

BUSINESS FINANCE BUDGETING



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Business Finance Budgeting (NWTC)

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1: FINANCE OVERVIEW AND FORMS OF BUSINESS

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1.1: Why It Matters



Figure 1.1.1: Finance is the linchpin that connects and directs many parts of a business or organization. (credit: modification of work “Finance behind the Glass” by Max London/flickr, CC BY 2.0)

Finance is essential to the management of a business or organization. Without good financial protocol, safeguards, and tools, running a successful business is more difficult. In 1978, Bacon Signs was a family-owned, regional Midwestern sign company engaged in the manufacture, sale, installation, and maintenance of commercial signage. The company was about to transition from the second to the third generation of family ownership. Bacon Signs, established in 1901, had weathered the Great Depression, World War II, the Vietnam War, and the oil embargo, and was working its way through historically high rates of inflation and interest rates. The family business had successfully struggled through the ebb and flow of the regional and national economy by providing quality products and services to its regional clients.

In the early 1980s, the company's fortunes changed permanently for the better. The owner recognized that the custom signs built by his firm were superior in quality to the signs it installed for national franchises. The owner worked with the company's banker and vice president of finance and operations to develop a production, sales, and financing plan that could be offered to the larger national sign companies. The larger companies agreed to subcontract the manufacturing of midsize orders to Bacon Signs. The firm then made a commitment to build and deliver these signs on time and under budget. As Bacon Signs' reputation for quality grew, so did demand for its products. The original financing plan anticipated this potential growth and was designed to meet anticipated capital requirements so that the firm could expand how and when it needed to.

Bacon Signs' ability to manufacture and deliver a high-quality product at a good price was the true value of the firm. However, without the planning and ability to raise capital facilitated by the financing plan, the firm would not have been able to act on its strengths at the critical moment. Financing was the key to expansion and financial stability for the firm.¹

Business finance is about developing and understanding the tools that help people make consistently good and repeatable decisions.

When someone opens a business, it is because they want to fulfill important personal financial goals. In publicly traded companies, managers and employees work on behalf of the shareholders, who own the business through their ownership of company stock. These managers and employees have an ongoing obligation to pursue projects, policies, and corporate investments that will increase or promote stockholder value over the long term. Although many companies focus on financially related goals, such as growth, earnings per share, and market share, the main financial goal is to create value for investors.



Figure 1.1.2: The legal structure of any business will have a substantial impact on its operations. (credit: modification of work “New Board Room at 2 Broadway” by Metropolitan Transportation Authority/Patrick Cashin/flickr, CC BY 2.0)

Keep in mind that a company's stockholders are not just an abstract group. Like the sole business owner, they are individuals who have chosen to invest their hard-earned cash in a company. They are looking for a return on their investment in order to meet their own personal long-term financial goals, which might be saving for retirement, a new home, or a college education for their children.

In addition to increasing value, it is also important to realize that a firm has important non-financial goals. Some examples of these might include the following:

- Expanding sales to existing customers
- Increasing customer loyalty to the weaker brands
- Developing new products for current and potential customers
- Becoming international by setting up an online ordering service
- Improving customer satisfaction with customer services

If managers are to help stockholders maximize their wealth, they must know how that wealth is determined in the first place. One of the main concepts in finance is that the value of any asset is determined by the present value of the stream of cash flows that the asset will provide to its owners over the course of time. Stock prices are based on cash flows expected in future years, not only on those coming in at the present time.

For these reasons, stock price maximization, which leads directly to maximizing shareholder wealth, requires us to take a long-term view of company operations. It is also important to realize that managerial actions that affect a company's value may not immediately be reflected in the price of a company's stock but rather will become evident in the long-term prospects of the organization.

In the case of privately held companies, smaller firms, and sole proprietorships, there are no shareholders. However, attention to long-term growth and maximizing the value of a firm is just as important a goal to the owners, who are also usually senior management with the company.

Footnotes

- ¹ Dun & Bradstreet. “Bacon Signs, Inc.” *D&B Business Directory*. www.dnb.com/business-directo...ancials-anchor

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1.2: What Is Finance?

Learning Objectives

By the end of this section, you will be able to:

- Describe the main areas in finance.
- Explain the importance of studying finance.
- Discuss the concepts of risk and return.

Definition of Finance

Finance is the study of the management, movement, and raising of money. The word **finance** can be used as a verb, such as when the First National Bank agrees to finance your home mortgage loan. It can also be used as a noun referring to an entire industry. At its essence, the study of finance is about understanding the uses and sources of cash, as well as the concept of the risk-reward trade-off. Finance is also a tool that can help us be better decision-makers.

Basic Areas in Finance

Finance is divided into three primary areas in the domestic market: business finance, investments, and financial markets and institutions (see Figure 1.2.1). We look at each here in turn.

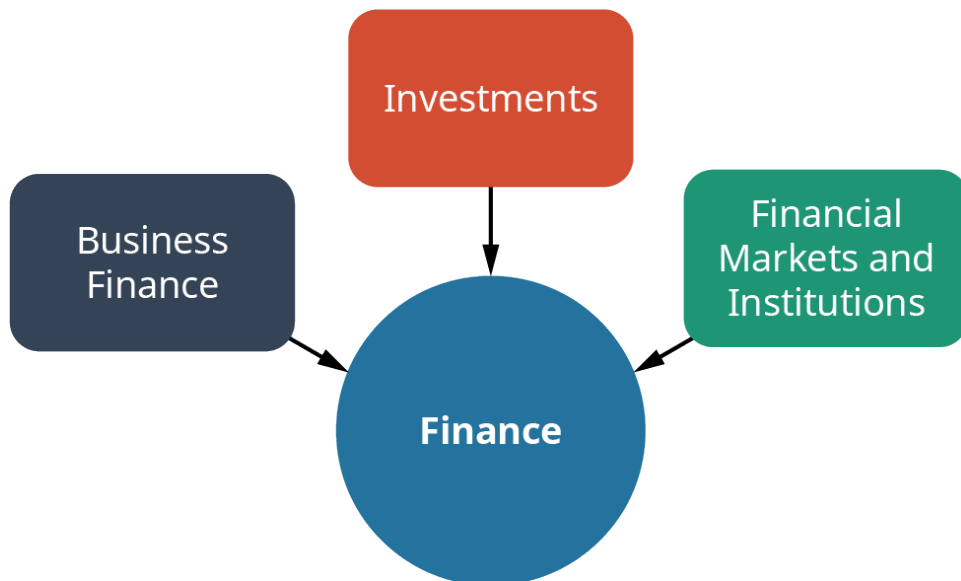


Figure 1.2.1: The Three Basic Areas of Study in Finance

Business Finance

Business finance looks at how managers can apply financial principles to maximize the value of a firm in a risky environment. Businesses have many stakeholders. In the case of corporations, the shareholders own the company, and they hire managers to run the company with the intent to maximize shareholder wealth. Consequently, all management decisions should run through the filter of these questions: “How does this decision impact the wealth of the shareholders?” and “Is this the best decision to be made for shareholders?”

In business finance, managers focus on three broad areas (see Figure 1.2.2).

1. **Working capital management (WCM)** is the study and management of short-term assets and liabilities. The chief financial officer (CFO) and the finance team are responsible for establishing company policy for how to manage WCM. The finance department determines credit policy, establishes minimum criteria for the extension of credit to clients, terms of lending, when to extend, and when to take advantage of short-term creditor financing. The accounting department basically implements the finance department's policies. In many firms, the accounting and finance functions operate in the same department; in others, they are separate.
2. **Capital budgeting** is the process of determining which long-term or fixed assets to acquire in an effort to maximize shareholder value. Capital budgeting decisions add the greatest value to a firm. As such, capital budgeting is thought to be one of the most important financial functions within a firm. The capital budgeting process consists of estimating the value of potential investments by forecasting the size, timing, and risk of cash flows associated with the investments. The finance department develops and compiles cash flow estimates with input from the marketing, operations, accounting, human resources, and economics departments to develop a portfolio of investment projects that collectively maximize the value of the firm.
3. **Capital structure** is the process by which managers focus more specifically on long-term debt and increasing shareholder wealth. Capital structure questions require financial managers to work with economists, lenders, underwriters, investment bankers, and other sources of external financial information and financial capital. When Bacon Signs developed its financial plan, the executives included each of these three aspects of business finance into the plan.

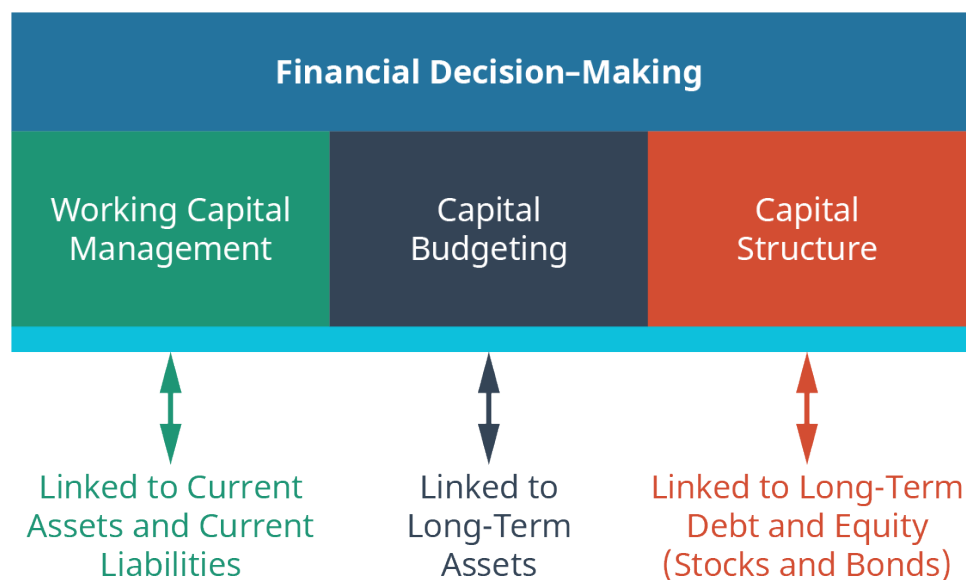


Figure 1.2.2: How Corporate Finance Decision-Making Activities Relate to the Balance Sheet

Figure 1.2.2 demonstrates how the three essential decision-making activities of the financial manager are related to a balance sheet. Working capital management focuses on short-term assets and liabilities, capital budgeting is focused on long-term assets, and capital structure is concerned with the mix of long-term debt and equity financing.

Investments

Investments are products and processes used to create and grow wealth. Most commonly, investment topics include the discussion and application of the different types of financial instruments, delivery vehicles, regulation, and risk-and-return opportunities. Topics also include a discussion of stocks, bonds, and derivative securities such as futures and options. A broad coverage of investment instruments would include mutual funds, exchange-traded funds (ETFs), and investment vehicles such as 401k plans or individual retirement accounts (IRAs). In addition, real assets such as gold, real estate, and commodities are also common discussion topics and investment opportunities.

Investments is the most interesting area of finance for many students. Television programs such as *Billions* and movies such as *Wall Street* make investing appear glamorous, dangerous, shady, or intoxicating, depending on the situation and the attitude of the viewer. In these programs, the players and their decisions can lead to tremendous wealth or tremendous losses. In reality, most of us will manage our portfolios well shy of the extremes portrayed by the entertainment industry. However, we will need to make personal and business investment decisions, and many students reading this material will work in the investment industry as personal investment advisers, investment analysts, or portfolio managers.

Financial Markets and Institutions

Financial markets and institutions are the firms and regulatory agencies that oversee our financial system. There is overlap in this area with investments and business finance, as the firms involved are profit-seeking and need good financial management. They are also commonly the firms that facilitate investment practices in our economy. A financial institution regulated by a federal or state agency will likely handle an individual investment such as the purchase of a stock or mutual fund.

Much of the US regulatory structure for financial markets and institutions developed in the 1930s as a response to the stock market crash of 1929 and the subsequent Great Depression. In the United States, the desire for safety and protection of investors and the financial industry led to the development of many of our primary regulatory agencies and financial regulations. The Securities and Exchange Commission (SEC) was formed with the passage of the Securities Act of 1933 and the Securities Exchange Act of 1934. Major bank regulation in the form of the Glass-Steagall Act (1933) and the Banking Act of 1935 gave rise to government-backed bank deposit insurance and a more robust Federal Reserve Bank.

These regulatory acts separated investment banking from commercial banking. Investment banks and investment companies continued to underwrite and facilitate new bond and equity issues, provide financial advice, and manage mutual funds. Commercial banks and other depository institutions, such as savings and loans and credit unions, left the equity markets and reduced their loan portfolios to commercial and personal lending, but could purchase insurance for their primary sources of funds, checking and savings deposits.

Today, the finance industry barely resembles the structure your parents and grandparents grew up and/or worked in. Forty years of deregulation have reshaped the industry. Investment and commercial bank operations and firms have merged. The separation of activities between investment and commercial banking has narrowed or been eliminated. Competition from financial firms abroad has increased, and the US financial system, firms, and regulators have learned to adapt, change, and innovate to continue to compete, grow, and prosper.

The **Financial Industry Regulatory Authority (FINRA)** was formed in 2007 to consolidate and replace existing regulatory bodies. FINRA is an independent, nongovernmental organization that writes and enforces the rules governing registered brokers and broker-dealer firms in the United States. The **Securities Investor Protection Corporation (SIPC)** is a nonprofit corporation created by an act of Congress to protect the clients of brokerage firms that declare bankruptcy. SIPC is an insurance that provides brokerage customers with up to \$500,000 coverage for cash and securities held by the firm.

The regulation of the financial industry kicked into high gear in the 1930s, and for those times and conditions was a necessary development of our financial industry and regulatory oversight. Deregulation of the finance industry beginning in the 1970s was a necessary pendulum swing in the opposite direction toward more market-based and less restrictive regulation and oversight. The Great Recession of 2007–2009 resulted in the reregulation of several aspects of the financial industry. Some would argue that the regulatory pendulum has swung too far toward deregulation and that the time for more or smarter regulation has returned.

Concepts In Practice: The Great Recession

The Great Recession of 2007–2009 exposed many of the weaknesses of our financial system. The ease with which banks could lower credit standards to allow ill-prepared consumers to purchase real estate and the resulting speed with which the world economy plunged into recession is astounding.

Regulations to address the economic crisis were also swift. Fortunately, Ben Bernanke, chairman of the Federal Reserve at the time, had throughout his career conducted extensive research into the causes of and potential resolution of the Great Depression of the 1930s.² He was uniquely qualified to lead the economic response to the crisis. Some resulting laws moved to address the immediate needs, and others to correct the underlying causes of the recession.

One immediate fix was the Troubled Asset Relief Program (TARP). TARP authorized the Treasury to buy illiquid assets in order to save the financial institutions so important to lubricating our economy. Politically, this was a tough decision, as it appeared that the government bailed out greedy bankers. In the end, however, the program was justified because the economy immediately began a slow but steady recovery, most financial institutions did not fail, and the Treasury recouped all of its investment used in the bailout. However, individual homeowners suffered greatly.

The Dodd-Frank Act of 2008 attempted to address many of the underlying causes of the Great Recession by reorganizing and toughening the regulatory framework, including tighter oversight of critically important financial institutions. Dodd-Frank also created the Consumer Financial Protection Bureau (CFPB) to protect consumers from harm caused by unscrupulous banking activities. Today, the hope is that financial institutions will be stopped short of the gross negligence evident prior to 2007 and consumers won't be left out in the cold due to actions beyond their control.

Why We Study Finance

Finance is the lubricant that keeps our economy running smoothly. Issuing a mortgage can be profitable for a bank, but it also allows people to live in their own homes and to pay for them over time. Do MasterCard, Venmo, and PayPal make money when you use their product? Sure, but think how much more convenient and safer it is to carry a card or use an app instead of cash. In addition, these services allow you to easily track where and how you spend your money. A well-regulated and independent financial system is important to capital-based economies. Our smoothly functioning financial system has removed us from the days of strictly bartering to our system today, where transactions are as simple as a tap on your mobile phone.

