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Financial Statement Analysis

Learning Objectives

By the end of this chapter, you should be able to:

- Outline the priorities of the three primary groups with an interest in the company and its financial statements: creditors, investors, and management.
- Describe the structure and content of the balance sheet and the income statement.
- Describe the structure and content of the statement of stockholders' equity and the statement of cash flows.
- Define financial analysis and list its limitations.
- Explain the role of ratio analysis in evaluating financial data.
- Perform horizontal analysis.
- Perform vertical analysis.

Digging Deeper

Al opened the second gathering by asking a provocative question. "Why do we produce financial statements every month?"

"Because we have to," answered Steve, the controller of the largest division. "Every month I am pressured to give Gloria, my division manager, the monthly financials so she can report to her boss."

"Does she need complete financial statements, or does she need key information?" asked Al. "I suspect she really wants to know what went well and what went less well, not all the details of all of the accounts."

"Honestly, 'because we have to' is not really a good reason," Al continued. "What we should be doing is providing more specific focus to our financial reporting. Our managers don't really want all the details. They want to know what they need to focus on and what they need to share with company management. Yes, we need to produce financial statements, and complete quarterly reports for the monthly analysts' call, but our managers need more specific managerial information earlier than we have been providing it. If we can get them the information they need early, we will have time to do the reporting stuff more smoothly."

"I think we provide a lot of information that is either not needed or not understood, raising a lot of questions and generating a lot of work, without really being usable to manage the operations. I think we can use available historic information and relationships from existing information to help our managers identify the places where we can make improvements."

The analysis of financial statements is fundamental—both to financial analysis and to the managerial role. As most managers are aware, the amount of information describing even the smallest firm is enormous. To be useful, this information is organized into different concise financial statements. Analyzing these statements is an important part of financial analysis, and their analysis is a valuable aid to decision making for managers. This chapter will discuss financial statement analysis first by explaining the differing viewpoints facing the manager, then by delineating the basic structure of financial statements, and finally by illustrating horizontal and vertical analysis. Financial managers need a strong background not only in developing the ratios, but also in integrating the concepts. When considering financial statements as the basis for analysis and interpretation, awareness of accounting and tax changes will help the analyst maximize the value of the analyses conducted. The legal and regulatory environment is dynamic, and the global nature of business today is expanding the perspective necessary for the most valuable analysis.

DIFFERING VIEWPOINTS

How you use financial statement analysis depends on the viewpoint you have toward the company. There are basically three primary positions from which the company and its financial statements are viewed: creditor (debt, both due to business partners and to lenders), investor (equity), and management. The management of a company must attempt to fulfil the expectations of the suppliers of the company's funds. Often these expectations differ; creditors are more interested in the company's liquidity position, while investors are more interested in long-term profit.

Creditors analyze a company's financial statements in terms of risk, liquidity, and solvency. Creditors want to know if they will receive funds due to them, whether as payment for invoices or as interest and principal payments. Creditors want to know if a company's operational, financing, and dividend policies create additional business risk.

Investors analyze the financial statements in terms of return on investment and growth rate. Investors want to know whether a company met their performance expectations and, if not, the reasons for the difference. Do assessments of future performance by the company need to be altered?

The management of the company analyzes the financial statements in terms of how to meet the different demands of investors and creditors simultaneously. Management is interested that the company is valued properly by external parties. Also, management wants to protect its own interests (job security) and uses the information on the financial statements to make decisions about the internal functioning of the company.

The Basic Structure of Financial Statements

Financial statements provide the information that is needed for analysis. They summarize the company's transactions and report on management's effectiveness. Basically, there are four common financial statements used in financial analysis:

1. The *balance sheet*—provides information on what the company owns (assets) and what it owes (liabilities) as of a particular date.
2. The *income statement*—provides information on a company's revenues and expenses over a period of time (a year, for example).
3. The *statement of stockholders' equity*—provides information on the changes in a company's ownership interests over a period of time.
4. The *statement of cash flows*—provides information on a company's cash inflows and outflows over a period of time.

The Balance Sheet

The balance sheet (see Exhibit 2–1) presents information on the financial position of a business on a specific date. The statement shows the assets, liabilities, and stockholders' equity of the business at that time. Generally, most assets are reported on the balance sheet at their historical cost; most liabilities are reported at maturity value or discounted present value.

Assets are economic resources owned by the business. They either provide present benefits or they will provide probable future benefits to the business. Some assets are physical items, that is, they can be seen or touched; other assets do not have physical form, but are instead represent legal claims or rights. The assets commonly presented on a balance sheet include the following:

- *Cash.* Cash includes currency, coins, and demand deposits in bank accounts; cash increases with deposits and decreases with withdrawals.
- *Marketable Securities.* Marketable securities consist of items such as bonds, notes, stocks, and bills that are readily marketable, which the company plans to sell as cash is needed, and which have relatively certain liquidation prices.

