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An Introduction to Business Financial Statements

In this chapter, we build on the basic knowledge of how businesses are financed by looking at how firms organize and report financial information. This understanding of financial statements relates to economic development finance in several ways. First, it is critical for assisting individual businesses to secure financing. A careful reading of a firm's financial statements reveals how it has financed its activities and helps identify the appropriate financing to address its fiscal needs. Second, financial statement analysis is central to evaluating a firm's capacity to repay debt or generate the return required by equity investors. Third, financial statements provide insight into common financing issues faced by similar firms, such as those in the same industry, at the same stage of development, with similar ownership, or in the same size class. For all these reasons, development finance practitioners need to be literate with financial statements.

To develop this literacy, this chapter covers three topics. It begins by introducing several important concepts that underlie accounting and financial statements and explains the difference between accrual and cash accounting. Next, it explains the three major financial statements used to summarize businesses, the balance sheet, the income statement, and the cash flow statement and defines the major categories of financial information included on these reports. Future chapters build on this knowledge of financial statements to develop skills in evaluating a business's capacity to support new capital and in structuring appropriate financing.

Accounting Concepts and Accrual Accounting

Robert N. Anthony, David F. Hawkins, and Kenneth A. Merchant in their classic introduction to accounting, *Accounting: Text and Cases*, identify 11 basic concepts that guide accounting practice.¹ While all eleven concepts are important, three concepts are especially helpful in highlighting how financial statements are prepared and clarifying the nature of accrual accounting. The first principal is called the *dual aspect concept*, which is summarized by a

simple equation that is the foundation for the balance sheet. This equation, $\text{assets} = \text{equities}$, indicates that everything that is owned by a firm (its assets) is claimed by someone, either its creditors (whose claims are called liabilities) or its owners (whose claims are called owner's equity). This concept is common sense; all of a firm's possessions must belong to someone. As discussed in the previous chapters, creditors have a first claim on a firm's assets while the owners have a residual claim.

An important corollary to the dual aspect concept is that every financial transaction of a business must impact at least two accounts of the firm. For the dual aspect equation to remain true, when a transaction increases an asset account, then either another asset account must decrease or an equity account must increase. Accountants use a system of debits and credits to keep the asset and equity aspects of a firm's financial accounts in balance.² For every transaction, the total of debit entries must equal the total of credit entries to ensure that assets will equal equities after the transaction is recorded. Accounting is referred to as a dual entry record-keeping system due to the balancing of debits and credits for each transaction.

Two additional concepts, the realization concept and matching concept, are used to determine when revenue and expenses³ are recognized (i.e., recorded as such in the firm's accounts). Under the *realization concept*, revenue is recognized and credited to a firm's accounts when goods are shipped or services are rendered. Note that revenue is not recognized when payment is made for the goods or services. This is central to accrual accounting in which revenue is recorded when it is earned (i.e., when goods or services are provided), not when payment is received. Under the *matching concept*, which governs how expenses are allocated, expenses are recognized in the same period when the revenues associated with those costs are recorded. By matching expenses with the recognized revenue for a given period, financial statements provide an accurate representation of the economic results of the sales occurring during the period. Note, as with revenue, that expenses are not recorded based on when payment is made. Since some costs are not directly related to producing goods or services but are general costs of the firm (e.g., insurance or salaries for the accounting staff), these expenses are recognized in the period for which they are associated. Insurance costs and accounting department salaries for October would be recorded as an expense in the October accounting records.

The realization and matching concepts are central to accrual basis accounting, which is required under generally accepted accounting principals (GAAP), the standards for all private sector financial statements. To understand accrual accounting, it is helpful to compare it to cash basis financial reporting. Under cash basis reporting, transactions are recorded based on the receipt and expenditure of cash. Cash basis revenue is recorded when the payment for goods and services is received and expenses are recognized when cash payments are made. Cash basis reporting presents the impact of business activities on a firm's cash flow and cash position, but it has a

serious pitfall. With cash basis financial reports, the income received during a period is not linked with the associated costs, and there is no determination of whether the business was profitable during a given time period. Accrual accounting, on the other hand, does not follow the cash. Instead, it seeks to accurately present a firm's "earned income," the actual economic results of its activities over a period. Accrual accounting statements answer the question: What were a business's financial results for a period based on the revenue generated and the associated costs in that period, independent of when payment is received and bills are paid.

In differentiating accrual from cash accounting, it is useful to distinguish between *revenue*, the accrual concept, and *receipt*, the cash activity. Revenue refers to income generated by the provision of goods or services to a customer. Revenue is a function of the delivery of goods and services in a period, and its financial reporting is unrelated to the timing of any payment. Receipt refers to the collection of cash: it records when a customer makes a payment, which may differ from when the customer actually receives goods or services. A similar distinction exists between *expense*, the accrual concept, and *expenditure*, the cash transaction. Expenses refer to the costs incurred during a period that are related to either the generation of revenue in that period or a general business cost for the period. Expenses are recorded in financial statements independent of any cash outlays for the period. Expenditure, on the other hand, refers to the outlay of cash, whether or not that outlay is tied to revenue-generating activities during that period.