There are a number of professional and personal reasons to study finance. A search of the internet provides a long list of finance-related professions. Interviews with senior managers reveal that an understanding of financial tools and concepts is an important consideration in hiring new employees. Financial skills are among the most important tools for advancement toward greater responsibility and remuneration. Government and work-guaranteed pension benefits are growing less common and less generous, meaning individuals must take greater responsibility for their personal financial well-being now and at retirement. Let's take a closer look at some of the reasons why we study finance.

There are many career opportunities in the field of finance. A single course in finance, such as this one, may pique your interest and encourage you to study more finance-related topics. These studies in turn may qualify you for engaging and high-paying finance careers. We take a closer look at financial career opportunities in Careers in Finance.

A career in finance is just one reason to study finance. Finance is an excellent decision-making tool; it requires analytical thinking. Further, it provides a framework for estimating value through an assessment of the timing, magnitude, and risk of cash flows for long-term projects. Finance is important for more immediate activities as well, such as the development of budgets to ensure timely distribution of cash flows, such as dividends or paychecks.

An understanding of finance and financial markets opens a broader world of available financial investment opportunities. At one time, commercial bank deposits and the occasional investment in stocks, bonds, real estate, or gold may have provided sufficient coverage of investment opportunities, portfolio diversification, and adequate returns. However, in today's market of financial technology, derivative securities, and cryptocurrencies, an understanding of available financial products and categories is key for taking advantage of both new and old financial products.

Link to Learning: Job Information

The internet provides a wealth of information about types of jobs in finance, as well as reasons to study it. Investigate the [Occupational Outlook Handbook](#) issued by the Bureau of Labor Statistics to see how many of the career opportunities in finance look interesting to you. Think about the type of people you want to work with, the type of work-related activities you enjoy, and where you would like to live. Read "5 Reasons Why You Should Study Finance" at [Harvard Business School Online](#) to gain a better understanding of why finance offers a broad career path and is intellectually stimulating and satisfying.

Risk and Return in Finance

Finance tells us that an increase in risk results in an increase in expected return. The study of historical financial markets demonstrates that this relationship generally holds true and that riskier investments over time have provided greater returns. Of course, this is not true all the time and under all conditions; otherwise, where's the risk?

At its most basic level, risk is uncertainty. The study of finance attempts to quantify risk in a way that helps individuals and organizations assess an appropriate trade-off for risk. Risk-return tradeoffs are all around us in our everyday decision-making. When we consider walking across the street in the middle of a city block or walking down to the marked intersection, we are

assessing the trade-off between convenience and safety. Should you buy the required text for your class or instead rely on the professor's notes and the internet? Should you buy that new-to-you used car sight unseen, or should you spend the money for a mechanic to assess the vehicle before you buy? Should you accept your first job offer at graduation or hold out for the offer you really want? A better understanding of finance makes these types of decisions easier and can provide you, as the decision maker, with statistics instead of just intuition.

Return is compensation for making an investment and waiting for the benefit (see Figure 1.2.3). Return could be the interest earned on an investment in a bond or the dividend from the purchase of stock. Return could be the higher income received and the greater job satisfaction realized from investing in a college education. Individuals tend to be risk-averse. This means that for investors to take greater risks, they must have the expectation of greater returns. Investors would not be satisfied if the average return on stocks and bonds were the same as that for a risk-free savings account. Stocks and bonds have greater risk than a savings account, and that means investors expect a greater average return.

The study of finance provides us with the tools to make better and more consistent assessments of the risk-return trade-offs in all decision-making, but especially in financial decision-making. Finance has many different definitions and measurements for risk. Portfolios of investment securities tend to demonstrate the characteristics of a normal return distribution, or the familiar "bell-shaped" curve you studied in your statistics classes. Understanding a security's average and variability of returns can help us estimate the range and likelihood of higher- or lower-than-expected outcomes. This assessment in turn helps determine appropriate prices that satisfy investors' required return premiums based on quantifiable expectations about risk or uncertainty. In other words, finance attempts to measure with numbers what we already "know."

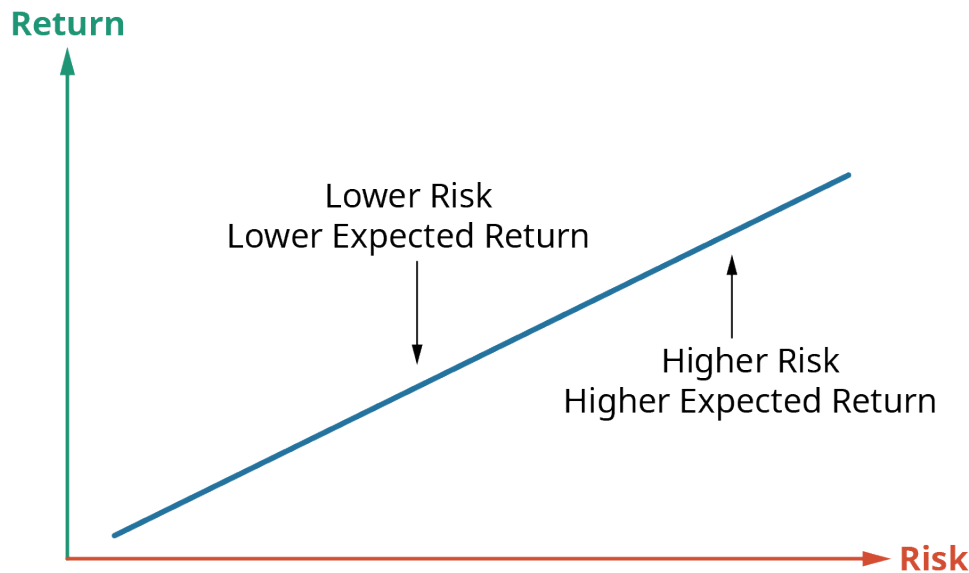


Figure 1.2.3: Risk and Expected Return. This describes the trade-off that invested money can bring higher profits if the investor is willing to accept the risk of possible loss.

The overall uncertainty of returns has several components.

- **Default risk** on a financial security is the chance that the issuer will fail to make the required payment. For example, a homeowner may fail to make a monthly mortgage payment, or a corporation may default on required semiannual interest payments on a bond.
- **Inflation risk** occurs when investors have less purchasing power from the realized cash flows from an investment due to rising prices or inflation.
- **Diversifiable risk**, also known as unsystematic risk, occurs when investors hold individual securities or smallish portfolios and bear the risk that a larger, more well-rounded portfolio could eliminate. In these situations, investors carry additional risk or uncertainty without additional compensation.
- **Non-diversifiable risk**, or systematic risk, is what remains after portfolio diversification has eliminated unnecessary diversifiable risk. We measure non-diversifiable risk with a statistical term called *beta*. Subsequent chapters on risk and return provide a more in-depth discussion of beta.
- **Political risk** is associated with macroeconomic issues beyond the control of a company or its managers. This is the risk of local, state, or national governments "changing the rules" and disrupting firm cash flows. Political risk could come about due to zoning changes, product liability decisions, taxation, or even nationalization of a firm or industry.

Footnotes

- ² Brookings Institution. “Ben S. Bernanke.” *Brookings Institute*. <https://www.brookings.edu/experts/ben-s-bernanke/>; Ben S. Bernanke. “On Milton Friedman’s 90th Birthday.” *The Federal Reserve Board*. November 8, 2002.

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1.3: The Role of Finance in an Organization

Learning Objectives

By the end of this section, you will be able to:

- Describe the finance function.
- Explain the role of finance and its importance within an organization.

The Finance Function

Finance has many functions within an organization, and there are many job titles to reflect the varied job responsibilities. The **comptroller**, or more commonly a *controller*, in a for-profit business relies heavily on a knowledge of accounting. Controllers are in charge of financial reporting and the oversight of the accounting activities necessary to develop those reports. Controllers are concerned with payroll functions, accounts receivable, and accounts payable, including taxes, inventory control, and any number of short-term asset and liability tracking and monitoring activities. They aid internal and external auditors and are responsible for monitoring and implementing the day-to-day financial operations of the firm.

In most organizations, the **treasurer** might assume many of the duties of the controller. However, the treasurer is also responsible for monitoring cash flow at a firm and frequently is the contact person for bankers, underwriters, and other outside sources of financing. A treasurer may be responsible for structuring loan and debt obligations and determining when and from whom to borrow funds. Treasurers are also responsible for investing excess funds. Where a controller may face inward toward the organization, the treasurer often faces outward as a representative to the public.

The vice president of finance (VP-F) is an executive-level position and oversees the activities of the controller and treasurer. The chief responsibility of the VP-F is to create and mentor a sufficient and qualified staff that generates reports that are timely, accurate, and thorough.

The **chief financial officer**, or **CFO**, is in a “big picture” position. The CFO sets policy for working capital management, determines the optimal capital structure for the firm, and makes the final decision in matters of capital budgeting. The CFO is also forward-looking and responsible for strategic financial planning and setting financial goals. Compared to a VP-F, a CFO is less of a “hands-on” manager and engages more in visionary and strategic planning.

Financial Planning

Financial planning is critical to any organization, large or small, private or public, for-profit or not-for-profit. Financial planning allows a firm to understand the past, present, and future funding needs and distributions required to satisfy all interested parties. For-profit businesses work to maximize the wealth of the owners. These could be shareholders in a publicly traded corporation, the owner-managers of a “mom and pop” store, partners in a law firm, or the principal owners of any other number of business entities. Financial planning helps managers understand the firm’s current status, plan and create processes and contingencies to pursue objectives, and adjust to unexpected events. The more thoughtful and thorough the financial planning process, the more likely a firm will be able to achieve its goals and/or weather hard times. Financial plans typically consider the firm’s strategic objectives, ethical practices, and sources and costs of funds, as well as the development of budgets, scenarios, and contingencies. The financial plan Bacon Signs developed was thorough enough to anticipate when and how growth might occur. The plan that was presented to commercial banks allowed the firm to be guaranteed new financing at critical moments in the firm’s expansion.

Good financial planning has a number of common features.

- It uses past, current, and pro forma (forward-looking) income statements. Pro forma income statements are created using assumptions from past events to make projections for future events. These income statements should develop likely scenarios and provide a sensitivity analysis of key assumptions.
- Cash flow statements are a critical part of any financial planning. Cash flow statements estimate the timing and magnitude of actual cash flows available to meet financial obligations.

- Balance sheets are critical for demonstrating the sources and uses of funds for a firm. One of the most important aspects of business is accounting (see Figure 1.3.1).
- Forecasting in the form of expected sales, cost of funds, and microeconomic and macroeconomic conditions is an essential element of financial planning.
- Financial analysis, including ratio analysis, common-size financial statements, and trend statements, is an important aspect of financial planning. Such analysis aids in the understanding of where a firm has been, how it stacks up against the competition, and the assessment of target objectives.

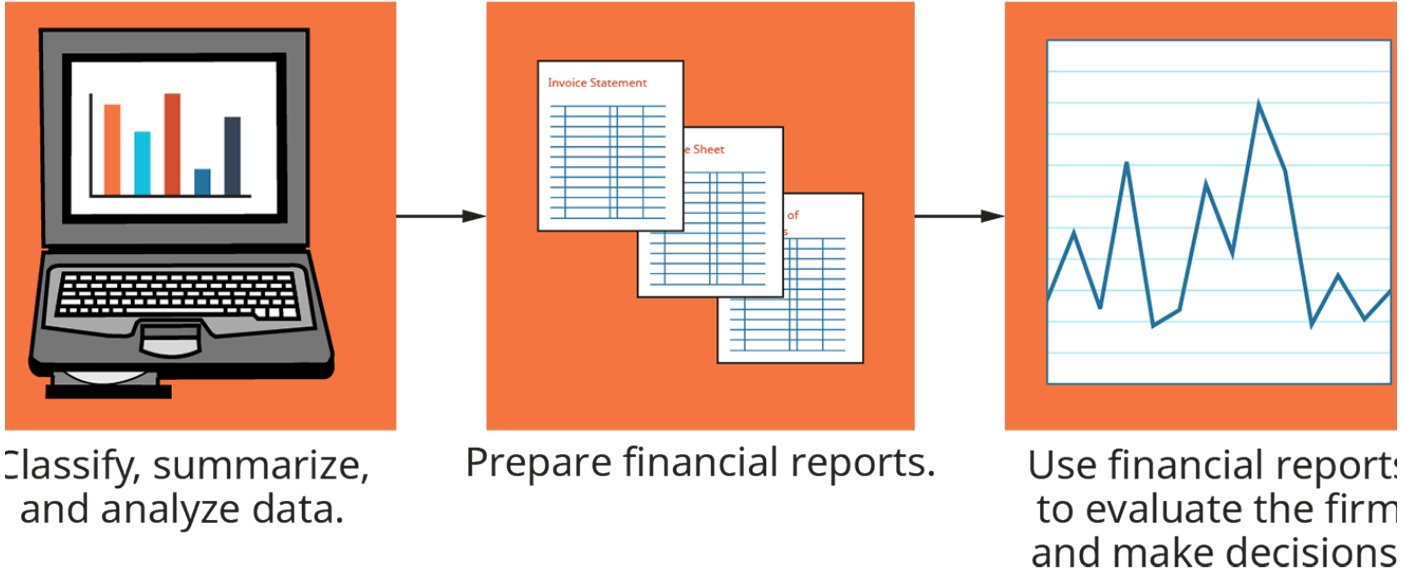


Figure 1.3.1: The Accounting System. The accounting system relies on accurate data used to prepare all the financial reports that help to evaluate a firm.

Link to Learning: Elements of a Financial Plan

You can view [key elements in a financial plan](#) at the US Small Business Administration's website.

Forecasting and Budgeting

Forecasting and budgeting are common practices for businesses, governmental agencies, not-for-profit firms, and individual households. As with many of the financial topics introduced in this chapter, these activities are valuable for individuals and businesses alike. Budgeting, or planning for the amount, sources, and uses of cash, occurs early in the planning process. It is common for businesses to have developed an annual budget well before the start of the year. With budgeting, a firm establishes objectives for the upcoming period by developing financial statements based on historical data and expectations, as well as aspirations for the future. The budgeting process helps the firm identify what actions need to be undertaken to achieve its objectives. However, no matter how strong the budgeting process, actual events can change the timing and magnitude of expected cash flows.

Financial forecasting addresses the changes necessary to the budgeting process. Budgeting can help identify the differences or variance from expectations, and forecasting becomes the process for adapting to those changes. We attribute to President Eisenhower the saying that “plans are worthless, but planning is everything.” That statement applies to business today as well as it did during his service in the military and government. The budgeting or planning process is a road map for organizations, and forecasting helps navigate the inevitable detours toward the firm's objectives.

The budgeting process develops pro forma financial statements such as income and cash flow statements and balance sheets. These provide benchmarks to determine if firms are on course to meet or exceed objectives and serve as a warning if firms are falling short. Budgeting should involve all departments within a firm to determine sources and uses of funds and required funding to meet department and firm objectives. The process should look to emulate successful processes and change or eliminate ineffective ones. Budgeting is a periodic renewal and reminder of the firm's goals.

Financial forecasting often starts with the firm's budget and recommends changes based on differences between the budgeted financial statements and actual results. Forecasting adjusts management behavior in the immediate term and serves as a foundation for subsequent budgets.

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1.4: Importance of Data and Technology

Learning Objectives

By the end of this section, you will be able to:

- Describe the role of data in finance.
- List and describe the various types of corporate data available.
- Explain how the various types of corporate data can be accessed and analyzed.
- Describe the impact of data digitization.
- Explain how stakeholders use data when making decisions.

Importance of Data

Financial data is important for internal and external analysis of business firms. More accurate and timely data leads to better business and financial decision-making. Financial budgeting and forecasting rely on the creation of several types of financial statements, including income statements, statements of cash flow, and balance sheets, as well as the notes and assumptions used to create the financial statements. Insiders such as executives and middle managers use financial data to evaluate and reevaluate decision-making. Having current and accurate data is key to making consistent value-adding decisions for a firm. Data helps inform managers about how and when to finance projects, which projects to undertake, and necessary changes to make regarding physical, financial, and human resource assets. “Gut feelings” and “seat-of-the-pants” decision-making tend to be inconsistent with value maximization and well-managed operations.