Exhibit 2–1
A Typical Balance Sheet

Consolidated Balance Sheet
as of December 31, 2013 and 2012
(Dollars in Millions)

	2013	*2012*
Assets		
Current Assets		
Cash	$ 170	$ 240
Marketable Securities	160	150
Accounts Receivable, Less Allowances of $8 and $7	530	550
Inventories	450	430
Prepaid Expenses	160	150
Total Current Assets	$1,470	$1,520
NET PLANT AND EQUIPMENT	$2,800	$2,930
INTANGIBLE ASSETS (net)	$ 630	$ 600
Total Assets	$4,900	$5,050
Liabilities and Stockholders' Equity		
Current Liabilities		
Accounts Payable	$ 530	$ 650
Notes Payable	570	750
Current Portion of Long-Term Debt	310	500
Accrued Salaries and Wages	160	210
Taxes Payable	90	80
Total Current Liabilities	$1,660	$2,190
LONG-TERM DEBT	$2,220	$1,810
STOCKHOLDERS' EQUITY		
Common Stock	$ 140	$ 90
Additional Paid-In Capital	90	70
Retained Earnings	940	990
Treasury Stock	(150)	(100)
Total Stockholders' Equity	$1,020	$1,050
Total Liabilities and Stockholders' Equity	$4,900	$5,050

Short-term investments in debt and equity securities are reported at market value. Some analysts view marketable securities as an extension of cash, perceiving them as immediately available. Others separate marketable securities and treat them as not operational investments.
- *Accounts Receivable.* Accounts receivable are claims against customers, usually arising from a sale made on credit. Accounts receivable are reported at net realizable value, deducting allowances for doubtful accounts from the reported balances.
- *Inventories.* Inventories of manufacturers include raw materials, work in process, and finished goods. Inventories increase by purchasing raw materials, and adding labor and overhead costs. They decrease by the cost of goods sold as finished goods are sold.
- *Supplies.* Supplies consist of items that are used, rather than sold, in the normal course of business (such as pens, wrapping paper, and cash register tapes). Some companies treat supplies as an operating expense and expense them as they are purchased. Such treatment will increase operating expenses and decrease taxes and profits.
- *Prepaid Expenses.* Prepaid expenses are amounts that are paid in advance for such services as insurance and rent.
- *Property, Plant, and Equipment*, net of accumulated depreciation. Property, plant, and equipment consist of tangible, long-term assets used in business operations. These assets include land, buildings, equipment, and natural resources. The cost of these assets (except for land) is allocated through depreciation over their useful lives.
- *Investments.* Long-term investments are securities of another company held for the long term.
- *Intangible Assets.* Intangible assets are rights used in carrying out business operations. These assets include copyrights, patents, trademarks, goodwill (excess of purchase price of a company over the fair value of its assets less its liabilities), organization costs, and franchises. Goodwill is often a very large asset on the books of major corporations that have been active participants in the merger and acquisition marketplace. The offsetting account to goodwill is often shareholders' equity; both intangible assets and the corresponding equity are deducted by bankers and other lenders when considering the creditworthiness of a loan applicant.

Current assets consist of those assets that are either cash, are expected to be converted into cash, or are expected to be consumed during the coming year or operating cycle, whichever is longer. The operating cycle is the average time that elapses between the purchase of inventory and its ultimate sale and conversion to cash. If the date of the balance sheet is December 31, 2013, then the coming year would be 2014. The operating cycle is used for those businesses that need more than one year to produce and sell their inventories (for example, some businesses that are engaged in construction). Examples of current assets are cash, marketable securities, accounts receivable, inventories, supplies, and prepaid expenses.

The assets of a business may be obtained through funding from two sources—the creditors and the owners. The creditors lend to the business economic resources that must be repaid at specified times. The lending process may be in the form of a loan (for example, a bank loan) or in the form of goods or services that are provided to the business prior to payment (for example, purchases of merchandise on credit by the business). These debts, called liabilities, are commonly presented on the balance sheet and include the following:

- *Accounts Payable.* Accounts payable are amounts arising from purchases of merchandise or services on credit.
- *Notes Payable.* Notes payable are written promises by a company to pay specific sums at designated maturity dates.
- *Accrued Liabilities.* Accrued liabilities are amounts that will be due for services already performed for the company. An example of an accrued liability is salaries for work already done, but for which payment is not due as of the balance sheet date.
- *Long-Term Debt.* Long-term debt consists of obligations that are not expected to be liquidated within the coming year or operating cycle, whichever is longer. Long-term debt is reported at present discounted value.

Current liabilities consist of those debts that are expected to be settled during the upcoming year or operating cycle, whichever is longer, either by the use of current assets or by the creation of other current liabilities. Current liabilities include accounts payable, accrued liabilities, and notes payable (if due within one year or the operating cycle, whichever is longer). Long-term liabilities are debts that are not expected to be paid during the coming year or operating cycle, whichever is longer. Examples of long-term liabilities include a note that is payable to the bank in three years, a mortgage note that is payable in instalments after the coming year, and a pension liability that is due when employees retire after the coming year.

