###### Chapter 1

## Overview of

### Financial Statement Analysis

**REVIEW**

Financial statement analysis is one important step in 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 investing in equity or debt securities, extending credit through short or long term loans, valuing a business in an initial public offering (IPO), and evaluating 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 one’s reliance on hunches, guesses, and intuition for business decisions. 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. Several tools and techniques of financial statement analysis are also introduced. Application of these tools and techniques is illustrated in a preliminary business analysis of Dell.

**OUTLINE**

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| * **Introduction to Business analysis**   **Types of Business Analysis**  **Credit Analysis**  **Equity Analysis**  **Other Uses of Business Analysis**  **Managers**  **Mergers, Acquisitions, and Divestitures**  **Financial Management**  **External Auditors**  **Components of Business Analysis**  **Business Environment and Strategy Analysis**  **Financial Analysis**  **Accounting Analysis**  **Prospective Analysis**  **Valuation**  **Financial Statement Analysis and Business Analysis**   * **Financial Statements-Basis of Analysis**   **Financial Statements Reflect Business Activities**  **Planning Activities**  **Financing Activities**  **Investing Activities**  **Operating Activities**  **The Annual Report**  **Balance Sheet**  **Income Statement**  **Statement of Shareholders’ Equity**  **Statement of Cash Flows**  **Links Between Financial Statements**  **Additional Information**  **Management Discussion and Analysis (MD&A)**  **Management Report**  **Auditor Report**  **Explanatory Notes**  **Supplementary Information**  **Social Responsibility Reports**  **Proxy Statements**   * **Financial Statement Analysis Preview**   **Analysis Tools**  **Areas of Preliminary Analysis**  **Comparative Financial Statement Analysis**  **Year-to-Year Change Analysis**  **Index-Number Trend Analysis**  **Common-Size Financial Statement Analysis**  **Ratio Analysis**  **Factors Affecting Ratios**  **Ratio Interpretation**  **Illustration of Ratio Analysis**  **Cash Flow Analysis**   * **Specialized Analysis Tools**   **Valuation Models**  **Debt Valuation**  **Equity Valuation**  **Analysis in an Efficient Market**  **Market Efficiency**  **Market Efficiency Implications for Analysis**   * **Book Organization** |
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**ANALYSIS OBJECTIVES**

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| * **Explain business analysis and its relation to financial statement analysis** * **Identify and discuss different types of business analysis** * **Describe the 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 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 fundamental valuation models** |
| * **Explain the purpose of financial statement analysis in an efficient market** |

**QUESTIONS**

1. **Business analysis is the evaluation of a company’s prospects and risks for business decisions. Applicable business decisions include, among others, equity and debt valuation, credit risk assessment, earnings prediction, audit testing, compensation negotiations, and countless other decisions. The objective of business analysis is to aid with decision making by helping to structure the decision task, including an evaluation of a company’s business environment, its strategies, and its financial position and performance. As a result, the decision-maker will make a more informed decision.**
2. **Business analysis is the evaluation of a company’s prospects and risks for business decisions. Financial statements are the most comprehensive source of information about a company. As a result, financial statement analysis is an integral part of business analysis.**
3. **Some major types of business analysis include credit analysis, equity analysis, management and control, analysis of mergers and acquisitions, and others. Credit analysis is the evaluation of the ability of a company to honor its financial obligations (i.e., pay all of its debts). Current and potential creditors and debt investors perform credit analysis. Equity analysis supports equity investment decisions. Equity investment decisions involve buying, holding, or selling the stock of a company. Current and potential investors perform equity analysis.**

**Managers perform business analysis to optimize their managerial activities. From business analysis, managers are better prepared to recognize challenges and opportunities and respond appropriately.**

**Business analysis is also a part of a company’s restructuring decisions. Before a merger, acquisition, or divestiture is completed, managers and directors perform business analysis to decide whether the contemplated action will increase the combined value of the firm. Business analysis supports financial decisions by financial managers. Business analysis helps assess the impact of financing decisions for both future profitability and risk.**

**External auditors perform business analysis to support their assurance function. Directors of a company use business analysis to support their activities as overseer of the operations of the company. Regulators use business analysis to support the performance of regulatory activities. Labor union representatives use business analysis to support collective bargaining activities. Lawyers use business analysis to provide evidence regarding litigation matters.**

1. **Credit analysis supports the lending decision. As such, credit analysis involves determining whether a company will be able to meet financial obligations over a given time horizon. Equity analysis supports the decision to buy, hold, or sell a stock. As such, equity analysis involves the identification of the optimal portfolio of stocks for wealth maximization.**
2. **Fundamental analysis is the process of determining the value of a company by analyzing and interpreting key factors for economy, industry, and company attributes. A major part of fundamental analysis is evaluation of a company’s financial position and performance. The objective of fundamental analysis is to determine the intrinsic value of an entity. Determination of fundamental value can be used to support stock decisions and to price acquisitions.**
3. **Total business analysis involves several component processes. Each process is critical to the ultimate summary beliefs about the business. The first component is analysis of the business environment and the company’s strategy in the context of the business environment. From this analysis, qualitative conclusions can be drawn about the future prospects of the firm. These prospects are crucial in investment decisions. The second component of business analysis is financial analysis. Financial analysis is the use of financial statements to analyze a company’s financial position and performance, and to assess future performance. Financial analysis supports equity decisions by providing quantified evidence regarding the financial position and performance of the company. Accounting analysis is another component of business analysis. Accounting analysis is the process of evaluating the extent that a company’s accounting reflects economic reality. If the accounting information distorts the economic picture of the firm, decisions made using this information can be flawed. Thus, accounting analysis should be performed before financial analysis. Prospective analysis is the forecasting of future payoffs. 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 intrinsic value such as earnings and cash flows. Another component of business analysis is valuation, which is the process of converting forecasts of future payoffs into an estimate of a company’s intrinsic value.**
4. **Accounting analysis is crucial to effective financial analysis. The limitations of financial analysis in the absence of accounting analysis include:**

* Lack of uniformity in accounting principles applied by different companies can impede the reliability of financial analysis. The seeming comparability of accounting data is sometimes illusory.
* **Lack of information in the aggregate financial data to inform the analyst on how the accounting of the company was applied. The analyst needs to analyze the explanatory notes for this information.**
* **Increased frequency of “anomalies” in financial statements such as the failure to change previous years' data for stock splits, missing data, etc.**
* **Retroactive changes cannot be made accurately because companies only change final figures.**
* **Certain comparative analyses (leases and pensions) cannot be done since all companies do not provide full information in the absence of analytical accounting adjustments.**

(CFA adapted)

1. **The financial statements of a company are one of the richest sources of information about a company. Financial statement analysis is a collection of analytical processes that are an important part of overall business analysis. These processes are applied to the financial statement information to produce useful information for decision making. The objective of financial statement analysis is to use the information provided in the statements to produce quantified information to support the ultimate equity, credit, or other decision of interest to the analyst.**
2. **Internal users: Owners, managers, employees, directors, internal auditors;**

**External users: Current and potential equity investors, current and potential debt investors, current and potential creditors, current and potential suppliers, current and potential customers, labor unions members and representatives, regulators, and government agencies.**

1. **A business pursues four major activities in a desire to provide a saleable product and/or service and to yield a satisfactory return on investment. These activities are:**

Planning activities. A company implements specific goals and objectives. A company's goals and objectives are captured in its business plans (or strategies)—that describe the company's purpose, strategy, and tactics. The business plan assists managers in focusing their efforts and identifying expected opportunities and obstacles.

Financing Activities. A company requires financing to carry out its business plan. Financing activities are the means companies use to pay for these ventures. A company must take care in acquiring and managing its financial resources because of both their magnitude and their potential to determine success or failure. There are two main sources of business financing: equity investors (referred to as owner financing) and creditors (referred to as non-owner financing).

Investing Activities. Investing activities are the means a company uses to acquire and maintain investments for purchasing, developing, and selling products and services. Financing provides the funds necessary for acquisition of investments needed to carry out business plans. Investments include land, buildings, equipment, legal rights (patents, licenses, and copyrights), inventories, human capital (managers and employees), accounting systems, and all components necessary for the company to operate.

Operating Activities. Operating activities represent the carrying out of the business plan, given necessary financing and investing. These activities involve several basic functions such as research, purchasing, production, marketing, and labor. Operating activities are a company's primary source of income. Income measures 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 with decisions on elements comprising the mix of operating activities, determines its success or failure.

1. **Business activities—planning, financing, investing, and operating—can be synthesized into a cohesive picture of how businesses function in a market economy. Step one is the company's formulation of plans and strategies. Next, a company obtains necessary financing from equity investors and creditors. Financing is used to acquire investments in resources to produce goods or services. The company uses these investments to undertake operating activities.**

At the end of a period of time—typically quarterly or annually—financial statements are prepared and reported. These statements list the amounts associated with financing and investing activities, and summarize operating activities for the most recent period(s). This is the role of financial statements—the object of analysis. The financial statements listing of financing and investing activities is at a *point in time*, whereas the reporting of operating activities cover a *period of time*.

1. **The four primary financial statements are the balance sheet, the income statement, the statement of shareholders’ (owner’s) equity, and the statement of cash flows.**

Balance Sheet. The accounting equation is the basis of the balance sheet:

**Assets = Liabilities + Equity.**

The left-hand side of this equation relates to the economic resources controlled by the firm, called assets. These resources are valuable in the sense that they represent potential sources of future revenues. The company uses these resources to carry out its operating activities. In order to engage in its operating activities, the company must obtain funds to fund its investing activities. The right-hand side of the accounting equation details the sources of these funds. Liabilities represent funds obtained from creditors. These amounts represent obligations or, alternatively, the claims of creditors on assets. Equity, also referred to as shareholders' equity, encompasses two different financing sources: (1) funds invested or contributed by owners, called "contributed capital", and (2) accumulated earnings since inception and in excess of distributions to owners (dividends), called "retained earnings". From the owners' viewpoint, these amounts represent their claim on assets. It often is helpful for students to rewrite the accounting equation in terms of the underlying business activities:

**Investing Activities = Financing Activities.**

Recognizing the two basic sources of financing, this can be rewritten as:

**Investments = Creditor Financing + Owner Financing.**

Income Statement. The income statement is designed to measure a company's financial performance between balance sheet dates—hence, it refers to a period of time. An income statement lists revenues, expenses, gains, and losses of a company over a period. The "bottom line" of an income statement, net income, measures the increase (or decrease) in the net assets of a company (i.e., assets less liabilities), before consideration of any distributions to owners. Most contemporary accounting systems, the U.S. included, determine net income using the accrual basis of accounting. Under this method, revenues are recognized when earned, independent of the receipt of cash. Expenses, in turn, are recognized when incurred (or matched with its related revenue), independent of the payment of cash.

Statement of Cash Flows. Under the accrual basis of accounting, net income equals net cash flow only over the life of the firm. For periodic reporting purposes, accrual performance numbers nearly always differ from cash flow numbers. This creates a demand for periodic reporting on both income and cash flows. The statement of cash flows details the cash inflows and outflows related to a company's operating, investing, and financing activities over a period of time.

**Statement of Shareholders' Equity. The statement of shareholders' equity reports changes in the component accounts comprising equity. The statement is useful in identifying the reasons for changes in owners' claims on the assets of the company. In addition, accepted practice excludes certain gains and losses from net income which, instead, are directly reported in the statement of shareholders' equity.**

1. **Financial statements are one of the most reliable of all publicly available data for financial analysis. Also, financial statements are objective in portraying economic transactions and events, they are concrete, and they quantify important business activities. Moreover, since financial statements express transactions and events in a common monetary unit, they enable users to readily work with the data, to relate them to other data, and to deal with them in different arithmetic ways. These attributes contribute to the usefulness of financial statements, both historical and projected, in business decision-making.**

On the other hand, one must recognize that accounting is a social science subject to human decision making. Moreover, it is a continually evolving discipline subject to revisions and improvements, based on experience and emerging business transactions. These limitations sometimes frustrate certain users of financial statements such that they look for substitute data. However, there is no equivalent substitute. Double-entry accounting is the only reliable system for the systematic recording, classification, and summarization of most business transactions and events. Improvement lies in the refinement of this time-tested system rather than in substitution. Accordingly, any serious analyst of a company’s financial position and results of operations, learns the accounting framework and its terminology, conventions, as well as its imperfections in financial analysis.

