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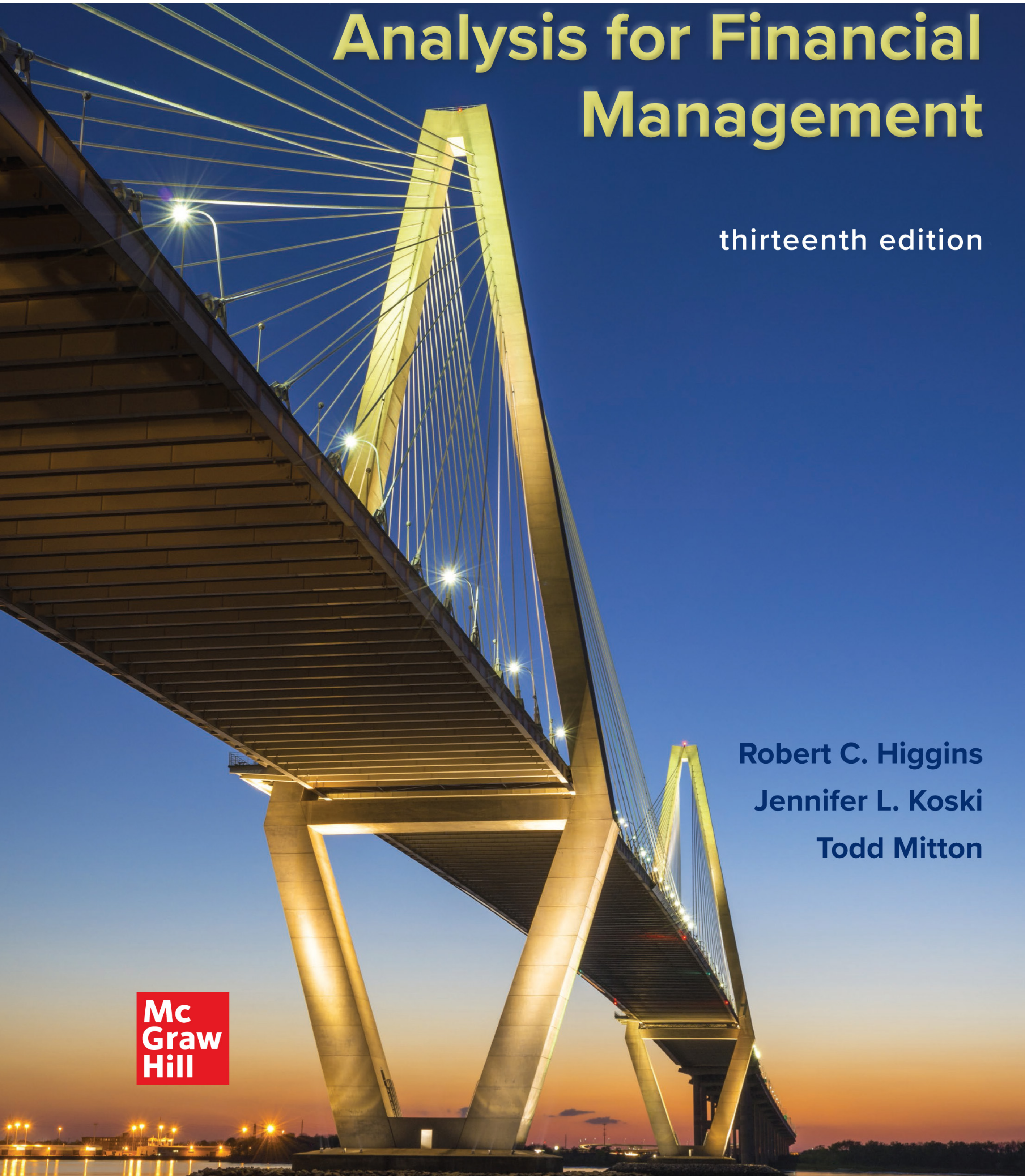

Analysis for Financial Management

thirteenth edition

Robert C. Higgins
Jennifer L. Koski
Todd Mitton

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Analysis for Financial Management

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Analysis for Financial Management

Thirteenth Edition

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In memory of our sons
STEVEN HIGGINS
1970–2007
ALEXANDER MITTON
1997–2014

Brief Contents

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PART FOUR

Appendix

Preface

Like its predecessors, the thirteenth edition of *Analysis for Financial Management* is for nonfinancial executives and business students interested in the practice of financial management. It introduces standard techniques and recent advances in a practical, intuitive way. The book assumes no prior background beyond a rudimentary and perhaps rusty familiarity with financial statements—although a healthy curiosity about what makes business tick is also useful. Emphasis throughout is on the managerial implications of financial analysis.