QUICK QUIZ 2–1

Answers to QUICK QUIZ questions can be found starting on page 191.

Can a company operate if its liabilities exceed its assets—that is, if its equity is negative?

Owners provide resources to a business by investing their personal property (for example, cash), and by reinvesting the profits into the business rather than withdrawing them as dividends. Stockholders' (or shareholders') equity usually includes the following:

- *Common Stock* and *Additional Paid-In Capital.* Common stock and additional paid-in capital represent the funds raised from the sale of a security having residual claim on the assets and earnings of the company after all other claims are met. Common stockholders have the right to vote on all matters pertaining to the overall management of a corporation.

- *Preferred Stock.* Preferred stockholders must be paid their dividends before any dividends are distributed to common stockholders. Preferred stock may be cumulative (past unpaid dividends must be paid before current preferred dividends and any common stock dividends). Preferred stock may be convertible into common stock or be callable at the corporation's option.
- *Retained Earnings.* Retained earnings are the reinvested earnings over the life of the company. Retained earnings increase with net income and decrease with a net loss, cash dividend distributions, or stock dividend distributions.
- *Treasury Stock.* Treasury stock is a company's previously issued stock that has been purchased by the company for some business reason (such as issuing stock to use for stock options exercised by employees).

Think About It . . .

With the dramatic increase in industrial globalization, companies are now trading with and competing with companies from all over the world. Much of the international market operates under International Financial Reporting Standards (IFRS) and reports their balance sheet using a different structure from that used in the United States. Think about how a different sequence of assets and liabilities and equity in the balance sheet might affect your interpretation for financial results.

In the balance sheet shown in Exhibit 2–1, assets are categorized as current assets and long-term assets, specifically plant and equipment and intangible assets; liabilities are classifed as current or long-term. Both the current year and the previous year are reported.

The Income Statement

The income statement (see Exhibit 2–2) provides information regarding the results of a company's operations for a specified period of time. Investors and creditors are interested in a company's future net cash inflows. The income statement provides the best predictor of these cash flows.

For a manufacturing company, the income statement relates the sales of a given period to the manufacturing costs incurred in producing the goods that were sold and to the other expenses incurred in that period. For a service business, the income statement summarizes the expenses incurred to deliver the services provided. If cost of sales is reported, it captures expenses directly responsible for the revenues generated, such as the hourly costs of consulting services rendered. Net income estimates the amount realized by the company during the period after all relevant items are deducted. Net income indicates the profitability of the firm and is often used as a benchmark to determine dividend payments.

Net income flows and cash flows are not synonymous, For the purpose of the income statement, the accrual basis of accounting recognizes revenues when earned, and expenses when incurred. In other words, transactions are recognized on the basis of *expected* cash receipts and payments, rather than actual cash receipts and payments. Cash basis accounting, on the other hand, recognizes revenues when cash is received and expenses when cash is paid; this method is used to determine cash flows from operations. It does not recognize the full economic effects of transactions undertaken in a particular accounting period, if they have not been completed through the exchange of cash or cash equivalents.

Revenue in a period results in an increase in assets due to activities that are directed at making a profit. Expenses in a period result in either a decrease in assets or an increase in liabilities due to activities that are directed at making a profit. Revenue and expenses result only from those activities that are directed at making a profit. An increase in cash due to a bank loan is not considered to be revenue. Conversely, a decrease in cash due to the repayment of a bank loan is not considered to be an expense. Gains and losses that are due to incidental transactions or other events affecting the company are segregated from revenues and expenses, but affect overall profits. .

The income statement presents information on the revenues that are earned and the expenses that are incurred by a business during a specified period of time. When revenues and gains exceed expenses and losses, net income is reported for the period. When expenses and losses are greater than revenues and gains, the business has incurred a net loss for the period.

In the income statement shown in Exhibit 2–2, costs and expenses totalling $5,820 million in 2013 are deducted from net sales (sales less sales discounts and returns) of $6,800 million. The cost of goods sold figure relates the cost of inventories sold to the proceeds from the sales. Cost of goods sold does not equal production costs for the period; production costs may include both inventories sold (cost of goods sold) and not sold (changes in inventories) and may be greater or less than cost of goods sold, based on whether ending inventories rise or fall. The depreciation and amortization charges are allocated costs for plant and equipment and intangible assets acquired in the current year or past years; no cash outlays are associated with these expenses of $280 million. This will affect the cash flow statement of the business. Interest, a cost of borrowing money, is deducted from the operating income of $980 million to obtain pretax income of $870 million. The provision for income taxes (or income tax expense) is deducted to arrive at the net income figure of $530 million. Earnings per common share (to be discussed in the next chapter) is equal to the net income available to the common stockholders divided by the weighted average number of shares of common stock outstanding (560 million shares). Net income increases retained earnings, while dividends for the stockholders reduce retained earnings. Note that dividends are distributions of earnings, not an expense appearing on the income statement.

