 3,426,000
Accrued expenses	1,575,000	1,644,000
Federal taxes payable	875,000	750,000
Current maturities on long-term debt	500,000	500,000
Total current liabilities	5,900,000	6,320,000
Other liabilities		
5% sinking fund debentures, due January 1, Year 16 ($500,000 redeemable annually)	5,000,000	5,500,000
Deferred taxes on income, due to depreciation	350,000	210,000
Total other liabilities	5,350,000	5,710,000
Shareholders' equity		
Preferred stock, $1 cumulative, $20 par, preference on liquidation $100 per share (authorized: 100,000 shares; issued and outstanding: 50,000 shares)	1,000,000	1,000,000
Common stock, $1 par (authorized: 900,000 shares; issued and outstanding: Year 5, 550,000 shares; Year 4, 500,000 shares)	550,000	500,000
Capital in excess of par value on common stock	3,075,000	625,000
Retained earnings	7,250,000	7,965,000
Total shareholders' equity	11,875,000	10,090,000
Total liabilities and shareholders' equity	$23,125,000	$22,120,000

LAKELAND CORPORATION
Statement of Income and Retained Earnings
For Years Ended December 31, Year 5 and Year 4

	Year 5	Year 4
Revenues		
Net sales	$48,400,000	$41,700,000
Royalties	70,000	25,000
Interest	30,000	—
Total revenues	$48,500,000	$41,725,000
Costs and expenses		
Cost of sales	$31,460,000	$29,190,000
Selling, general, and administrative	12,090,000	8,785,000
Interest on 5% sinking fund debentures	275,000	300,000
Provision for Federal income taxes	2,315,000	1,695,000
Total costs and expenses	$46,140,000	$39,970,000
Net income	$ 2,360,000	$ 1,755,000
Retained earnings, beginning of year	7,965,000	6,760,000
Subtotal	$10,325,000	$ 8,515,000
Dividends paid		
Preferred stock, $1.00 per share in cash	50,000	50,000
Common stock		
Cash—$1.00 per share	525,000	500,000
Stock—(10%)—50,000 shares at market value of $50 per share	2,500,000	—
Total dividends paid	$ 3,075,000	$ 550,000
Retained earnings, end of year	$ 7,250,000	$ 7,965,000

Additional Information:

1. Inventory at January 1, Year 4, is $6,850,000.
2. Market prices of common stock at December 31, Year 5 and Year 4, are $73.50 and $47.75, respectively.
3. Cash dividends for both preferred and common stock are declared and paid in June and December of each year. The stock dividend on common stock is declared and distributed in August of Year 5.
4. Plant and equipment disposals during Year 5 and Year 4 are $375,000 and $425,000, respectively. Related accumulated depreciation is $215,000 in Year 5 and $335,000 in Year 4. At December 31, Year 3, the plant and equipment asset balance is $21,470,000, and its related accumulated depreciation is $11,650,000.

Required:

Compute the following financial ratios and figures for both Year 5 and Year 4. Identify and discuss any significant year-to-year changes.

At December 31:

a. Current ratio.

b. Acid-test ratio.

c. Book value per common share.

For year ended December 31:

d. Gross profit margin ratio.

e. Days to sell inventory.

f. Times interest earned.

g. Common stock price-to-earnings ratio (end-of-year value).

h. Gross capital expenditures.

(AICPA Adapted)

CHECK
(*g*) Year 5 PE, 17.5

PROBLEM 1–10
Identifying Industries from Financial Statement Data

Selected ratios for three different companies that operate in three different industries (merchandising, pharmaceuticals, utilities) are reported in the table below:

Ratio	Co. A	Co. B	Co. C
Gross profit margin ratio	18%	53%	n.a.
Net profit margin ratio	2%	14%	8%
Research and development to sales	0%	17%	0.1%
Advertising to sales	7%	4%	0.1%
Interest expense to sales	1%	1%	15%
Return on assets	11%	12%	7%
Accounts receivable turnover	95 times	5 times	11 times
Inventory turnover	9 times	3 times	n.a.
Long-term debt to equity	64%	45%	89%

n.a. = not applicable

Required:
Identify the industry that each of the companies, A, B, and C, operate in. Give at least two reasons supporting each of your selections.