Analysis for Financial Management should prove valuable to individuals interested in sharpening their managerial skills and to executive program participants. The book has also found a home in university classrooms as the sole text in Executive MBA and applied finance courses, as a companion text in case-oriented courses, and as supplementary reading in more theoretical courses.

Analysis for Financial Management is our attempt to translate into another medium the enjoyment and stimulation we have received over many years working with executives and college students. This experience has convinced us that financial techniques and concepts need not be abstract or obtuse; that significant advances in the field, such as agency theory, market signaling, market efficiency, capital asset pricing, and real options analysis, are important to practitioners; and that finance has much to say about the broader aspects of company management. We are also convinced that any activity in which so much money changes hands so quickly cannot fail to be interesting.

Part One looks at the management of existing resources, including the use of financial statements and ratio analysis to assess a company's financial health, its strengths, weaknesses, recent performance, and future prospects. Emphasis throughout is on the ties between a company's operating activities and its financial performance. A recurring theme is that a business must be viewed as an integrated whole and that effective financial management is possible only within the context of a company's broader operating characteristics and strategies.

The rest of the book deals with the acquisition and management of new resources. Part Two examines financial forecasting and planning, with particular emphasis on managing growth and decline. Part Three considers the financing of company operations, including a review of the principal security types, the markets in which they trade, and the proper choice of security type by the issuing company. The latter requires a close look at financial leverage and its effects on the firm and its shareholders.

Part Four addresses the use of discounted cash flow techniques, such as the net present value and the internal rate of return, to evaluate investment opportunities. It also deals with the difficult task of incorporating risk into investment appraisal. The book concludes with an examination of business valuation and company restructuring within the context of the ongoing debate over the proper roles of shareholders, boards of directors, and incumbent managers in governing America's public corporations.

An extensive glossary of financial terms and suggested answers to odd-numbered, end-of-chapter problems follow the last chapter.

Changes in the Thirteenth Edition

Noteworthy changes and refinements in the thirteenth edition include:

- Updated discussions of adjusted earnings and International Financial Reporting Standards in Chapter 1.
- Application in Chapter 3 of Argo, a new, free Excel add-in for implementing simulation analyses to financial forecasting.
- Inclusion of a discussion of Special Purpose Acquisition Companies (SPACs) in Chapter 5, in the context of trends in raising capital.
- Expanded discussion of the underinvestment problem for corporate investments and its consequences for the capital structure decision in Chapter 6.
- Updated discussions of tax inversions, EPS dilution, and research on merger performance in Chapter 9.
- Use of Polaris, Inc., a leading producer of snowmobiles, all-terrain vehicles, motorcycles, and boats, as an extended example throughout the book.

A word of caution: *Analysis for Financial Management* emphasizes the application and interpretation of analytic techniques in decision making. These techniques have proved useful for putting financial problems into perspective and for helping managers anticipate the consequences of their actions. However, techniques can never substitute for thought. Even with the best technique, it is still necessary to define and prioritize issues, to modify analysis to fit specific circumstances, to strike the proper balance between quantitative analysis and more qualitative considerations, and to evaluate alternatives insightfully and creatively. Mastery of technique is only the necessary first step toward effective management.

The ability to access current Compustat data continues to be a great help in providing timely examples of current practice. We also owe a large thank you to the following people for their insightful reviews of the twelfth edition and their constructive advice. They did an excellent job. Any remaining shortcomings are ours, not theirs.

Buleny Aybar, Southern New Hampshire University
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We appreciate the exceptional direction provided by Barb Hari, Chuck Synovec, Michele Janicek, and Harvey Yep of McGraw-Hill on the development, design, and editing of the book. We thank Paige Nelson for her thorough review of the end-of-chapter problems for this edition. David Beim, Dave Dubofsky, George Parker, Megan Partch, and Alan Shapiro have our continuing gratitude for their insightful help and support throughout the book's evolution. Finally, we want to express our appreciation to students and colleagues at the University of Washington, Brigham Young University, Stanford University, IMD, The Darden School, The Pacific Coast Banking School, The Koblenz Graduate School of Management, The Gordon Institute of Business Science, Boeing, and Microsoft, among others, for stimulating our continuing interest in the practice and teaching of financial management.