A primary function of the income statement is its use in predicting the results of future operations. Consequently, the income statement should disclose and distinguish clearly between those items considered to be normal and recurring and those considered to be unusual and nonrecurring. In addi-

Exhibit 2–2
A Typical Income Statement

Consolidated Statement of Income
for the Years Ended December 31, 2013 and 2012
(Dollars in Millions Except per Share)

	2013	*2012*
NET SALES	$6,800	$6,670
Cost and Expenses		
Cost of Goods Sold	3,300	3,100
Selling and Administrative Expenses	2,240	2,390
Depreciation and Amortization	280	250
Total Operating Expenses	$5,820	$5,740
Operating Income	$ 980	$ 930
Interest Expense	(110)	(90)
Income before Provision for Income Taxes	$ 870	$ 840
Provision for Income Taxes	(340)	(330)
NET INCOME	$ 530	$ 510
Earnings per Common Share	$ .95	$ 1.42

tion, the results of discontinued operations should be reported separately from those of continuing operations. Also, the effects of changes in accounting principles should be reported separately on the income statement.

Extraordinary items are reported separately, net of any tax effect, on the income statement. To be classified as extraordinary, the event or transaction must be unusual in nature and not be expected to recur in the foreseeable future. An example of an extraordinary item is tornado damage in an area in which tornadoes rarely occur. The FASB has decreed that gains and losses from retirements of debt are classified as extraordinary items, even though the above-mentioned criteria are not met. However, the definition of extraordinary has been tightened significantly in recent years because companies have sought to segregate expenses that have adversely affected a business's results. Many managers believe that stock analysts will disregard extraordinary items when evaluating a company for investment. As a consequence of this definitional tightening, operating expenses and losses resulting from the World Trade Center tragedy on September 11, 2001 were not permitted to be classified as extraordinary.

The results of discontinued operations, along with the gain or loss from disposal of the segment, should be reported separately, net of any tax effect, on the income statement. A segment of a company is a component that represents a separate major line of business or class of customer. An example of a discontinued operation is General Electric's sale of NBC Universal to Comcast.

For most changes in accounting principles, the cumulative effect, net of tax, of the changes in the income of prior periods should be reported separately on the income statement. Most accounting changes are mandated by the FASB. For example, when the FASB introduced a requirement that health care benefits to be paid when needed after retirement be accrued as the employees worked and earned the benefits rather than shown as an expense as payments are made, companies reported a cumulative effect on the income statement in the year of adopting the new method. The cumulative effect was equal to the change in income in all prior periods as if the new requirement had always been implemented.

The Statement of Stockholders' Equity

A statement of stockholders' equity presents the beginning and ending balances in the stockholders' equity accounts and the changes that occurred in these accounts during the accounting period. An example of a statement of stockholders' equity is presented in Exhibit 2–3.

Common stock was sold for $70, with $50 being allocated to the common stock account at its par value (a dollar amount per share defined by the company as the value of a single share of stock) and $20 (the difference between the $70 proceeds and the $50 par value) being allocated to additional paid-in-capital. Treasury stock costing $50 was purchased. Net income (from the income statement) is added to retained earnings; dividends are subtracted from retained earnings.

Exhibit 2–3
A Typical Statement of Stockholders' Equity

Consolidated Statement of Stockholders' Equity
For the Year Ended December 31, 2013
(Dollars in Millions)

	Common Stock	*Additional Paid-in Capital*	*Retained Earnings*	*Treasury Stock*
Balances on December 31, 2012	$90	$70	$990	($100)
Issuance of Common Stock	50	20		
Purchase of Treasury Stock				(50)
Net Income			530	
Dividends			(580)	
Balances on December 31, 1999	$140	$90	$940	($150)

Exhibit 2–4
A Typical Statement of Cash Flows

Consolidated Statement of Cash Flows
for the Years Ended December 31, 2013 and 2012
(Dollars in Millions)

	2013	2012
Cash Flows from Operating Activities:		
Net Income	$530	$510
Depreciation and Amortization	280	250
(Increase)/Decrease in Accounts Receivable	20	(110)
(Increase)/Decrease in Inventories	(20)	30
(Increase)/Decrease in Prepaid Expenses	(10)	(20)
Increase/(Decrease) in Accounts Payables	(120)	(50)
Increase/(Decrease) in Accrued Salaries and Wages	(50)	10
Increase/(Decrease) in Taxes Payable	10	(30)
Net Cash Flow from Operating Activities	$640	$590
Cash Flows from Investing Activities:		
Acquiring Marketable Securities	($ 10)	($ 10)
Purchase of Plant Assets	(150)	(100)
Purchase of Intangible Assets	(30)	(20)
Net Cash Flow from Investing Activities	($190)	($130)
Cash Flows from Financing Activities:		
Proceeds from Issuance of Long-Term Debt	$410	$250
Proceeds from Issuance of Common Stock	70	–
Payment of Cash Dividends	(580)	(560)
Paid Notes Payable	(180)	–
Bought Treasury Stock	(50)	(20)
Decrease in Current Portion Of Long-Term Debt	(190)	(100)
Net Cash Flow from Financing Activities	($520)	($430)
Net Increase/(Decrease) in Cash	($ 70)	$ 30

The Statement of Cash Flows

While the income statement reports the results of operations for the period, and the balance sheet discloses the assets, liabilities, and stockholders' equity as of the end of the period, the statement of cash flows (see Exhibit 2–4) indicates where the company obtained its cash and what it did with it.