Outsiders also use publicly available data about firms to make purchasing, investment, credit, and regulatory decisions. Customers, investors, lenders, suppliers, and regulators must be able to access a firm’s financial information. Investors need to determine how much they are willing to pay for a share of stock, banks need data to determine if a loan should be made, suppliers need financial information to determine if they should supply trade credit, and customers need to know that a firm has priced its products appropriately.

Basic Data Types

Financial statements provide some of the data needed for decision-making. Firms summarize data and develop at least three essential financial statements or reports.

1. The **income statement** summarizes the flow of revenues and expenses over a specified period. Income statements for publicly traded companies are available quarterly.
2. **Balance sheets** show the existing assets, liabilities, and equity as of a particular date.
3. **Statements of cash flow** identify actual receipts and uses of cash over a period.

These statements represent book values and reflect historical costs and accounting adjustments such as accumulated depreciation. Book values often differ significantly from market values. Market values look forward and reflect expectations, whereas book values represent what has occurred.

In addition to the internal data summarized on financial statements, firms and outside stakeholders also seek external sources of information. External data gathering includes surveys of customers and suppliers, market research, new product development, statistical analysis, agreements with creditors, and discussions with government officials. Broader macroeconomic data is also valuable as it applies to expected market demand, unemployment, inflation, interest rates, and economic growth.

In addition to the financial statements, customer data, sales data, job performance data, and many other forms of data can be used to help managers make decisions.

The Impact of Digitization

Data digitization makes the storage and transmission of data easier and more cost-effective. Some data starts out as digital data, such as that from a Microsoft product such as Excel or PowerBI. The Excel files and Word documents we create are ubiquitous and easily stored and transmitted. Cloud storage and video conferencing are now the norm. Emails and virtual meetings are quick, easy, and inexpensive ways to share and store information. Businesses now create an e-trail, or virtual paper trail, to document, verify, and share processes. Because data is now much easier to access, firms bear the added responsibility of ensuring that it is stored and secured properly so that individuals cannot inappropriately alter or delete information.

Data storage has changed significantly in the last decade as companies have moved the storage of digital data to the cloud. The advantages include only paying for the storage actually used, reduced energy consumption, access to specialized data protection services, and software and hardware maintenance. However, the risk of data hacks and the safety of data are key concerns in the storage of digitized information.

Artificial intelligence (AI) is transforming business data by enabling organizations to collect, analyze, and interpret information faster and more accurately than ever before. Through machine learning and advanced analytics, AI can identify patterns, predict future trends, and automate routine data-processing tasks, allowing managers to make more informed decisions. In budgeting and financial planning, AI helps businesses improve forecasting accuracy, optimize resource allocation, detect anomalies or risks, and respond quickly to changing market conditions. As a result, organizations can increase efficiency, reduce costs, and gain a competitive advantage through data-driven decision making.

Uses of Data

Taken together and separately, the internally generated financial statements can provide managers with a wealth of information to enable superior decision-making. Harvard Business School identifies six ways managers can use financial statements.³

1. Measuring the impact of business decisions such as new software, marketing plan, or product line
2. Aiding in the development of budgets by creating a starting point for future expectations
3. Aiding in cost-cutting or the reduction of duplicate activities
4. Providing data-supported strategic planning and visioning
5. Ensuring consistent data and content across departments
6. Motivating teams to set, meet, and exceed goals and objectives

Concepts In Practice: How and Why Managers Use Financial Statements: The Case of Peloton

Should you lease a new car or buy one? Do you opt for the more expensive high-tech production equipment or reduce your upfront investment and pay higher labor costs over time? Is it better to finance a new product by borrowing money or selling new shares of stock? Should you manufacture overseas, where the production costs are lower, or in your own country, where political and transportation costs are lower? Once you make your choice, how do you know if you've made the right decision? Understanding and applying financial principles can help.

For example, consider Peloton, the leader in social exercising with its bike, treadmill, and yoga platforms. In 2012, the principal founder, John Foley, was inspired to start the company because he lacked the time to attend bicycle exercise classes due to his demanding career and growing family. He enjoyed cycling classes, but they could be expensive and often did not fit into his schedule. He recognized that the most popular instructors had developed a bit of a cult following and that the music playlist was a critical component for many followers. His choice of the company name, Peloton, comes from the French word for a "pack of bike riders," familiar to anyone who has even loosely followed the annual Tour de France bike race. The company name evokes a measure of mystique and prestige.

Peloton started small and underwent five funding rounds in seven years before the company went public with an initial public offering in September 2019. Foley and his friends had the idea that they were a "purposeful music company" and needed to touch on all aspects of the workout experience, including the bike, video, audio, and music content, clothing design, competition among the riders, data gathering, and instructors for livestream and on-demand classes. They were selling an

experience, not a bicycle. The equipment is expensive—a Peloton bike typically costs over \$2,000. Peloton equips its studios with state-of-the-art cameras and music systems and pays its instructors top dollar. Along the way, the founders made several critical financial decisions. They kept control of the firm by using private funding at the start.

How can we tell if Peloton has managed its resources well? The company started with \$400,000 of funding to develop a prototype in 2012. By 2018, firm value increased to \$4 billion with yet another round of private investor funding. As of April 2021, Peloton is a publicly traded company with a stock value of \$34 billion. The executives are sacrificing profits in the short term to generate growth and long-term profitability. The firm uses its financial statements to identify sources and uses of funds, to test the effectiveness of advertising, and to forecast future profitability. Analysts like the firm, the stock price is up, and by many financial measures, Peloton has been a great success. Time will tell if the decisions made over the last several years will lead to long-term profitability or if the company has overinvested in marketing only to miss current and long-term profits.

Footnotes

- 3 Catherine Cote. “How and Why Managers Use Financial Statements.” *Business Insights*. June 16, 2020.

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1.5: Careers in Finance

Learning Objectives

By the end of this section, you will be able to:

- Describe current job opportunities in finance.
- Describe the financial analyst role.
- Describe the business analyst role.

Job Opportunities in Finance: Market Trends

Finance offers a wide range of rewarding career opportunities across industries. According to the U.S. Bureau of Labor Statistics (BLS), the median annual wage for business and financial occupations was **\$80,920 in May 2024**, significantly higher than the median annual wage for all occupations of **\$49,500**. Employment in business and financial occupations is projected to grow faster than the average for all occupations from **2024 to 2034**, creating approximately **942,500 job openings each year** due to both employment growth and the need to replace workers who retire or leave the profession. As organizations increasingly rely on data analytics, artificial intelligence, and financial expertise to support decision-making, demand for finance and accounting professionals is expected to remain strong.⁴

Several of the BLS-listed finance careers do not even have finance or associated wording in the career titles. The BLS identifies finance skills as necessary for careers such as management analysts, market research analysts, and work in logistics. Of course, many careers traditionally encourage the study of finance. These include job titles and descriptions such as these:

- **Financial manager:** Oversees aspects of and produces reports about an organization's financial needs, uses, and related activities
- **Investment relations associate:** Prepares and presents company financial data to investors and other company stakeholders
- **Budget analyst:** Reviews, plans, and evaluates an organization's financial activities
- **Credit analyst:** Reviews financial and related information to determine the creditworthiness of potential clients and customers; typically works at commercial and investment banks, credit unions, and rating firms such as Moody's or Standard and Poor's
- **Financial analyst:** Collects and examines data to plan future activities and evaluate past decisions
- **Personal financial advisor:** Provides advice to clients for short-, intermediate-, and long-term financial planning
- **Loan officer:** Helps individuals and organizations apply for loans and typically works for depository financial institutions such as commercial banks
- **Insurance underwriter:** Evaluates risk and establishes prices for insurance products such as life, property, and casualty insurance
- **Financial examiner:** Evaluates and monitors the activities of depository institutions in an effort to assure proper practice and behavior
- **Finance professor:** Teaches college classes, engages in economic and financial research, and provides community service by serving on boards and providing financial expertise

Link to Learning: Best Jobs in Finance

You can read more about [possible careers in finance](#) at the Balance Careers website.

Financial Analyst Roles

Many executive-level finance officers worked their way up via the role of financial analyst. Job descriptions vary across firms, industries, and government organizations. However, the role of a financial analyst usually includes market research, financial

forecasting, modeling, cost analysis, and comparative valuations. Financial analysts gather data and produce financial reports in conjunction with multiple departments within a business or organization. They rely on marketing and production personnel to provide accurate sales forecasts, and they work with accountants to create accurate financial reports.

As a financial analyst, you need strong spreadsheet skills, the ability to develop financial models and pro forma financial statements, outstanding analytical skills, and an overall understanding of business processes. Financial analysts possess a well-diversified collection of business and communication skills, both quantitative and qualitative. Figure 1.5.1 lists some tasks that financial analysts must perform on a daily basis. Some firms require an MBA or several years of business experience for their financial analysts.



Figure 1.5.1: Financial Analyst Tasks

Internal financial analysts are important for a successful firm or organization because their work can lead to more efficient and cost-effective use of financial and non-financial resources. Responsibilities include keeping current with market conditions, developing financial models, reconciling variance between forecasts and outcomes, and serving as a resource for management. Financial analysts fulfill their responsibilities through the development and analysis of financial data, including ratio analysis, trend analysis, in-depth discussions with division managers, and the presentation and interpretation of information at meetings and on electronic platforms.

External financial analysts use similar resources and tools to evaluate financial instruments as an aid to investment companies, investment and commercial bankers, and individual investors who rely on their published reports. Various government agencies also use financial analysts to aid in regulatory oversight and enforcement.

According to the U.S. Bureau of Labor Statistics (BLS), financial analysts earned a **median annual wage of \$101,910 in May 2024**. Employment of financial analysts is projected to grow **9% from 2023 to 2033**, which is faster than the average for all occupations. The increasing use of financial data, investment analysis, and advanced technologies such as artificial intelligence is expected to drive continued demand for skilled financial professionals.⁵

Business (or Management) Analyst Roles

The job description for a business analyst looks much like that for a financial analyst. However, the strong quantitative skills required for a financial analyst are less emphasized in favor of overall strategic thinking. A successful business analyst is able to evaluate business opportunities by using analytical thinking, industry best practices, process development, team building, organization, and information technology. They then communicate optimal courses of action to executive decision makers to maximize value in alignment with the vision and goals of the firm.

Business analysts can help develop strategy and tactics to move a firm forward. They aid in identifying challenges and solutions. Data-driven solutions help get products to market more quickly, evaluate performance, and optimize production and product mix. The Bureau of Labor Statistics identifies the following as typical business analyst duties:

- Gathering information about problems to be solved or procedures to be improved
- Interviewing personnel and conducting on-site observations to determine the methods, equipment, and personnel that will be needed
- Analyzing financial data, revenues and expenditures, and employment reports, among other data
- Finding root causes for problems and proposing solutions that may include new systems, procedures, or personnel changes
- Presenting findings to decision makers
- Conferring with managers to ensure changes work

According to the U.S. Bureau of Labor Statistics (BLS), **management analysts earned a median annual wage of \$101,190 in May 2024**. Employment of management analysts is projected to grow **11% from 2023 to 2033**, much faster than the average for all occupations. This growth is expected to result in approximately **95,700 job openings each year**, on average, driven by both new job creation and the need to replace workers who leave the occupation. Organizations continue to seek management analysts to improve efficiency, reduce costs, and leverage data-driven decision-making in an increasingly complex business environment.⁶

Footnotes

- [4 Business and Financial Occupations : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics](#)
- [5 Business and Financial Occupations : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics](#)
- [6 Business and Financial Occupations : Occupational Outlook Handbook: : U.S. Bureau of Labor Statistics](#)

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1.6: Markets and Participants

Learning Objectives

By the end of this section, you will be able to:

- Identify primary and secondary markets.
- Identify key market players.

Primary and Secondary Markets

Simply put, the **primary market** is the market for “new” securities, and the **secondary market** is the market for “used” securities. Think of the primary market as equivalent to the sale of new cars and the secondary market as equivalent to the sale of used cars. In practice, many market locales trade both new and used securities. For example, the stock markets trade equity securities daily, and most of the trading takes place among individual and institutional investors who own shares in publicly traded companies. Trading a share of Amazon, Facebook, or Nike stock has little impact and no direct cash flow to the underlying firm. However, the information provided by such transactions is valuable, as it is a costly and public real-time statement by investors of their perceptions of the firm’s value and a reflection of satisfaction and expectations.

Some, though many fewer, transactions in the equity market are for the purchase and sale of new securities. Firms issue new shares of stock called seasoned equity offerings (SEOs) or initial public offerings (IPOs) into the market. These are issues of new shares of stock, previously untraded, and their issuance sends cash flows directly to the underlying firms. SEOs are new shares issued by established firms, and IPOs are new shares issued by firms going public for the very first time. Once the initial transaction takes place, purchasers of these new securities may trade them. However, the second and subsequent trades are secondary, not primary, market transactions.

Extensive primary market transactions take place weekly, when the Treasury Department auctions billions of dollars of new Treasury securities. These new securities repay maturing Treasury securities and provide for the ongoing liquidity and long-term borrowing needs of the federal government. Again, subsequent trading of this government debt occurs as secondary market transactions.

Key Market Players

Key market players in finance include dealers, brokers, financial intermediaries, and you and me. Each of these players facilitates the exchange of products, information, and capital in different ways. The presence of these players makes financial transactions easier, faster, and safer—essentially more efficient. You and your friends might engage in direct financial transactions, such as buying a coffee or borrowing money for a movie. These are typically small transactions. However, for transactions that are larger or more complicated, you need advanced financial entities with capital, expertise, and networks. The two segments of the secondary markets are broker markets and dealer markets, as Figure 1.6.1 shows. The primary difference between broker and dealer markets is the way each executes securities trades.

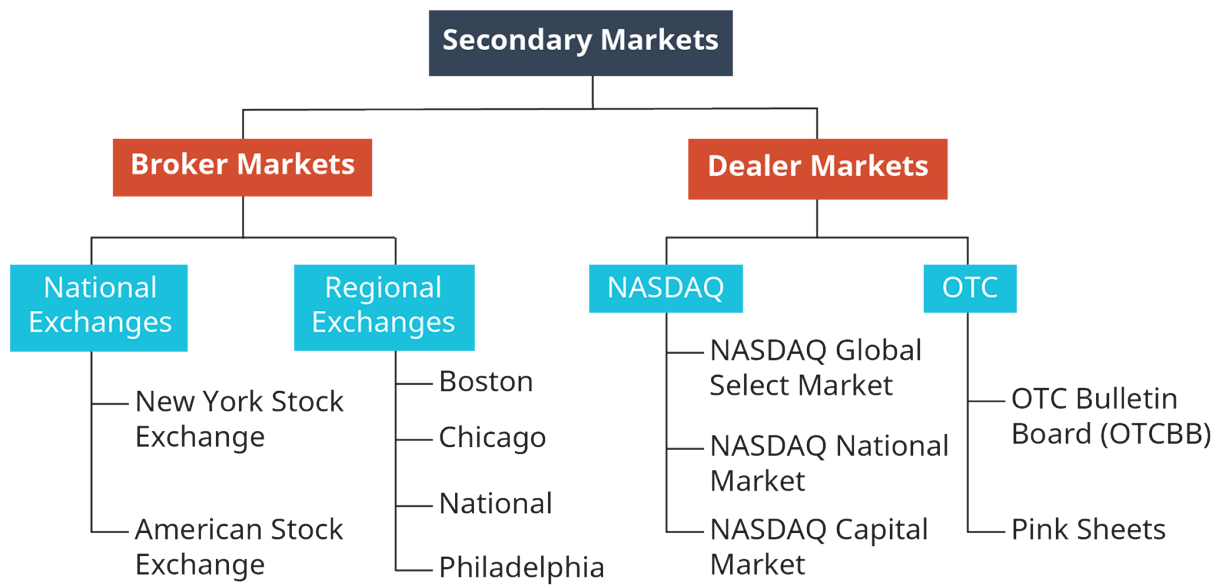


Figure 1.6.1: Broker and Dealer Markets

Dealers

Financial **dealers** own the securities that they buy or sell. When a dealer engages in a financial transaction, they are trading from their own portfolio. Dealers do not participate in the market in the same manner as an individual or institutional investor, who is simply trying to make their investments worth as much as possible. Instead, dealers attempt to “make markets,” meaning they are willing and able to buy and sell at the current bid and ask prices for a security. Rather than relying on the performance of the underlying securities to generate wealth, dealers make money from the volume of trading and the spread between their bid price (what they are willing to pay for a security) and their ask price (the price at which they are willing to sell a security). By standing ready to always buy or sell, dealers increase the liquidity and efficiency of the market. Dealers in the United States fall under the regulatory jurisdiction of the Securities and Exchange Commission (SEC). Such regulatory oversight ensures that dealers execute orders promptly, charge reasonable prices, and disclose any potential conflicts of interest with investors.