We envy you learning this material for the first time. It's a stimulating intellectual adventure.

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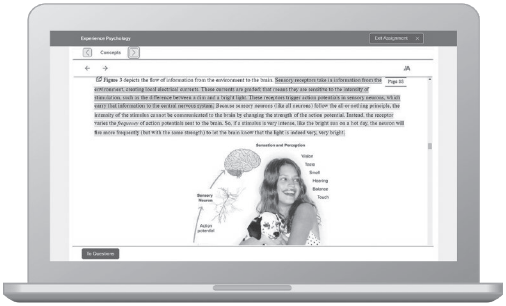

Figure 3 depicts the flow of information from the environment to the brain. Sensory receptors take in information from the environment, creating local electrical currents. These currents are graded; that means they are sensitive to the intensity of stimulation, such as the difference between a dim and a bright light. These receptors trigger action potentials in sensory neurons, which carry that information to the central nervous system. Because sensory neurons (like all neurons) follow the all-or-nothing principle, the intensity of the stimulus cannot be communicated to the brain by changing the strength of the action potential. Instead, the receptor varies the *frequency* of action potentials sent to the brain. So, if a stimulus is very intense, like the bright sun on a hot day, the neuron will fire more frequently (but with the same strength) to let the brain know that the light is indeed very, very bright.

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PART ONE

Assessing the Financial Health of the Firm

CHAPTER ONE

Interpreting Financial Statements

Financial statements are like fine perfume; to be sniffed but not swallowed.

Abraham Briloff

Accounting is the scorecard of business. It translates a company's diverse activities into a set of objective numbers that provide information about the firm's performance, problems, and prospects. Finance involves the interpretation of these accounting numbers for assessing performance and planning future actions.

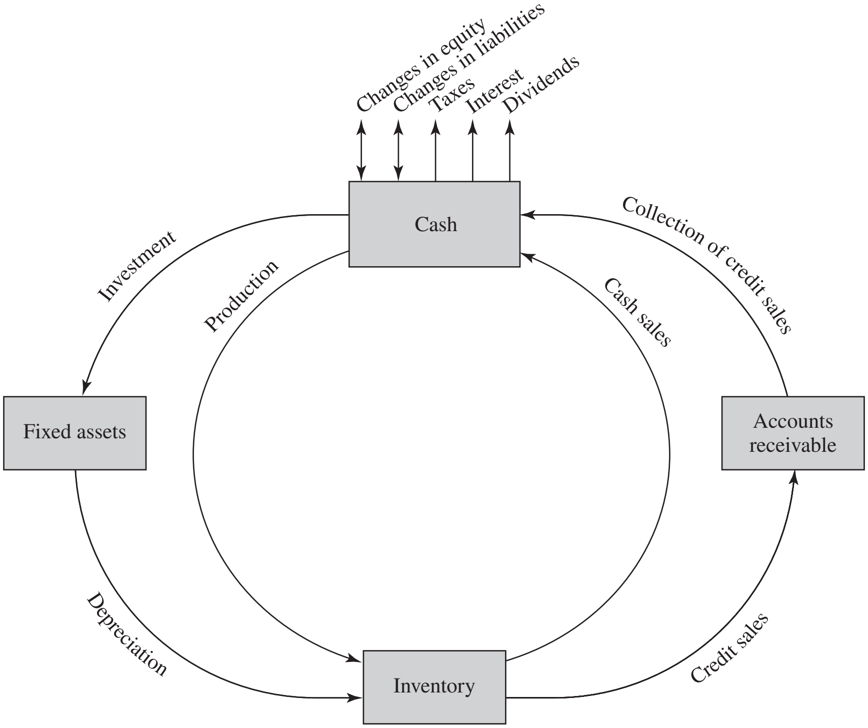
The skills of financial analysis are important to a wide range of people, including investors, creditors, and regulators. But nowhere are they more important than within the company. Regardless of functional specialty or company size, managers who possess these skills are able to diagnose their firm's ills, prescribe useful remedies, and anticipate the financial consequences of their actions. Like a ballplayer who cannot keep score, an operating manager who does not fully understand accounting and finance works under an unnecessary handicap.