To see the difference in financial reports based on cash and accrual accounting, consider the following activities of College Books, a mail order bookstore during the month of September 2002. During this month, College Books shipped \$2,000 in books to customers. These customers paid for the books in October, after their receipt. College Books acquired the inventory of books sold in September during the months of June, July, and August, paying \$1,200 over these 3 months. General business costs for College Books are monthly rent payments of \$200 paid on the first day of each month and monthly salaries of \$500, paid on the last day of each month.

Both a cash basis and accrual basis income statement for College Books are presented in Exhibit 3.1. In the cash basis statement, no revenue is recorded in September since College Books did not receive any payment in this month. Similarly, no deduction is made for the cost of the books shipped in September since the firm paid for these books in the prior 3 months. The only cash payments in September were \$700 for its rent and salaries. Consequently, the cash basis statement for College Books shows a loss of \$700. The accrual income statement reports income of \$2,000 corresponding to the sales price for the books shipped that month. The cost of these books is matched to the revenue and reported as a \$1,200 expense. The other \$700 in monthly costs also are deducted as September expenses, showing a final net income of \$100. Although the cash statement shows that College Books's bank account declined by \$700 during September, it does

Exhibit 3.1 Cash and Accrual September Income Statements for College Books

	<i>Cash Statement</i>	<i>Accrual Statement</i>
Revenue	\$0	\$2,000
Cost of Goods Sold	\$0	(\$1,200)
Rent	(\$200) ^a	(\$200)
Salaries	(\$500)	(\$500)
Net Income	(\$700)	\$ 100

NOTE:

- a. A figure shown in parentheses in financial statements represents a negative number, either a deduction or a loss.

not show the economic results of College Books's activities for the month (i.e., whether or not the firm earned a profit from its September sales). The accrual statement provides a more complete and accurate picture of the store's financial results.

Financial Statements: The Balance Sheet

Accounting systems function to generate reports that provide an accurate picture of a business's financial condition and performance. There are two standard financial reports prepared by businesses: the balance sheet and the income statement (also called a profit and loss statement or a statement of revenues and expenses). For the firm's owners and managers, these reports inform decisions about the firm's management, operations, and capital spending. Economic development professionals use this information to make decisions about whether to provide debt or equity financing to a firm. Practitioners also use financial statement analysis in their technical assistance work, to identify weaknesses and management issues that firms need to address to improve their performance and access financing. Although the balance sheet and income statement are separate reports, they are closely linked and should be analyzed together to understand a firm's finances. A third financial report, the cash flow statement, details how the firm's activities affect cash flow. While a cash flow statement is included in audited financial statements prepared by independent accounting firms, firms without audited statements often do not prepare this key financial statement themselves. Thus, the steps to construct a cash flow statement from the balance sheet and income statement are detailed below.

The *balance sheet* is a snapshot of a business's financial position at a single point in time. It organizes financial information about the firm's assets (things of value that it owns), liabilities (its financial obligations), and shareholder's equity on a specific date. Exhibit 3.2 presents the balance sheet

for a fictional firm, American Biotechnology Company (ABC). Note that the balance sheet includes a date, June 30, 2002, which is the date for which the report applies. The asset and liability values listed in the report are for that specific date. Since ABC may undertake transactions that significantly change its financial position on the next day, this static picture is an important limitation of the financial information in a balance sheet. As the name implies, the balance sheet must balance; that is, the total assets must equal the total liabilities and shareholders' equities, per the dual aspect principle and the dual entry accounting method. ABC's total assets and total liabilities and shareholders' equity both equal \$81.8 million.

Exhibit 3.2 American Biotechnology Company Balance Sheet—June 30, 2002

ASSETS

Current Assets

Cash and Cash Equivalents	\$410,000
Marketable Securities	3,000,000
Accounts Receivable, net of allowance	16,065,000
Inventory	16,178,000
Prepaid Expenses	779,000
Total Current Assets	36,432,000

Investments	3,343,000
Property Plant and Equipment, less accumulated depreciation	21,905,000
Purchased Technology and Goodwill	19,310,000
Other Assets	810,000
TOTAL ASSETS	\$81,800,000

LIABILITIES AND SHAREHOLDERS' EQUITY

Current Liabilities

Accounts Payable	\$7,148,000
Income Taxes Payable	12,000
Accrued Expenses	3,973,000
Deferred Income	985,000
Current Portion of Long-Term Debt	1,367,000
Total Current Liabilities	13,485,000

Deferred Income	361,000
Long-Term Debt, less current portion	5,022,000
Total Liabilities	18,868,000

Shareholders' Equity

Common Stock Issue, par value \$.01 per share Authorized 40,000,000 shares, Issued 23,305,000 shares	233,305
Additional Paid-in Capital	110,198,695
Accumulated Deficit	(47,500,000)
Total Equity	62,932,000

TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	\$81,800,000
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There are two common interpretations of the balance sheet.⁴ The first interpretation is a statement of the firm's resources and the claims against those resources. Assets correspond to the resources owned by the firm while the liabilities and shareholders' equity are the claims against those assets. Liabilities are the claims of suppliers, lenders, and other outside parties while shareholders' equity represents the claims of the firm's owners. Thus, one immediate piece of information that the balance sheet provides is the relative size of the claims of outside creditors versus those of the firm's owners. In ABC's case, owner's claims, at \$62.9 million, are over three times those of outsiders, at \$18.9 million. A second interpretation of the balance sheet is a statement of the firm's sources and uses of funds. The liabilities and shareholders' equity represent the sources of funds while the assets show how the firm used these funds. This view is very useful since it tells us how the firm has financed itself and what assets it has acquired with this financing. For ABC, shareholders' equity provided the primary source of funds, and the largest uses of these funds have been for property, plant, and equipment (\$21.3 million) and purchased technology and goodwill (\$19.3 million).