Brokers

Brokers act as facilitators in a market, and they bring together buyers and sellers for a transaction. Brokers differ from dealers who buy and sell from their own portfolio of holdings. These firms and individuals traditionally receive a commission on sales.

In the world of stockbrokers, you may work with a discount broker or a full-service broker, and the fees and expenses are significantly different. A discount broker executes trades for clients. Brokers are required for clients because securities exchanges require membership in the exchange to accept orders. Discount brokers or platforms such as Robinhood or E-Trade charge no or very low commissions on many of their trade executions, but they may receive fees from the exchanges. They also do not offer investment advice.

Full-service brokers offer more services and charge higher fees and commissions than discount brokers. Full-service brokers may offer investment advice, retirement planning, and portfolio management, as well as execute transactions. Morgan Stanley and Bank of America Merrill Lynch are examples of full-service brokers that serve both institutional and individual investors.

Financial Intermediaries

A **financial intermediary**, such as a commercial bank or a mutual fund investment company, serves as an intermediary to enable easier and more efficient exchanges among transacting parties. For instance, a commercial bank accepts deposits from savers and investors and creates loans for borrowers. An investment company pools funds from investors to inexpensively purchase and manage portfolios of stocks and bonds. These transactions differ from those of a dealer or broker. Brokers facilitate trades, and dealers stand ready to buy or sell from their own portfolios. Financial intermediaries, however, accept money from investors and may create a completely different security altogether. For example, if the borrower defaults on a mortgage loan created by the commercial bank where you have your certificate of deposit, your investment is still safely earning interest, and you are not

directly affected.

Financial institutions usually facilitate financial intermediation. However, occasionally, lenders and borrowers are able to initiate transactions without the help of a financial intermediary. When this occurs on a large scale, the process, known as disintermediation, can cause much turmoil in the financial markets. In the 1970s, inflation rose above 10% on an annual basis, and yet commercial banks were limited to offering maximum rates of 5% on their savings deposits.⁷ Savers bypassed banks and savings and loan associations to invest directly into Treasury securities and other short-term marketable securities. This lack of deposit funds and the subsequent behavior of the industry essentially eliminated the savings and loan industry and led to significant deregulation of commercial and investment banking in the United States.

The advantages of a robust network of financial intermediaries are many. They add efficiency to the financial system through lower transaction costs. They gather and disperse information to minimize financial abuse and fraud. They provide economies of scale and specialized knowledge. Finally, financial intermediaries are critical for the functioning of a capitalist economy.

Footnotes

- ⁷ United States President and Council of Economic Advisers. “The 1970s: Inflation, High Interest Rates, and New Competition.” *Economic Report of the President*. 1991.

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1.7: Microeconomic and Macroeconomic Matters

Learning Objectives

By the end of this section, you will be able to:

- Define microeconomics and macroeconomics.
- Discuss the relationship between microeconomics and macroeconomics.
- Explain the importance of macroeconomic variables in financial markets.

Microeconomics

In the business setting, finance is the intersection of economics and accounting. Financial decision makers rely on economic theory and empirical evidence combined with accounting data to make informed decisions for their organization. Economics is the study of the allocation of scarce resources. Economists attempt to understand the how and why of human and financial capital allocation to governments, businesses, and consumers.

We typically separate economics into two major areas, microeconomics and macroeconomics. Microeconomics is devoted to the study of these decisions of allocation by individual businesses, persons, or organizations. Microeconomics helps us understand incentives and behavior, consumer choices and consumption, and supply and demand.

Our understanding of microeconomics aids in financial forecasting, planning, and budgeting by understanding how individuals are likely to respond to changes in product or service functionality, price, supply, quality, marketing, or other firm-induced stimuli. Empirical research by individuals, businesses, academics, and government provides evidence of what is going on and suggests what may change or stay the same.

Macroeconomics

Whereas microeconomics studies the decisions of individuals, macroeconomics examines the decisions of groups. Macroeconomic areas of study and concern include inflation, income, economic growth, and unemployment. When Bacon Signs developed a financial and operating plan to expand the business, the firm had to consider unemployment and inflation when estimating the price of labor and materials. Bacon Signs also had to consider interest rates when estimating the cost of borrowing money to expand the business.

Macroeconomic modeling is limited because models cannot capture every variable in testing and application. However, financial forecasting must incorporate macroeconomic assumptions and expectations into individual firm and industry forecasts. Economic Foundations expands on our discussion of micro- and macroeconomics.

Importance of Macroeconomic Variables in Financial Markets

To make financial forecasts, managers need good information to understand the relationship among several economic variables. Working from small to large, sales forecasts estimate the likely price and quantity of goods sold. In doing so, the forecaster will consider local, regional, state, national, and international economic conditions. Inflation is an important macroeconomic variable that influences prices. Every quarter, financial information hubs, such as the Wall Street Journal (WSJ), and government agencies and regulatory bodies, such as the Treasury Department and the Federal Reserve, release estimates about expected and current inflation. This information informs policymakers how to adjust the money supply to meet target objectives. Financial forecasters pay close attention to current and expected interest rates, as they have a fundamental impact on the cost of raising money and determining the required rate of return for investment.

The unemployment rate helps inform financial forecasters about the expected cost of labor and the ability of employers to hire people if a firm plans to increase the production of goods or services. The stock market is a forward-looking macroeconomic variable and measures investor expectations about future cash flows and economic growth. Political economic variables such as

changes in regulation or tax policy can also affect forecasting models.

Link to Learning: Politics and Stock Markets

Politics and stock market returns make for heated conversations. Who can run the country's economic system better, Republicans or Democrats? Presidents often take the credit or blame for overall economic performance, even though their actual influence is less than you might think. See this fun comparison chart of political economic performance that measures stock market returns by each administration going back to President Warren Harding in 1920. Who had the highest overall increase in the market? What president in the 21st century oversaw an overall decline in the market? Just to get things going, who had better overall market returns after four years in office, Donald Trump or Barack Obama?

Each of the variables we have identified—inflation, interest rates, unemployment, economic growth, the stock market, and government fiscal policy—is a macroeconomic factor. They are beyond the scope and influence of individual firms, but combined, they play a critical role in establishing the market in which firms compete. A better understanding of the interaction of these macro variables with each other and with individual micro or firm-specific variables can only strengthen financial forecasting and management decision-making.

Concepts In Practice: Here, There, and Everywhere: Where Did Your iPhone Come From?

How do international macroeconomic factors affect investment decisions for businesses and individuals? Foreign investment adds risk and potential return to the decision-making process. Macroeconomic factors such as different inflation rates, unexpected changes in currency exchange rates, and mismatched economic growth all add to the uncertainty of making investments abroad. Just as important are government regulations limiting pollution, exploitation of precious minerals, labor laws, and tariffs. Toss in a pandemic and a bottleneck or two, and suddenly international macroeconomic factors can affect almost every aspect of commerce and international trade.

For example, how far did your new iPhone travel before it got into your hands? Apple is an American company headquartered in Cupertino, California, and worth over \$2 trillion.⁸ However, your phone may have visited as many as six continents before it reached you. Each location touched by the Apple corporate hand requires an understanding of the financial impact on the product cost and a comparison with alternative designs, resources, suppliers, manufacturers, and shippers. This is where finance can get really fun!

(Sources: Magdalena Petrova. "We Traced What It Takes to Make an iPhone, from Its Initial Design to the Components and Raw Materials Needed to Make It a Reality." *CNBC*. December 14, 2018.; Natasha Lomas. "Apple's Increasingly Tricky International Trade-offs." *TechCrunch*. January 6, 2019.; Kif Leswing. "Here's Why Apple Is So Vulnerable to a Trade War with China." *CNBC*. May 13, 2019.)

Relationship between Microeconomics and Macroeconomics

In the parable, a group of blind people happens upon an elephant for the first time, and they each touch one part—but one part only—of the elephant. Subsequently, when they each describe what they have discovered, the descriptions are vastly different. The group's members become upset, accusing one another of inaccurate descriptions or worse. The parable demonstrates how individuals can make absolute truths from their own limited and subjective information. Financial decision makers run a similar risk if they choose to recognize only their own findings and ignore other microeconomic or macroeconomic information and the interaction of these factors.

A common view of understanding economics states that macroeconomics is a top-down approach and microeconomics is a bottom-up approach. Financial decision makers need to see both the forest and the individual trees to chart a course and move toward a strategic objective. They need both the macro data, so important for strategic thinking, and the micro data, required for tactical movement. For example, the national rate of unemployment may not have been much help when Bacon Signs was searching for skilled laborers who could form neon signs. However, the unemployment rate helped inform the company about the probability of demand for new businesses and the signs they would need.

Footnotes

- 8 Sergei Klebnikov. “Apple Becomes First U.S. Company Worth More Than \$2 Trillion.” *Forbes*. August 19, 2020.

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1.8: Financial Instruments

Learning Objectives

By the end of this section, you will be able to:

- Differentiate between money and capital markets.
- List money market instruments.
- List capital market instruments.

Money Markets and Instruments

The **money market** is the market for short-term, low-risk, highly liquid securities. “Short-term” refers to **money market securities** having maturities of less than one year—sometimes as short as overnight. “Low risk” specifically means that the probability of default by the issuer is very low. Defaulting on money market instruments is not unheard of, but it is very rare. “High liquidity” means that money market instruments can generally be sold in a secondary market very quickly and at or near their current market value. Finally, money market securities are homogeneous, meaning that within an issue of securities, a single instrument is not unique. For example, if you purchase 13-week T-bills issued in the first week of January, each bill is identical to any other in the issue. Compare that to the purchase of physical assets such as a car or house, where each of the assets sold has some unique feature or measure of quality.

Financial institutions, corporations, and governments that have short-term borrowing and/or lending needs issue securities in the money market. Most of the transactions are quite large, with typical amounts in excess of \$100,000. These large transactions are the norm when trading federal funds, repurchase agreements, commercial paper, or negotiable certificates of deposit. Our sample company, Bacon Signs, was much too small to participate directly in the money market. However, Bacon Signs’ borrowing rates were affected by changes in the money market. Treasury bills are also a very important component of the money market, and they trade in smaller amounts starting at \$10,000 per T-bill.

Treasury bills (T-bills) are short-term debt instruments issued by the federal government. T-bills are auctioned weekly by the Treasury Department through the trading window of the Federal Reserve Bank of New York. The federal government uses T-bills to meet short-term liquidity needs. T-bills have very short maturities and a broad secondary market and are default-risk-free. T-bills are also exempt from state and local income taxes. As a result, they carry some of the lowest effective interest rates on publicly traded debt securities. In addition to the regular auction of new T-bills, there is also an active secondary market where investors can trade used or previously issued T-bills. Since 2001, the average daily trading volume for T-bills has exceeded \$75 billion.⁹

Commercial paper (CP) is a short-term, unsecured debt security issued by corporations and financial institutions to meet short-term financing needs such as for inventory and receivables. For example, credit card companies use commercial paper to finance credit card payments. Commercial paper has a maturity of one to 270 days. The short maturity reduces SEC oversight. The lesser oversight and the unsecured nature of CP mean that only highly rated firms are able to issue the uninsured paper. The default rate on commercial paper is typically low, but default rates did increase into the double-digit range during the financial crisis of 2008.

Commercial paper typically carries a minimum face value of \$100,000 and sells at a discount, with the face value as the repayment amount. Corporations and financial institutions, not the government, issue commercial paper; thus, returns are taxable. Further, unlike T-bills, there is no robust secondary market for CP. Most purchasers are large, such as mutual fund investment companies, and they tend to hold commercial paper until maturity.

Negotiable certificates of deposit (NCDs) are very large CDs issued by financial institutions. They are redeemable only at maturity, but they can and often do trade prior to maturity in a broad secondary market. NCDs, or *jumbo CDs*, are so called because they sell in increments of \$100,000 or more. However, typical minimum amounts are \$1,000,000 with a maturity of two weeks to six months.

NCDs differ in some important ways from the typical CD you may be familiar with from your local bank or credit union. The typical CD has a maturity date, interest rate, and face amount and is protected by deposit insurance. However, if an investor wishes to

cash out prior to maturity, they will incur a substantial penalty from the issuer (bank or credit union). An NCD also has a maturity date and amount but is much larger than a regular CD and appeals to institutional investors. The principal is not insured. When the investor wishes to cash out early, there is a robust secondary market for trading the NCD. The issuing institution can offer higher rates on NCDs compared to CDs because they know they will have use of the purchase amount for the entire maturity of the NCD. The reserve requirements on NCDs by the Federal Reserve are also lower than for other types of deposits.

The market for **federal funds** is notable because the Federal Reserve targets the equilibrium interest rate on federal funds as one of its most important monetary policy tools. The federal funds market traditionally consists of the overnight borrowing and lending of immediately available funds among depository financial institutions, notably domestic commercial banks. The participants in the market negotiate the federal funds interest rate. However, the Federal Reserve effectively sets the target interest rate range in the federal funds market by controlling the supply of funds available for use in the market. Many of the borrowing and lending rates in our economy are a direct function of the federal funds rate.

Capital Markets and Instruments

The **capital market** is the market for longer-term financial instruments. The capital market is similar to the money market. However, maturities are longer, default risk varies to a greater degree from low to high, and liquidity is less certain, as is the homogeneity of the financial instruments. Broadly, we separate capital market instruments into debt instruments traded in the bond markets and equity securities traded on the stock markets.

The federal government issues Treasury notes and bonds to raise money for current spending and to repay past borrowing. The size of the Treasury market is quite large, as the US federal government over the years has accumulated a total indebtedness of over \$28 trillion.¹⁰

Treasury notes are US government debt instruments with maturities of 2 to 10 years. The Treasury auctions notes on a regular basis, and investors may purchase new notes from TreasuryDirect.gov in the same way they would a T-bill. T-notes differ from T-bills in that they are longer term, pay semiannual coupon interest payments, and pay the par or face value of the note at maturity. Upon issue of a note, the size, number, and timing of note payments are fixed. However, prices do change in the secondary market as interest rates change. Like T-bills, T-notes are generally exempt from state and local taxes. There is an active secondary market for Treasury notes.

Longer-term Treasury issues, **Treasury bonds**, have maturities of 20 or 30 years. T-bonds are like T-notes in that they pay semiannual coupon interest payments for the life of the security and pay the face value at maturity. They are longer-term than notes and typically have higher coupon rates.

State and local governments and taxing districts can issue debt in the form of **municipal bonds** (“munis”). Local borrowing carries more risk than Treasury securities, and default or bankruptcy is unlikely but possible. Thus, munis have ratings that run a spectrum similar to that of corporate bonds in that they receive a bond rating based on the perceived default risk. The defining feature of municipal bonds is that some interest payments are tax-free. Interest on munis is always exempt from federal taxes and sometimes exempt from state and local taxes. This makes them very attractive to investors in high-income brackets.