PROBLEM 1–11
Ratio Interpretation–Industry Comparisons

The Tristar Mutual Fund manager is considering an investment in the stock of Best Computer and asks for your opinion regarding the company. Best Computer is a computer hardware sales and service company. Approximately 50% of the company's revenues come from the sale of computer hardware. The rest of the company's revenues come from hardware service and repair contracts. Below are financial ratios for Best Computer and comparative ratios for Best Computer's industry. The ratios for Best Computer are computed using information from its financial statements.

	Best Computer	Industry Average
Liquidity ratios		
Current ratio	3.45	3.10
Acid-test ratio	2.58	1.85
Collection period	42.19	36.60
Days to sell inventory	18.38	18.29
Capital structure and solvency		
Total debt to equity	0.674	0.690
Long-term debt to equity	0.368	0.400
Times interest earned	9.20	9.89
Return on investment		
Return on assets	31.4%	30.0%
Return on common equity	52.6%	50.0%

	Best Computer	Industry Average
Operating performance		
Gross profit margin	36.0%	34.3%
Operating profit margin	16.7%	15.9%
Pre-tax profit margin	14.9%	14.45%
Net profit margin	8.2%	8.0%
Asset utilization		
Cash turnover	40.8	38.9
Accounts receivable turnover	6.90	8.15
Sales to inventory	29.9	28.7
Working capital turnover	8.50	9.71
Fixed asset turnover	15.30	15.55
Total assets turnover	3.94	3.99
Market measures		
Price-to-earnings ratio	27.8	29.0
Earnings yield	8.1%	7.9%
Dividend yield	0%	0.5%
Dividend payout rate	0%	2%
Price-to-book	8.8	9.0

Required:

a. Interpret the ratios of Best Computer and draw inferences about the company's financial performance and financial condition—ignore the industry ratios.

b. Repeat the analysis in (*a*) with full knowledge of the industry ratios.

CHECK
Acct. recble., Above norm

c. Indicate which ratios you consider to deviate from industry norms. For each Best Computer ratio that deviates from industry norms, suggest two possible explanations.

PROBLEM 1–12
Equity Valuation

Ace Co. is to be taken over by Beta Ltd. at the end of year 2007. Beta agrees to pay the shareholders of Ace the book value per share at the time of the takeover. A reliable analyst makes the following projections for Ace (assume cost of capital is 10% per annum):

($ per share)	2002	2003	2004	2005	2006	2007
Dividends	—	$1.00	$1.00	$1.00	$1.00	$1.00
Operating cash flows	—	2.00	1.50	1.00	0.75	0.50
Capital expenditures	—	—	—	1.00	1.00	—
Debt increase (decrease)	—	(1.00)	(0.50)	1.00	1.25	0.50
Net income	—	1.45	1.10	0.60	0.25	(0.10)
Book value	9.00	9.45	9.55	9.15	8.40	7.30

CHECK
(*b*) Value using RI, $8.32

Required:

a. Estimate Ace Co.'s value per share at the end of year 2002 using the dividend discount model.

b. Estimate Ace Co.'s value per share at the end of year 2002 using the residual income model.

c. Attempt to estimate the value of Ace Co. at the end of year 2002 using the free cash flow to equity model.

CASES

NIKE Reebok

CASE 1–1
Comparative Analysis: Return on Invested Capital

Key comparative figures ($ millions) for both **NIKE** and **Reebok** follow:

Key Figures	NIKE	Reebok
Financing (liabilities + equity)	$5,397.4	$1,756.1
Net income (profit)	399.6	135.1
Revenues (sales)	9,553.1	3,637.4

Required:

a. What is the total amount of assets invested in (*a*) NIKE and (*b*) Reebok?
b. What is the return on investment for (*a*) NIKE and (*b*) Reebok? NIKE's beginning assets equal $5,361.2 (in millions) and Reebok's beginning assets equal $1,786.2 (in millions).
c. How much are expenses for (*a*) NIKE and (*b*) Reebok?
d. Is return on investment satisfactory for (*a*) NIKE and (*b*) Reebok [assume competitors average a 4% return]?
e. What can you conclude about NIKE and Reebok from these computations?