Financial information in the balance sheets is reported under specific categories. While the categories in each firm's balance sheet can vary somewhat,⁵ Figure 3.2 includes the major categories listed on most balance sheets. Figures on the balance sheet reflect the original cost paid for items, not their current market value.⁶ "Book value" is often used to refer to this cost valuation of a firm's assets on its financial statements. Assets are grouped into two types: current assets and noncurrent assets. Current assets are those assets that are normally converted into cash within 1 year or, in some cases, within the normal operating cycle of the business. For example, since large aircraft take longer than 1 year to manufacture, the inventory of an aircraft manufacturer represents the materials that would be converted to cash under their normal production and sales cycle, rather than over 1 year. Assets are listed in a specific order, with those most easily converted into cash (referred to as more "liquid" assets) listed first followed by less liquid assets. Thus, current assets are listed before noncurrent assets, and cash is the first item listed.

The current asset categories on ABC's balance sheet are cash, marketable securities, accounts receivable, inventory, and prepaid expenses. *Cash* refers to both cash that is in the firm's direct possession and funds held in ABC's bank accounts that are immediately available for its use. *Marketable securities* are investment securities with maturities of 1 year or less that can be readily redeemed or sold. Firms often have more cash than they need for near term expenditures, and they invest these funds in certificates of deposit, commercial paper, treasury bills, or other short-term investment instruments to increase interest income earned on these funds. *Accounts receivables* are the uncollected bills for goods and services that ABC has shipped or rendered. Since most businesses do not operate on a cash sales basis, accounts receivable are usually a large and important part of a firm's current assets.

ABC's accounts receivables total \$16 million, almost one fifth of its total assets. *Inventory* refers to goods held by the firm in one of three forms: (1) raw materials and supplies that are used in the firm's business; (2) unfinished goods-in-progress that the firm is still in the process of manufacturing; and (3) finished products. Some firms list inventory under these three separate categories on their balance, but others, like ABC, consolidate all three types of inventory into one figure. Inventory is a major asset for some business, such as manufacturers, retailers, and wholesalers, but is of little significance to service businesses. *Prepaid expenses*, the final current asset category, are costs that the business has paid for but that are not yet treated as expenses based on the matching concept. Businesses often pay in advance for expenses recognized in future periods. For example, a firm may pay for an annual insurance policy in advance of the policy period. This advance payment is an asset, something of value that the firm acquired that will be used in the future course of its business. The prepaid expense amount will be reduced each month of the period covered by the policy, as the business "uses" its insurance policy. An accounting entry will be made to record a business expense equal to the reduction in the prepaid expense asset.⁷

ABC's noncurrent assets, those with a life longer than 1 year, include property, plant, and equipment; purchased technology and goodwill; and other assets. *Property, plant, and equipment* represent the land, buildings, and equipment owned by the business. These items are often listed under the term *fixed assets* since they are, with the exception of noninstalled equipment, immovable. Since property, plant, and equipment have a limited useful life, firms reduce the value of their fixed assets each year to account for the implicit costs associated with their wearing out and replacement over time. The term for this reduction in value of fixed assets is *depreciation*. Thus, ABC's \$21.9 million of property, plant, and equipment is listed net of accumulated depreciation: the figure represents the original cost of these assets less the cumulative depreciation deductions taken. Other firms list the original cost, accumulated depreciation, and the net value as separate items on their balance sheet. When a business depreciates the value of its fixed assets, it enters a corresponding accounting entry as a depreciation expense on the income statement. Purchased technology and goodwill represents the value of other firms and technology acquired by ABC. When a firm acquires the assets of another firm, it may pay more than the stated book value of its assets. Accountants use *goodwill* to account for this excess of the acquisition price over the book value. Goodwill may relate to acquired assets that have real value to firms, such as brand names, customer lists, experience, and relationships, but that cannot be directly valued. Goodwill also can reflect the difference between a firm's book value and its market value at the time of acquisition. *Other assets* is a catchall category for other things owned by the firm that do not fit into other categories or do not warrant a separate listing.