Just as governments borrow money in the long-term from investors, so do corporations. A corporation often issues bonds for longer-term financing. Bond contracts identify very specific terms of agreement and outline the rules for the order, timing, and amount of contractual payments, as well as processes for when one or more of the required activities lapse. A bond contract, known as an indenture, includes both standard “boilerplate” contract language and specific conditions unique to a particular issue. Because of these non-standardized features of a bond contract, the secondary market for trading used bonds typically requires a broker, dealer, or investment company to facilitate a trade.

An important goal of business executives is to maximize the owners’ wealth. For corporations, shares of stock represent ownership. Stocks are difficult to price compared to bonds. Bonds have contracts that specify the number and amount of all payments made by the firm to the purchasers of bonds. Stock cash flows are far more uncertain than bond cash flows. Stocks might or might not have periodic dividend payments, and an investor can plan to sell the stock at some point in the future. However, no contract guarantees the size of the dividends or the time or resale price of the stock. Thus, the cash flows from stock ownership are more uncertain and risky than cash flows from bonds.

Ownership of corporations is easily transferable if a company’s stock trades in one of the organized stock exchanges or in the over-the-counter (OTC) market. Most of the trading consists of used or previously issued stocks in the over-the-counter market and organized exchanges. The two largest stock exchanges in the world are the New York Stock Exchange (NYSE) and the

NASDAQ. Both exchanges are located in the United States.

Footnotes

- [9](#) Henrik Bessembinder, Chester Spatt, and Kumar Venkataraman. "A Survey of the Microstructure of Fixed-Income Markets." *Journal of Financial and Quantitative Analysis*. February 2020. www.sec.gov/spotlight/fixed-income-market.pdf
- [10](#) Trading Economics. "United States Government Debt." *Trading Economics*. tradingeconomics.com/united-states-government-debt

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1.9: Concepts of Time and Value

Learning Objectives

By the end of this section, you will be able to:

- Explain the impact of time on saving and spending.
- Describe economic value.

Many students don't have a choice between saving and spending. College is expensive, and it is easy to spend every dollar you earn and to borrow to meet the rest of your obligations. Businesses, however, continually make decisions about when and how much money to borrow or invest. Bacon Signs established banking relationships to borrow money when needed to expand the business or a product line. Sometimes the best decision is to invest as soon as possible to grab opportunities, and other times it is better to delay new investment in order to pay dividends to the owners of the company.

Link to Learning: The Dow Jones Industrial Average Marches On!

Once you begin to save and invest, here is a “fun fact” about the [Dow Jones Industrial Average \(DJIA\)](#), also known as the Dow 30. It first appeared on May 26, 1896, as a quick way for stock traders to assess if the stock market had gone “up or down” each day and by how much. Here we are over 100 years later, and the Dow 30 index is alive and well. Of course, the 30 companies have changed, but the index does represent a continuous yardstick to measure stock performance over time. As Table 1.9.1 shows, it took from 1906 to 1972, or a little over 66 years, for the Dow 30 to increase tenfold, from a value of 100 to a value of 1,000. The next tenfold increase from 1,000 to 10,000 took only a little under 27 years, from 1972 to 1999. Time will tell if or when the Dow 30 will top 100,000 at the closing bell.

Table 1.9.1: The Dow 30 Closing Milestones and Dates

Closing Milestones	Date
41	5/26/1896
100	1/12/1906
1,000	11/14/1972
10,000	3/29/1999
20,000	1/25/2017
30,000	11/24/2020

Impact of Time on Saving and Spending

The choice to spend or save and invest is really a choice between consumption today and consumption in the future. Economists, investment advisers, your friends, and mine love to discuss the trade-off of consumption now or later—even if not in those words. We have all heard conversations that go something like this: “Let’s go grab a beer—you can study for tomorrow’s exam in the morning.” Or “My father’s investment adviser told me that if I invest \$500 per month for the next 30 years and earn an annual rate of 10% on my investments, I will have invested \$180,000 over time but accumulated an investment portfolio worth over \$1.13 million!”

An important aspect of the trade-off between saving and spending involves your short-, intermediate-, and long-term goals. Delaying consumption until later comes with risks. Will your consumption choices still be available? Will the prices be attainable? Will you still be able to consume and enjoy your future purchases?

When saving for short-term objectives, the safety of the principal invested is important, and the value of compounding returns is

minimal compared to longer-term investments. Most short-term investors have a low tolerance for risk and hope to beat the rate of inflation with a little extra besides. An example could be to start a holiday savings account at your local bank as a way to save, earn a low rate of return, and ensure that you have funds set aside for consumption at the end of the year.

An intermediate investment may be to save for a new car or for the down payment on a house or vacation home. Again, maintaining the principal is important, but you have some time to recover from poor investment returns. Intermediate-term investments tend to earn higher average annual rates of return than short-term investments, but they also have greater uncertainty and risk.

Long-term investments have the advantage of enough time to recover from temporary poor performance and the luxury of compounded returns over a long period. Further, long-term investments tend to have greater risk and higher expected average annual rates of return. Even though this is a business finance text, sometimes a personal finance example is easier to relate to. To illustrate, Table 1.2 demonstrates four different investment scenarios. In scenario 1, you invest \$5,000 annually from ages 26 through 60 into an account earning an average annual rate of return of 10% per year. Over your lifetime, you invest a total of \$175,000, and at age 60, you have an estimated portfolio value of \$1,490,634. This is a healthy amount that has almost certainly beaten the average annual rate of inflation. In scenario 1, by investing regularly, you accumulate roughly 8.5 times the value of what you invested. Congratulations, you can expect to become a millionaire!

Compare your results in scenario 1 with your college roommate in scenario 2, who is able to invest \$5,000 per year from ages 19 through 25 and leave her investments until age 60 in an account that continues to earn an annual rate of 10%. She makes her investments earlier than you, but they total only \$35,000. However, despite a much smaller investment, her head start advantage, and the high average annual compounded rate of return leave her with an expected portfolio value of \$1,466,369. Her total is almost as great as the amount you would accumulate, but with a much smaller total investment.

Scenarios 3 and 4 are even more dramatic, as can be seen from a review of Table 1.9.2. In both scenarios, only five \$5,000 investments are made, but they are made earlier in the investor's life. Parents or grandparents could make these investments on behalf of the recipients. In both scenarios, the portfolios grow to amounts greater than those of you or your roommate with smaller total investments. The common factor is that greater time leads to additional compounding of the investments and thus greater future values.

Table 1.9.2: Four Investment Scenarios: Assumptions and Expected Outcomes

Assumptions	Average Annual Rate of Return = 10%			
	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Starting investment age	26	19	14	9
Ending investment age	60	25	18	13
Total investments	35	7	5	5
Annual investment	\$5,000	\$5,000	\$5,000	\$5,000
Total investment amount	\$175,000	\$35,000	\$25,000	\$25,000
Value at age 60	\$1,490,634	\$1,466,369	\$1,838,858	\$2,961,500

Definition of Economic Value

Value is a term used frequently in business and especially in economics, accounting, and finance. Accountants track, record, and display value in the form of financial statements and footnotes. The numbers they present are “book values” and represent what has occurred. Financial people like to speak in terms of “market values.” Market values are calculated using expected future cash flows discounted to today. Market values are the prices that consumers pay for a product. **Economic value** is what we believe consumers are actually willing to pay for a product, service, or experience. For example, the price of a movie ticket may be \$10, but there are individuals who are willing to pay far more for the experience of watching a movie on the big screen.

Generally, the economic value is at least as great as the market value or current price of an asset. When Bacon Signs planned for the future, the firm attempted to determine the economic value of its products when creating an optimal mix of price and quantity sold. Firms that produce unique products for clients may have multiple prices based on the estimated economic value of their goods or services to the client. One way to think about the difference between market value and economic value is that market

value is what you have to pay, while economic value is what you are willing to pay.

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1.10: Business Structures

Learning Objectives

By the end of this section, you will be able to:

- Identify the business form created by most organizations.
- Contrast the advantages and disadvantages that the corporate form has over sole proprietorships.
- Contrast the advantages and disadvantages that the corporate form has over partnerships.
- List and describe characteristics associated with a hybrid business structure.

The Most Common Types of Business Organization

The functions of most executive management teams are very similar for most businesses, and they will not differ in any significant manner based on how they may be structured or organized. However, the legal structure of any company will have a substantial impact on its operations, and it therefore deserves a significant amount of analysis and discussion. The four most common forms of business organizations are the following:

1. Sole proprietorships
2. Partnerships
3. Corporations
4. Hybrids, such as limited liability companies (LLCs) and limited liability partnerships (LLPs)

The vast majority of businesses take the form of a proprietorship. However, based on the total dollar value of combined sales, more than 80 percent of all business in the United States is conducted by a **corporation**.¹ Because corporations engage in most business, and because most successful businesses eventually convert into corporations, we will focus on corporations in this chapter. However, it is still important to understand the legal differences between different types of firms and their advantages and disadvantages.

Sole Proprietorships

A proprietorship is typically defined as an unincorporated business owned by a single person. The process of forming a business as a **sole proprietor** is usually a simple matter. A business owner merely decides to begin conducting business operations, and that person is immediately off and running. Compared to other forms of business organizations, proprietorships have the following four important advantages:

1. They have a basic structure and are simple and inexpensive to form.
2. They are subject to relatively few government rules and regulations.
3. Taxation on sole proprietorships is far simpler than on other organizational forms. There are no separate taxes associated with a sole proprietorship, as there are with corporations. Sole proprietors simply report all their business income and losses on their personal income tax returns.
4. Controlling responsibilities of the firm are not divided in any way. This results in less complicated managerial decisions and improved timeliness of necessary corrective actions.

However, despite the ease of their formation and these stated advantages, proprietorships have four notable shortcomings:

1. A sole proprietor has unlimited personal liability for any financial obligations or business debts, so in the end, they risk incurring greater financial losses than the total amount of money they originally invested in the company's formation. As an example, a sole proprietor might begin with an initial investment of \$5,000 to start their business. Now, let's say a customer slips on some snow-covered stairs while entering this business establishment and sues the company for \$500,000. If the organization loses the lawsuit, the sole proprietor would be responsible for the entire \$500,000 settlement (less any liability insurance coverage the business might have).
2. Unlike with a corporation, the life of the business is limited to the life of the individual who created it. Also, if the sole

proprietor brings in any new equity or financing, the additional **investor(s)** might demand a change in the organizational structure of the business.

3. Because of these first two points, sole proprietors will typically find it difficult to obtain large amounts of financing. For these reasons, the vast majority of sole proprietorships in the United States are small businesses.
4. A sole proprietor may lack specific expertise or experience in important business disciplines, such as finance, accounting, taxation, or organizational management. This could result in additional costs associated with periodic consulting with experts to assist in these various business areas.

It is often the case that businesses that were originally formed as proprietorships are later converted into corporations when the growth of the business causes the disadvantages of the sole proprietorship structure to outweigh the advantages.

Partnerships

A **partnership** is a business structure that involves a legal arrangement between two or more people who decide to do business as an organization together. In some ways, partnerships are similar to sole proprietorships in that they can be established fairly easily and without a large initial investment or cost.

Partnerships offer some important advantages over sole proprietorships. Among them, two or more partners may have different or higher levels of business expertise than a single sole proprietor, which can lead to superior management of a business. Further, additional partners can bring greater levels of investment capital to a firm, making the process of initial business formation smoother and less risky.

A partnership also has certain tax advantages in that the firm's income is allocated on a pro rata basis to the partners. This income is then taxed on an individual basis, allowing the company to avoid corporate income tax. However, similar to the sole proprietorship, all of the partners are subject to unlimited personal liability, which means that if a partnership becomes bankrupt and any partner is unable to meet their pro rata share of the firm's liabilities, the remaining partners will be responsible for paying the unsatisfied claims.

For this reason, the actions of a single partner that might cause a company to fail could end up bringing potential ruin to other partners who had nothing at all to do with the actions that led to the downfall of the company. Also, as with most sole proprietorships, unlimited liability makes it difficult for most partnerships to raise large amounts of capital.

Corporations

The most common type of organizational structure for larger businesses is the corporation. A corporation is a legal business entity that is created under the laws of a state. This entity operates separately and distinctly from its owners and managers. It is the separation of the corporate entity from its owners and managers that limits stockholders' losses to the amount they originally invested in the firm. In other words, a corporation can lose all of its money and go bankrupt, but its owners will only lose the funds that they originally invested in the company.

Unlike other forms of organization, corporations have unlimited lives as business entities. It is far easier to transfer shares of stock in a corporation than it is to transfer one's interest in an unincorporated business. These factors make it much easier for corporations to raise the capital necessary to operate large businesses. Many companies, such as Microsoft and Hewlett-Packard, originally began as proprietorships or partnerships, but at some point, they found it more advantageous to adopt a corporate form of organization as they grew in size and complexity.

An important disadvantage to corporations is income taxes. The earnings of most corporations in the United States are subject to something referred to as double taxation. First, the corporation's earnings are taxed; then, when its after-tax earnings are paid out as dividend income to **shareholders (stockholders)**, those earnings are taxed again as personal income.

It is important to note that to address the issue of double taxation associated with traditional C corporations, Congress created the **S corporation**. An S corporation is generally not subject to federal corporate income tax. Instead, its income, deductions, and credits pass through to shareholders, who report these amounts on their individual tax returns. To qualify for S corporation status, a company must meet several requirements, including having no more than 100 shareholders, issuing only one class of stock, and maintaining eligibility under Internal Revenue Service (IRS) rules. As a result, the S corporation structure is particularly attractive to small and medium-sized privately owned businesses, although its ownership restrictions make it less suitable for large, publicly traded companies.

In addition to avoiding double taxation, S corporations offer shareholders the benefit of limited liability protection, meaning owners are generally not personally responsible for the company's debts and obligations. This structure combines some of the tax advantages of a partnership with the legal protections of a corporation. S corporations also provide flexibility in managing the business while enhancing credibility with lenders, suppliers, and customers. However, they are subject to stricter ownership and reporting requirements than sole proprietorships and partnerships. Business owners must carefully evaluate the costs and benefits of the S corporation form to determine whether it aligns with their growth objectives, financing needs, and long-term strategic plans.

A larger corporation is often referred to as a **C corporation**. The vast majority of small corporations prefer to elect S status. This structure will usually suit them very well until the business reaches a point where their financing needs grow and they make the decision to raise funds by offering their stock to the public. At such time, they will usually become C corporations. Generally speaking, an S corporation structure is more popular with smaller businesses because of the likely tax savings, and a C corporation structure is more prevalent among larger companies due to the greater flexibility in raising capital.

Hybrids: Limited Liability Corporations and Partnerships

Another form of business organization is the **limited liability corporation (LLC)**. This type of business structure has become a very popular type of organization. The LLC is essentially a **hybrid form of business** that has elements of both a corporation and a partnership. Another form of organizational structure is something called a **limited liability partnership (LLP)**, which is quite similar to the LLC in structure and in use. It is very common to see LLPs used as the organizational form for professional services firms, often in such fields as accounting, architecture, and law. Conversely, LLCs are typically used by other forms of businesses.

Similar to corporation structures, LLCs and LLPs will provide their principals with a certain amount of liability protection, but they are taxed as partnerships. Also, unlike in limited partnerships, where a senior general partner will have overall control of the business, investors in an LLC or LLP have votes that are in direct proportion to their percentage of ownership interest or the relative amount of their original investment.

A particular advantage of a limited liability partnership is that it allows some of the partners in a firm to limit their liability. Under such a structure, only designated partners have unlimited liability for company debts; other partners can be designated as limited partners, only liable up to the amount of their initial contribution. Limited partners are typically not active decision-makers within the firm.

Some important differences between LLCs and LLPs are highlighted in Table 1.10.1.

Table 1.10.1: *Advantages and Disadvantages of LLCs and LLPs*

Limited Liability Corporation		Limited Liability Partnership	
Advantages	Disadvantages	Advantages	Disadvantages
Fewer restrictions on eligibility (only one member allowed; can be professional, although some states disallow professionals)			Only certain professions eligible
Usually, more personal liability protection	Limited protection from partners' actions	Personal protection as well as protection from negligence of other partners	
Flexibility in taxation	Earnings included in members' personal taxes	Earnings are taxed just once	Must file taxes as a pass-through entity

LLCs and LLPs have gained great popularity in recent years, but larger companies still find substantial advantages in being structured as C corporations. This is primarily due to the benefits of raising capital to support long-term growth. It is interesting to note that LLC and LLP organizational structures were essentially devised by attorneys. They generally are rather complicated, and the legal protection offered to their ownership principals may vary from state to state. For these reasons, it is usually necessary to retain a knowledgeable lawyer when establishing an organization of this type.