CHECK
Nike ROI, 7.4%

NIKE Reebok

CASE 1–2
Comparative Analysis: Comparison of Balance Sheet and Income Statement

Key comparative figures ($ millions) for both **NIKE** and **Reebok** follow:

Key Figures	NIKE	Reebok	Key Figures	NIKE	Reebok
Cash and equivalents	$ 108.6	$ 209.8	Income taxes	$ 253.4	$ 12.5
Accounts receivable	1,674.4	561.7	Revenues (Nike)	9,553.1	—
Inventories	1,396.6	563.7	Net sales (Reebok)	—	3,643.6
Retained earnings	3,043.4	1,145.3	Total assets	5,397.4	1,756.1
Costs of sales	6,065.5	2,294.0			

Required:

a. Compute common-size percents for both companies using the data provided.
b. Which company incurs a higher percent of their revenues (net sales) in income taxes?
c. Which company retains a higher portion of cumulative net income in the company?
d. Which company has a higher gross margin ratio on sales?
e. Which company holds a higher percent of its total assets as inventory?

CASE 1–3
Comparative Analysis: Credit and Equity Analysis

Two companies competing in the same industry are being evaluated by a bank that can lend money to only one of them. Summary information from the financial statements of the two companies follows:

	Datatech Company	Sigma Company
Data from the current year-end balance sheet:		
Assets		
Cash	$ 18,500	$ 33,000
Accounts receivable, net	36,400	56,400
Notes receivable (trade)	8,100	6,200
Merchandise inventory	83,440	131,500
Prepaid expenses	4,000	5,950
Plant and equipment, net	284,000	303,400
Total assets	$434,440	$536,450

	Datatech Company	Sigma Company
Data from the current year's income statement:		
Sales	$660,000	$780,200
Cost of goods sold	485,100	532,500
Interest expense	6,900	11,000
Income tax expense	12,800	19,300
Net income	67,770	105,000
Basic earnings per share	1.94	2.56

	Datatech Company	Sigma Company
Liabilities and Stockholders' Equity		
Current liabilities	$ 60,340	$ 92,300
Long-term notes payable	79,800	100,000
Common stock, $5 par value	175,000	205,000
Retained earnings	119,300	139,150
Total liabilities and equity	$434,440	$536,450

Beginning-of-year data:	Datatech Company	Sigma Company
Accounts receivable, net	$ 28,800	$ 53,200
Notes receivable (trade)	0	0
Merchandise inventory	54,600	106,400
Total assets	388,000	372,500
Common stock, $5 par value	175,000	205,000
Retained earnings	94,300	90,600

Required:

CHECK
Accounts receivable turnover, Sigma, 13.5 times

a. Compute the current ratio, acid-test ratio, accounts (including notes) receivable turnover, inventory turnover, days' sales in inventory, and days' sales in receivables for both companies. Identify the company that you consider to be the better short-term credit risk and explain why.

b. Compute the net profit margin, total asset turnover, return on total assets, and return on common stockholders' equity for both companies. Assuming that each company paid cash dividends of $1.50 per share and each company's stock can be purchased at $25 per share, compute their price-earnings ratios and dividend yields. Identify which company's stock you would recommend as the better investment and explain why.

CASE 1–4
Business Decisions Using Financial Ratios

Jose Sanchez owns and operates Western Gear, a small merchandiser in outdoor recreational equipment. You are hired to review the three most recent years of operations for Western Gear. Your financial statement analysis reveals the following results:

	2006	2005	2004
Sales index-number trend	137.0	125.0	100.0
Selling expenses to net sales	9.8%	13.7%	15.3%
Sales to plant assets	3.5 to 1	3.3 to 1	3.0 to 1
Current ratio	2.6 to 1	2.4 to 1	2.1 to 1
Acid-test ratio	0.8 to 1	1.1 to 1	1.2 to 1
Merchandise inventory turnover	7.5 times	8.7 times	9.9 times
Accounts receivable turnover	6.7 times	7.4 times	8.2 times
Total asset turnover	2.6 times	2.6 times	3.0 times
Return on total assets	8.8%	9.4%	10.1%
Return on owner's equity	9.75%	11.50%	12.25%
Net profit margin	3.3%	3.5%	3.7%

Required:

Use these data to answer each of the following questions with explanations:

a. Is it becoming easier for the company to meet its current debts on time and to take advantage of cash discounts?

b. Is the company collecting its accounts receivable more rapidly over time?

c. Is the company's investment in accounts receivable decreasing?

d. Are dollars invested in inventory increasing?