The equities side of the balance sheet is divided into two sections, liabilities and shareholders' equity. As with assets, liabilities to be paid within

either 1 year or the business's normal operating cycle are listed first under current liabilities. ABC's balance sheet includes the typical current liabilities categories: accounts payable, income taxes payable, accrued expenses, deferred income, and current portion of long-term debt. *Accounts payable* are ABC's unpaid bills for goods and services that it received as of June 30, 2002. Accounts payable and accounts receivable are two sides of the same transaction. One firm's account receivable is another's account payable. An account receivable is the vendor's uncollected invoice for goods or services rendered; an account payable is the customer's unpaid bill for goods or services received. *Income taxes payable* are ABC's unpaid portion of its tax liability on its net income from the prior period. Depending on the applicable state and local taxes, a firm may have additional tax liabilities for property, excise, and other taxes. *Accrued expenses* is a concept similar to prepaid expenses. It refers to expenses that have been recognized for accounting purposes but have not yet been billed or paid. With the matching of revenue and expenses under accrual accounting, costs are recognized as expenses for a period if they are directly tied to goods or services delivered during that period or are general expenses for the period. When such a cost is recognized as expense in a period but has not yet been billed or paid, there is an associated liability for that expense item. Interest payments are a good example of accrued expenses. Some debt contracts require interest payments every quarter or 6 months, but the firm is incurring an interest payment obligation each month. The interest obligation will be deducted as an expense each month. This interest expense is not paid monthly but builds up, or accrues, as an obligation to be paid at a future date. Accrued expenses can also be viewed as the opposite of prepaid expenses. For prepaid expenses, a firm generates an asset by paying for expenses in advance of their "use." With accrued expenses, a firm creates a liability by "using" an expense before it has been billed or paid. *Deferred income* refers to an obligation to provide goods or service for which ABC received advance payment. For example, ABC may have entered into research and development contracts and received up front payment for some of these activities. If ABC needs to acquire facilities and equipment and hire scientists before it can begin the research, it might be paid for some costs in advance. Although ABC has received cash, it cannot recognize this payment as revenue, since under the realization concept it has not provided these services yet. Thus the advance payment is offset by a deferred income liability for the same amount. The deferred income liability will be reduced as the company completes the research and development services and recognizes the revenue for these activities. Note, in Figure 3.2, that ABC has a second deferred income liability that is not listed under current liabilities. This means that ABC received advance payment for obligations that extend beyond 1 year. The portion of the advance payment for research activities over the next year is listed under current liabilities while the balance is listed as a noncurrent liability. *Current portion of long-term debt*, the last current liability listed on ABC's balance

sheet, is the portion of ABC's total outstanding debt that must be repaid over the next year. As with deferred income, the balance sheet divides debt liabilities into two portions: the amount payable over the next year and the amount payable beyond 1 year. Only the principal component of debt is listed on the balance sheet. Interest payments are an expense included on the income statement. To calculate ABC's total debt service for a given year from its financial statements, one needs to sum the interest expense from the income statement for that year (interest payments) and the current portion of long-term debt from the balance sheet for the end of the prior year (principal payments).

Shareholders' equity completes the equity side of the balance sheet. The presentation of shareholders' equity can be confusing since it includes three parts: (1) par value; (2) additional paid-in capital; and (3) accumulated retained earnings or deficit. *Par value* is a stated value for the stock that is legally required. It does not have any relationship to the stock's actual market value. Since the par value is the lowest value at which a share of stock can trade, it is usually set at one cent (\$.01). Thus, the balance sheet lists the stock's par value as the number of issued shares of stock times the par value. The first line of shareholder's equity for ABC in Figure 3.2 reads as follows:

Common stock issue, par value \$.01 per share	
Authorized 40,000,000 shares,	
Issued 23,305,000 shares	233,305

This line means that ABC is legally authorized to sell up to 40 million shares of common stock, but had issued only 23.305 million of these shares as of June 30, 2002. With a par value of \$.01, the total par value of the issued shares is \$233,305. However, firms do not sell their stock at par value. Instead, they receive a higher amount of money when their stock is sold to shareholders. This difference between the actual funds raised from stock sales and the listed par value is shown on the balance sheet as *additional paid-in capital*. For ABC, additional paid-in capital is \$110,198,695. The total amount that ABC raised from its stock sales is \$110,432,000, the sum of par value and additional paid-in capital. The final component of shareholder equity, *retained earnings*, represents the increase in equity value from the accumulated reinvestment of the company's profits (net income). When a business earns a profit, it can distribute some or all of these profits to its shareholders as dividends. The portion that is not paid out as dividends is reinvested in the company and called retained earnings. Since net income represents the firm's residual income after all expenses, it belongs to the firm's owners and any portion retained by the businesses represents an increase in shareholders' equity. Another way to think about this accounting relationship is that when net income is reinvested in a business, it increases

the company's assets. Since no external party provided the funds to increase these assets, there is no increase in liabilities to external parties. Consequently, the owners must have a claim on the increased assets, and the owners' equity account increases to balance the increase in assets.

In ABC's case, the balance sheet shows an accumulated deficit of \$47.5 million rather than accumulated retained earnings. This means that the company has generated more losses over its life than profits. Its accumulated losses, after deducting any accumulated net income, total \$47.5 million. ABC invested its equity to fund research and development and other activities that have not yet generated sufficient revenues to earn sustained profits. Its up front investment to acquire technology and develop new products has exceeded its cumulative profits. This is a common situation for biotechnology companies, which have long lead times, often 10 years or longer, before a new product is developed, tested, and approved for use by regulators. These accumulated losses serve to reduce the book value of the shareholder equity in the same manner that retained earnings increase it. Accumulated losses diminish the firm's assets, which must be consumed to cover the excess of expenses over revenues.⁸ Since assets have declined without any reduction in liabilities, the value of the shareholders' claim has been reduced. ABC's losses reduced the book value of shareholders' equity from \$110.4 million to \$62.9 million. It is important to recognize that this book value for shareholder equity is not the same as the market value of the firm's stock. ABC's stock price may have increased, despite the accumulated losses, if investors believe that the company has good future earning prospects.