Obviously, when a company is choosing an organizational structure, it must carefully evaluate the advantages and disadvantages that come with any form of doing business. For example, if an organization is considering a corporation structure, it would have to evaluate the trade-off of having the ability to raise greater amounts of funding to support growth and future expansion versus

the effects of double taxation. Yet despite such organizational concerns with corporations, time has proven that the value of most businesses, other than relatively small ones, is very likely to be maximized if they are organized as corporations. This follows from the idea that limited ownership liability reduces the overall risks borne by investors. All other things being equal, the lower a firm's risk, the higher its value.

Growth opportunities will also have a tremendous impact on the overall value of a business. Because corporations can raise financing more easily than most other types of organizations, they are better able to engage in profitable projects, make investments, and otherwise take superior advantage of their many favorable growth opportunities.

The value of any asset will, to a large degree, depend on its liquidity. *Liquidity* refers to asset characteristics that enable the asset to be sold or otherwise converted into cash in a relatively short period of time and with minimal effort to attain fair market value for the owner. Because ownership of corporate stock is far easier to transfer to a potential buyer than is any interest in a business proprietorship or partnership, and because most investors are more willing to invest their funds in stocks than they are in partnerships that may carry unlimited liability, an investment in corporate stock will remain relatively liquid. This, too, is an advantage of a corporation and is another factor that enhances its value.

Link to Learning: Amazon

Most people are surprised to learn that Amazon, the largest online retailer, is set up as an LLC. Amazon.com Services LLC is set up as a subsidiary of the larger Amazon.com Inc. Take a look at the Amazon LLC company profile provided by Dun & Bradstreet. Why do you think such a large corporation is set up as an LLC?

Incorporating a Business

Many business owners decide to structure their business as a corporation. In order to begin the process of incorporation, an organization must file a business registration form with the US state in which it will be based and carry on its primary business activities. The document that must be used for this application is generally referred to as the **articles of incorporation** or a corporate charter. Articles of incorporation are the single most important governing documents of a corporation. The registration allows the state to collect taxes and ensure that the business is complying with all applicable state laws.

The exact form of the articles of incorporation differs depending on the type of corporation. Some types of articles of incorporation include the following:

- Domestic corporation (in state)
- Foreign corporation (out of state or out of country)
- Close (closely held) corporation
- Professional corporation
- Nonprofit corporation (several different types of nonprofits)
- Stock corporation
- Non-stock corporation
- Public benefit corporation

It is important to note that articles of incorporation are only required to establish a regular corporation. Limited liability corporations require what are referred to as *articles of organization* (or similar documents) to register their business with a state. Some types of limited partnerships must also register with their state. However, sole proprietorships do not have to register; for this reason, they are often the preferred organizational structure for a person who is just starting out in business, at least initially.

Articles of incorporation provide the basic information needed to legally form the company and register the business in its state. The state will need to know the name of the business, its purpose, and the people who will be in charge of running it (the **board of directors**). The state also needs to know about any stock that the business will be selling to the public. The websites of various **secretaries of state** will have information on the different types of articles of incorporation, the requirements, and the filing process.

Wisconsin Considerations. Businesses that choose to incorporate in Wisconsin must file Articles of Incorporation with the Wisconsin Department of Financial Institutions (DFI) and appoint a registered agent with a physical Wisconsin address. Wisconsin generally recognizes the federal S corporation election, meaning businesses that qualify as S corporations for federal

tax purposes typically receive similar pass-through tax treatment at the state level.

Wisconsin automatically recognizes the federal S corporation election, so businesses generally do not need to file a separate state-level S corporation election. This is a useful distinction compared to some states that require additional filings.

Wisconsin corporations are also required to file an annual report and maintain corporate records to remain in good standing.

Wisconsin is often viewed as a business-friendly state because of its relatively straightforward incorporation process and modest filing fees. Entrepreneurs can establish a corporation online through the Department of Financial Institutions, making the formation process efficient for small business owners. However, as with corporations in other states, Wisconsin S corporations must comply with both state corporate regulations and federal IRS requirements to maintain their tax status.

Footnotes

- 1 Aaron Krupkin and Adam Looney. “9 Facts about Pass-Through Businesses.” Brookings. The Brookings Institution, May 15, 2017.

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1.11: Relationship between Shareholders and Company Management

Learning Objectives

By the end of this section, you will be able to:

- Explain the difference between principals and agents.
- List and discuss various stakeholders associated with a company and its operations.
- Explain how management impacts the operations and future of a company.

Stakeholders

A **stakeholder** is any person or group that has an interest in the outcomes of an organization's actions. Stakeholders include employees, customers, shareholders, suppliers, communities, and governments. Different stakeholders have different priorities, and companies often have to make compromises to please as many stakeholders as possible.

Shareholders' Roles and Composition

A shareholder or stockholder can be a person, company, or organization that holds stock in a given company. Shareholders typically receive dividends if the company does well and succeeds. They are entitled to vote on certain company matters and to be elected to a seat on the board of directors. One advantage of being a shareholder is that creditors cannot compel shareholders to pay for any of the company's financial obligations or debts. However, being a shareholder includes responsibilities such as appointing the company's directors, deciding on director compensation, setting limits on directors' power, and monitoring and approving the company's financial statements.

Types of Shareholders

There are two types of shareholders: common shareholders and preferred shareholders. Common shareholders are any persons who own a company's common stock. They have the right to control how the company is managed, and they have the right to bring charges if management is involved in activities that could potentially harm the organization. Preferred shareholders own a share of the company's preferred stock and have no voting rights or involvement in managing the company. Instead, they receive a fixed amount of annual dividends, apportioned before the common shareholders are paid. Though both common shareholders and preferred shareholders see their stock value increase with the positive performance of the company, common shareholders experience higher capital gains and losses.

Shareholders and directors are two different entities, although a director can also be a shareholder. The shareholder, as already mentioned, is a part owner of the company. A director, on the other hand, is the person hired by the shareholders to perform oversight and provide strategic policy direction to company management.

The Differences between a Shareholder and a Stakeholder

The terms **shareholder** and **stakeholder** mean different things. A shareholder is an owner of a company because of the shares of stock they own. Stakeholders may not own part of the company, but they are in many ways equally dependent on the performance of the company. However, their concerns may not be financial. For example, a chain of hotels in the United States that employs thousands of people has several classes of stakeholders, including employees who rely on the company for their jobs and local and national governments that depend on the taxes the company pays.

Before a company becomes public, it is a private company that is run, formed, and organized by a group of people called *subscribers*. A **subscriber** is a member of the company whose name is listed in the memorandum of association. Even when the company goes public or they depart from the company, subscribers' names continue to be written in the public register.

Role of Management

Corporations are run at the highest level by a group of senior managers referred to as the board of directors (BOD). The BOD is ultimately responsible for providing oversight and strategic direction as well as overall supervision of the organization at its highest managerial level. From an operational standpoint, the practical day-to-day management of a company comprises of a team of several mid-level managers, who are responsible for providing leadership to various departments in the company. Such managers may often have different functional roles in a business organization. The primary roles of any management group involve setting the objectives of the company; organizing operations; hiring, leading, and motivating employees; and overseeing operations to ensure that company goals are continually being met.

It is also important that managers have a long-term focus on meeting growth targets and corporate objectives. Unfortunately, there have been many examples of companies where the managerial focus was shifted to short-term goals—quarterly or fiscal year earnings estimates or the current price of the company stock—for personal reasons, such as increased bonuses and financial benefits. Such short-term thinking is often not in the best interest of the long-term health and objectives of companies or their shareholders.

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1.12: Role of the Board of Directors

Learning Objectives

By the end of this section, you will be able to:

- Describe the oversight functions performed by boards.
- Define an independent board member.
- Compare arguments for and against having independent board members.
- Describe ways boards can become diverse.

Functions of a Board of Directors

A board of directors is a group of people who are elected to represent shareholders, and these directors are then ultimately responsible for running the company. Every public company is legally required to install a board of directors. Nonprofit organizations and many private companies often establish a board of directors as well, even if they are not legally required to do so.

The board is responsible for protecting shareholders' interests, establishing management policies, overseeing the corporation or organization, and making decisions about important issues. The board of directors acts as a fiduciary for shareholders. The board is also tasked with a number of other responsibilities, including setting company goals, creating dividend and stock option policies, hiring and firing chief executive officers (CEOs), and ensuring that the company has the resources it needs to perform well.

Basic Structure of a Board of Directors

The bylaws of a company or organization determine the structure, responsibilities, and powers given to a board of directors. The bylaws also determine how many board members there are, how the members are elected, and how frequently the board members meet.

The board must represent shareholder and management interests, so it is best for the board to include both internal and external members. Usually, there is an internal director and an external director. The internal director is a member of the board who is involved with the daily workings of the company and manages the interests of shareholders, officers, and employees. The external director represents the interests of those who function outside of the company. The CEO often serves as the chairman of the company's board of directors.



Figure 1.12.1: Corporate Boardroom. ("495 Express Lanes Board Room" by Fairfax County Chamber of Commerce/flickr, CC BY 2.0)

International Structure of a Board of Directors

The structure of a board of directors varies more outside of the United States. In Asia and the European Union, there are commonly executive and supervisory boards. The executive board is made up of company insiders who are elected by employees and shareholders. In most cases, the executive board is headed by the company CEO or a managing officer. The supervisory board oversees daily business operations and acts much like a typical US board of directors. The chair of the board varies, but the board is always led by someone other than the prominent executive officer.

Oversight: Corporate Governance

Corporate governance is a discipline that focuses on how a company conducts its business and the various controls that are implemented to ensure proper procedures and ethical behavior.

Although many companies and managers do operate with a fair and honest philosophy, others will try to exploit the temporary benefits of actions that fall outside ethical behavior. Companies do not always adhere to laws. You may have seen or read news stories about false reporting of earnings, failure to reveal financial information, or payments of large bonuses to top executives shortly after a company files for bankruptcy.

In one infamous example, the insurance giant AIG paid for a lavish trip to California for top employees of the company immediately after declaring that the company was insolvent. It asked for and received financial support from the US government in the bailout of 2008.²

At other times, a company may cross the line between legal and illegal and violate the law in order to increase profits. Because of the potential for human self-interest and greed, governments have enacted laws and regulations that require specific actions of a company or restrict its activities in an effort to ensure fair competition and ethical behavior.

Often, Congress enacts laws and regulations in response to major economic or other highly visible events. Following the great market crash of 1929, the US government created a new set of rules and regulations governing the issuing and trading of securities, the Securities Act of 1933 and the Securities Exchange Act of 1934. The government also created the **Securities and Exchange Commission (SEC)** to oversee these laws and regulations.

The new laws required that firms make available specific financial information to current owners and prospective owners and that the SEC approve the initial sale of securities to the public. More recently, following a series of major ethical lapses at some firms, the US government enacted new legislation in 2002. One of the most sweeping acts is the Sarbanes-Oxley Act (SOX), which requires, among other things, the following:

- That the CEO and chief financial officer (CFO) must attest to the fairness and accuracy of the company's financial reporting
- That the company implements and maintains an effective structure of internal controls responsible for the reporting of financial results
- That the company and an external public accounting firm confirm the effectiveness of the controls over the most recent fiscal year

In addition, SOX created the Public Company Accounting Oversight Board, outlining the prohibited activities of auditors. It also set a requirement that the SEC issue new rulings that establish compliance with the act.

Board of Directors Oversight and Corporate Governance

Because of the widely publicized control breakdowns at Wells Fargo Bank and recent regulatory actions, boards of directors of public companies and financial institutions have been directed to improve oversight and **corporate governance**. Boards are evolving from focusing primarily on the needs of top key individuals to considering broader aspects of ethics, values, and corporate culture. Boards now oversee the monitoring systems being put in place and may take on direct responsibilities related to senior management.

The Role of the Audit Committee

A strong independent audit committee (AC) is an important part of the corporate governance efforts of any firm. The AC is formed by the board of directors as a separately chartered subcommittee of the board of directors. It reports regularly to the BOD and assists the board by assuming responsibilities for critical corporate financial matters, such as reviewing audit plans and findings, approving external public accountants, and coordinating the efforts of both internal and external financial reviews and audits. The audit committee provides expertise in all financial and accounting matters for a company, and it is therefore a critical part of a company's corporate governance efforts.

Some important functions of the audit committee include:

- Confirming the accuracy of the firm's financial reporting
- Verifying that systems of internal control and risk management are operating effectively
- Ensuring compliance with legal and regulatory requirements
- Verifying the qualifications, independence, and performance of the external public auditing firm
- Coordinating the activities and performance of the internal audit function

The role of the audit committee has significantly expanded over the years, and it has become exceedingly important with the enactment of the Sarbanes-Oxley Act. Due to this increase in importance and recognition, several boards have shifted some of the audit committee's responsibilities to separately chartered committees in order to create a balance of duties and ensure that those duties are effectively focused on and efficiently executed. Some of these additional committees have been known to include a compensation committee, a disclosure committee, and a governance committee, and they all have related objectives that need to be documented within the charter of each of the individual committees. It is important for the different committees to have close working relationships so that the audit committee can help each one fulfill its responsibilities to senior management, the greater board of directors, shareholders, and other stakeholders.

The audit committee performs an internal audit to review the organization's corporate governance process and to communicate any recommendations for changes. The audit committee will usually follow up and monitor the process put in place to implement any changes or necessary improvements. As with any other corporate function, the audit committee's role is greatly affected by the legal, institutional, financial, cultural, and political circumstances that impact the company.

Importance of Improving Oversight and Governance

It is crucial to today's corporate environment that firms do not lose sight of achieving and maintaining strong and efficient oversight and governance. This is true despite the litany of other important items on the busy agendas of most boards.

Keeping a focus on the critical ethics of management, as well as the traditional focus on the importance of ethics to the overall organization, is not only timely in this day and age but also sound business practice. The importance of establishing a comprehensive system of checks and balances cannot be overemphasized. Beginning with the chief executive officer, these checks and balances need to progress through senior management, and they ultimately include the board of directors itself.

Similar checks and balances need to then filter down through the rest of the entire firm. By taking the appropriate steps to improve corporate oversight and governance, overall business risk can be mitigated and future operational problems reduced. Additionally, such steps can lead to the positive effects of achieving sustainable operational and financial benefits for a company and its shareholders.

Link to Learning: PepsiCo

PepsiCo is a global leader in the food and beverage industry. It has also been noted for its excellence in corporate governance. Take a look at the [PepsiCo website](#). Why do you think the company has won numerous awards and was featured in Fortune's annual Blue Ribbon Companies list for 2021?

The Importance of Independence in Boards of Directors

An independent board of directors is composed of individuals who have no material interest in the company other than their directorship. They maintain their independence by only accepting compensation from the company for their BOD services. They also have their own information sources, instead of relying on information provided by the senior management of the company. It is considered a corporate governance best practice to have independent members serve on boards of directors for both publicly and privately held companies.

In most cases, board members have no affiliation with activities or organizations that could result in conflicts of interest. An example of this might be a scenario in which a board is considering the formation of a partnership or alliance with an organization that is directly associated with one of its board members. In such an instance, a director might be excused from participating in that decision process, particularly if it is clear that it would lead to potential conflict.

A board with a majority of independent directors can bring expertise and objectivity, which:

- Helps assure ownership that the company is being run legally, ethically, and in the best interest of shareholders
- Allows for both independence and objectivity regarding senior managerial representatives and limits situations in which a key decision maker might have a vested interest or an "ax to grind."
- Enables board members to advance discussions with no hidden agendas for self-advancement or other self-profiting motives

The Importance of Diversity in Boards of Directors

As mentioned earlier, diversity can be an important quality for any board of directors. Increasingly over recent years, corporate management has begun to appreciate the value of diversity in boards of directors. This has resulted in a significant increase in the total number of women and people of color in boardrooms in the United States. However, many business observers believe that corporate governance practices have a long way to go in this respect. Increasing representation has now grown to become a high priority for most businesses and organizations around the world.