CHECK
Plant assets are increasing

e. Is the company's investment in plant assets increasing?

f. Is the owner's investment becoming more profitable?

g. Is the company using its assets efficiently?

h. Did the dollar amount of selling expenses decrease during the three-year period?

Campbell Soup Company

CASE 1–5
Financial Statement Ratio Computation

Refer to **Campbell Soup Company's** financial statements in Appendix A.

Required:

Compute the following ratios for Year 11.

Liquidity ratios:
- *a.* Current ratio
- *b.* Acid-test ratio
- *c.* Days to sell inventory
- *d.* Collection period

Capital structure and solvency ratios:
- *e.* Total debt to total equity
- *f.* Long-term debt to equity
- *g.* Times interest earned

Return on investment ratios:
- *h.* Return on total assets
- *i.* Return on common equity

Operating performance ratios:
- *j.* Gross profit margin ratio
- *k.* Operating profit margin ratio
- *l.* Pretax profit margin ratio
- *m.* Net profit margin ratio

Asset utilization ratios:*
- *n.* Cash turnover
- *o.* Accounts receivable turnover
- *p.* Inventory turnover
- *q.* Working capital turnover
- *r.* Fixed assets turnover
- *s.* Total assets turnover

Market measures (Campbell's stock price per share is $46.73 for Year 11):
- *t.* Price-to-earnings ratio
- *u.* Earnings yield
- *v.* Dividend yield
- *w.* Dividend payout rate
- *x.* Price-to-book ratio

* *For simplicity in computing utilization ratios, use end-of-year values and not average values.*

CASE 1–6
Describe and Interpret Business Activities

Explain and interpret the major business activities–namely, planning, financing, investing, and operating. Aim your report at a general audience such as shareholders and employees. Include concrete examples for each of the business activities.

CASE 1–7
Ethics Challenge

As controller of Tallman Company, you are responsible for keeping the board of directors informed about the company's financial activities. At the recent board meeting, you presented the following financial data:

	2006	2005	2004		2006	2005	2004
Sales trend percent	147.0%	135.0%	100.0%	Accounts receivable turnover	7.0 times	7.7 times	8.5 times
Selling expenses to net sales	10.1%	14.0%	15.6%	Total asset turnover	2.9 times	2.9 times	3.3 times
Sales to plant assets	3.8 to 1	3.6 to 1	3.3 to 1	Return on total assets	9.1%	9.7%	10.4%
Current ratio	2.9 to 1	2.7 to 1	2.4 to 1	Return on stockholders' equity	9.75%	11.50%	12.25%
Acid-test ratio	1.1 to 1	1.4 to 1	1.5 to 1	Profit margin	3.6%	3.8%	4.0%
Merchandise inventory turnover	7.8 times	9.0 times	10.2 times				

After the meeting, the company's CEO held a press conference with analysts in which she mentions the following ratios:

	2006	2005	2004		2006	2005	2004
Sales trend percent	147.0%	135.0%	100.0%	Sales to plant assets	3.8 to 1	3.6 to 1	3.3 to 1
Selling expenses to net sales	10.1%	14.0%	15.6%	Current ratio	2.9 to 1	2.7 to 1	2.4 to 1

Required:

a. Why do you think the CEO decided to report these 4 ratios instead of the 11 ratios that you prepared?

b. Comment on the possible consequences of the CEO's reporting decision.

CASE 1–8

Comparative Analysis

Colgate and Kimberly-Clark

Kimberly-Clark is a household products company that produces and sells various paper products under popular brand names such as Kleenex and Scott. In many respects, Kimberly-Clark is similar to Colgate: both are mature and profitable consumer products' companies that are of similar size. Therefore, Kimberly-Clark is a good company to compare Colgate's financial performance with. Refer to select financial information about Colgate over the 1996–2006 period reproduced in Exhibit 1.3. The table below provides identical information relating to Kimberly-Clark over the same period.