1. **Financial statements are not the sole output of the financial reporting system. Additional financial information is communicated by companies through the following sources:**

**Management's Discussion and Analysis (MD&A). Companies with publicly traded debt and equity securities are required by the SEC to provide a report of their financial condition and results of operations in a MD&A section of its financial reports.**

**Management Report. The management report sets out the responsibilities of management in preparing the company's financial statements.**

**Audit Report. The external auditor is an independent certified public accountant hired by management to assess whether the company's financial statements are prepared in conformity with generally accepted accounting principles. Auditors provide an important check on financial statements prior to their release to the public.**

**Explanatory Notes. Notes are an integral part of financial statements and are intended to communicate additional information regarding items included in, and excluded from, the statements.**

Supplementary Information. Certain supplemental schedules are required by accounting regulatory agencies. These schedules can appear in notes to financial statements or, in the case of companies with publicly held securities, in exhibits to regulatory filings such as the Form 10-K that is filed with the Securities and Exchange Commission.

**Social Responsibility Reports. Companies increasingly recognize their need for social responsibility. While reports of socially responsible activities are increasing, there is no standard format or accepted standard.**

Proxy Statements. A proxy statement is a document containing information necessary to assist shareholders in voting on matters for which the proxy is solicited.

1. **Financial analysis includes analysis of the profitability of a company, the risk of the company, and the sources and uses of funds for the company. 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 drivers of profitability. Profitability analysis includes evaluation of two sources of profitability: margins and turnover. Risk analysis is the evaluation of a company’s riskiness and its ability to meet its commitments. Risk analysis involves assessing the solvency and liquidity of a company along with its earnings variability. An analysis of sources and uses of funds is the evaluation of how a company is obtaining and deploying funds. This analysis provides insights into a company’s future financing implications.**
2. **Financial analysis tools include the following:**

**a. Comparative financial statements**

**i. Year-to-year change analysis**

**ii. Index-number trend analysis**

**b. Common-size financial statements**

1. **Ratio analysis**
2. **Cash flow analysis**
3. **a. Comparative analysis focuses on exceptions and variations and helps the analyst to formulate judgments about data that may be interpreted in various ways. In short, the usefulness of comparative analysis is the notion that a number is more meaningfully interpreted when it is evaluated relative to a comparable quantity.**

**b. Comparison can be made against (1) past experience, (2) external data—industry or economy-wide, or (3) accepted guidelines such as standards, budgets, or forecasts.**

1. **A comparison, to be meaningful and fair, must be made between data, which are prepared on a similar basis. If data are not directly comparable, the analyst should make appropriate adjustments before undertaking any comparative analysis. One also must remember that the past is not always an unqualified guide to the future.**
2. **Past trend often is a good predictor of the future *if* all relevant variables remain constant or nearly constant. In practice, however, this is seldom the case. Consequently, the analyst should use the results of trend analysis and adjust them in the light of other available information, including the expected state of the economy and industry. Trend analysis will, in most cases, reveal the direction of change in operating performance along with the velocity and the magnitude of change.**
3. **Both indicators complement one another. Indeed, one indicator in the absence of the other is of limited value. To illustrate, an increase to $4,000 of receivables from base year receivables of $100 indicates a 3,900 % [($4,000-$100)/$100] increase. However, the huge percent change in this case is misleading given the relatively small base year amount. This simple case demonstrates that both indicators need to be considered simultaneously. That is, reference to the absolute dollar amounts must be made to retain the proper perspective when a significant change in percent is revealed.**
4. **Several answers are possible. Since division by zero is not mathematically defined, it is impossible to get changes in percent when there is no figure for the base year. Also, if there is a negative figure in the base year and a positive figure in another year, or vice versa, a mere mathematical computation of percent change is nonsensical.**
5. **In index-number trend analysis, all figures are expressed with reference to a base year figure. Since the base year serves as the frame of reference, it is desirable to choose a year that is "typical" for the business. If the earliest year in the series analyzed is not typical, then a subsequent (more typical) year should be chosen as the base year.**
6. **By utilizing index numbers, the analyst can measure change over time. Such analysis enables the analyst to assess management's policies and, when examined in the light of the economic and industry environment of the periods covered, the ability of the company to effectively confront challenges and opportunities. Moreover, trend analysis of index-numbers enables the analyst to uncover important relations among various components of financial statements. This helps in the evaluation of the relative change in these components. For example, changes in sales and accounts receivable are logically correlated and can be expected to display a natural relation when examining trends.**
7. **a. Common-size financial statements enable comparisons of changes in the elements that make up financial statements. The figures in each line item of financial statements are divided by a reasonable aggregate total and then expressed as percents. The total of these elements will add to 100%. For example, the balance sheet items are usually expressed as a percentage of total assets and the income statement items are usually expressed as a percentage of total revenues. This makes it easier for the analyst to identify internal structural changes in companies that are reflected in financial statements.**

**b. The analysis of common-size financial statements focuses on major aspects of the internal structure of company operations such as:**

* **Capital structure and sources of financing**
* **Distribution of assets or make up of investing activities**
* **Composition of important segments of financial position such as current assets**
* **Relative magnitude of various expenses in relation to sales**

Moreover, useful information can be obtained by a comparison of common-size statements of a company across years. The advantage of this temporal analysis is even more evident in comparisons between two companies of different sizes. Since analyses can be made on a uniform basis, this tool greatly facilitates such comparisons.

1. A ratio expresses a mathematical relation between two quantities. To be meaningful (useful in analysis), a ratio of financial numbers must capture an important economic relation. Certain items in financial statements have no logical relation to each other and, therefore, would not be amenable to ratio analysis.

Also, some type of benchmark or norm must exist for interpretation of the ratio. One can draw minimal inference from being told that the return on assets for a certain firm is .02. However, if the analyst is told that the company’s return on assets is .02 and the industry average is .08, the ratio becomes more useful for interpretation purposes.

1. Since not all relations have meaning and not all ratios are useful for all analytical purposes, the analyst must be careful in selecting ratios that are useful for the particular task at hand. Unfortunately, ratios are too often misunderstood and their significance overrated. Ratios can provide an analyst with clues and symptoms of underlying conditions. Ratios also can highlight areas that require further investigation and inquiry. Still, ratios, like all other analysis tools, cannot predict the future. Moreover, the usefulness of insights obtained from ratios depends on their skillful interpretation by the analyst. Of these several limitations on ratio analysis, two are especially problematic:

**Changing Price Levels. Different items on financial statement are valued at different times, with the result that ratios can change over time even though underlying factors do not. For example, a plant constructed in 1980 and running at full capacity ever since might be blindly compared to, say, year 2002 dollar sales in computing a sales to gross plant ratio. Moreover, once we begin multiplying ratios, it becomes more difficult (if not impossible) to view everything in comparable real dollar terms.**

**Diverse Underlying Businesses. For most diversified companies, even one reporting limited diversification of sales and earnings, the ratios calculated from financial statements reflect composites or approximations of operations and financial condition. This means they can obscure what may be significant differences by product or service line. For example, a utilization ratio may conceal markedly different levels of facility utilization for different products. Yet, the overall utilization ratio might show a balanced picture with no serious problems.**

**(CFA adapted)**

1. **a. Current ratio; Acid-test (quick) ratio; Cash ratio; Total debt ratio; Total debt to equity ratio; Long-term debt to equity; Financial leverage ratio; Book value per share**

**b. Times interest earned; Gross margin ratio; Operating profit margin ratio; Pretax profit margin ratio; Net profit margin ratio; Effective tax rate**

1. **Inventory turnover; Days' sales in receivables; Return on total assets; Return on equity; Cash turnover; Accounts receivable turnover; Sales to inventory; Working capital turnover; Fixed asset turnover; Total assets turnover; Equity growth rate**
2. **Besides the general tools of analysis, many special-purpose tools of financial analysis exist. Most of these tools are designed for specific financial statements or specific segments of statements. Other special-purpose tools apply to a particular industry. Special-purpose tools include (1) cash flow analyses, (2) statements of variation in gross profit, (3) earning power analysis, and (4) industry-specific techniques like occupancy to capacity analyses for hotels, hospitals, and airlines.**
3. **A dollar is worth more to an entity today than it is worth a year from now. The reason is that the dollar can be employed today and begin earning additional money (such as with an interest-bearing bank account). In the context of valuation, the time value of money is important because the timing of pay offs becomes important. An investor is willing to pay more for cash flows that will occur sooner rather than later.**
4. **In the market, a bond’s value is determined by what investors are willing to pay (supply and demand dynamics). The effective interest implicit in the deal is determined by finding the rate at which the present value of the future cash outflows associated with the bond are equal to the proceeds received at issuance. Thus, the effective interest rate might be viewed as a function of the bond price set by market forces.**
5. **The present value of cash flows often means something different to different people. For example, some believe that the value of the firm is the present value of operating cash flows or investing cash flows or financing cash flows. Others believe value is derived as the present value of net cash flows. Others define the value of the firm as the present value of free cash flows. Thus, there are many definitions of cash flows. Also, the widely accepted valuation formula written as a function of future dividends cannot be written in terms of cash flows proper.**
6. **The residual income model computes value from accounting variables only. This model performs quite well relative to cash flow models (several recent research articles and working papers support this conclusion). Thus, this model seems to refute the argument that the value of an entity can *only* be determined by discounting the underlying cash flows.**
7. **The efficient market hypothesis (EMH) deals with the reaction of market prices to financial and other data. First, note that EMH has its origins in the random walk hypothesis—which states that at any given point in time the size and direction of the next price change is random relative to what is known about an investment at that given time. Second, there are three derivatives of this hypothesis. The first is known as the *weak form* of the EMH—it states that current prices reflect fully the information conveyed by historical time series of prices. The second is the *semi-strong form*—it states that prices fully reflect all publicly available information. The third is the *strong form*—it asserts that prices reflect all information, including inside information. The EMH, in all its forms, has undergone extensive empirical testing. Much of this evidence supports the weak form EMH, but there is considerable debate about the validity of the semi-strong EMH due to various conflicting evidence.**
8. **The EMH is dependent on the assumption that competent and well-informed analysts, using tools of analysis, continually evaluate and act on the ever-changing stream of new information entering the marketplace. Still, hardcore theorists seemingly rely on the notion that since all information is immediately reflected in prices, there is no obvious role for financial statement analysis. This scenario presents a paradox. On one hand, analysts’ efforts are assumed to keep security markets efficient. On the other hand, analysts are sufficiently wise to recognize that their efforts yield no individual rewards. However, should analysts recognize that their efforts are unrewarded, then the market would cease to be efficient.**

Several points may help explain this paradox. First, EMH is built on aggregate rather than individual investor behavior. The focus on aggregate behavior not only highlights average performance but masks the results achieved by individual ability, efforts, and ingenuity as well as by superior timing in acting on information as it becomes available. Second, few doubt that important information travels fast. After all, enough is at stake to make it travel fast. Nor is it surprising that securities markets are rapid processors of information. Consequently, using deductive reasoning similar to the hardcore theorist, we could conclude that the speed and efficiency of the market is evidence that market participants are motivated by substantial, real rewards. Third, the reasoning behind

EMH's alleged implication for the lack of usefulness of analysis fails to recognize the essential difference between information and its proper interpretation. That is, even if all the information available on a security at a given point in time is impounded in price, that price may not reflect intrinsic value. It may be under- or over-priced depending on the degree to which an incorrect interpretation or evaluation of the available information is made by those whose actions determine the price at a given time.

The work of financial statement analysis is complex and demanding. The spectrum of users of financial statements varies from the institutional analyst who concentrates on only a few companies in one industry to a person who merely looks at the pictures in an annual report. All act on financial information, but surely not with the same insights and competence. Competent evaluation of "new information" entering the marketplace requires special skills. Few have the ability and are prepared to expend the efforts and resources needed to conduct such analysis. It is only natural that they would reap the rewards by being able to act both competently and confidently on information. The vast resources that must be brought to bear on the competent analysis of securities has caused some segments of the market to be more efficient than others. For example, the market for shares of larger companies is more efficient because more analysts follow such securities in comparison to those who follow small, lesser-known companies.