This and the following chapter look at the use of accounting information to assess financial health. We begin with an overview of the accounting principles governing financial statements and a discussion of one of the most abused and confusing notions in finance: cash flow. Two recurring themes will be that defining and measuring profits is more challenging than one might expect, and that profitability alone does not guarantee success, or even survival. In Chapter 2, we look at measures of financial performance and ratio analysis.

The Cash Flow Cycle

Finance can seem arcane and complex to the uninitiated. However, a comparatively few basic principles should guide your thinking. One is that *a company's finances and operations are integrally connected.* A company's

FIGURE 1.1 **The Cash Flow–Production Cycle**



activities, method of operation, and competitive strategy all fundamentally shape the firm's financial structure. The reverse is also true: Decisions that appear to be primarily financial in nature can significantly affect company operations. For example, the way a company finances its assets can affect the nature of the investments it is able to undertake in future years.

The cash flow–production cycle shown in Figure 1.1 illustrates the close interplay between company operations and finances. For simplicity, suppose the company shown is a new one that has raised money from owners and creditors, has purchased productive assets, and is now ready to begin operations. To do so, the company uses cash to purchase raw materials and hire workers; with these inputs, it makes the product and stores it temporarily in inventory. Thus, what began as cash is now physical inventory. When the company sells an item, the physical inventory changes back into cash. If the sale is for cash, this occurs immediately; otherwise, cash is not realized until some later time when the account receivable is collected. This simple movement of cash to inventory, to accounts receivable, and back to cash is the firm's *operating,* or *working capital, cycle.*

Another ongoing activity represented in Figure 1.1 is investment. Over a period of time, the company's fixed assets are consumed, or worn out, in the creation of products. It is as though every item passing through the business takes with it a small portion of the value of fixed assets. The accountant recognizes this process by continually reducing the accounting value of fixed assets and increasing the value of merchandise flowing into inventory by an amount known as *depreciation.* To maintain productive capacity and to finance additional growth, the company must invest part of its newly received cash in new fixed assets. The object of this whole exercise, of course, is to ensure that the cash returning from the working capital cycle and the investment cycle exceeds the amount that started the journey.

We could complicate Figure 1.1 further by including accounts payable and expanding on the use of debt and equity to generate cash, but the figure already demonstrates two basic principles. First, *financial statements are an important window on reality.* A company's operating policies, production techniques, and inventory and credit-control systems fundamentally determine the firm's financial profile. If, for example, a company requires payment on credit sales to be more prompt, its financial statements will reveal a reduced investment in accounts receivable and possibly a change in its revenues and profits. This linkage between a company's operations and its finances is our rationale for studying financial statements. We seek to understand company operations and predict the financial consequences of changing them.

The second principle illustrated in Figure 1.1 is that *profits do not equal cash flow.* Cash—and the timely conversion of cash into inventories, accounts receivable, and back into cash—is the lifeblood of any company. If this cash flow is severed or significantly interrupted, insolvency can occur. Yet the fact that a company is profitable is no assurance that its cash flow will be sufficient to maintain solvency. To illustrate, suppose a company loses control of its accounts receivable by allowing customers more and more time to pay, or suppose the company consistently makes more merchandise than it sells. Then, even though the company is selling merchandise at a profit in the eyes of an accountant, its sales may not be generating sufficient cash soon enough to replenish the cash outflows required for production and investment. When a company has insufficient cash to pay its maturing obligations, it is insolvent. As another example, suppose the company is managing its inventory and receivables carefully, but rapid sales growth is necessitating an ever-larger investment in these assets. Then, even though the company is profitable, it may have too little cash to meet its obligations. The company will literally be "growing broke." These brief examples illustrate why a manager must be concerned at least as much with cash flows as with profits.

To explore these themes in more detail and to sharpen your skills in using accounting information to assess performance, we need to review the basics of financial statements. If this is your first look at financial accounting, buckle up because we will be moving quickly. If the pace is too quick, take a look at one of the accounting texts recommended at the end of the chapter.

Overview of Financial Statements

The most important source of information for evaluating the financial health of a company is its set of financial statements, consisting principally of a balance sheet, an income statement, and a cash flow statement. Although these statements can appear complex at times, they all rest on a very simple foundation. To understand this foundation and to see the ties among the three statements, let us look briefly at each.