Financial Statements: The Income Statement

The second major financial statement produced by firms is the *income statement*, also referred to as a *profit and loss statement* or a *statement of revenue and expenses*. While the balance sheet presents a firm's financial position at one point in time, the income statement shows the financial results from a business's activities over a period of time. It summarizes the two parts of a company's financial flows that determine its profits: revenues and expenses. By relating a firm's expenses to its revenue over a period of time, the income statement presents the economic results of the firm's activities for that period (i.e., its profits).

Exhibit 3.3 presents American Biotechnology Company's income statement for the year ending June 30, 2002. Note that the income statement specifies the time period that it covers. Revenue is listed on the top of the income statement with expenses listed below and net income (profit) presented at the bottom. Beyond this general format, firms use many different presentations of revenue and expenses for their income statement. The main variation occurs in how expenses are separated to present different subtotals before the final net income line. For ABC, income before interest and taxes (known as IBIT or

Exhibit 3.3 American Biotechnology Company Income Statement for the 12 Months Ending June 30, 2002

Revenue	
Product sales	5,013,000
Research and development revenue	7,675,000
Interest income	239,000
Total Revenues	12,927,000
Expenses	
Cost of goods sold	4,967,000
Research and development expenses	2,077,000
Sales, general and administrative expenses	2,908,000
Depreciation	1,000,000
Total Expenses	10,952,000
Income before interest and taxes	1,975,000
Interest expense	(119,000)
Provision for income taxes	(102,000)
Net income	1,754,000
Less cash dividends	0
Retained earnings	1,754,000
Accumulated deficit at beginning of year	(49,254,000)
Plus retained earnings for year	1,754,000
Accumulated deficit at end of year	(47,500,000)

EBIT—for earnings before interest and taxes) is presented as a separate item before the final net income figure is calculated. This allows the reader to see the firm's profits without financing and tax costs. Another common format calculates a gross margin before deducting selling, general, and administrative costs, which helps in understanding the firm's core profitability from operations before administrative, sales, and overhead costs are considered.

ABC lists three sources of income: product sales, research and development, and interest income. *Product sales* and *research and development revenue* account for the revenue realized during the 12 months from each respective activity. Interest income is revenue earned from the company's investment of surplus cash in marketable securities. Since the income statement presents separate expense figures for manufactured products and research and development activities, it is possible to determine a gross profit for each activity. *Gross profit* (also known as *gross margin*) is the difference between revenue and the direct costs involved in producing goods or delivering services. *Costs of goods sold* is the name used for the direct expenses incurred by ABC to make its products, including materials, labor, energy, and other items. The gross margin for ABC's product sales is calculated by subtracting the costs of goods sold from product sales:

$$\text{Gross margin for products} = 5,013,000 - 4,967,000 = 46,000$$

Gross margin for research and development is calculated in the same manner by subtracting research and development (R&D) expenses from R&D revenues:

$$\text{Gross margin for R\&D} = 7,675,000 - 2,077,000 = 5,598,000$$

From these figures, it is clear that ABC's R&D activities are more profitable than its manufacturing business, by a factor of over 100! Looking only at ABC's bottom line net income masks this difference. A useful way to present gross margin is as a percentage of sales. ABC's *gross margin percentage* for each activity is

$$\text{Gross margin percentage on product sales} = \frac{47,000}{5,013,000} = 0.9\%$$

$$\text{Gross margin percentage on R\&D} = \frac{5,598,000}{7,675,000} = 72.9\%$$

ABC's next expense item is *selling, general, and administrative costs*, or SGA expense. SGA includes all the indirect expense of the firm, including the salaries for executives, salespeople, the accounting department, and other general overhead such as insurance and real estate costs for administrative offices. The following expense item is depreciation, which we touched upon in the discussion of fixed assets. *Depreciation* is a noncash expense that accounts for the diminution in an asset's value over time. Depreciation is deducted as an expense to represent this economic cost to a business, but it has no impact on ABC's cash flow. ABC never writes a check or makes a payment for its depreciation expense.

After SGA and depreciation expenses, ABC reports its income before interest and taxes. This earnings amount is often referred to as *operating profits* since it measures a firm's earnings from all its operations before the impact of financing, taxes, or other nonoperating expenses are considered. Like gross margin, operating profit is more informative when expressed as a percentage of total revenue. ABC's operating profit percentage was 15.3% of revenue in fiscal year 2002.⁹ The final net income figure is listed after deducting interest expenses on ABC's debt and a provision to cover expected tax payments. ABC's net income in FY2002 was \$1,754,000, or 13.6% of sales. Thus, interest and taxes had only a small impact of ABC's net income, reducing it by less than 2 percentage points.