**One must also recognize that those who judge usefulness in an efficient market construe the function and purpose of analysis too narrowly. While the search for overvalued and undervalued securities is an important part of many analyses, the importance of risk assessment and loss avoidance, in the total framework of business decision making, cannot be overemphasized. For instance, analysis can evaluate the reasonableness of a risk premium associated with a security. Moreover, the prevention of serious investment errors is at least as important as the discovery of undervalued securities. Yet, a review of CAPM and beta theory tends to explain why strict adherents to these macro-oriented models of security markets neglect this important function of analysis. Namely, it is a basic premise of these theories that analysis of unsystematic risk is not worthwhile because the market does not reward that kind of risk taking. Instead, such risks should be diversified away and the portfolio manager should look only to systematic or market risk for rewards.**

**In sum, most financial statement analysis assumes that investment results are achievable through careful study and analysis of individual companies. This approach emphasizes the value of fundamental analysis not only as a means of keeping markets efficient but also as the means by which those investors who, having obtained information, are willing and able to apply knowledge, effort, and ingenuity in analysis to reap rewards. For those analysts, the fruits of fundamental analysis—long before being converted to a "public good"—will yield rewards. These rewards are not discernable, however, in the performance of analysts aggregated to comprise major market segments, such as mutual funds. Instead they remain as individual as the efforts needed to realize them.**

**EXERCISES**

**Exercise 1-1 (20 minutes)**

**a. Comparative financial statement analysis for a single year reflects a brief period of a company's history. It is essentially an interim analysis of a company’s business activities for that year. Moreover, the accounting system’s allocation of costs and revenues to such short periods of time is, to a considerable extent, based upon convention, judgment, and estimates. The shorter the time period, the more difficult is the matching and recognition process and the more it is subject to error. In addition, single‑year comparative analysis may not accurately reflect a company's long‑run performance. This is because of the possibility of unusually favorable or unfavorable economic or other conditions experienced in any particular year.**

**Consequently, any comparative financial statement analysis for a single year cannot provide information on trends and changing relations that might occur over time. For this reason, the information generated by comparative analysis of a set of single‑year statements is of limited interpretive value. Moreover, the financial statements themselves have limitations for analytical and interpretive purposes by virtue of the inherent limitations of the accounting function applied to a single year. Also, many factors that significantly affect the progress and success of a firm are not of a financial character and are not, therefore, expressed explicitly in financial statements. These include factors such as general economic conditions, labor relations, and customer attitudes. The preparation of comparative statements for a single year would not alleviate these limitations.**

**b. Changes or inconsistencies in accounting methods, policies, or classifications for the years covered by comparative financial statement analysis can yield misleading inferences regarding trends or changing relations. For example, a change in a firm's depreciation or inventory methods, even though the alternative procedures are acceptable or preferable, can inhibit the comparability of corresponding items in two or more of the periods covered. Further, the existence of errors (and their correction in subsequent periods), nonrecurring gains or losses, mergers and acquisitions, and changes in business activities can yield misleading inferences from comparative analysis performed over several years.**

**Exercise 1-1—continued**

**To avoid the potential for misleading inferences from these factors, we must carefully examine footnotes, explanations, and qualifications that are disclosed as part of financial reporting. Our comparative analysis must be adjusted for such possibilities. Also, changing price levels for the periods of analysis can distort comparative financial statements. For example, even items on a comparative balance sheet or income statement that pertain to a single year are not all expressed in dollars having the same purchasing power. Namely, in an era of rising prices, a given year's depreciation represents older dollars having greater purchasing power compared with most other income statement items. Further, inventory methods other than LIFO can add to the inflationary distortion of the income statement. Similarly, balance sheet items for a given year are expressed in dollars of varying purchasing power.**

**Beyond these vertical distortions that exist within individual years covered by comparative financial statements, are horizontal distortions in the trends and relations of corresponding items across years. For example, an upward trend in sales may actually reflect a constant level of, or even decline in, actual sales volume because of increases in prices. Because of the potential for misleading inferences from comparative analysis during periods of changing price levels, its usefulness as an analytical and interpretative tool is severely restricted. This is because price level changes can limit the comparability of the data in financial statements across time. Of course, analysis of price-level adjusted financial statements can restore the comparability of these statements across time and, thereby, enhance their usefulness as tools of analysis and interpretation.**

**Exercise 1-2 (25 minutes)**

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|  | ***2006*** | | ***2005*** |
| **Sales** | **100.0%** | **100.0%** | | |
| **Cost of goods sold** | **66.0** | **52.4** | | |
| **Gross profit** | **34.0%** | **47.6%** | | |
| **Operating expenses** | **21.0** | **19.4** | | |
| **Net income** | **13.0%** | **28.2%** | | |

Analysis and Interpretation: This situation appears to be unfavorable. Both cost of goods sold and operating expenses are taking a larger percent of each sales dollar in year 2006 compared to the prior year. Also, even though sales volume increased, net income both decreased in absolute terms and declined to only 13.0% of sales as compared to 28.2% in the year before.

Exercise 1-3 (25 minutes)

**a. Current ratio:**

**$30,800 + $88,500 + $111,500 + $9,700**

**$128,900**

**2006: = 1.9 to 1**

**$35,625 + $62,500 + $82,500 + $9,375**

**$75,250**

**2005: = 2.5 to 1**

**$36,800 + $49,200 + $53,000 + $4,000**

**$49,250**

**2004: = 2.9 to 1**

**b. Acid-test ratio:**

**$30,800 + $88,500**

**$128,900**

**2006: = 0.9 to 1**

**$35,625 + $62,500**

**$75,250**

**2005: = 1.3 to 1**

**$36,800 + $49,200**

**$49,250**

**2004: = 1.7 to 1**

**Analysis and Interpretation: Mixon's short-term liquidity position has weakened over this two-year period. Both the current and acid-test ratios show declining trends. Although we do not have information about the nature of the company's business, the acid-test ratio shift from ‘1.7 to 1’ down to ‘0.9 to 1’ and the current ratio shift from ‘2.9 to 1’ down to ‘1.9 to 1’ indicate a potential liquidity problem. Still, we must recognize that industry standards may show that the 2004 ratios were too high (instead of 2006 ratios as too low).**

**Exercise 1-4 (20 minutes)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Mixon Company**  **Common-Size Comparative Balance Sheet**  **December 31, 2004-2006** | | | | | | | | | | | | |
|  | | **2006** | | | **2005\*** | | | | **2004\*** | | | |
| **Cash** | | | **5.9%** | | | **8.0%** | | | | **9.9%** | |  |
| **Accounts receivable, net** | | | **17.1** | | **14.0** | | | | **13.2** | |  |
| **Merchandise inventory** | | | **21.5** | | **18.5** | | | | **14.2** | |  |
| **Prepaid expenses** | | | **1.9** | | **2.1** | | | | **1.1** | |  |
| **Plant assets, net** | | | **53.6** | | **57.3** | | | | **61.6** | |  |
| **Total assets** | | | **100.0%** | | **100.0%** | | | | **100.0%** | |  |
|  | | |  | | | |  | | | |  | |
| **Accounts payable** | | | **24.9%** | | | **16.9%** | | | | **13.2%** | |  |
| **Long-term notes payable secured by**  **mortgages on plant assets** | | | **18.8** | | | **23.0** | | | | **22.1** | |  |
| **Common stock, $10 par value** | | | **31.4** | | | **36.5** | | | | **43.6** | |  |
| **Retained earnings** | | | **24.9** | | | **23.5** | | | | **21.0** | |  |
| **Total liabilities and equity** | | | **100.0%** | | | **100.0%** | | | | **100.0%** | |  |
| **\* Column does not equal 100.0 due to rounding.** | | | | | | | |  | | |  | |

**Exercise 1-5 (25 minutes)**

**a. Days' sales in receivables:**

$88,500

**$672,500**

**2006: x 360 = 47 days**

**$62,500**

**$530,000**

**2005: x 360 = 42 days**

**b. Accounts receivable turnover:**

**$672,500**

**($88,500 + $62,500)/2**

**2006: = 8.9 times**

**$530,000**

**($62,500 + $49,200)/2**

**2005: = 9.5 times**

**c. Inventory turnover:**

**$410,225**

**($111,500 + $82,500)/2**

**2006: = 4.2 times**

**$344,500**

**($82,500 + $53,000)/2**

**2005: = 5.1 times**

**d. Days’ sales in inventory:**

**$111,500**

**$410,225**

**2006: x 360 = 98 days**

**$82,500**

**$344,500**

**2005: x 360 = 86 days**

**Analysis and Interpretation: The number of days' sales uncollected has increased and the accounts receivable turnover has declined. Also, the merchandise turnover has decreased and days’ sales in inventory has increased. While none of these changes in ratios that occurred from 2005 to 2006 appear dramatic, it seems that Mixon is becoming less efficient in managing its inventory and in collecting its receivables.**

**Exercise 1-6 (25 minutes)**

**a. Total debt ratio (solution also includes the equity ratio):**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | ***2006*** | | | | |  | ***2005*** | | |
| **Total liabilities (and debt ratio):** | | | |  | |  |  |  | |  |
| **$128,900 + $97,500** | | **$226,400** | | | **43.7%** | |  |  |  | | |
| **$75,250 + $102,500** | |  | | |  | |  | **$177,750** | **39.9%** | | |
| **Total equity (and equity ratio):** | |  | | |  | |  |  |  | | |
| **$162,500 + $129,100** | | **291,600** | | | **56.3** | |  |  |  | | |
| **$162,500 + $104,750** | | **\_\_\_\_\_\_\_** | | |  | |  | **267,250** | **60.1** | | |
| **Total liabilities and equity** | | **$518,000** | | **100.0%** | |  | **$445,000** | **100.0%** | | |

**b. Times interest earned:**

**2006: ($34,100 + $8,525 + $11,100)/$11,100 = 4.8 times**

**2005: ($31,375 + $7,845 + $12,300)/$12,300 = 4.2 times**

**Analysis and Interpretation: Mixon added debt to its capital structure during 2006, with the result that the debt ratio increased from 39.9% to 43.7%. However, the book value of pledged assets is well above secured liabilities (2.8 to 1 in 2006 and 2.5 to 1 in 2005), and the increased profitability of the company allowed it to increase the times interest earned from 4.2 to 4.8 times. Apparently, the company is able to handle the increased debt. However, we should note that the debt increase is entirely in current liabilities, which places a greater stress on short-term liquidity.**

**Exercise 1-7 (30 minutes)**

**a. Net profit margin:**

**2006: $34,100/$672,500 = 5.1%**

**2005: $31,375/$530,000 = 5.9%**

**b. Total asset turnover:**

**$672,500**

**($518,000 + $445,000)/2**

**2006: = 1.4 times**

**$530,000**

**($445,000 + $372,500)/2**

**2005: = 1.3 times**

**c. Return on total assets:**

**$34,100**

**($518,000 + $445,000)/2**

**2006: = 7.1%**

**$31,375**

**($445,000 + $372,500)/2**

**2005: = 7.7%**

**Analysis and Interpretation: Mixon's operating efficiency appears to be declining because the return on total assets decreased from 7.7% to 7.1%. While the total asset turnover favorably increased slightly from 2005 to 2006, the profit margin unfavorably decreased from 5.9% to 5.1%. The decline in profit margin indicates that Mixon's ability to generate net income from sales has declined.**

**Exercise 1-8 (20 minutes)**

**a. Return on common stockholders' equity:**

**$34,100**

**($291,600 + $267,250)/2**

**2006: = 12.2%**

**$31,375**

**($267,250 + $240,750)/2**

**2005: = 12.4%**

**b. Price earnings ratio, December 31:**

**2006: $15/$2.10 = 7.1**

**2005: $14/$1.93 = 7.3**

**c. Dividend yield:**

**2006: $.60/$15 = 4.0%**

**2005: $.30/$14 = 2.1%**

**Exercise 1-9 (25 minutes)**

**Answer: Net income decreased.**

**Supporting calculations: When the sums of each year's common-size cost of goods sold and expenses are subtracted from the common-size sales percents, net income percents are as follows:**

**2004: 100.0 - 58.1 - 14.1 = 27.8% of sales**

**2005: 100.0 - 60.9 - 13.8 = 25.3% of sales**

**2006: 100.0 - 62.4 - 14.3 = 23.3% of sales**

**Also notice that if 2003 sales are assumed to be $100, then sales for 2004 are $103.20 and the sales for 2005 are $104.40. If the income percents for the years are applied to these amounts, the net incomes are:**

**2004: $100.00 x 27.8% = $27.80**

**2005: $103.20 x 25.3% = $26.12**

**2006: $104.40 x 23.3% = $24.33**

**This case shows that the company’s net income decreased over the three-year period.**

**Exercise 1-10 (30 minutes)**

##### Comparative Report

**Mesa has a greater amount of working capital. But that by itself does not indicate whether Mesa is more capable of meeting its current obligations. Further support is provided by the current ratios and acid-test ratios that show Mesa is in a more liquid position than Huff. However, this evidence does not mean that Huff's liquidity is inadequate. Such a conclusion would require more information such as norms for the industry or its other competitors. Notably, Huff's acid-test ratios approximate the traditional rule of thumb (1 to 1).**

**This evidence also shows that Mesa's working capital, current ratio, and acid-test ratio all increased dramatically over the three-year period. This trend toward greater liquidity may be positive. But the evidence also may suggest that Mesa holds an excess amount of highly liquid assets that typically earn a low return.**