There are two common formats for presenting the Cash Flow Statement: the direct method, which presents a summary of cash receipts and cash disbursements, using the difference to reconcile with the change in cash on the balance sheet, and the indirect method, which consists consists of three major sections: cash flows from operating activities, cash flows from investing activities, and cash flows from financing activities and again reconciling with the change in cash on the balance sheet. The direct method only tracks actual cash movements, so many non-cash transactions are not recognized. This is sometimes confusing to analysts and managers because sales or obligations that have not been paid do not show up. Neither do prepaid expenses paid for in prior periods or any accounting for depreciation. As a result, most public companies and many private ones use the indirect method, which is more easily tied to the period's financial statements, particularly when publishing their financial statements. The indirect method is presented in Exhibit 2-4.

The items included in each section are as follows:

1. *Operating activities,* including selling, purchasing, and producing goods; providing services; and paying suppliers, employees, and lenders.
2. *Investing activities*, including collection of loans receivable; acquiring and selling securities; and acquiring and selling plant assets.
3. *Financing activities*, including proceeds from the issuance of the company's bonds or stocks; outlays to retire bonds; and the payment of dividends.

In Exhibit 2–4 net income is adjusted for depreciation and amortization expense, because no cash outlay occurred due to these charges. The adjustments for changes in receivables, inventories, prepaid expenses, and payables are made to track the net movements of cash. Outflows from investing activities consisted of payments for acquiring marketable securities, plant assets, and intangible assets. Cash inflows for financing activities were due to the issuance of long-term debt and common stock; cash outflows occurred because of payments for cash dividends, retiring debt, and acquiring treasury stock.

Users of this statement can easily see how cash is moving through the organization and what the net impact on the cash balance is at year end. Basically, this statement informs the user where the cash came from and where it went. It provides insight into management's decisions regarding the financing of the business and its assets. This should help investors, creditors, and other users to determine the relationship between income and cash flows and to help gauge the availability of each for dividends and long-term investment; it will also help users and managers to recognize the firm's ability to finance growth from internal sources.

? Think About It . . .

Financial statements available to those outside a company are those prepared after the end of the fiscal year. Because they will be reviewed by numerous interested parties, the company will make sure that they present the best, most favorable picture possible, akin to a job candidate polishing up a resume before an important interview. How does that affect the interpretation of those financial statements?

FINANCIAL STATEMENT ANALYSIS

Financial analysis is the examination of a company's financial statements in order to determine how well that company is doing and to get a sense of how the company can be expected to perform in the subsequent period. Has a company's financial position improved, deteriorated, or stayed the same over a period of time? Financial analysis is conducted by both internal and external users of financial statements. Internal users such as the company's management employ financial analysis in order to identify potential problem areas that need management attention. External users such as owners and creditors employ financial analysis in order to determine the reasonableness of committing financial resources to the company. For example, owners are interested in the present and future earnings prospects of a business, whereas short-term creditors may be concerned with the ability of a firm to meet its short-term obligations as they become due.

A commonly used technique for evaluating financial statement data is ratio analysis. A financial ratio is a fraction expressing a relationship between financial statement items. To examine the percentage changes in certain financial statement items from period to period, changes in the account balances that are reported in comparative financial statements are compared. This type of ratio analysis is called *horizontal analysis*. Sometimes we want to compare a financial amount with some total within the financial statements for a single year. This type of ratio analysis is referred to as *vertical analysis*. A third type of ratio analysis is used to compare one or more items within a set of financial statements to one or more items within the same or different set of financial statements. This type of ratio analysis is examined in the next chapter.

Limitations of Financial Statement Analysis

Making decisions requires a great amount of information. That information can be obtained in many different ways, and ratio analysis is only one of them. Therefore, you should not expect that the computation of a few ratios or a brief analysis of comparative financial statements will provide all the answers to important financial questions. While ratio analysis provides important inputs to the decision process, many other factors also provide necessary inputs. These other factors include the current and forecasted economic conditions, the rate of inflation both at home and abroad, the extent of and accessibility to the company's sources of supply and markets, and changes in the industry of which the company is a part.

Financial statements are based on many measurements, estimates, and judgments. Also, there is considerable flexibility allowed in determining accounting information under the techniques available. While the number of areas in which alternative accounting methods are used has been reduced significantly in recent years, management still has the ability to choose from alternative, generally accepted accounting methods in several important areas (for example, there are a number of inventory valuation methods that may be used).