A *balance sheet* is a financial snapshot, taken at a point in time, of all the assets the company owns and all the claims against those assets. The basic relationship, and indeed the foundation for all of accounting, is

$$\text{Assets} = \text{Liabilities} + \text{Shareholders' equity}$$

It is as if a herd (flock? column?) of accountants runs through the business on the appointed day, making a list of everything the company owns, and assigning each item a value. After tabulating the firm's assets, the accountants list all outstanding company liabilities, where a liability is simply an obligation to deliver something of value in the future—or more colloquially, some form of an "IOU." Having thus totaled up what the company *owns* and what it *owes,* the accountants call the difference between the two *shareholders' equity.* Shareholders' equity is the accountant's estimate of the value of the shareholders' investment in the firm, just as the value of a homeowners' equity is the value of the home (the asset), less the mortgage outstanding against it (the liability). Shareholders' equity is also known variously as *owners' equity, stockholders' equity, net worth,* or simply *equity.*

It is important to realize that the basic accounting equation holds for individual transactions, as well as for the firm as a whole. When a firm pays $1 million in wages, cash declines $1 million and shareholders' equity falls by the same amount. Similarly, when a company borrows $100,000, cash rises $100,000, as does a liability named something like *loans outstanding*. And when a company receives a $10,000 payment from a customer, cash rises while another asset, accounts receivable, falls by the same figure. In each instance, the double-entry nature of accounting guarantees that the basic accounting equation holds for each transaction, and when summed across all transactions, it holds for the company as a whole.

To see how the repeated application of this single formula underlies the creation of company financial statements, consider Worldwide Sports (WWS), a newly founded retailer of value-priced sporting goods. In January 2021, the founder invested $150,000 of his personal savings and added another $100,000 borrowed from relatives to start the business. After buying furniture and display fixtures for $60,000 and merchandise for $80,000, WWS was ready to open its doors.

The following six transactions summarize WWS's activities over the course of its first year.

- Sold $900,000 of sports equipment, receiving $875,000 in cash, with $25,000 still to be paid.
- Paid $190,000 in wages, including the owners' salary.
- Purchased $380,000 of merchandise at wholesale, with $20,000 still owed to suppliers, and $30,000 worth of product still in WWS's inventory at year-end.
- Spent $210,000 on other expenses, such as utilities and rent.
- Depreciated furniture and fixtures by $15,000.
- Paid $10,000 interest on WWS's loan from relatives and another $40,000 in income taxes to the government.

Table 1.1 shows how an accountant would record these transactions. WWS's beginning balance, the first line in the table, shows cash of $250,000, a loan of $100,000, and equity of $150,000. But these numbers change quickly as the company buys fixtures and an initial inventory of merchandise. And they change further as each of the listed transactions occurs.

Abstracting from the accounting details, there are two important things to note here. First, the basic accounting equation holds for each transaction. For every line in the table, assets equal liabilities plus owners' equity. Second, WWS's year-end balance sheet across the bottom of the table is just its beginning balance sheet plus the cumulative effect of the individual transactions. For example, ending cash on December 31, 2021 is the beginning cash of

TABLE 1.1 **Worldwide Sports Financial Transactions 2021 ($ thousands)**

	Assets				=	Liabilities		+	Equity
	Cash	Accounts Receivable	Inventory	Fixed Assets	=	Accounts Payable	Loan from Relatives		Owners' Equity
Beginning Balance 1/1/21	$ 250				=		$100		$ 150
Initial purchases	(140)		80	60	=				
Sales	875	25			=				900
Wages	(190)				=				(190)
Merchandise purchases	(360)		30		=	20			(350)
Other expenses	(210)				=				(210)
Depreciation				(15)	=				(15)
Interest payment	(10)				=				(10)
Income tax payment	(40)				=				(40)
Ending Balance 12/31/21	$ 175	$25	$110	$ 45	=	$20	$100		$ 235

$250,000 plus or minus the cash involved in each transaction. Incidentally, WWS's first year appears to have been a decent one: Owners' equity is up $85,000 over the year, on top of whatever the owner paid himself in salary.

To further convince you that the bottom row of Table 1.1 really is a balance sheet, the following table presents the same information in a more conventional format.