**The accounts receivable turnover and merchandise turnover indicate that Huff Company is more efficient in collecting its accounts receivable and in generating sales from available merchandise inventory. However, these statistics also may suggest that Huff is too conservative in granting credit and investing in inventory. This could have a negative impact on sales and net income. Mesa's ratios may be acceptable, but no definitive determination can be made without having information on industry (or other competitors) standards.**

**Exercise 1-11 (20 minutes)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ***Year 5*** | ***Year 4*** | ***Year 3*** | ***Year 2*** | ***Year 1*** |
| **Sales** | **188** | **180** | **168** | **156** | **100** |
| **Cost of goods sold** | **190** | **181** | **171** | **158** | **100** |
| **Accounts receivable** | **191** | **183** | **174** | **162** | **100** |

**The trend in sales is positive. While this is better than no growth, one cannot definitively say whether the sales trend is favorable without additional information about the economic conditions in which this trend occurred such as inflation rates and competitors’ performances.**

**Given the trend in sales, the comparative trends in cost of goods sold and accounts receivable both appear to be somewhat unfavorable. In particular, both are increasing at slightly faster rates (indexes for cost of goods sold is 190 and accounts receivable is 191) than sales (index is 188).**

**Exercise 1-12 (15 minutes)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | ***Dollar***  ***Change*** | ***Base Amount*** | | | ***Percent***  ***Change*** |
| **Short-term investments** | **$52,800** | **$165,000** | | **32%** | |
| **Accounts receivable** | **(5,880)** | | **48,000** | **-12%** | |
| **Notes payable** | **57,000** | **0** | | **(not calculable)** | |

**Exercise 1-13 (10 minutes)**

1. **Bond price = Present value (PV) of cash flows (both interest payments and principal repayment)**

**Present value of interest payments:**

**Payment = $100 x 10% = $10 per year at end of each year (ordinary annuity)**

**PVint = $10 x PV factor for an ordinary annuity (n=5, i=14%)**

**= $10 x 3.43308**

**= $34.33**

**Present value of principal repayment:**

**PVprin = $100 x PV factor for a lump sum (n=5, i=14%)**

**= $100 x 0.51937**

**= $51.94**

**Price = PV of interest payments + PV of principal repayment**

**= $34.33 + $51.94**

**= $86.27**

1. **Interest payments ($1,000 x 8% = $80 annually):**

**PVint = $80 x Present value factor for an ordinary annuity (n=5; i=6%)**

**= $80 x 4.21236**

**= $336.99**

**Principal repayment ($1,000 in 5 years hence):**

**PVprin = $1,000 x Present value factor for a lump sum (n=5; i=6%)**

**= $1,000 x 0.74726**

**= $747.26**

**Price = $336.99 + $747.26**

**= $1,084.25**

1. **Interest payments ($1,000 x 8% x (1/2)= $40):**

**PVint = $40 x Present value factor for an ordinary annuity (n=10; i=3%)**

**= $40 x 8.53020**

**= $341.21**

**Principal repayment ($1,000 in 5 years hence):**

**PVprin = $1,000 x Present value factor for a lump sum (n=10; i=3%)**

**= $1,000 x .74409**

**= $744.09**

**Price = $341.21 + $744.09**

**= $1085.30**

**Exercise 1-14 (10 minutes)**

**a. Interest payments ($10,000 x 8% x (1/2) = $400 semiannually):**

**PVint = $400 x Present value factor for an ordinary annuity (n=20; i=3%)**

**= $400 x 14.87747**

**= $5,950.99**

**Principal repayment ($10,000 in 10 years hence):**

**PVprin = $10,000 x Present value factor for a lump sum (n=20; i=3%)**

**= $10,000 x 0.55368**

**= $5,536.80**

**Price = $5,950.99 + $5,536.80**

**= $11,488**

**b. Interest payments ($10,000 x 8% x (1/2) = $400):**

**PVint = $400 x Present value factor for an ordinary annuity (n=20; i=5%)**

**= $400 x 12.46221**

**= $4,984.88**

**Principal repayment ($10,000 in 10 years hence):**

**PVprin = $10,000 x Present value factor for a lump sum (n=20; i=5%)**

**= $10,000 x 0.37689**

**= $3,768.90**

**Price = $4,984.88 + $3,768.90**

**= $8,754**

**c. Risk is the possibility that Colin Company will not make all of the interest and principal payments that are called for in the debt agreement. The higher that an investor perceives the risk of non-payment to be, the more the investor should discount the cash flows. Thus, a higher risk of repayment is reflected in a higher discount rate. By using the higher discount rate, the amount that the investor is willing to pay for the bonds is lower.**

**Exercise 1-15 (15 minutes)**

***End of:* Year 0 Year 1 Year 2 Year 3 Year 4 Year 5**

# Net income 8 11 20 40 30

**Book value 50 58a 69 89 129 159**

**Capital charge (Beg.**

**book value x 20%**

**cost of capital) 10b 11.6 13.8 17.8 25.8**

**Residual income (2)c (.6) 6.2 22.2 4.2**

**Discount factor 1/1.2 1/(1.2)2 1/(1.2)3 1/(1.2)4 1/(1.2)5**

**Value at time t 50 + (1.67) + (.417) + 3.588 + 10.706 + 1.688 = $64**

**a: $50 beginning book value + $8 net income - $0 dividends**

**b: $50 beginning book value x 20% cost of capital**

**c: $8 net income (projected) - $10 capital charge**

**Comments: One of the key variables for the residual income model is book value. Book value is readily available and subjected to auditing procedures. The other key variables are future net income and cost of capital. Net income is generally considered easier to predict than future dividends or cash flows. These points are advantages of the residual income valuation model. The cost of capital must be estimated in all of the valuation models. The primary limitation of the residual income model is that it requires predictions of earnings for the life of the firm. Simplifying assumptions are usually necessary.**

**PROBLEMS**

**Problem 1-1 (30 minutes)**

##### Comparative Report

**Arbor's profit margins are higher than Kampa's. However, Kampa has significantly higher total asset turnover ratios. As a result, Kampa generates a substantially higher return on total assets.**

**The trends of both companies include evidence of growth in sales, total asset turnover, and return on total assets. However, Arbor's rates of improvement are better than Kampa's. These differences may result from the fact that Arbor is only 3 years old while Kampa is an older, more established company. Arbor's operations are considerably smaller than Kampa's, but that will not persist many more years if both companies continue to grow at their current rates.**

**To some extent, Kampa's higher total asset turnover ratios may result from the fact that its assets may have been purchased years earlier. If the turnover calculations had been based on current values, the differences might be less striking. The relative ages of the assets also may explain some of the difference in profit margins. Assuming Arbor's assets are newer, they may require smaller maintenance expenses.**

**Finally, Kampa successfully employed financial leverage in 2006. Its return on total assets is 8.9% compared to the 7% interest rate it paid to obtain financing from creditors. In contrast, Arbor's return is only 5.8% as compared to the 7% interest rate paid to creditors.**

**Problem 1-2 (100 minutes)**

***Part 1***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **COHORN COMPANY** | | | | | | | |
| **Income Statement Trends** | | | | | | | |
| **For Years Ended December 31, 2000-2006** | | | | | | | |
|  | ***2006*** | ***2005*** | ***2004*** | ***2003*** | ***2002*** | ***2001*** | ***2000*** |
| **Sales** | **192.5** | **168.6** | **153.4** | **140.6** | **131.2** | **122.0** | **100.0** |
| **Cost of goods sold** | **235.8** | **191.8** | **165.0** | **144.4** | **134.2** | **125.5** | **100.0** |
| **Gross profit** | **131.0** | **135.7** | **136.8** | **135.1** | **126.9** | **117.0** | **100.0** |
| **Operating expenses** | **265.6** | **207.8** | **190.6** | **140.6** | **121.9** | **120.3** | **100.0** |
| **Net income** | **50.5** | **92.5** | **104.7** | **131.8** | **129.9** | **115.0** | **100.0** |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **COHORN COMPANY** | | | | | | | |
| **Balance Sheet Trends** | | | | | | | |
| **December 31, 2000-2006** | | | | | | | |
|  | ***2006*** | ***2005*** | ***2004*** | ***2003*** | ***2002*** | ***2001*** | ***2000*** |
| **Cash** | **68.7** | **88.9** | **92.9** | **94.9** | **99.0** | **97.0** | **100.0** |
| **Accounts recble., net** | **233.0** | **244.7** | **221.4** | **169.9** | **149.5** | **141.7** | **100.0** |
| **Merchandise inventory** | **337.5** | **245.4** | **214.4** | **181.0** | **162.3** | **137.9** | **100.0** |
| **Other current assets** | **242.1** | **221.1** | **126.3** | **231.6** | **200.0** | **200.0** | **100.0** |
| **Long-term investments** | **—** | **—** | **—** | **100.0** | **100.0** | **100.0** | **100.0** |
| **Plant and equip., net** | **257.0** | **256.2** | **224.5** | **126.5** | **130.7** | **116.4** | **100.0** |
| **Total assets** | **247.3** | **222.9** | **196.0** | **144.4** | **138.6** | **124.0** | **100.0** |
|  |  |  |  |  |  |  |  |
| **Current liabilities** | **411.8** | **346.3** | **227.2** | **189.0** | **164.0** | **155.1** | **100.0** |
| **Long-term liabilities** | **306.2** | **266.7** | **259.5** | **120.5** | **123.1** | **133.3** | **100.0** |
| **Common stock** | **156.3** | **156.3** | **156.3** | **131.3** | **131.3** | **100.0** | **100.0** |
| **Other contrib. capital** | **156.3** | **156.3** | **156.3** | **112.5** | **112.5** | **100.0** | **100.0** |
| **Retained earnings** | **262.7** | **230.8** | **191.7** | **176.3** | **162.1** | **145.0** | **100.0** |
| **Total liabilities & equity** | **247.3** | **222.9** | **196.0** | **144.4** | **138.6** | **124.0** | **100.0** |

***Part 2***

**The statements and the trend percent data indicate that the company significantly expanded its plant and equipment in 2004. Prior to that time, the company enjoyed increasing gross profit and net income. Sales grew steadily for the entire period of 2000 to 2006. However, beginning in 2004, cost of goods sold and operating expenses increased dramatically relative to sales, resulting in a significant reduction in net income. In 2006 net income was only 50.5% of the 2000 base year amount.**

**At the same time that net income was declining, assets were increasing. This indicates that Cohorn was becoming less efficient in using its assets to generate income. Also, the short-term liquidity of the company continued to decline. Accounts receivable did not change significantly for the period of 2004 to 2006, but cash steadily declined and merchandise inventory sharply increased, as did current liabilities.**

**Problem 1-3 (25 minutes)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **Yr. 6** | | **Yr. 5** | **Yr. 4** | **Cumulative** | **Annual** |
| Amount | | | | | | | Average Amount |
| Net Sales | $6,880 | | $3,490 | | $2,860 | $13,230 | $4,410 |
| Cost of Goods Sold | 3,210 | | 2,810 | | 1,810 | 7,830 | 2,610 |
| Gross Profit | $3,670 | | $ 680 | | $1,050 | $ 5,400 | $1,800 |
| Operating Expenses | 930 | | 465 | | 945 | 2,340 | 780 |
| Income Before Taxes | $2,740 | | $ 215 | | $ 105 | $ 3,060 | $1,020 |
|  |  | |  | |  |  |  |
| Net Income | $1,485 | | $ 145 | | $ 58 | $ 1,688 | $ 563 |

**Interpretation of Comparative Analysis**

Overall, this analysis suggests a rather volatile financial picture for Eastman Corp. For example, net sales have steadily increased for this three-year period—almost doubling in Year 6—while gross profit dips in Year 5 but increases considerably in Year 6. Also, operating expenses are especially low in Year 5—this occurs at the same time when income taxes expense is low.