The final part of the income statement reports dividend payments to shareholders and retained earnings. In ABC's case, there were no dividend payments in this year. All of its \$1,754,000 in net income was retained for reinvestment in the business. In the final lines of the income statement, retained earnings for the current year are added to the retained earnings at

the beginning of the year to calculate ABC's final retained earnings as of June 30, 2002. Since ABC has generated cumulative losses during its lifetime, it has "negative retained earnings" which is called an *accumulated deficit*. The \$1,754,000 in retained earnings for FY2002, therefore, reduced its accumulated deficit from \$49,254,000 to \$47,500,000. These last three lines of the income statement formally connect the income statement to the balance sheet. Referring back to ABC's June 30, 2002, balance sheet in Figure 3.1, note that the accumulated deficit under shareholders' equity is \$47,500,000, matching the income statement's figure for accumulated deficit at year end.

Connecting the Balance Sheet and Income Statement

Thus far, we have only touched on the interrelationship between the balance sheet and income statement. However, these two financial statements are closely connected, with two ways to view their interaction. In the first view, two balance sheets and the intervening income statement provide a full picture of a firm's financial performance and change in financial condition for a given period. The beginning and ending balance sheets for a year show the changes in assets, liabilities, and owners' equity whereas the income statement shows how revenue and expense flows contribute to these balance sheet changes over that year. One direct connection is that retained earnings from net income on the income statement increases shareholders' equity on the balance sheet. Another direct connection occurs when an expense item on the income statement is coupled with a decrease in an asset account (e.g., when a depreciation expense on the income statement is matched with the depreciation of fixed assets). In this manner, decreases in an asset account, such as prepaid expenses, inventory, and fixed assets are often connected to an increase in expenses. On the other hand, sales generate an increase in accounts receivable, an asset account. The change in accounts receivable from one balance sheet to another is a function of two things: new accounts receivables created by sales and the conversion of accounts receivables into cash through their collection. Finally, the sale of an asset can result in revenue on the income statement. When the asset is sold for more than its book value, it yields income called capital gains. Conversely, when the firm sells an asset for less than its book value, it has a capital loss. By relating income statement items to the balance sheet, we gain a deeper understanding of what accounts for balance sheet changes.

A second way to view the interrelationship of the balance sheet and income statement is through the lens of cash flow (i.e., how both contribute to a firm's cash flow). The income statement generates cash flow through

the excess of revenue over expenses. To the extent that revenue and expenses are fully converted into cash transactions, net income is a good proxy for cash flow. However, since financial statements are not based on cash transactions, they need to be adjusted to present their contribution to cash flow. One type of adjustment corrects for noncash expenses such as depreciation. A second type of adjustment captures the impact of balance sheet changes on cash flow. For example, the cash flow from sales is affected by the collection of accounts receivable. When accounts receivable increase over a year, this reduces the cash flow realized from sales. Net income must be reduced by this increase in accounts receivable to show actual cash flow for the period. An increase in other asset accounts, such as inventory or fixed assets, results from the firm converting cash into other assets. Thus, the general rule is that increases in asset accounts are a use of cash (i.e., decrease cash flow). Increases in liability accounts are a source of cash that increase cash flow. A clear example of this is when a firm secures new debt; it receives cash from the debt proceeds as the liability for outstanding debt increases. When accounts payable increase, this represents an increase in the firm's unpaid bills, which means that some of the expenses shown on the income statement were not converted into cash outlays. Thus, an addition to net income is made equal to the increase in accounts payable to show actual cash flow. These examples demonstrate that both the income statement and balance sheet must be analyzed to determine a firm's cash flow over a period.

Financial Statements: The Cash Flow Statement

As indicated above, *the cash flow statement* details how a firm's income statement and changes to its balance sheet accounts contribute to cash flow for a specific period. It may seem surprising that cash flow statements are prepared since earlier in this chapter it was argued that accrual financial statements provide a more accurate picture of a firm's economic performance than cash basis statements. If accrual statements are more accurate, why bother with cash flow analysis? The answer is twofold. First, a company needs cash flow to pay its bills and make debt service payments. Although accrual statements provide a better picture of a business's economic profits than a cash flow statement, a firm does not pay its bills with profits. We need to know the firm's actual cash flow to determine whether it can meet the payments for a proposed loan. Second, cash flow statements provide insight into how a firm generates and uses cash flow, which can indicate areas for improved management and operations. For example, if a profitable company experiences cash flow problems due to large increases in its accounts receivables, then it needs to change its credit policies and collection practices. Another argument against preparing a cash flow statement is that a business's net cash flow for a period is revealed by the change

in the balance sheet cash account for that period. By definition, the change in cash from one period to another is the firm's net cash flow. Why undertake the tedious work of constructing a cash flow statement when net cash flow is already known? Although net cash flow is significant, it is more important to understand what contributed to this end result. A firm that loses money from its core business, but has positive cash flow from the one-time sale of assets, is quite different from one with positive cash flow from its core operations and after other costs. Moreover, we do not know how the firm's cash flow related to its level of debt payments. A firm with \$40,000 in net cash flow and \$30,000 in annual debt service is a better credit risk than a business with the same net cash flow but debt payments of \$250,000.