Board members face many challenges in making decisions as effectively and efficiently as possible. Because of such challenges, the potential objective of diversifying the boardroom competes with other worthy topics and objectives such as improving cybersecurity, advancing customer service, identifying and reducing risk, improving community relations, and positioning strategically within an industry. This has left corporate governance experts and researchers in a situation where they find themselves "playing catch-up" to adequately diversify.

Footnotes

- ² Scott Vogel. "You Paid for It: AIG's Retreat Destination, Up Close." *Washington Post*. October 9, 2008. [voices.washingtonpost.com/tra...s_to_cali.html](https://www.washingtonpost.com/tra...s_to_cali.html)

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1.13: Agency Issues- Shareholders and Corporate Boards

Learning Objectives

By the end of this section, you will be able to:

- Define the concept of agency costs.
- Discuss conflicts of interest between board members, company management, and employees.
- Define each component of ESG.
- Discuss the findings indicating how ESG policies impact stock returns.

Agency Problems and Issues

Agency problems refers to conflicts that occur when an **agent** (manager) who is entrusted with following the interests of the **principal** (shareholder or owner) of an organization abuses their position to further their own personal goals. In the field of corporate finance, agency problems are often related to a conflict of interest between the management of a company and its shareholders.

For many years, this has been a very common problem that has been seen in nearly every kind of organization, irrespective of it is a church, a club, a not-for-profit organization, a multinational corporation, or any other government agency or institution. As with most problematic issues in business, agency problems can be resolved, but only if organizations are willing to take the appropriate steps to resolve them.

Every company has its own set of goals and objectives, but it is important to note that the employee and personal goals of managers may differ and may not align with the goals and objectives of stockholders (ownership). Because these differences exist, and because all parties have a desire to maximize their own wealth, agency problems can often arise, having a negative impact on company profits, stock price, and the goodwill of the shareholder base.

There are three primary types of agency problems, discussed below.

Concepts In Practice: Example of an Agency Problem

ABC Co. used to sell organic shampoo for \$15, but the stockholders of ABC lobbied for an increase in the selling price of the shampoo from \$15 to \$18. This was to increase earnings and, ultimately, their own personal wealth through an uptick in stock price. However, as a result of this unnecessary rise in the price of the shampoo, customers were disappointed, and a majority of them wound up boycotting the product. Additionally, some of the consumers who continued to purchase the product noticed a decline in the overall quality of the shampoo and were also very disappointed. In this scenario, agency problems surfaced between stockholders and loyal customers of the company.

Stockholders versus Management

Large corporations typically have a substantial number of stockholders forming their ownership. It is essential for an organization to separate the management of a company from its ownership in order to avoid this type of agency problem.

Segregating ownership from management can be advantageous for an organization. Doing so will usually not have any effects on normal business operations. At the same time, the company can employ different experts and professionals to manage key operations of the business.

However, a drawback to this is that hiring outsiders may eventually become troublesome for shareholders. External managers who are brought into a company may end up making self-serving decisions or even misusing company funds. This could eventually result in declining bottom line results and company share prices, which would then lead to conflicts of interests between

stockholders and company management.

An example of an agency problem between management and shareholders occurred at WorldCom in 2001, when the company's CEO used company assets to underwrite several personal loans.³ As a result of these inappropriate actions, the company took on additional debt that negatively impacted WorldCom's capital structure, liquidity, and ultimately its stock price. From this example, we can see how individual greed on the part of agents, executives, or corporate management can lead to significant agency problems.

Investors versus Creditors

If a company decides to engage in risky investments and projects in order to drive organizational profitability, these increased risk levels could threaten the company's ability to service (repay) its debts, leading to possible default.

This additional risk could also result in creditors taking steps to devalue such debts, which in most cases refers to company bond issues. In the end, if these riskier projects end up failing and the company loses money, investors (bondholders) may also experience financial risk as bonds go into default or otherwise lose market value. This then becomes a potential agency problem between bondholders (investors) and creditors.

Stockholders versus Other Stakeholders

Situations may arise in which stockholders of a firm find themselves in conflicts of interest with other stakeholders of the company. For example, employees of a firm might be asking for a general wage increase. If such a wage increase were voted down by stockholders, this could result in key employees departing the organization, eventually leading to poorer business results and the dissatisfaction of other stakeholders in the company as company profits decline. In such an example, we see the agency problem of stockholders versus other stakeholders.

A more specific example of such an agency problem occurred in 2011, when Oregon-based food and gift basket company Harry & David was forced to file for bankruptcy.⁴ This was a direct result of the company being purchased through a leveraged buyout that left the company saddled with a tremendous amount of debt. However, the most important factor leading to the company's failure was the actions of Steven Heyer, who was a friend of the new owners and had been hired as CEO. Heyer, who was awarded an exorbitant executive salary, was also allowed to sink the company into further debt. Harry & David has since emerged from bankruptcy under new leadership. But this example should serve as a cautionary tale of what can happen when stockholders are able to put their interests ahead of those of other stakeholders in a corporate environment.

Concepts In Practice: Infamous Agency Problems

Enron

Enron is one particularly infamous example of an agency problem. Enron's directors were responsible for protecting and promoting investor interests, but they failed to carry out their regulatory and oversight responsibilities, enabling the company to venture into illegal activity. The company's resulting accounting scandal resulted in billions of dollars in losses to its investors.

At one time, Enron had been one of the largest companies in the United States. Despite being a multibillion-dollar company, Enron began losing money in 1997. It had also started incurring a tremendous amount of debt. Fearing a drop in stock prices, Enron's management team tried to disguise the problems by misrepresenting them through inappropriate accounting methods, which resulted in confusing and misleading financial statements.

Disaster started to unfold in 2001, when common stock prices fell from \$90 to under \$1 per share. The company filed for bankruptcy in December 2001, and criminal charges were brought against several key Enron employees, including former CEO Kenneth Lay and former CFO Andrew Fastow. Jeffrey Skilling was subsequently named CEO in February 2001, but he ended up resigning six months later.

Bernard L. Madoff Investment Securities LLC

Ponzi schemes are common examples of the agency problem. Agency theory claims that a lack of oversight and incentive alignment greatly contributes to these problems. Many investors fall into Ponzi schemes, thinking that taking fund management outside a traditional banking institution reduces fees and saves money.

Even though established financial institutions reduce risk by providing oversight and enforcing legal practices, some Ponzi schemes simply involve taking advantage of consumer suspicions about the banking industry and financial markets. In this type of environment, the consumer cannot ensure that an agent is acting in their best interest. Investments are made under limited or, in many cases, completely nonexistent oversight.

Bernie Madoff's scam is probably one of the most infamous examples of a Ponzi scheme. Madoff's fraud started with friends, relatives, and acquaintances in New York, but it ultimately grew to encompass major charities such as Hadassah, universities such as Tufts and Yeshiva, institutional investors, and wealthy families in Europe, Latin America, and Asia. The cash losses of Madoff's scheme were recently estimated to be between \$17 billion and \$20 billion. The returns he promised were higher than what most investment firms and banks were offering—so promising that almost all of his investors ignored any concerns they may have had and basically looked the other way. Madoff paid for any redemption requests with money that had been newly invested.

Madoff's Ponzi scheme fell apart when he could no longer pay his investors. He was criminally charged, convicted, and given a 150-year prison sentence. Madoff died in April 2021 while serving his prison term.

(Sources: Diana B. Henriques. "Bernard Madoff, Architect of Largest Ponzi Scheme in History, Is Dead at 82." *New York Times*. April 14, 2021. www.nytimes.com/2021/04/14/b...doff-dead.html; Chase Peterson-Withorn. "The Investors Who Had to Pay Back Billions in Ill-Gotten Gains from Bernie Madoff's Ponzi Scheme." *Forbes*. April 14, 2021.; Adam Hayes. "The Agency Problem: Two Infamous Examples." Investopedia. Dotdash, updated April 15, 2021.)

How to Resolve Agency Problems

Ultimately, agency problems result from the differences among the interests of a company's management, other stakeholders of the firm, and its ownership or stockholders. When perpetuated, these differences may eventually result in lasting conflicts of interest. In order for companies to avoid such problems, it is imperative that they address the underlying problems of these differences. This will help ensure that normal business operations are not being adversely impacted by the agency problem.

While there is no surefire way to resolve all conflicts of interest and agency problems, some measures that can help mitigate such issues include the following:

- Offering incentives to management for strong performance and ethical behavior
- Awarding decision makers with stock packages, commissions, and other long-term compensation packages to encourage long-term thinking and matching of company objectives with shareholders' priorities
- Penalizing poor performance, shortsightedness, and unethical behavior

The prevailing belief in agency theory is that when a business creates organizational incentives that encourage hard work on projects that will benefit the company in both the short and long term, more employees will be encouraged to act in the business's best interest.

Another means of resolving agency problems is through a hostile takeover of the organization. Even the threat of such a takeover may be effective in reducing or eliminating these conflicts of interest. A hostile corporate takeover tends to unify and discipline a management or agent group, thus fostering a union of agent and shareholder interests. When such a potential threat or outright ownership change is introduced to a company, its managers are more likely to act in the best long-term interests of the shareholders in order to maintain their leadership positions within the company.

By better aligning **agent** (management) and **principal** (ownership) goals, agency theory attempts to bridge any gulfs among employees, employers, and stakeholders that are created by the principal-agent problem. While it is recognized as being nearly impossible for companies to eliminate the ongoing agency problem, it is also recognized that it is possible to minimize its negative effects.

Impact of ESG Ratings

In recent years, many publicly traded companies, as well as many that are privately owned, have been evaluated and rated according to environmental, social, and governance (ESG) factors. These ratings and evaluations are primarily conducted by third-party organizations. As a result, the investment community is using these reports and ratings to an ever-increasing degree in order to measure and assess corporate ESG factors and performance.

Environmental, social, and governance issues have become an important part of the investment community's evaluation of publicly traded companies. Each component of what is now referred to as ESG has equal importance in ongoing corporate evaluations, as per Figure 1.13.1 below. It is critical for the senior management of any corporation to stay abreast of any and all ESG issues as they arise and take immediate corrective action when necessary.

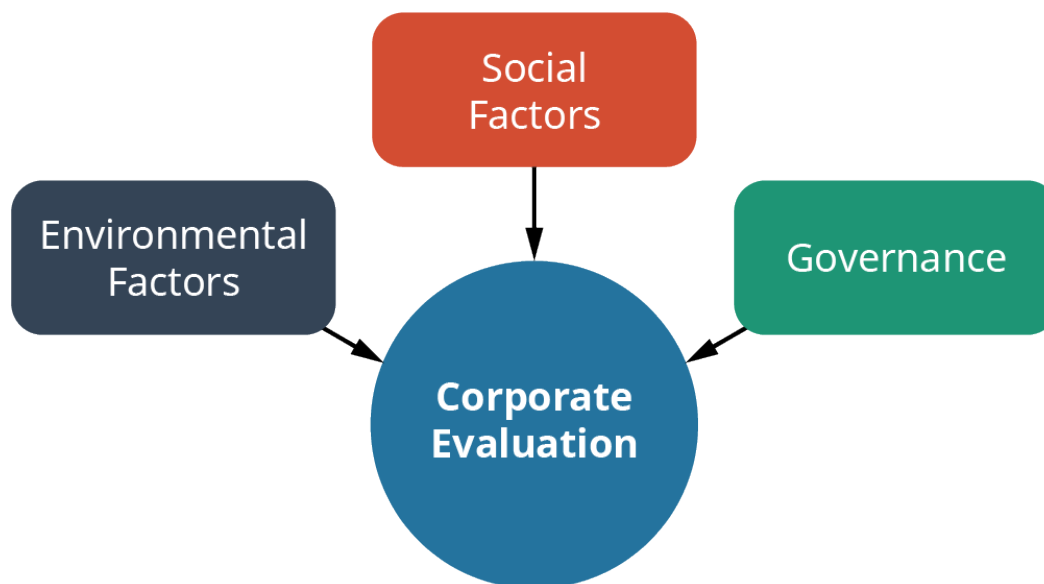


Figure 1.13.1: Importance of ESG Factors to a Business Concern

ESG measurements and assessments have become very important to firms, as they often become the basis of formal and informal buy recommendations by investment professionals. ESG ratings were originally developed to assist in determining the general risk of ESG factors for any public company, but they have since grown to become unique scores used by investors to gauge the potential attractiveness of investment in the subject company. Because of the nature of these factors, firms that are rated with high ESG metrics are believed to represent superior investments and to have proactive management teams focused on creating long-term value of the company stock.

Thus, with investors increasingly using ESG scores to form their investment strategies, the consequences of a poor rating can have a negative impact on a firm's share price and result in substantial problems. In any case, it is important to note that ESG is only a starting point from which it is possible to gather indicators on a business and its direction. In the end, it does not present the entire story of a firm. Any investment decisions about the company in question should include a significant amount of additional data.

Footnotes

- 3 Anshita Kohli. "Worldcom Scam: The Fall of the Biggest US Telecommunication Company." The Company Ninja. JD Learning Ventures, May 26, 2020. thecompany.ninja/worldcom-scam/
- 4 Beth Kowitt. "Harry & David's Failed Mr. Fix-It." *Fortune*. April 1, 2011.

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1.14: Interacting with Investors, Intermediaries, and Other Market Participants

Learning Objectives

By the end of this section, you will be able to:

- Define the investor relations function.
- Discuss how the investor relations office interacts with investors, regulators, and other corporate stakeholders.
- Describe the topics most often discussed during a quarterly conference call.
- Explain how press release information impacts company stock prices.

Investor Relations

Within the general field of corporate public relations is a specific subdivision referred to as **investor relations (IR)**. IR involves elements of communication, marketing, and finance and is designed to control the flow of information from the management of a public corporation to its investors and stakeholders.

Because the investment community plays such a critical role in the overall growth and success of any corporation, it is imperative that firms maintain strong and open relationships with their shareholder or potential investor audience. IR was developed to take responsibility for achieving and maintaining these crucial relationships.

Investor relations are quite different from typical public relations practices. A firm's IR group must work very closely with the accounting and legal departments, as well as with members of the senior management team, such as the CEO and CFO.

As might be expected, IR has far more regulatory obligations than standard public relations functions, largely due to corporate reporting requirements enforced by the SEC and the **International Financial Reporting Standards (IFRS)**. IR became significantly more important in 2002, when the United States Congress passed the Sarbanes-Oxley Act (SOX), also known as the Public Company Accounting Reform and Investor Protection Act. This legislation resulted in requirements that dramatically increased the extent of financial reporting for any publicly traded company. SOX was enacted in an attempt to prevent the occurrence of corporate financial scandals such as the one notoriously committed by the Enron Corporation that we discussed earlier.

In summary, investor relations functions have responsibilities including, but not limited to:

- Coordinating live shareholder meetings and press conferences
- Disseminating financial information to the investment community
- Conducting briefings to the financial analyst community
- Publishing the **quarterly report** and **annual report**
- Addressing any issues that arise as a result of financial disclosure

The best time to form an internal IR function or to engage an IR firm is when a company begins the process of becoming publicly traded through an initial public offering, or IPO.

Quarterly Earnings Conference Calls

As a result of the Securities Exchange Act of 1934, all publicly traded companies are required to file certain financial reports with the SEC. The underlying purpose of these requirements is to provide shareholders and the investment community with important operational and financial information on a regular basis and in a transparent manner. Reports filed with the SEC include the annual Form 10-K, quarterly Form 10-Qs, and current periodic Form 8-Ks, in addition to proxy reports and certain shareholder and affiliate reporting documents. Quarterly 10-Qs are an ongoing and regular reporting requirement of publicly traded companies and are to be filed within 45 days following the end of each fiscal quarter.