**Problem 1-4 (25 minutes)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year 7** | | | **Year 6** | | **Year 5** |
|  | **Index** | **Change** | **Index** | **Change** | **Index** |
|  | **No.** | **in %** | **No.** | **in %** | **No.** |
| **Net Sales** | **129** | **29%** | **100** | **11.1%** | **90** |
| **Cost of Goods Sold** | **139** | **39** | **100** | **17.6** | **85** |
| **Gross Profit** | **126** | **26** | **100** | **25.0** | **80** |
| **Operating Expenses** | **120** | **20** | **100** | **53.8** | **65** |
| **Income Before Taxes** | **114** | **14** | **100** | **42.9** | **70** |
| **Net Income** | **129** | **29** | **100** | **33.3** | **75** |

**Interpretation of Trend Analysis**

**The growth in cost of goods sold exceeds the growth in net sales in both Years 6 and 7. A continuation of these trends in both sales and cost of goods sold will limit future growth in net income. The growth in operating expenses is erratic—that is, it is 53.8% in Year 6 and 20% in Year 7.**

# Problem 1-5 (45 minutes)

**MESCO COMPANY**

**Balance Sheet**

**December 31, Year 5**

***Assets***

**Current Assets**

**Cash $ 10,250**

**Accounts receivable 46,000**

**Inventories 86,250**

**Total current assets $142,500**

**Noncurrent assets 280,000**

**Total assets $422,500**

***Liabilities and Stockholders' Equity***

**Current liabilities $ 22,500**

**Noncurrent liabilities 62,000**

**Total liabilities $ 84,500**

***Stockholders' Equity***

**Common stock $150,000**

**Additional paid-in capital 60,000**

**Retained earnings 128,000**

**Total stockholders' equity $338,000**

**Total liabilities and equity $422,500**

**Supporting computations:**

# Note 1: Compute net income for Year 5

**Sales $920,000**

**Cost of goods sold 690,000 (75% of sales)**

**Gross profit $230,000 (25% of sales)**

**Operating expenses 180,000**

**Income before taxes $ 50,000**

**Taxes expense 20,000 (tax at 40% rate)**

**Net income $ 30,000**

# Note 2: Compute Stockholders' Equity

**Common stock ($15 par x 10,000 sh.) $150,000**

**Additional paid-in capital ($21-$15) x 10,000 sh. 60,000 $210,000**

**Retained earnings, Dec. 31, Year 4 98,000**

**Net income 30,000**

**Retained earnings, Dec. 31, Year 5 128,000**

**Total $338,000**

# Problem 1-5—continued

# Note 3: Total equity $338,000

**÷ 4**

# Total debt $ 84,500

# Note 4: Cost of goods sold / Inventory = 8

**$690,000 / Inventory = 8**

**∴Inventory = $86,250**

**Receivables / (Credit sales÷360) = 18 days**

**Receivables / ($920,000÷360) = 18 days**

**∴Receivables = $46,000**

# Note 5: Total assets = Total equity + Total liabilities

**= $338,000 + $84,500**

**= $422,500**

# Current assets = Total assets - Noncurrent assets

**= $422,500 - $280,000**

**= $142,500**

**Cash = $142,500 - $46,000 - $86,250**

**= $10,250**

**Note 6: Acid-test ratio = (Cash + Accounts receivable) / Current liabilities = 2.5**

**∴Current liabilities = ($10,250 + $46,000)/2.5 = $22,500**

**Noncurrent liabilities = Total liabilities - Current liabilities**

**= $84,500 - $22,500 = $62,000**

# Problem 1-6 (45 minutes)

**FOXX COMPANY**

**Balance Sheet**

**December 31, Year 2**

|  |  |  |
| --- | --- | --- |
| **Assets** |  | **Liabilities and Equity** |
| **Current assets:** |  | **Current liabilities $100,000** |
| **Cash $ 75,000** |  | **Noncurrent liabilities 150,000** |
| **Accounts receivable 75,000** |  | **Total liabilities $250,000** |
| **Inventory 50,000** |  |  |
| **Noncurrent assets $300,000** |  | **Total equity $250,000** |
| **Total assets $500,000** |  | **Total Liabilities and Equity $500,000** |

**Supporting computations:**

# Note 1: Compute net income for Year 2

**Sales $1,000,000**

**Cost of goods sold 500,000 (50% of sales)**

**Gross profit $ 500,000 (50% of sales)**

**Expenses 450,000 (given)**

**Net income $ 50,000**

**Note 2: Return on end-of-year equity = 20%**

**Net income / End-of-year equity = 20%**

**50,000 / Equity = 0.20**

**∴Equity = $250,000**

# Note 3: Total debt to total equity = 1

**Total debt / $250,000 = 1**

**∴Total debt = $250,000**

# Note 4: Accounts receivable turnover = Sales / Average accounts receivable

**16 = **

**∴Ending accounts receivable = $75,000**

# Note 5: Days’ sales in inventory = (Inventory x 360) / Cost of goods sold

# 36 = (Inventory x 360) / $500,000

**∴Ending inventory = $50,000**

# Problem 1-6—continued

**Note 6: Total assets = Total liabilities + Total equity**

**= $250,000 + $250,000**

**= $500,000**

**Current assets = Total assets - Noncurrent assets**

**= $500,000 - $300,000**

**= $200,000**

**Current ratio = Current assets ÷ Current liabilities**

1. **= $200,000 ÷ ?**

**∴Current liabilities = $100,000**

**Noncurrent liabilities= Total liabilities - Current liabilities**

**= $250,000 - $100,000**

**= $150,000**

**Note 7: Cash = Current assets - Accounts receivable - Inventory**

**= $200,000 - $75,000 - $50,000**

**= $75,000**

**Problem 1-7 (70 minutes)**

**a.**

**VOLTEK COMPANY**

**Balance Sheet**

**December 31, Year 6**

***Assets***

**Current Assets**

**Cash $3,900**

**Account receivable 2,600**

**Inventories 1,820**

**Prepaid expenses 1,430**

**Total current assets $ 9,750**

**Plant and equipment, net 6,000**

**Total assets $15,750**

***Liabilities and Stockholders' Equity***

**Current liabilities $6,500**

**Bond payable 6,500**

**Stockholders’ equity 2,750**

**Total liabilities and equity $15,750**

**Supporting computations:**

**Note 1: Net income/Sales = 10%**

**$1,300 / ? = 10%**

**∴Sales = $13,000**

**Note 2: Gross Margin = Sales x Gross margin ratio**

**= $13,000 x 30%**

**= $3,900**

**Cost of good sold = Sales - Gross margin**

**= $13,000 - $3,900**

**= $9,100**

**Inventory = Cost of goods sold ÷ Inventory turnover**

**= $9,100 ÷ 5**

**= $1,820**

**Note 3: Accounts recble. = Sales ÷ Accounts receivable turnover**

**= $13,000 ÷ 5**

**= $2,600**

# Problem 1-7—continued

**Note 4: Working capital = Sales ÷ Sales to end-of-year working capital**

**= $13,000 ÷ 4**

**= $3,250**

**Note: Current assets = Current liabilities + Working capital**

**Current assets = Current liabilities + $3,250**

**Current liabilities = Current assets - $3,250**

**Then: Current ratio = Current assets ÷ Current liabilities**

**1.5 = Current assets ÷ (Current assets - $3,250)**

**Current assets /1.5 = (Current assets - $3,250)**

**Current assets = 1.5 x Current assets - $4,875**

**0.5 x Current assets= $4,875**

**Current assets = $9,750**

**And: Current liabilities = $9,750 - $3,250**

**= $6,500**

**Note 5: Acid-test ratio = 1.0**

**Then: Cash + Accounts receivable = Current liabilities**

**Cash = $6,500 - $2,600 = $3,900**

**Note 6: Prepaid expenses = Current assets - Cash - Accounts recble. - Inventory**

**= $9,750 - $3,900 - $2,600 - $1,820**

**= $1,430**

**Note 7: Times interest earned = (Income before tax + Interest exp.) / Interest exp.**

**5 = ($1,300 + Interest expense) / Interest expense**

**5 (Interest expense) = $1,300 + Interest expense**

**4 (Interest expense) = $1,300**

**Interest expense = $325**

**Par value of bonds payable = Interest expense / Interest rate on bonds**

**= $325 / 0.05**

**= $6,500**

**Note 8: Shareholders' equity = Total assets - Current liabilities - Bonds payable**

**= $15,750 - $6,500 - $6,500 = $2,750**

**Note 9: Par value of preferred stock = Dividend on preferred ÷ Dividend rate**

**= $40 ÷ 0.08**

**= $500**

**Note 10: EPS = (Net income-Preferred dividend) / Common shares outstanding**

**$3.75 = ($1,300 - $40) / Common shares outstanding**

**$3.75 x Common shares outstanding = $1,260**

**Common shares outstanding = 336**

**Par value of common stock = 336 x $5 = $1,680**

# Problem 1-7—continued

**Note 11: Retained earnings = Stockholders' equity -Common stock - Preferred stock**

**= $2,750 - $1,680 - $500**

**= $570**

b. Dividends paid on common stock:

Retained earnings, Jan. 1, Year 6 $ 350

**Net income for Year 6 1,300 $1,650**

**Dividends paid on preferred 40**

**Dividends paid on common – plug ?**

**Retained earnings, Dec. 31, Year 6 $ 570**

**∴Dividends paid on common stock = $1,040**

**Problem 1-8 (45 minutes)**

Financial ratios for Chico Electronics:

**a. Acid-test ratio:**

**(Cash + Accounts receivable) ÷ Total current liabilities**

**($325 + $3,599) ÷ $3,945 = 0.99**

**Interpretation: The most liquid assets can adequately cover current liabilities**

**b. Return on assets:**

**[Net income + Interest expense (1-tax rate)] ÷ Average total assets**

**[$1,265 + $78 (1 - .40)] ÷ [($4,792 + $8,058) ÷ 2] = 20.4%**

**Interpretation: Return on each dollar invested in assets (this return would seem to be good to very good)**

**c. Return on common equity:**

**(Net income - Preferred dividends) ÷ Average common equity**

**[$1,265 - $45] ÷ [($2,868 - $500 + $3,803 - $450) ÷ 2] = 42.7%**

**Interpretation: Return on each dollar invested by equity holders (this return would seem to be excellent)**

**d. Earnings per share:**

**(Net income - Preferred dividends) ÷ Average common shares outstanding**

**[$1,265 - $45] ÷ [(550 + 829) ÷ 2] = $1.77**

**Interpretation: Net income earned per each share owned (difficult to assess this EPS value in isolation)**

# Problem 1-8—continued

**e. Gross profit margin:**

**(Net sales - Cost of goods sold) ÷ Net sales**

**($12,065 - $8,048) ÷ $12,065 = 33.3%**

**Interpretation: Gross profit for each dollar of net sales (difficult to assess this value in isolation)**

**f. Times interest earned:**

**(Net income before tax + Interest expense) ÷ Interest expense**

**($2,259 + $78) ÷ $78 = 30 times**

**Interpretation: Magnitude (multiple) that net income before tax exceeds interest expense – a measure of safety, and a value of 30 is probably good to very good**

**g. Days to sell inventory:**

**Average inventory ÷ (Cost of goods sold ÷ 360)**

**[($2,423 + $1,415) ÷ 2] ÷ [$8,048 ÷ 360] = 85.8 days**

**Interpretation: Time it would take to dispose of inventory (difficult to assess the value in isolation)**

**h. Long-term debt to equity:**

**(Long-term debt + Other liabilities) ÷ Shareholders' equity**

**($179 + $131) ÷ $3,803 = 8.2%**

**Interpretation: Percent contributed by long-term debt holders relative to equity holders – this is not a highly leveraged company in terms of long-term debt**

**i. Total debt to total equity:**

**Total liabilities ÷ Total shareholders' equity**

**$4,255 ÷ $3,803 = 1.12**

**Interpretation: Total nonowner financing relative to owner financing**

**j. Sales to end-of-year working capital:**

**Net sales ÷ Working capital**

**$12,065 ÷ ($6,360 - $3,945) = 5**

**Interpretation: Sales as a multiple of working capital – measure of efficiency and safety**

**Problem 1-9 (55 minutes)**

**Year 5 Year 4**

**At December 31:**

**Current ratio 2.30 1.95**

**Acid-test ratio 1.05 0.80**

**Book value per share $12.50 $10.18**

**Year ended December 31:**

**Gross profit margin ratio 35% 30%**

**Days to sell inventory 82 86**

**Times interest earned 18.0 12.5**

**Price-to-earnings ratio 17.5 15.4**

**Gross expenditures for plant & equipment $1,105,000 $975,000**

**Supporting computations:**

a. Current ratio:

**Current assets $13,570,000 $12,324,000**

**÷ Current liabilities $ 5,900,000 $ 6,320,000**

**Current ratio 2.3 1.95**

b. Acid-test ratio:

**Cash, marketable sec., accts. rec. (net) $6,195,000 $5,056,000**

**÷ Current liabilities $5,900,000 $6,320,000**

**Acid-test ratio 1.05 0.80**

c. Book value per common share:

**Stockholders' equity $11,875,000 $10,090,000**

**- Preferred stock at liquidating value 5,000,000 5,000,000**

**Common stockholders' equity $ 6,875,000 $ 5,090,000**

**÷ Equivalent shares outstanding at year end 550,000 500,000**

**Book value per common share $ 12.50 $ 10.18**

d. Gross profit margin ratio:

**Gross margin (Sales - Cost of sales) $16,940,000 $12,510,000**

**÷ Net sales 48,400,000 41,700,000**

# Gross profit margin ratio 35% 30%

e. Days to sell inventory:

**Inventories:**

**Beginning of year $ 7,050,000 $ 6,850,000**

**End of year 7,250,000 7,050,000**

**$14,300,000 $13,900,000**

**(A) Average inventories (Total ÷ 2) 7,150,000 6,950,000**

**(B) Cost of sales (÷ 360) 87,389 81,083**

**Days to sell inventory (A ÷ B) 82 86**

# Problem 1-9—continued

f. Times interest earned:

**Income before taxes $ 4,675,000 $ 3,450,000**

**+ Interest expense 275,000 300,000**

**4,950,000 3,750,000**

**÷ Interest expense 275,000 300,000**

**Times interest earned 18 12.5**

g. Common stock price-to‑earnings ratio:

**Market value, at end of year $ 73.5 $ 47.75**

**÷ Earnings per share 4.2 3.10**

**Common stock price-to‑earnings ratio 17.5 15.4**

h. Gross expenditures for plant and equipment:

**Plant and equipment at cost:**

**End of year $ 22,750,000 $22,020,000**

**Beginning of year 22,020,000 21,470,000**

**730,000 550,000**

**Add disposals at cost 375,000 425,000**

**Gross expenditures for P&E $ 1,105,000 $ 975,000**

**Analysis and interpretation:**

**Lakeland's financial statements reveal significant improvements across the board. In terms of liquidity, both the current and acid-test ratios increase, while the days to sell inventory decreases by 4 days. The nearly 50% increase in times interest earned indicates a more solid financial position. Profitability improved as evidenced by the 5% increase in gross profit margin. In addition, it appears that Lakeland is poised for additional earnings growth based on its increasing capital expenditures. The improved performance has not gone unnoticed by the stock market as the price-to-earnings ratio rose from 14.0 to 17.5. Additional analysis is needed before determining an appropriate price for the proposed acquisition.**

**Problem 1–10 (20 minutes)**

**Company A is the merchandiser – evidenced by:**

* **Low gross profit margin ratio**
* **Low net profit margin ratio**
* **High inventory turnover**
* **High accounts receivable turnover**
* **Higher advertising to sales ratio**

**Company B is the pharmaceutical – evidenced by:**

* **High gross profit margin ratio**
* **High research and development costs to sales**
* **Slightly higher advertising costs to sales**

**Company C is the utility – evidenced by:**

* **Low advertising expenses to sales**
* **High long-term debt to equity ratio**
* **Nonapplicable inventory turnover**
* **Higher interest expense to sales**

**Problem 1-11 (20 minutes)**

1. **The liquidity of the company appears reasonable. Current assets are 3.45 times current liabilities and even cash-like assets are fully 2.58 times current liabilities. The company is selling its inventory in reasonable time (18 days). However, the collection period for receivables is a bit slow (42 days).**

**The capital structure and solvency of the company also appears reasonable. Long-term debt is only 37 percent of equity and total debt is 67% of total equity. This debt total would seem to be on the high end of the acceptable range. Likewise, the return on assets and equity are quite good (31% and 53%, respectively). This is a positive sign for long-term solvency and for long-term growth. Profit margins appear relatively strong as well.**

**The strong profit margins reflect healthy asset utilization. The company is turning over its inventory 30 times per year and turning over receivables 7 times per year. The market measures reflect these relatively strong operating results. The price to earnings ratio of 27.8 reflects a strong stock market valuation. The lack of dividends for this company is not surprising given the growth rate that the company is achieving.**

# Problem 1-11—continued

1. **The liquidity of the company is strong. The company has a current ratio that is strong (3.45) and slightly above industry average (3.1). The near cash assets are also strong (acid-test ratio of 2.58 versus 1.85). The size of the acid-test ratio coupled with the receivables collection period (42.19 days versus 36.6 days) raises a question about the quality of the receivables for Best. That relationship warrants some additional investigation. Nevertheless, Best appear to be adequately liquid.**

**Best also appears strong in terms of solvency and capital structure. The company approximates average industry levels of debt and interest coverage. Likewise, the company is slightly above industry averages in terms of return on assets and return on equity. This provides additional comfort about Best’s ability to remain solvent and to grow.**

**The asset utilization ratios reflect reasonably healthy operations. The company is turning over inventory slightly above the industry average and utilizing its fixed assets efficiently relative to industry norms. Again, the accounts receivable turnover warrants investigation. The company is turning over receivables significantly slower than industry averages.**

**The market measures reflect a healthy market capitalization for the company. The slightly lower p/e ratio for Best is interesting given the company’s above average performance. This could reflect the market’s concern about Best’s ability to convert its sales into cash (i.e., accounts receivable collection).**

1. **The following ratios deviate from industry norms and warrant some investigation: Acid-test ratio, collection period, accounts receivable turnover, working capital turnover. These are all related to accounts receivable. Specifically, accounts receivable is higher than normal for the industry. One possible explanation is that the company offers looser collection terms than the industry. Another possibility is that the company extends credit to less creditworthy customers. It could also be random variation but this is unlikely given the magnitude of the difference.**

**Also, the times interest earned ratio is interesting. While it is near industry norms, it is low considering the following. One would expect this to be higher than the industry average because the company has lower than average debt and higher than average earnings. One possible explanation for this relationship is that the company paid down debt late in the year. Thus, the debt ratios look lower at year-end than they were most of the year. Another possibility is that the company has higher priced debt than industry average.**

**Problem 1-12 (30 minutes)**

**a.**

**2003 2004 2005 2006 2007 Terminal**

**Value**

**Dividend 1.00 1.00 1.00 1.00 1.00 7.30**

**Discount factor 1/(1.1)1 1/(1.1)2 1/(1.1)3 1/(1.1)4 1/(1.1)5 1/(1.1)5**

**Present value .9091 .8264 .7513 .6830 .6209 4.5327**

# Value = $8.32

**b.**

**2002 2003 2004 2005 2006 2007**

**Net income 1.45 1.10 .60 .25 (.10)**

**Book value 9.00 9.45 9.55 9.15 8.40 7.30**

**Capital charge (Beg.**

**book value x 10%**

**cost of capital) .90 .945 .955 .915 .840**

**Residual income .55 .155 (.355) (.665) (.940)**

**Discount factor 1/1.1 1/(1.1)2 1/(1.1)3 1/ (1.1)4 1/(1.1)5**

**Present value 9 .50 .128 (.267) (.454) (.584)**

**Value at time t = Sum of previous line = $8.32**

**c.**

**2003 2004 2005 2006 2007 | Terminal**

**Value**

**Operating cash flows 2.00 1.50 1.00 .75 .50 | 7.30**

**Capital expenditures - - 1.00 1.00 -**

**Debt incr (decr) -1.00 -0.50 1.00 1.25 0.50**

**Free cash flows 1.00 1.00 1.00 1.00 1.00**

**Discount factor 1/(1.1)1 1/(1.1)2 1/(1.1)3 1/(1.1)4 1/(1.1)5 1/(1.1)5**

**Present value .9091 .8264 .7513 .6830 .6209 4.5327**

**Value = $8.32**

**CASES**

**Case 1-1 (35 minutes)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | | **NIKE** | | | **REEBOK** | | |
| 1. **Financing = Amount Invested** | | | | **$5,397.4** | **$1,756.1** | | |
| 1. **Return on**   **= 0.076**  **= 0.074**  **investment =** | **$399.6** | | | | **$135.1** | | |
| **profit/average   amount   invested)** | **[($5,397.4 + $5,361.2)/2]** | | | | **[($1,756.1 + $1,786.2)/2]** | | |
|  | | |  | | |  |
|  | | |  | | |  |
| 1. **Revenues-Expenses** | | | **$9,553.1-Expenses=$399.6** | | | **$3,637.4-Expenses=$135.1** |
| **=Net income** | | | **Expenses=$9,153.5** | | | **Expenses=$3,502.3** |

1. Analysis of return on investment: Nike’s 7.4% return is marginally satisfactory given the moderate risk NIKE confronts. Similarly, Reebok’s 7.6% return is marginally acceptable.
2. Analysis conclusions—Nike’s return is borderline acceptable but its market share is high. Reebok’s return is also borderline acceptable, and it needs greater market share.

**Case 1-2 (35 minutes)**

**a.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Key figures*** | **NIKE** | |  | | **Reebok** | |
| **Cash and equivalents** | **2.0%** | **$ 108.6** | | **11.9%** | | **$ 209.8** | |
| **Accounts receivable** | **31.0** | **1,674.4** | | **32.0** | | **561.7** | |
| **Inventories** | **25.9** | **1,396.6** | | **32.1** | | **563.7** | |
| **Retained earnings** | **56.4** | **3,043.4** | | **65.2** | | **1,145.3** | |
| **Costs of sales** | **63.5** | **6,065.5** | | **63.0** | | **2,294.0** | |
| **Income taxes** | **2.6** | **253.4** | | **0.3** | | **12.5** | |
| **Revenues (NIKE)**  **Net sales (Reebok)** | **100.0**  **—** | **9,553.1**  **—** | | **—**  **100.0** | | **—**  **3,643.6** | |
| **Total assets** | **100.0** | **5,397.4** | | **100.0** | | **1,756.1** | |

**b. NIKE incurred income taxes at 2.6% of revenues while Reebok incurred income taxes at 0.3% of its net sales.**

**c. Reebok’s retained earnings comprises a greater percent of its assets (65.2%) as compared to NIKE (56.4%).**

**d. Since Nike’s costs of sales percent is slightly higher at 63.5% compared to Reebok’s 63.0%, NIKE has a lower gross margin ratio on sales (36.5%).**

**e. Reebok has a higher percent of total assets in the form of inventory at 32.1%, compared to Nike’s 25.9%.**

**Case 1-3 (60 minutes)**

***Part a***

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | ***Datatech Company*** | | |  | | ***Sigma Company*** | | |
| **Current ratio:**  **$233,050**  **$92,300**  **$150,440**  **$60,340** |  | **= 2.5 to 1** |  | |  | | **= 2.5 to 1** |
| **Acid-test ratio:**  **$95,600**  **$92,300** | **$63,000**  **$60,340** | **= 1.0 to 1** |  | |  | | **= 1.0 to 1** |

**Accounts receivable turnover:**

**$780,200**

**($56,400 + $6,200 + $53,200)/2**

**$660,000**

**($36,400 + $8,100 + $28,800)/2**

**= 18.0 times = 13.5 times**

**Inventory turnover:**

**$532,500**

**($131,500 + $106,400)/2**

**$485,100**

**($83,440 + $54,600)/2**

**= 7.0 times = 4.5 times**

**Days’ sales in inventory:**

**With ending inventory,**

**$131,500**

**$532,500**

**$83,440**

**$485,100**

**x 360 = 62 days x 360 = 89 days**

**With average inventory,**

**( $69,020/$485,100) x 360 = 51 days ($118,950/$532,500) x 360 = 80 days.**

**Days' sales in receivables:**

**With ending receivables,**

**$56,400 + $6,200**

**$780,200**

**$36,400 + $8,100**

**$660,000**

**x 360 = 24 days x 360 = 29 days**

**With average receivables,**

**($36.650/$660,000) x 360 = 20 days ($57,900/$780,200) x 360 = 27 days.**

**Short-term credit risk analysis: Datatech and Sigma have equal current ratios and equal acid-test ratios. However, Datatech both turns its merchandise and collects its accounts receivable more rapidly than does Sigma. On this basis, Datatech probably is the better short-term credit risk.**

**Case 1-3—continued**

***Part b***

|  |  |  |  |
| --- | --- | --- | --- |
|  | ***Datatech Company*** |  | ***Sigma Company*** |

**Net profit margin:**

**$105,000**

**$780,200**

**$67,770**

**$660,000**

**= 10.3% = 13.5%**

**Total asset turnover:**

**$780,200**

**($536,450 + $372,500)/2**

**$660,000**

**($434,440 + $388,000)/2**

**= 1.6 times = 1.7 times**

**Return on total assets:**

**$67,770**+ **[$6,900(1-.159)]**

**($434,440 + $388,000)/2**

**$105,000+ [$11,000(1-.155)]**

**($536,450 + $372,500)/2**

**= 17.9% = 25.1%**

**Return on common stockholders' equity:**

**$105,000**

**($344,150 + $295,600)/2**

**$67,770**

**($294,300 + $269,300)/2**

**= 24.0% = 32.8%**

**Price-earnings ratio:**

**$25**

**$1.94**

**= 12.9 = 9.8**

**$25**

**$2.56**

**Dividend yield:**

**$1.50**

**$25**

**= 6.0% = 6.0%**

**$1.50**

**$25**

**Investment analysis: Sigma's profit margin, total asset turnover, return on total assets, and return on common stockholders' equity are all higher than Datatech's. Although the companies pay the same dividend, Sigma's price-earnings ratio is lower. All of these factors suggest that Sigma's stock is likely the better investment.**

# Case 1-4 (35 minutes)

1. No. Although the current ratio improved over the three-year period, the acid-test ratio declined and accounts receivable and merchandise inventory turned more slowly. These conditions indicate that an increasing portion of the current assets consisted of accounts receivable and inventories from which current debts could not be paid.
2. No. The decreasing turnover of accounts receivable indicates the company is collecting its debt more slowly.
3. No. Sales are increasing and accounts receivable are turning more slowly. Either of these trends would produce an increase in accounts receivable, even if the other remained unchanged.
4. Probably yes. Since there is nothing to indicate the contrary, cost of goods sold is probably increasing in proportion to sales. Consequently, with sales increasing, cost of goods sold increasing in proportion, and merchandise turning more slowly, the amount of merchandise in the inventory must be increasing.
5. Yes. To illustrate, if sales are assumed to equal $100 in 2004, the sales trend shows that they would equal $125 in 2005 and $137 in 2006. Then, dividing each sales figure by its ratio of sales to plant assets would give $33.33 for plant assets in 2004 ($100/3.0), $37.88 in 2005 ($125/3.3) and $39.14 in 2006 ($137/3.5).
6. No. The percent of return on owner’s equity declines from 12.25% in 2004 to 9.75% in 2006.
7. The ratio of sales to plant assets increased from 3.0 in 2004 to 3.5 in 2006. However, the return on total assets declined from 10.1% in 2004 to 8.8% in 2006. Whether these results are derived from a more efficient use of assets depends on a comparison with other companies and on the expectations of the individual doing the evaluation.
8. The dollar amount of selling expenses increased in 2005 and decreased sharply in 2006. Again assuming sales figures of $100 in 2004, $125 in 2005, and $137 in 2006, and multiplying each by its selling expense to net sales ratio gives $15.30 of selling expenses in 2004, $17.13 in 2005, and $13.43 in 2006.