KIMBERLY-CLARK SUMMARY FINANCIAL DATA

(In billions, except per share data)	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
Net sales	16.75	15.90	15.08	14.35	13.57	14.52	13.98	13.01	12.30	12.55	13.15
Gross profit	6.36	6.12	5.91	5.66	5.55	6.71	6.38	6.00	5.25	5.30	5.47
Operating income (after tax)	1.65	1.70	1.91	1.81	1.80	1.75	1.96	1.82	1.24	1.02	1.53
Net income	1.50	1.57	1.80	1.69	1.67	1.61	1.80	1.67	1.10	0.90	1.40
Restructuring charge (after tax)	0.35	0.17									
Net income before restructuring	1.84	1.74	1.80	1.69	1.67	1.61	1.80	1.67	1.10	0.90	1.40
Operating income before restructuring	2.00	1.86	1.91	1.81	1.80	1.75	1.96	1.82	1.24	1.02	1.53
Total assets	17.07	16.30	17.02	16.78	15.59	15.01	14.48	12.82	11.69	11.27	11.85
Total liabilities	10.97	10.75	10.39	10.01	9.94	9.36	8.71	7.72	7.66	7.14	7.36
Long-term debt	2.28	2.59	2.30	2.73	2.84	2.42	2.00	1.93	2.07	1.80	1.74
Shareholders' equity	6.10	5.56	6.63	6.77	5.65	5.65	5.77	5.09	4.03	4.13	4.48
Treasury stock at cost	1.39	6.38	5.05	3.82	3.35	2.75	1.97	1.42	1.45	0.62	0.21
Basic earnings per share	3.27	3.30	3.64	3.34	3.24	3.04	3.34	3.11	2.00	1.62	2.49
Cash dividends per share	1.97	1.85	1.64	1.37	1.21	1.14	1.09	1.03	1.02	0.96	0.92
Closing stock price	67.95	59.65	65.81	59.09	47.47	59.80	70.69	65.44	54.50	49.31	47.63
Shares outstanding (billions)	0.46	0.46	0.48	0.50	0.51	0.52	0.53	0.54	0.54	0.56	0.56

Required:

Conduct a detailed comparative analysis of Colgate and Kimberly-Clark's financial performance over the 1997–2006 period.

Specifically:

a. Conduct an index-number trend analysis separately for every item reported in the table (e.g., net sales, gross profit, etc.). Use 1996 as the base year (i.e., set 1996 numbers equal to 100).

b. Calculate the following ratios for every year for each company: return on investment (return on assets, return on common equity), operating performance (gross profit margin, operating profit margin), asset utilization (total asset turnover), capital structure (total debt to equity, long-term debt to equity), dividend payout rate, and market measures (price-to-earnings, price-to-book).

c. Conduct an index-number trend analysis separately for every one of the ratios that you computed in (*b*). Once again use 1996 as the base year.

d. For analysis in (*a*), (*b*), and (*c*) that involves net income or operating income, it is important to also examine these numbers after removing the costs relating to restructuring activities. The table calculates net income and operating income after adding the pretax cost of restructuring (e.g., net income before restructuring). Similarly determine net income and operating income before restructuring for Colgate using the data in Exhibit 1.3. Then compute all trends and ratios using these adjusted income numbers in addition to those using the reported numbers.

e. Finally, we need to determine the stock price performance of the two companies over this period. To do that, we need to determine cum-dividend return. Cum-dividend return is the return on a stock including cash dividends. Colgate's cum-dividend return over this period is 12.5% compared to 5.9% for Kimberly-Clark. For advanced analysis that uses finance techniques, verify these numbers. Those who don't want to do this advanced analysis can merely use the cum-dividend returns' numbers provided above. (Hint: This is advanced analysis that covers material from finance outside the scope of this chapter and should be attempted only by those who are conversant with finance techniques. Cum-dividend return is determined by the following formula: Cum-dividend return for a year = [(Closing stock price + Dividend paid during the year)/Opening stock price] −1. For example, Kimberly-Clark's cum-dividend return in 1997 is [(49.31 + 0.96)/47.63] −1 = 5.5%. Using this formula, determine the cum-dividend return for each company for every year. Then determine the compounded per-year return over the entire period).

f. Examine all of the previous analyses and provide a commentary that compares the performance of Colgate and Kimberly-Clark over the 1997–2006 period.

Note: This case involves extensive data analysis and should be done using Excel (or similar software). To facilitate the analysis in Excel, the data in Exhibit 1.3 and in the table above are available in Excel format and can be downloaded from the book's website.