Constructing a Cash Flow Statement

A statement of cash flows is included in the standard audited financial statements prepared by a firm's independent accountants. Since many privately held companies, and most small businesses, do not produce audited financial statements, practitioners need to know how to prepare a cash flow statement for a specific period. To prepare a cash flow statement, the balance sheets for the beginning and end of the period and the income statement for the period are necessary. Two types of adjustments are made to the income statement to determine cash flow: (1) noncash expense items (e.g., depreciation) are added back; and (2) cash flows from changes in balance sheet accounts are incorporated.

When preparing a cash flow statement, it is helpful to divide the statement into three sets of activities that affect cash flow: operations (purchasing, production, and sales activities); investment activities (purchase of plant and equipment to support operations); and financing activities (securing or retiring debt and equity). Beyond showing the relative impact of operations, investment, and financing on a firm's cash flow, this format simplifies the calculation of debt service coverage ratios. It highlights the cash flow available to make debt service payments (i.e., the cash flow prior to financing activities) and the principal and interest payments for the period. For these reasons, the following explanation and example organizes the cash flow statement into these three components: cash flow from operations, cash flow from investments, and cash flow from financing. This is not the only way to present a cash flow statement, but it is well suited to analyzing a business's borrowing capacity. Exhibit 3.4 summarizes the steps to prepare this cash flow statement format.

The first step in cash flow analysis is finding the correct starting point from the firm's income statement. Since we need to compare cash flow to debt payments, the starting figure should exclude the interest expense. Therefore, begin with *net income before interest and tax payments*, which many firms list as a separate line on the income statement as income (or

Exhibit 3.4 Steps to Prepare a Three-Part Cash Flow Statement**Part One: Cash Flow From Operations**

- Step 1: Begin with income before interest and taxes from the income statement.
- Step 2: Subtract taxes.
- Step 3: Add back in noncash expenses from the income statement (e.g., depreciation and amortization).
- Step 4: Adjust cash flow for balance sheet changes from operations:
 calculate changes in asset accounts (accounts receivables, inventory, prepaid expenses, and other noninvestment or financing accounts). A decrease in an asset account produces a cash inflow (positive) and an increase in an asset account produces a cash outflow (negative).
 Calculate changes in liability accounts (accounts payables, accrued expenses, deferred income, and other noninvestment or financing liability accounts). An increase in a liability account produces a cash inflow (positive) and a decrease in a liability account produces a cash outflow (negative).
- Step 5: Calculate *net cash flow from operations* by summing these figures.

Part Two: Cash Flow After Investing Activities

- Step 6: Adjust cash flow for changes in balance sheet investment accounts (fixed assets, equipment, patents, goodwill, marketable securities, investments, etc.). An increase indicates a cash outflow (negative) while a decrease is a cash inflow (positive). Base calculations on gross amounts before any depreciation or amortization.
- Step 7: Calculate *net cash flow after investing activities* by summing and adding these changes to *net cash flow from operations*. This figure is used to calculate the debt service coverage ratio.

Part Three: Cash Flow After Financing Activities

- Step 8: Adjust cash flow for changes in balance sheet and income statement financing accounts (from the balance sheet: current and long-term portions of debt and changes in outstanding stock; from income statement: interest expense and dividend payments). A balance sheet increase indicates a cash inflow (positive) while a decrease is a cash outflow (negative). Income statement items are cash outflows.
- Step 9: Calculate *net cash flow after financing activities* by summing and adding these changes to the *net cash flow after investing activities*.
- Step 10: *Net cash flow after financing activities is the final net cash flow.* Check to see that it agrees with the change in balance sheet cash account.

earnings) before interest and taxes (IBIT). Next, subtract the tax payments (or allowance for taxes) from the IBIT amount. When IBIT is not listed as a separate line on the income statement, begin with the final figure for net income after interest and taxes and add back the interest payment amount. Once net income after taxes and before interest payments is determined, the second step is adding back noncash expense items, which are accounting items that were subtracted from revenues as an economic expense but do not involve a real cash outflow. Depreciation is the most common noncash item, but amortization of patents, goodwill, and other costs is a second example. Third, incorporate the cash flow impact from balance sheet changes related

to operating activities, for both assets and liabilities/owners' equity. The relevant asset accounts are accounts receivable, inventory, prepaid expenses, and other noninvestment related accounts. Liability accounts for this portion of the cash flow analysis are accounts payable, accrued expenses, deferred income, other payable accounts, and other liability accounts that are not debt or equity financing items. An increase in an asset account is a cash outflow (use of cash) that is a negative entry on the cash flow statement. Conversely, a decrease in an asset account is a cash inflow (source of cash) treated as a positive entry on the cash flow statement. Consider accounts receivable to see the relationship between asset accounts and cash flow. An increase in accounts receivable means that uncollected sales are higher, which reduces the cash flow received from the sales revenue shown on the income statement. If accounts receivable decrease, cash collections from sales exceed the sales revenue on the income statement, generating a cash flow increase. Liability accounts have the opposite effect on cash flow: a decrease in a liability account is a cash outflow, whereas a liability account increase is a cash inflow. For example, when deferred income increases, the firm has received additional cash that is not included in the period's revenue on the income statement but needs to be added to represent true cash flow. If deferred income decreases, the business recognized some deferred income as revenue on its income statement in the period, although the associated cash inflow occurred in a prior period. Thus, a cash outflow deduction from net income is made to reflect the cash effect of the deferred income change. Once the cash flow impact of these balance sheet accounts is determined, they are summed up and added to the earlier figure for net income before interest payment plus noncash expenses. The resulting sum is *net cash flow from operations*. It indicates whether the firm is generating positive or negative cash flow from its core purchasing, production, and sales activities. A negative cash flow may indicate management problems, such as carrying too much inventory or slow accounts receivable collection. However, it may also indicate a well-managed firm that is expanding its inventory and accounts receivables as its sales grow, using internal cash flow to finance them.