For all these reasons the caveats related to ratios in analysis are many. For example, it is important to recognize that one ratio, even across several years, or several ratios measuring a single year, is not sufficient for making decisions. The analyst must use all the available data and often explore a wide range of sources before rendering a judgment or recommending an action. Ratios often provide the analyst with clues as to where else to look for the information needed. Analysts must be sensitive to changes in balances and in ratios and must actively look for corroborating indicators and explanations embedded in other ratios and relationships.

Horizontal Analysis

Analyzing the increases and decreases in a given financial statement item over two or more periods is called *horizontal analysis*. The changes are shown both in dollar amounts and as a percentage. The percentage change is computed by dividing the dollar amount of the change by the amount of the financial statement item for the earlier period. Change is always measured from early to late and is based on the early amount. For example, if the amount of an item changes from $60,000 in 2012 to $80,000 in 2013, we would indicate a $20,000 increase in the amount of the item equal to a 33 percent increase. The 33 percent increase is computed by dividing the $20,000 change by the $60,000 balance for the item at the end of 2012. It is important to consider both the absolute and the percentage change in an item to obtain an indication of the significance of the change. For example, a large percentage change in a relatively small dollar item may be much less significant than a similar percentage change in a large dollar item. While the years of data may be presented in either early-to-late or late-to-early format, financial statements are typically presented with the most recent year closest to the captions. Using a consistent format makes analysis easier and clearer. Change is always measured from early to late and percentage change is measured based on the early amount.

Exhibit 2–5 shows a horizontal analysis of a comparative balance sheet. (Note: This horizontal analysis does not relate to the statements included in Exhibits 2–1 through 2–4.)

By looking at this exhibit, you can see the following:

1. One of the largest relative changes is indicated for cash. This would appear to be a positive sign, especially in relationship to the great increase in sales that is shown on the comparative income statements (see Exhibit 2–6). In other words, the company is not only selling more, but it is also realizing cash on those sales on a timely basis.
2. Accounts receivable indicate a slight decline while sales and cash have increased substantially. This would seem to indicate better collection efficiency and, perhaps, a somewhat tighter credit and collection policy by the company. That is, sales have increased by about 56 percent (see Exhibit 2-6) and cash has increased by about 50 percent, while accounts receivable have decreased by about 10 percent. Assuming that the company is selling primarily on credit, this indicates a solid policy on the granting of credit as well as the improved ability to convince customers to pay their bills on time.

Exhibit 2–5
Horizontal Analysis-Comparative Balance Sheet

Horizontal Analysis-Comparative Balance Sheet
December 31, 2012 and 2013

	2012	2013	Increase (Decrease)	Percentage Increase (Decrease)
Assets				
Current Assets:				
Cash	$ 60,000	$ 90,000	$ 30,000	50%
Accounts Receivable	50,000	45,000	(5,000)	(10%)
Inventories	120,000	108,000	(12,000)	(10%)
Supplies	35,000	42,000	7,000	20%
Prepaid Expenses	8,000	10,000	2,000	25%
Total Current Assets	$273,000	$295,000	$ 22,000	8%
Property, Plant, and Equipment:				
Equipment (net)	$100,000	$180,000	$ 80,000	80%
Furniture (net)	40,000	50,000	10,000	25%
Total Property, Plant, and Equipment	$140,000	$230,000	$ 90,000	64%
Total Assets	$413,000	$525,000	$112,000	27%
Liabilities				
Current Liabilities:				
Accounts Payable	$ 70,000	$ 60,000	($ 10,000)	(14%)
Notes Payable	30,000	20,000	(10,000)	(33%)
Taxes Payable	20,000	34,000	14,000	70%
Total Current Liabilities	$120,000	$ 114,000	($ 6,000)	(5%)
Long-Term Liabilities:				
Notes Payable	$ 42,000	$ 78,000	$ 36,000	86%
Total Liabilities	$162,000	$192,000	$ 30,000	19%
Stockholders' Equity				
Common Stock	$150,000	$170,000	$ 20,000	13%
Retained Earnings	101,000	163,000	62,000	61%
Total Stockholders' Equity	$251,000	$333,000	$ 82,000	33%
Total Liabilities and Stockholders' Equity	$413,000	$525,000	$112,000	27%

3. The slight decline in inventories also seems to indicate good management control procedures. In other words, it appears as if decisions on the purchasing of merchandise are being made with a reasonable understanding of the demand for the company's products. These control procedures are especially important in a business in which merchandise is relatively large and could be held for considerable periods of time. Note, regarding the inventories, that while the amount of inventory has declined as sales have risen, which is good, the overall amount of inventory as a percent of cost of goods sold (measured because cost of goods sold and inventory are on the same basis) is quite high. This relationship will be considered with the inventory turnover discussion in the next chapter.