Worldwide Sports Balance Sheet, December 31, 2021 ($ thousands)

Cash	$175	Accounts payable	$ 20
Accounts receivable	25	**Total current liabilities**	20
Inventory	110	Loan from relatives	100
Total current assets	310	Equity	235
Fixed assets	45	**Total liabilities and Owners' equity**	
Total assets	$355		$355

If a balance sheet is a snapshot in time, the income statement and the cash flow statement are videos, highlighting changes in two especially important balance sheet accounts over time. Business owners are naturally interested in how company operations have affected the value of their investment. The income statement addresses this question by partitioning the recorded changes in owners' equity into revenues and expenses, where revenues increase owners' equity and expenses reduce it. The difference between revenues and expenses is earnings, or net income.

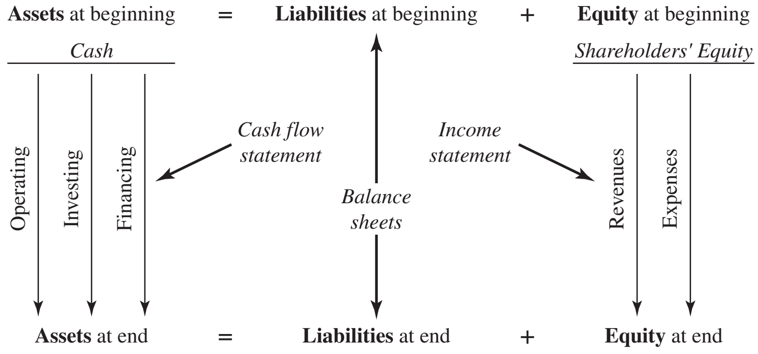
Looking at the right-most column in Table 1.1, WWS's 2021 income statement looks like this. Note that the $85,000 net income appearing at the bottom of the statement equals the change in owners' equity over the year.

Worldwide Sports Income Statement, 2021 ($ thousands)

Sales	$900
Wages	190
Merchandise purchases	350
Depreciation	15
Gross profit	$345
Other expenses	210
Interest expense	10
Income before tax	$125
Income taxes	40
Net income	$ 85

The focus of the cash flow statement is solvency, having enough cash in the bank to pay bills as they come due. The cash flow statement provides a detailed look at changes in the company's cash balance over time. As an organizing principle, the statement segregates changes in cash into three broad categories: cash provided (or consumed) by operating activities, by investing activities, and by financing activities. Figure 1.2 is a simple schematic diagram showing the close conceptual ties among the three principal financial statements.

FIGURE 1.2 **Ties among Financial Statements**



The Balance Sheet

POLARIS

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We will now take a more in-depth look at each of the key financial statements in turn, beginning with the balance sheet. To illustrate the techniques and concepts presented throughout the book, I will refer whenever possible to Polaris Inc., the self-styled “Global leader in Powersports” including snowmobiles, all-terrain vehicles (ATVs), motorcycles, and boats. In addition to the United States, Polaris has manufacturing operations in China, France, Mexico, and Poland. It has offices in 14 countries and sells its products in over 100 countries, although 80 percent of sales originate in the United States. The company’s focus, as embodied in its marketing tagline “Think Outside” is to create products that enhance the experience of outdoor enthusiasts.

Headquartered in Medina, Minnesota, a small town outside of Minneapolis, Polaris has $7 billion in annual sales, and its stock trades on the New York Stock Exchange. The firm was founded in 1954 as one of the pioneers of the snowmobile industry. In the 1980s, Polaris diversified into off-road vehicles when they produced the first American-made ATVs. In 2011, Polaris extended its reach into on-road vehicles with its acquisition of the legendary Indian Motorcycle company. Between 2018 and 2019, two more acquisitions added three well-known boat brands to Polaris’s product portfolio. Polaris’s recent ventures include forays into electric ATVs, electric motorcycles, and special-purpose electric automobiles. In 2020, 64 percent of Polaris’s sales came from snowmobiles and off-road vehicles, with 9 percent coming from boats, 8 percent from motorcycles, and 19 percent from other products and services.

Table 1.2 presents Polaris’s balance sheets for 2019 and 2020. If the precise meaning of every asset and liability category in Table 1.2 is not immediately apparent, be patient. We will discuss many of them in the following text. In addition, all of the accounting terms used appear in the glossary at the end of the book.