In the second part of the cash flow analysis, the cash impact from investment activities is calculated. Investment activities include the purchase of long-term assets to support the firm's operations and expand sales. These investments are shown on the balance sheet as increases in fixed asset accounts (plant and equipment), patents or purchased technology, and goodwill (intangible assets from the purchase of other businesses). A second type of investment activity is using excess cash to acquire marketable securities or other financial investments. Changes in any of these asset accounts are included in the investment activity part of the cash flow analysis. As with the operating assets, increases in these accounts are a cash outflow while decreases represent a cash inflow. In this case, it is intuitive that when a business purchases new equipment, for example, it uses cash; and when a fixed asset account declines, the firm is selling the asset and generating cash. *These*

changes must be calculated based on the gross value asset accounts before any depreciation or amortization. The change in gross value represents the actual cash transaction without the confusion of noncash deductions. Calculate the cash flow impact from changes in each investment-related account and then add these figures to the net cash flow from operations. The resulting figure is *net cash flow after investing activities*. This figure is used to determine the debt service coverage ratio, since it represents the firm's cash flow prior to its debt service payments and other financing activities.

The final step incorporates the impact of the firm's financing transactions (i.e., new borrowing and stock sales, the repayment of debt, interest payments, and dividend payments) on cash flow. For this analysis, include both balance sheet and income statement items. From the balance sheet, calculate changes in debt accounts and total proceeds from stock sales. Since debt is divided into two accounts, current portion of long-term debt and long-term debt, the change in the sum of these two accounts must be calculated to determine the change in total debt. When this sum increases, there is a cash inflow from additional borrowing. On the other hand, when the sum of the current and long-term portions of debt declines, it represents a cash outflow from the firm to pay-down of debt. Debt-related cash flow also includes interest payments, which are obtained from the interest expense item on the income statement. For equity financing, cash flow from stock issuance equals the change in the total shareholders' paid-in capital. Total paid-in capital is the sum of stock par value and additional paid-in capital from the shareholders' equity section of the balance sheet. Note that retained earnings are excluded since they were already counted within the firm's net income. If the change in retained earnings is added, it will double count this portion of net income. An increase in total paid-in equity capital represents cash inflow from additional stock sales. A decrease indicates the use of cash to buy back stock. The final item included in cash flow from financing activities is the deduction of dividend payments itemized on the income statement. For the final net cash flow calculation, sum the cash flow changes from all the financing accounts and add them to net cash from after investing activity. This final figure, cash flow after financing activities, is the firm's *net cash flow*. To check the accuracy of the cash flow analysis, compare this net cash flow figure to the change in the balance sheet cash account for the period. The two figures should be identical.

Using Financial Statements

This chapter provided an introduction to the language, presentation, and organization of business financial statements. With this knowledge, the reader is prepared to develop skills in analyzing business financial statements to inform economic development finance decisions. Although information in financial statements can be used for a variety of purposes, the primary goal

of economic development practitioners is to evaluate the firm's financial health, its capacity to productively use new debt or equity, and the appropriate structure for any new financing. The next chapter provides a framework and financial tools to undertake this type of analysis.

Endnotes

1. These 11 principles are money measurement, entity, going concern, cost, dual aspect, conservatism, time period, realization, matching, consistency, and materiality. They are first introduced on page 26 and then further discussed in Chapters 2 and 3 of Anthony, Hawkins, and Merchant (1999), *Accounting: Text and Cases*.

2. Debit entries increase asset accounts and decrease liabilities and owners' equity while credit entries have the opposite effect—they increase a liability or owner's equity account while decreasing asset accounts.

3. Accountants distinguish between costs and expenses. Costs involve any use of resources by a business whereas expenses are costs that are deducted from revenue for a particular accounting period. Some costs, such as the purchase of equipment or inventory, are not expenses but rather add to business assets. See, Anthony, Hawkins, and Merchant, pp. 59–64, for a more detailed discussion of costs and expenses.

4. These two interpretations are drawn from Anthony, Hawkins, and Merchant (1999), pp. 32–35.

5. Different firms also use different names for the same category. For example, “marketable securities” is sometimes listed as “investments” or as “certificates of deposit.”

6. One exception is financial assets, such as marketable securities, for which a market value is easily determined. These assets are listed at the lesser amount of their cost or market value.

7. In terms of credits and debits, the reduction in the prepaid asset account is a debit and the insurance expense is a credit.

8. This is the definition of a loss. Profit is when revenues exceed expenses.

9. This percentage was calculated by dividing the difference between total revenue and total expenses before interest, depreciation, and taxes (1,975,000) by total revenue (12,297,000).