4. Although taxes payable increased, both accounts payable and current notes payable decreased. Notes payable showed the greatest decline ($10,000 or about 33 percent) and is a favorable sign. It indicates that the company is able to generate cash to begin liquidating some of its most currently due loans. Often, these loans are made by banks to finance the purchase of inventories and supplies or to extend the time for payment on an account payable to a merchandise supplier.
5. There is a significant increase in the property, plant, and equipment accounts—equipment and furniture. The increase in these assets suggests the purchase of fixed assets during the period. This increase appears to have been partially financed by long-term debt, which increased 86 percent.
6. The company raised some money by issuing common stock (increased about 13 percent).
7. Retained earnings increased by 61 percent. This net increase is due to the 56 percent increase in net income and to the payment of dividends in the amount of $24,000 to the common stockholders (beginning retained earnings of $101,000 plus net income of $86,000 less dividends of $24,000 equals the ending retained earnings of $163,000).

Exhibit 2–6 presents a horizontal analysis of a comparative income statement. By looking at this exhibit, you can see the following:

1. The income statements indicate a rather substantial increase (56 percent) in net sales. There is a corresponding increase in cost of goods sold, but at a lesser rate (45 percent). Therefore, the gross profit has increased by even more than the sales (67 percent).
2. An analysis of the operating expenses indicates large increases in both selling and administrative expenses. The increase in overall operating expenses was about 83 percent. The company should examine these expenses (especially the selling expenses, which increased by over 100 percent) in greater detail to see whether they are too high and whether or not they can be effectively controlled by management. For example, heat and light expenses may be considered as a fixed expense to the company, because these costs must be incurred in order for the business to operate. However, advertising is a cost (included in selling expenses) that to some extent management may control. Greater or lesser amounts of advertising may be advisable depending on circumstances.
3. The increase in interest expense is due to the increase in long-term debt being more than the decrease in current notes payable and due to the fact that long term interest rates are usually higher than short term interest rates.

Exhibit 2–6
Horizontal Analysis-Income Statement

Horizontal Analysis-Comparative Income Statements
for the Years Ended December 31, 2012 and 2013

	2012	*2013*	*Increase (Decrease)*	*Percentage Increase (Decrease)*
Net Sales	$320,000	$500,000	$180,000	56%
Less Cost of Goods Sold	158,000	229,000	71,000	45%
Gross Profit	$162,000	$271,000	$109,000	67%
Less Operating Expenses:				
Selling Expenses	40,000	82,000	42,000	105%
Administrative Expenses	35,000	55,000	20,000	57%
Total Operating Expenses	$ 75,000	$ 137,000	$ 62,000	83%
Operating Income	$ 87,000	$134,000	$ 47,000	54%
Add Other Income:				
Rent	1,000	2,000	1,000	100%
Less Other Expenses:				
Interest Expense	4,000	9,000	5,000	125%
Income before Income Taxes	$ 84,000	$ 127,000	$ 43,000	51%
Income Tax Expense	29,000	41,000	12,000	41%
Net Income	$ 55,000	$ 86,000	$ 31,000	56%

4. The 56 percent increase in net income is considered to be a positive sign. Nevertheless, management should analyze individual expense accounts and other factors in order to identify procedures for operating more efficiently. They should also consider other factors such as the market situation of the company, the state of the general economy, competitive advertising, and operating costs. In other words, the company may look very profitable, but it may still not be taking advantage of potential increases in operating efficiency.

The analyst should develop an evaluative aspect to there analysis, converting the analysis from a reporting of facts based on the numbers to an interpretative, in-depth explanation of the changes, and guidance for management based on knowledgeable understanding of the data, its causes, and its consequences. This will dramatically increase the contribution an analyst can make to their firm.

Vertical Analysis

Vertical analysis is used to examine the elements of financial statements of a single period. For the balance sheet, each element is shown as a percentage of total assets; for the income statement, each element is shown as a percentage of net sales. Such statements are often called common-size financial statements. A vertical analysis for the statements shown in Exhibits 2–5 and 2–6 is shown in Exhibit 2–7. By looking at this exhibit, you can see the following:

1. Current assets are a lower percentage of total assets in 2013 than in 2012. This is mainly due to decreases in accounts receivable and inventories.
2. Current liabilities are also a smaller percentage of total assets in 2013 than in 2012. Accounts payable and current notes payable are smaller percentages; taxes payable increased due to higher net income in 2013 than in 2012.
3. Long-term debt is a higher percentage of total assets in 2013 than in 2012. Acquisitions of plant and equipment were partially financed by long-term notes payable.
4. Cost of goods sold as a percentage of net sales has declined from 49 percent in 2012 to 46 percent in 2013. This resulted in an increase in gross profit from 51 percent of net sales in 2012 to 54 percent of net sales in 2013.
5. Selling expenses are 16 percent of net sales in 2013, a higher figure than the 13 percent in 2012. These expenses need to be carefully examined.

recap

Financial statement analysis is a valuable analytical exercise for financial managers. The purpose is to compare the company's financial status from year to year and also to compare the company to other companies within the same industry. Through ratio analysis, problem areas may be identified, and management's attention can be focused on such areas.