**Case 1-5 (75 minutes)**

**a. Current ratio = Current assets ÷ Current liabilities**

**$1,518.5 [36] ÷ $1,278.0 [45] = 1.19**

# b. Acid-test ratio = (Cash + Cash equiv. + Acct. recble.) ÷ Current liabilities

**($178.9 [31] + $12.8 [32] + $527.4 [33]) ÷ $1,278.0 [45] = 0.56**

# c. Collection period = Average accounts receivable ÷ (Sales ÷ 360)

**[($527.4 + $624.5)/2 [33]] ÷ ($6,204.1 [13]/360) = 33.4**

# d. Days to sell inventory = Average inventory ÷ (Cost of goods sold ÷ 360)

**[($706.7 + $819.8)/2 [34] ÷ ($4,095.5/360) [14] = 67.1**

**e. Total debt to equity = (Current liab + Long-term liab. + Oth Liab) ÷**

**Stockholders’ equity**

**($1,278.0[45]+$772.6[46]+$305.0 [47]) ÷ $1,793.4[54] = 1.31**

# f. Long‑term debt to equity = Long‑term debt ÷ Equity

**$772.6[46]+$305.0[47] = 0.60**

**$1,793.4[54]**

**g. Times interest earned = Income before interest and taxes ÷ Interest expense**

**$667.4 [26] + $116.2 [18] = 6.74**

**$116.2[18]**

**h. Return on assets = Net income + Interest expense (1 - Tax rate)÷ Average assets**

**$401.5 [28] + $116.2 [18] (1 - .35) = 13.96%**

**($4,149.0 [55] + $4,115.6 [55])/2**

# i. Return on common equity = NI - Preferred dividend ÷ Average common equity

**$401.5 [28] - $0 = 23.0%**

**($1,793.4 [54] + $1,691.8 [54])/2**

# j. Gross profit margin ratio = Gross profit / Sales

**$2,108.6 [13 - 14] = 34.0%**

**$6,204.1 [13]**

# k. Operating profit margin = (Income before interest and taxes) ÷ Sales

**$667.4 [26] + $116.2 [18] - $26.0 [19] = 12.2%**

**$6,204.1 [13]**

# l. Pretax profit margin ratio = Pretax income / Sales

**$667.4 [26]\_\_= 10.8%**

**$6,204.1 [13]**

**Case 1-5—continued**

# m. Net profit margin ratio = Net income / Sales

**$401.5 [28] = 6.47%**

**$6,204.1 [13]**

# n. Cash turnover = Sales / Average cash and cash equivalents

**$6,204.1 [13] = 47.8**

**($178.9 [31] + $80.7 [31])/2**

# o. Accounts receivable turnover = Sales / Average accounts receivable

**$6,204.1 [13]                   = 10.77**

**($527.4 + $624.5 [33])/2**

# p. Inventory turnover = Cost of goods sold / Average inventories

**$6,204.1 [13] - $4,095.5 [14] = 2.76**

**($706.7+$819.8)/2 [34]**

# q. Working capital turnover = Sales / Average working capital

**$6,204.1 [13]                                                                                      = 20.4**

**(($1,518.5 [36] - $1,278.0 [45]) + ($1,665.5 [36] - $1,298.1 [45]))/2**

# r. PPE turnover = Sales / Average PPE

**$6,204.1 [13]                        = 3.53**

**($1,790.4 + $1,717.7 [37])/2**

# s. Total assets turnover = Sales / Average total assets

**$6,204.1 [13]               = 1.50**

**($4,149.0+$4,115.6)/2**

# t. Price-to‑earnings ratio = Market price / Earnings per share

**$46.73 [179] = 14.8**

**$3.16 [29]**

# u. Earnings yield = Earnings per share / Market price per share

**$3.16 [29] = 6.76%**

**$46.73 [179]**

# v. Dividend yield = Dividends per share / Market price per share

**$1.12 [89] = 2.4%**

**$46.73 [179]**

# w. Dividend payout rate = Dividends per share / Earnings per share

**$1.12 [89] = 35.4%**

**$3.16 [29]**

# x. Price-to-book ratio = Market price per share / Book value per share

**$46.73 [179] = 3.31**

**$14.12 [185]**

**Case 1-6 (25 minutes)**

**A company pursues four major business activities in a desire to provide a saleable product and/or service, and with the goal to yield a satisfactory return on investment.**

**Planning activities. A company exists to implement specific goals and objectives. A company's goals and objectives are captured in a business plan, describing the company's purpose, its strategy, and its tactics for activities. A business plan assists managers in focusing their efforts and identifying expected opportunities and obstacles.**

**Financing Activities. A company requires financing to carry out its business plan. Financing activities are the means companies use to pay for these ventures. Because of their magnitude, and their potential to determine success or failure of a venture, companies take care in acquiring and managing their financial resources. There are two main sources of business financing: equity investors (sometimes referred to as owners or shareholders) and creditors.**

**Investing Activities. Investing activities are the means a company uses to acquire and maintain investments for obtaining, developing, and selling products or services. Financing provides the funds necessary for acquisition of investments needed to carry out business plans. Investments include land, buildings, equipment, legal rights (patents, licenses, and copyrights), inventories, human capital (managers and employees), accounting systems, and all components necessary for the company to operate.**

**Operating Activities. Operating activities represent the "carrying out" of the business plan, given necessary financing and investing. These activities usually involve at least five basic components--research, purchasing, production, marketing, and labor. Operating activities are a company's primary source of income. Income measures 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 with decisions on materials comprising the mix of operating activities, determines business success or failure.**

**Case 1-7 (25 minutes)**

**a. The CEO appears to have selectively chosen from the 11 available ratios to present only the ones that show trends that are favorable to the company. (However, some analysts may not interpret a decline in selling expenses as a percent of revenue as positive since it might imply a scaling back on advertising campaigns.) The CEO’s motivation might be to make her and/or the company’s performance appear better than it is in the eyes of the analysts.**

**b. The consequences of this action by the CEO might be mixed. It is likely that the analysts will ask other questions that may reveal some negative trends such as the trends in return and profit margins. The CEO’s actions may become transparent to the analysts as they discover the presence of less favorable trends through their questions. If discovered, such a disclosure ploy by the CEO will not reflect favorably on the company. Both the CEO and the company are likely to suffer losses in reputation and credibility.**

**Even if the CEO is able to succeed with this strategy in the short term, once the financial statements are issued all users can compile additional ratio information and see that some of the trends are unfavorable to the company. This is likely to damage the credibility of the CEO.**

**Case 1-8 (75 minutes)**

**Please note that it is essential to use Excel or similar software for solving this case. Excel files for this case are available on the book’s web site.**

1. **Index –number trend analysis**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COLGATE** |  |  |  |  |  |  |  |  |  |  |  |
|  | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** | **2003** | **2002** | **2001** |
| Net Sales | 177% | 165% | 163% | 163% | 146% | 130% | 121% | 112% | 105% | 99% | 100% |
| Gross Profit | 176% | 169% | 165% | 165% | 151% | 132% | 121% | 113% | 105% | 98% | 100% |
| Operating Income | 206% | 188% | 194% | 179% | 159% | 138% | 127% | 118% | 115% | 109% | 100% |
| Net Income | 212% | 192% | 200% | 171% | 152% | 118% | 118% | 116% | 124% | 112% | 100% |
| Before restructuring: |  |  |  |  |  |  |  |  |  |  |  |
| Net Income before restructuring | 212% | 197% | 200% | 180% | 168% | 143% | 131% | 121% | 127% | 112% | 100% |
| Op Income before restructuring | 206% | 191% | 194% | 185% | 169% | 154% | 135% | 121% | 117% | 109% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Total Assets | 182% | 160% | 159% | 143% | 145% | 131% | 122% | 124% | 107% | 101% | 100% |
| Total Liabilities | 172% | 141% | 133% | 134% | 130% | 128% | 119% | 122% | 107% | 110% | 100% |
| Long Tern Debt | 158% | 100% | 100% | 128% | 115% | 97% | 104% | 110% | 95% | 114% | 100% |
| Shareholders' Equity | 244% | 316% | 368% | 227% | 270% | 167% | 160% | 147% | 105% | 41% | 100% |
| Treasury Stock at cost | 246% | 217% | 201% | 186% | 171% | 155% | 146% | 134% | 125% | 118% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Basic Earnings per share | 247% | 220% | 224% | 189% | 166% | 127% | 126% | 121% | 129% | 115% | 100% |
| Cash Dividends per share | 336% | 301% | 255% | 231% | 207% | 185% | 164% | 142% | 133% | 107% | 100% |
| Closing Stock Price | 160% | 139% | 142% | 119% | 135% | 113% | 95% | 89% | 87% | 91% | 100% |
| Shares Outstanding (billions) | 87% | 90% | 90% | 91% | 92% | 93% | 94% | 96% | 97% | 97% | 100% |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **KIMBERLEY CLARK** |  |  |  |  |  |  |  |  |  |  |  |
|  | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** | **2003** | **2002** | **2001** |
| Net Sales | 144% | 136% | 132% | 134% | 126% | 115% | 109% | 104% | 99% | 93% | 100% |
| Gross Profit | 92% | 110% | 108% | 99% | 98% | 95% | 91% | 88% | 84% | 83% | 100% |
| Operating Income | 94% | 111% | 118% | 101% | 106% | 100% | 99% | 100% | 97% | 99% | 100% |
| Net Income | 99% | 114% | 117% | 105% | 113% | 93% | 97% | 112% | 105% | 104% | 100% |
| Before restructuring: |  |  |  |  |  |  |  |  |  |  |  |
| Net Income before restructuring | 114% | 112% | 120% | 106% | 117% | 110% | 105% | 110% | 103% | 102% | 100% |
| Op Income before restructuring | 104% | 110% | 120% | 102% | 108% | 111% | 104% | 99% | 96% | 98% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Total Assets | 129% | 132% | 128% | 121% | 123% | 114% | 109% | 113% | 112% | 104% | 100% |
| Total Liabilities | 163% | 154% | 146% | 150% | 138% | 115% | 113% | 109% | 107% | 107% | 100% |
| Long Tern Debt | 224% | 211% | 198% | 201% | 181% | 94% | 107% | 95% | 113% | 117% | 100% |
| Shareholders' Equity | 98% | 105% | 96% | 69% | 93% | 108% | 98% | 117% | 120% | 100% | 100% |
| Treasury Stock at cost | 77% | 172% | 149% | 156% | 139% | 51% | 232% | 184% | 139% | 122% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Basic Earnings per share | 132% | 147% | 149% | 134% | 136% | 108% | 110% | 118% | 110% | 107% | 100% |
| Cash Dividends per share | 249% | 232% | 214% | 205% | 187% | 173% | 158% | 139% | 119% | 106% | 100% |
| Closing Stock Price | 123% | 105% | 107% | 88% | 116% | 114% | 100% | 110% | 99% | 79% | 100% |
| Shares Outstanding (billions) | 76% | 78% | 80% | 79% | 81% | 87% | 89% | 93% | 96% | 98% | 100% |

1. **Ratio Analysis**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COLGATE** |  |  |  |  |  |  |  |  |  |  |  |
|  | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** | **2003** | **2002** | **2001** |
| Return on equity | 102% | 76% | 91% | 93% | 94% | 98% | 104% | 124% | 230% | 215% | 135% |
| Return on assets | 32% | 31% | 34% | 33% | 31% | 29% | 28% | 27% | 29% | 29% | 27% |
| Operating profit margin | 23% | 22% | 24% | 22% | 21% | 21% | 21% | 21% | 22% | 22% | 20% |
| Gross profit margin | 57% | 59% | 59% | 59% | 60% | 59% | 58% | 58% | 58% | 58% | 58% |
| Before restructuring: |  |  |  |  |  |  |  |  |  |  |  |
| Return on equity | 102% | 78% | 91% | 98% | 104% | 119% | 115% | 130% | 236% | 215% | 135% |
| Return on assets | 32% | 32% | 34% | 34% | 33% | 32% | 29% | 28% | 30% | 29% | 27% |
| Operating profit margin | 23% | 23% | 24% | 22% | 23% | 23% | 22% | 21% | 22% | 22% | 20% |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Total asset turnover | 1.40 | 1.40 | 1.45 | 1.53 | 1.43 | 1.39 | 1.33 | 1.31 | 1.36 | 1.32 | 1.35 |
| Total liabilities to equity | 4.92 | 3.12 | 2.53 | 4.13 | 3.37 | 5.40 | 5.22 | 5.79 | 7.19 | 18.63 | 7.01 |
| Long-term debt to equity | 2.14 | 1.05 | 0.91 | 1.87 | 1.41 | 1.93 | 2.16 | 2.48 | 3.03 | 9.17 | 3.32 |
| Price to earnings | 18.55 | 18.06 | 18.13 | 17.99 | 23.27 | 25.39 | 21.59 | 20.88 | 19.25 | 22.50 | 28.59 |
| Price to book | 21.43 | 14.87 | 13.03 | 17.88 | 17.36 | 23.71 | 20.97 | 21.63 | 30.11 | 80.22 | 37.58 |
| Dividend Payout | 46% | 46% | 38% | 41% | 42% | 49% | 44% | 39% | 35% | 31% | 33% |

**Note: For 2001 alone, return on equity (return on asset) is computed using only the closing balance of shareholder’s equity (total assets). For all other years these ratios are computed using the average of opening and closing balances.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **KIMBERLEY CLARK** |  |  |  |  |  |  |  |  |  |  |  |
|  | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** | **2003** | **2002** | **2001** |
| Return on equity | 28% | 33% | 41% | 37% | 32% | 26% | 26% | 27% | 27% | 30% | 29% |
| Return on assets | 12% | 15% | 16% | 14% | 15% | 16% | 15% | 15% | 16% | 17% | 17% |
| Operating profit margin | 12% | 15% | 16% | 14% | 15% | 16% | 16% | 17% | 18% | 19% | 18% |
| Gross profit margin | 30% | 37% | 38% | 34% | 36% | 38% | 38% | 39% | 39% | 41% | 46% |
| Before restructuring: |  |  |  |  |  |  |  |  |  |  |  |
| Return on equity | 33% | 33% | 43% | 38% | 34% | 31% | 28% | 27% | 27% | 30% | 29% |
| Return on assets | 14% | 15% | 17% | 15% | 16% | 17% | 16% | 15% | 16% | 17% | 18% |
| Operating profit margin | 13% | 15% | 17% | 14% | 16% | 17% | 17% | 17% | 18% | 19% | 18% |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Total asset turnover | 1.06 | 1.01 | 1.02 | 1.06 | 1.03 | 1.00 | 0.95 | 0.89 | 0.89 | 0.89 | 0.97 |
| Total liabilities to equity | 2.50 | 2.22 | 2.31 | 3.30 | 2.25 | 1.60 | 1.73 | 1.40 | 1.35 | 1.62 | 1.51 |
| Long-term debt to equity | 0.98 | 0.87 | 0.89 | 1.26 | 0.84 | 0.37 | 0.47 | 0.35 | 0.40 | 0.50 | 0.43 |
| Price to earnings | 18.30 | 14.10 | 14.06 | 12.93 | 16.79 | 20.78 | 17.91 | 18.38 | 17.69 | 14.56 | 19.67 |
| Price to book | 5.26 | 4.34 | 4.91 | 5.62 | 5.59 | 5.08 | 4.95 | 4.79 | 4.38 | 4.29 | 5.52 |
| Dividend Payout | 69% | 58% | 53% | 56% | 50% | 59% | 53% | 43% | 40% | 36% | 37% |

1. **Index-trend analysis for ratios**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COLGATE** |  |  |  |  |  |  |  |  |  |  |  |
|  | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** | **2003** | **2002** | **2001** |
| Return on equity | 76% | 56% | 67% | 69% | 69% | 72% | 77% | 92% | 170% | 159% | 100% |
| Return on assets | 121% | 117% | 129% | 124% | 115% | 109% | 104% | 102% | 110% | 108% | 100% |
| Operating profit margin | 116% | 114% | 120% | 110% | 109% | 106% | 105% | 105% | 109% | 110% | 100% |
| Gross profit margin | 99% | 102% | 102% | 102% | 103% | 102% | 100% | 100% | 100% | 99% | 100% |
| Before restructuring: |  |  |  |  |  |  |  |  |  |  |  |
| Return on equity | 76% | 58% | 67% | 73% | 77% | 88% | 85% | 96% | 174% | 159% | 100% |
| Return on assets | 121% | 119% | 129% | 128% | 123% | 122% | 110% | 105% | 112% | 108% | 100% |
| Operating profit margin | 116% | 116% | 120% | 114% | 115% | 118% | 112% | 108% | 111% | 110% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Total asset turnover | 104% | 103% | 108% | 113% | 106% | 103% | 98% | 97% | 101% | 98% | 100% |
| Total liabilities to equity | 70% | 45% | 36% | 59% | 48% | 77% | 75% | 83% | 103% | 266% | 100% |
| Long-term debt to equity | 64% | 32% | 27% | 56% | 42% | 58% | 65% | 75% | 91% | 276% | 100% |
| Price to earnings | 65% | 63% | 63% | 63% | 81% | 89% | 76% | 73% | 67% | 79% | 100% |
| Price to book | 57% | 40% | 35% | 48% | 46% | 63% | 56% | 58% | 80% | 213% | 100% |
| Dividend Payout | 136% | 137% | 114% | 123% | 125% | 146% | 131% | 117% | 104% | 92% | 100% |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **KIMBERLEY CLARK** |  |  |  |  |  |  |  |  |  |  |  |
|  | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** | **2003** | **2002** | **2001** |
| Return on equity | 98% | 114% | 142% | 130% | 113% | 90% | 90% | 94% | 96% | 104% | 100% |
| Return on assets | 72% | 86% | 95% | 83% | 89% | 90% | 89% | 89% | 90% | 97% | 100% |
| Operating profit margin | 65% | 82% | 90% | 76% | 84% | 87% | 90% | 96% | 98% | 106% | 100% |
| Gross profit margin | 64% | 81% | 82% | 74% | 78% | 82% | 83% | 85% | 85% | 89% | 100% |
| Before restructuring: |  |  |  |  |  |  |  |  |  |  |  |
| Return on equity | 113% | 112% | 146% | 131% | 116% | 107% | 98% | 93% | 94% | 102% | 100% |
| Return on assets | 79% | 84% | 96% | 84% | 91% | 100% | 93% | 88% | 89% | 96% | 100% |
| Operating profit margin | 72% | 81% | 91% | 76% | 86% | 96% | 95% | 95% | 97% | 105% | 100% |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Total asset turnover | 110% | 104% | 106% | 110% | 106% | 104% | 99% | 92% | 92% | 92% | 100% |
| Total liabilities to equity | 166% | 147% | 153% | 219% | 149% | 106% | 114% | 93% | 90% | 107% | 100% |
| Long-term debt to equity | 229% | 202% | 206% | 293% | 196% | 87% | 109% | 81% | 94% | 117% | 100% |
| Price to earnings | 93% | 72% | 71% | 66% | 85% | 106% | 91% | 93% | 90% | 74% | 100% |
| Price to book | 95% | 79% | 89% | 102% | 101% | 92% | 90% | 87% | 79% | 78% | 100% |
| Dividend Payout | 188% | 158% | 144% | 152% | 138% | 161% | 144% | 118% | 108% | 99% | 100% |

1. **See (a), (b) and (c) above. Note that only return on equity, return on assets and operating profit margins are affected by the restructuring charge.**
2. **Computation of cum-dividend stock return (This is advanced analysis only for those students with strong finance background).**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **COLGATE** |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** | **2003** | **2002** | **2001** | **OVERALL** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cum-Div Return (Gross) | 1.18 | 1.00 | 1.22 | 0.90 | 1.22 | 1.21 | 1.09 | 1.04 | 0.97 | 0.92 |  | **1.0692** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **KIMBERLEY CLARK** |  |  |  |  |  |  |  |  |  |  |  |  |
|  | **2011** | **2010** | **2009** | **2008** | **2007** | **2006** | **2005** | **2004** | **2003** | **2002** | **2001** | **OVERALL** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cum-Div Return (Gross) | 1.21 | 1.03 | 1.25 | 0.79 | 1.05 | 1.17 | 0.93 | 1.14 | 1.27 | 0.81 |  | **1.0533** |

1. **The performance of Colgate and Kimberley Clark offer an interesting contrast.**

**Let us start with stock price performance. The cum-dividend return on Colgate’s stock was 6.92% per annum over the ten-year period. The comparable return for Kimberley Clark was 5.33% per annum. Put differently, every dollar invested in Colgate’s stock at the end of 2001 would be worth $ 1.95 by 2011 (assuming that dividends were reinvested in the company’s stock). In contrast, a dollar invested in Kimberley Clark’s stock in 2001 would be worth $ 1.68 in 2011. Therefore an investor in Colgate would have become 16% richer relative to an investor in Kimberley Clark over this period.**

**While the stock price performance of these firms is fairly comparable over the 2001-2011 period, this masks differences in the underlying financial performance of the two companies. Colgate’s net income (before restructuring charge) grew by 112% during 2001-2011, compared to just 14% for Kimberley Clark. In contrast, Colgate’s shareholder’s equity increasedby 144% over this time period compared to a 2% *decline* for Kimberley Clark. As a result, Colgate’s ROE (before restructuring) fell by 24% during 2001-2011 compared to Kimberley Clark’s ROE, which increased by 13% over the same period. Despite the inferior growth in profitability, Kimberley Clark was able to payout more of its earnings as dividends; Kimberley Clark’s dividend payout has grown from 37% to 69%, while Colgate’s payout increased only slightly from 33% to 46%. This suggests that Colgate is paying less of its earnings as dividends, although it spends much of the balance in buying back shares as treasury stock. Because of these opposing trends, the stock market now rewards Colgate and Kimberly Clark’s financial performance with similar price-to-earnings ratios in 2011. However, due to Colgate’s small level of shareholder’s equity, Colgate retains a much higher price-to-book ratio.**

**Despite the differences in trends over the recent 10-year period, Colgate maintains a phenomenal ROE of 102% in 2011 (before restructuring charge), compared to the good, but modest 33% for Kimberley Clark. What explains this difference in ROE? For starters, Colgate’s ROA (32% before restructuring) is much higher than Kimberley Clark’s (14%). However, this difference is largely magnified by Colgate’s much higher leverage: Colgate’s debt-to-equity (total liability to equity 4.92 and long-term-debt to equity 2.14) are much higher than Kimberley Clark’s (total liability to equity 2.50 and long-term-debt to equity 0.98). However, the trends in both of these leverage measures have narrowed the difference over the 2001-2011 period for the firms. The higher leverage for Colgate is both the result of its disappearing equity base and a slight build-up in liabilities. Obviously, the higher leverage makes Colgate a more risky company. However Colgate’s management appears to have greater faith in the stability and growth of its core business in order to keep leverage so high.**

**Du Pont analysis of profitability shows that Colgate has a much higher operating profit margin (before restructuring charge) than Kimberley Clark (23% to 12%) and a much higher asset turnover (1.40 to 1.06). This suggests that Colgate has greater pricing power than Kimberley Clark and uses its assets more efficiently. Also Colgate’s gross profit margin (57%) is much higher than Kimberley Clark’s (30%). This suggests that Colgate actually has much higher pricing power than Kimberley Clark but it also tends to invest more heavily in SG&A.**