The income statement, balance sheet, statement of stockholders' equity, and statement of cash flows are the foundation of financial statement analysis. You now understand the role of each of these statements in corporate financial disclosure. Any analysis of the figures in the statements is only as valid as the information in the statements themselves.

Two types of ratio analysis were discussed in this chapter. Horizontal analysis is used to examine the changes in a given financial statement element over two or more periods. Vertical analysis is used to study the financial statement items of a single period.

Exhibit 2–7
Vertical Analysis

Vertical Analysis-Comparative Balance Sheets
December 31, 2012 and 2013

	2012	Percentage	2013	Percentage
Assets				
Current Assets:				
Cash	$ 60,000	15%	$ 90,000	17%
Accounts Receivable	50,000	12%	45,000	8%
Inventories	120,000	29%	108,000	21%
Supplies	35,000	8%	42,000	8%
Prepaid Expenses	8,000	2%	10,000	2%
Total Current Assets	$273,000	66%	$295,000	56%
Property, Plant, and Equipment:				
Equipment (net)	$100,000	24%	$180,000	34%
Furniture (net)	$ 40,000	10%	$ 50,000	10%
Total Property, Plant, and Equipment	$140,000	34%	$230,000	44%
Total Assets	$413,000	100%	$525,000	100%
Liabilities				
Current Liabilities:				
Accounts Payable	$ 70,000	17%	$ 60,000	12%
Notes Payable	30,000	7%	20,000	4%
Taxes Payable	20,000	5%	34,000	6%
Total Current Liabilities	$120,000	29%	$ 114,000	22%
Long-Term Liabilities:				
Notes Payable	$ 42,000	10%	$ 78,000	15%
Total Liabilities	$162,000	39%	$192,000	37%
Stockholders' Equity				
Common Stock	$150,000	36%	$170,000	32%
Retained Earnings	101,000	25%	163,000	31%
Total Stockholders' Equity	$251,000	61%	$333,000	63%
Total Liabilities and Stockholder's Equity	$413,000	100%	$525,000	100%

Vertical Analysis-Comparative Income Statements
For the Years Ended December 31, 2012 and 2013

	2012	Percentage	2013	Percentage
Net Sales	$320,000	100%	$500,000	100%
Less Cost of Goods Sold	158,000	49%	229,000	46%
Gross Profit	$162,000	51%	$271,000	54%
Less Operating Expenses:				
Selling Expenses	$ 40,000	13%	$ 82,000	16%
Administrative Expenses	35,000	11%	55,000	11%
Total Operating Expenses	75,000	24%	$ 137,000	27%
Operating Income	$ 87,000	27%	$134,000	27%
Add Other Income:				
Rent	$ 1,000	0%	2,000	0%
Less Other Expenses:				
Interest Expense	$ 4,000	1%	9,000	2%
Income Before Taxes	$ 84,000	26%	$ 127,000	25%
Income Tax Expense	$ 29,000	9%	41,000	8%
Net Income	$ 55,000	17%	$ 86,000	17%

Review Questions

Use the following financial statements to answer these review questions.

	2013	2012
Assets:		
Current Assets	$ 25	$ 20
Plant and Equipment	105	110
Intangible Assets	25	30
Total Assets	$155	$160
Liabilities:		
Current Liabilities	$ 15	$ 10
Long-Term Liabilities	45	60
Total Liabilities	$ 60	$ 70
Stockholders' Equity	95	90
Total Liabilities and Stockholder Equity	$155	$160
Net Sales	$ 85	$ 80
Cost of Goods Sold	44	40
Gross Profit	$ 41	$ 40
Operating Expenses	26	30
Income before Taxes	$ 15	$ 10
Provision for Income Tax	4	3
Net Income	$ 11	$ 7

1. Gross profit: 1. (c)
(a) rose by a greater percentage than sales.
(b) rose by a greater percentage than cost of sales.
(c) fell as a percentage of sales.
(d) fell by more than operating expenses.

2. Which one of the following is true? 2. (b)
(a) Net sales increased more in terms of percentages than cost of goods sold.
(b) Income before taxes increased more in terms of percentages than net sales.
(c) The provision for income taxes increased more in terms of percentages than income before taxes.
(d) Net income increased less in terms of percentages than income before taxes.

3. The best estimate for dividends for common stockholders for 2013 is: 3. (b)
(a) $2.
(b) $6.
(c) $11.
(d) $0.

4. As a percentage of total assets in 2013 compared to 2012: 4. (a)
(a) current assets increased.
(b) plant and equipment increased.
(c) current liabilities decreased.
(d) long-term liabilities increased.

5. On a comparative basis: 5. (c)
(a) net sales increased more than cost of goods sold.
(b) income before taxes increased less than gross profit.
(c) operating expenses decreased more than gross profit increased.
(d) income before taxes increased more than net income.

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