Depending on a company's size and the complexity of its operation, a firm is likely to issue an earnings **press release** and conduct a **conference call** with the investment community within this same 45-day period. There is no legal requirement for companies to do either of these things, but experts in IR view these communications tools as best practice. They can add context and commentary to the reported financial results.

It is important for companies to do their planning and not enter a quarterly earnings conference call unprepared. There is a multitude of available resources for companies to analyze and review in preparation. Among such resources are industry reports prepared by government agencies; the financial reports and earnings calls of competing organizations, both within and outside of a company's primary industry; and financial research reports prepared by various covering analysts, who follow the specific company and are employed by financial brokerage firms.

Investment Meetings and Conferences

Organizing the **annual meeting** of shareholders, investor roadshows, and investment conferences is no easy task for any corporation, though all of these audience-facing events are critical to maintaining strong relations with shareholders and the investment community. It is important to reach shareholders and investors on an almost personal basis by crafting a successful and interesting investment story. For effective investor relations, key messages supporting any ownership or potential investment case should be clear and consistent. These key messages should be embedded within the company's materials and should form the basis of presentations, the corporate website, and annual reports. They should also be reinforced via concrete examples during annual meetings, roadshows, and investor presentations.



Figure 1.14.1: Quarterly Investor Relations Presentation (credit: "MAPFRE" by Castilla y León Económica/flickr, CC BY 2.0)

Corporations have found that using senior management's time efficiently is also important to investor relations. By targeting the ownership and potential investing audience, senior executives can make the best use of their time and improve their interactions with the investing public during these events. If smaller companies outsource the investor meeting planning process, the third-party firm should be thoroughly grounded in the client's corporate culture.

The most productive investor and shareholder meetings begin with a strong, understandable corporate introduction and continue by delivering an engaging story that demonstrates the company's successes, a track record of growth, and the high probability of favorable future prospects. Additionally, it is important for a company's senior management to end any meeting with feedback from the investor audience and set timelines for follow-up. There will always be times when something unexpected may happen, and the addition of information or impromptu changes to scheduled agendas may occur. It is at times like these when understanding the body language and facial expressions of an audience can be critical in producing a favorable outcome of the meeting.

It is unlikely that the decision to invest or to remain an investor will be made based on a single corporate event, but impressions, good or bad, will certainly factor into such decisions over a period of time. Thus, it is important for IR officers to understand the importance of follow-up communication with their audience.

Purposes of Corporate Press Releases

Press releases have always been a vital tool in the communications toolkit of an IR professional. Various social media channels are also becoming increasingly popular for delivering company information and news. However, the press release remains a standard medium for most companies to communicate corporate news, results, and ideas.

Press releases can be written with various intentions. Whether to release financial information, unveil new products or services, announce changes in management, or for a host of other reasons, all communications have a different objective. Not all press releases are created equally, and they have varying degrees of effectiveness. Any press release should contain information in easy-to-understand language that is free of corporate jargon and as concise as possible. Press releases may be viewed by multiple audiences, such as customers, stakeholders, investors, potential investors, and the general public, which is vital to consider when drafting a press release.

According to PR Newswire statistics, press releases that contain multimedia content have been known to substantially increase press release views.⁵ Using infographics and charts where possible and relaying the key messages in short, easy-to-digest points makes a press release easier for the reader to take in. Quotes from senior management can provide valuable insight, but they should not provide any new information; they should simply extend or expand on a subject already mentioned and further back up a claim.

Link to Learning: Press Releases Approved by PR Newswire

Take a look at this press release [on mobile drive-in movies during the COVID-19 pandemic](#).

How would you judge this press release? Is it effective? Why or why not?

Footnotes

- ⁵ “Multimedia Content Distribution.” PR Newswire. Cision, accessed August 27, 2021.

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1.15: Companies in Domestic and Global Markets

Learning Objectives

By the end of this section, you will be able to:

- Explain why corporations expand beyond domestic borders.
- Determine how different strategic decisions may influence corporate performance.

Important Differences among Domestic, International, and Global Organizations

If a company becomes global or multinational in scope, fundamental analysis of the organization by the investment community can become more complex. In order to better understand a company, it is important to determine what laws affect the company's governance process and which set of accounting rules is used to fashion its financial reports.

Domestic companies operate completely or for the most part within the borders of the United States. While such organizations may import raw materials and supplies from other nations or end up exporting their finished products to other countries around the world, in the end, these international activities represent only a very small portion of their overall business activities.

Domestic companies are typically governed by US accounting and securities laws that have been established by the SEC. Further, financial reporting for these domestic organizations is to be completed using **Generally Accepted Accounting Principles (GAAP)**.

International firms, while based in the United States, will typically maintain significant levels of international investment and conduct operations that may be quite diverse, both geographically and culturally. For such international firms, parent company accounting will usually adhere to GAAP standards. Conversely, non-US subsidiaries of such international firms may be regulated by laws dictated by their host countries. These will often differ significantly from those in the United States.

In recent years, accounting regulations in countries outside the United States have come under the jurisdiction of International Financial Reporting Standards (IFRS). It should be noted that guidelines and regulations under IFRS and those under GAAP can differ significantly. As a result of these regulatory differences, any specific divergences in accounting or governance practices between foreign subsidiaries and a US parent company should be clearly stated and disclosed in the parent company's financial reports.

Global firms have substantial operations and investments in different countries (**global markets**), and they may have no single center or basis of operational activity. In such cases, regulations for corporate governance are usually determined by the laws of the country in which the parent company has been established. While there are some global firms that report their financial statements according to GAAP standards, usually to satisfy the informational needs of US investors, most global parent companies' financials will adhere to IFRS reporting standards.

Difference in Financial Reporting: GAAP versus IFRS

Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS) were designed with similar objectives in mind: to provide a common and structured set of guidelines to assist in the preparation of accurate and unbiased financial reporting for public corporations.

Yet despite these commonalities in purpose, there are important differences between them. Among these are differences in inventory accounting and reporting, guidelines for the consolidation of subsidiaries, and the accounting and reporting of minority interests.

Link to Learning: GAAP and IFRS

Learn more about US GAAP reporting from the SEC website, and learn about international standards from the [IFRS website](#).

SEC Reporting and EDGAR

EDGAR (Electronic Data Gathering, Analysis, and Retrieval system) is the primary system for collecting and indexing documents submitted by companies to the SEC under the Securities Act of 1933, the Securities Exchange Act of 1934, the Trust Indenture Act of 1939, and the Investment Company Act of 1940.

Link to Learning: EDGAR System

The [SEC's EDGAR system](#) contains millions of corporate and individual filings. It benefits investors, corporations, and the US economy overall by increasing the efficiency, transparency, and fairness of the securities markets. The system processes about 3,000 filings per day, serves up 3,000 terabytes of data to the public annually, and accommodates 40,000 new filers per year on average.⁶

Footnotes

- ⁶ “About EDGAR.” US Securities and Exchange Commission. Modified March 23, 2021. www.sec.gov/edgar/about

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1.16: Summary

What Is Finance?

Finance is the study of the trade-off between risk and expected return. There are three broad areas of finance: business finance, investments, and financial markets and institutions.

The Role of Finance in an Organization

The accounting department creates financial statements, and the finance department implements the firm's policy objectives, monitors results, and responds to necessary strategic and tactical changes. Finance is responsible for budgeting and forecasting. Finance aids in establishing firm objectives and is responsible for meeting with creditors, lenders, owners, regulators, and other stakeholders that provide capital to the firm or have a claim against firm assets.

Importance of Data and Technology

Much of the data used in business today has been available for many years. However, data today is more attainable than ever due to technological advancements facilitating a user's ability to gather, evaluate, and store information faster and more cost-effectively than ever. Information is continually available, so the quicker and less expensively firms can adjust to the arrival of new information, the more valuable they become for their stakeholders.

Careers in Finance

Careers in finance are plentiful, fulfilling, and well compensated. Introductory positions are available in areas such as data collection and data entry. More skill and experience is required for roles such as data analysis and forecasting. Eventually, executive-level positions such as CFO present themselves to the most qualified. Finance careers are not limited to financial firms, as understanding finance is an important skill in government regulatory positions, nonprofit management, and all types of commercial business—from real estate to retail to manufacturing to education.

Markets and Participants

Financial markets are where buyers and sellers of financial securities come together to trade. The trading of securities allows markets to value assets and signal value as new information arrives. Brokers operate to bring buyers and sellers together and receive commissions. Dealers trade from their own portfolios and are often willing to make markets for specific securities by agreeing to buy or sell at the current bid and ask prices. Financial intermediaries actually change or create new financial products.

Microeconomic and Macroeconomic Matters

Economics is the study of the allocation of scarce resources. Economists attempt to understand the how and why of human, physical, and financial capital allocation. Microeconomics is the study of factors affecting an individual's consumption, and macroeconomics is the study of all the aggregate factors affecting an economy. Economics is important in finance due to the number of economic variables critical to good financial forecasting.

Financial Instruments

Maturity is one method to differentiate among financial instruments. Using this methodology, we have money markets and capital markets. Money markets consist of short-term marketable securities, and capital markets focus on longer-term securities such as bonds and stocks.

Concepts of Time and Value

The concepts of time and value involve the resolution of conflict between consumption now and consumption later. Time and value represent the trade-off between risk and expected return. Many financial exercises examine the relationships among time, interest rates, risk, cash flows now, and cash flows in the future. You can expect to solve several “time value of money” problems before you complete this book.

Business Structures

The most common forms of business organizations are sole proprietorships, partnerships, corporations, and hybrids. There are advantages and disadvantages to each type of organization involving ease of formation, tax requirements, and personal liabilities. The most common type of organization for larger businesses is the corporation, the establishment of which involves filing articles of incorporation.

Relationship between Shareholders and Company Management

A stakeholder is any individual or group that has an interest in the outcomes of an organization’s actions. Shareholders are relevant to a corporation's form of business because they own stock in the corporation. The board of directors of a company is ultimately responsible to shareholders for effectively running the business.

Role of the Board of Directors

The board of directors acts as a fiduciary for shareholders. The board is also tasked with a number of other responsibilities, including setting company goals, creating dividend and stock option policies, hiring and firing CEOs, and ensuring that the company has the resources it needs to perform well. Diversity and experience play important roles in corporate governance and in the strength and effectiveness of a board of directors.

Agency Issues: Shareholders and Corporate Boards

Issues and conflicts of interest might arise between shareholders (public ownership) and senior management, including C-level executives and the board of directors. Although there is no definite way to resolve all conflicts of interest, some measures that can help mitigate problems include offering incentives for strong performance and ethical behavior, and awarding decision makers with stock packages to encourage long-term thinking.

Interacting with Investors, Intermediaries, and Other Market Participants

Investor relations are important to a company's overall corporate governance strategy. Effective communication that is straightforward, open, and free of potentially confusing corporate jargon has become a critical component of a company's image, overall message, and long-term success.

Companies in Domestic and Global Markets

Companies sometimes expand internationally, and there are advantages and disadvantages to such growth. International or global expansion efforts require careful and efficient communication, planning, and financing.

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1.17: Key Terms

agency theory

a principle that is used to explain and resolve issues in the relationship between business principals and their agents, most commonly between shareholders (principals) and company executives (agents)

agent

a person who acts on behalf of another person or group

annual meeting

a meeting of the general membership and shareholders of a corporation; also known as an annual general meeting (AGM)

annual report

a document describing a public corporation's operations and financial condition that must be provided to shareholders once per year; also known as the Securities and Exchange Commission (SEC) Form 10-K

articles of incorporation

a set of formal documents filed with a government body to legally document the creation of a corporation

board of directors (BOD)

a group of people who jointly supervise the activities of an organization

brokers

individuals or a firm that brings together potential buyers and sellers of a product and receives a commission at the transaction

business finance

the study and application of how managers can apply financial principles to maximize the value of a firm in a risky environment

C corporation

a legal structure for a corporation in which the owners, or shareholders, are taxed separately from the entity

capital budgeting

the process of determining which long-term or fixed assets to acquire in an effort to maximize shareholder value

capital market

market for longer-term financial instruments, such as stocks and bonds, used to finance long-term projects for organizations

capital structure

the mix of financing, usually debt and equity, used by a firm

chief financial officer (CFO)

an executive-level officer who sets policy for working capital management, determines the optimal capital structure for the firm, and makes the final decision in matters of capital budgeting

close (closely held) corporation

a company that has only a limited number of shareholders

commercial paper (CP)

short-term, unsecured financial obligations issued by firms as a means of short-term financing for items such as inventory or payables

comptroller

also referred to as the controller, the individual in charge of financial reporting and the oversight of the accounting activities necessary to develop financial reports

conference call

a meeting or presentation conducted via telephone or internet to relay company information to all interested parties, including institutional and individual investors, as well as buy-side and sell-side analysts; also known as an earnings conference call

corporate governance

the system of rules, practices, and processes by which a firm is directed and controlled

corporation

a legal entity that is separate and distinct from its owners

dealers

facilitate a market and the trading of securities by holding a portfolio of the underlying asset for easy purchase and sale; earn money on the spread between ask and bid prices for the asset

default risk

the risk that the issuer of a financial security will be unable to make payments as specified in the terms of a financial contract

diversifiable risk

also called unsystematic risk, a risk that can be eliminated without the loss of expected return by holding a portfolio of securities

domestic corporation (in state)

a corporation incorporated under the laws of the country or state in which it does business

economic value

the amount a consumer is willing to pay for a particular asset or service, usually greater than or equal to the current market price or present value of the asset

Electronic Data Gathering, Analysis, and Retrieval system (EDGAR)

the primary system for collecting and indexing documents submitted by companies and others under the Securities Act of 1933, the Securities Exchange Act of 1934, the Trust Indenture Act of 1939, and the Investment Company Act of 1940

ESG

environmental, social, and governance (ESG) standards for a company's operations that socially conscious investors use to screen potential investments

federal funds rate

the rate targeted by the Federal Reserve in the implementation of monetary policy

financial industry regulatory authority (FINRA)

an independent, nongovernmental organization that writes and enforces the rules governing registered brokers and broker-dealer firms in the United States

financial intermediary

a commercial bank or a mutual fund investment company that serves as an intermediary to enable easier and more efficient exchanges among transacting parties, often accepting one form of financial asset from which they create another, such as taking demand deposits to create mortgage loans

financial markets and institutions

one of the three main areas of the field of finance; firms and regulatory agencies that oversee our financial system

foreign corporation (out of state or out of country)

an existing corporation that conducts business in a state or jurisdiction other than where it was originally incorporated

Generally Accepted Accounting Principles (GAAP)

a common set of accounting principles, standards, and procedures issued by the Financial Accounting Standards Board (FASB)

global markets

economies or markets that are multinational in nature, spanning several different countries or jurisdictions

hybrid form of business

a limited liability company (LLC) or limited liability partnership (LLP) that combines the characteristics of a corporation with those of a sole proprietorship or partnership

inflation risk

the risk of reduced purchasing power of goods and services due to rising prices

International Financial Reporting Standards (IFRS)

accounting standards used by international corporations, issued by the IFRS Foundation and the International Accounting Standards Board

investments

one of the three main areas of finance; products and processes used to create individual and institutional portfolios with the intent of growing wealth

investor

a person or an entity, such as a firm or mutual fund, that invests capital with the expectation of receiving financial returns

investor relations (IR)

a strategic management responsibility that is capable of integrating finance, communication, marketing, and securities law compliance to enable the most effective two-way communication between a company and the financial community or other constituencies, which ultimately contributes to a company's securities achieving fair valuation

limited liability corporation (LLC)

a US-specific form of a private limited company; a business structure that can combine the pass-through taxation of a partnership or sole proprietorship with the limited liability of a corporation

limited liability partnership (LLP)

a partnership in which some or all partners have limited liabilities; can exhibit elements of both partnerships and corporations

money market

the market for short-term, low-risk, highly liquid, homogeneous financial securities; common money market securities include T-bills, NCDs, and commercial paper

money market mutual funds

created by investment companies to pool the money of many investors to purchase and then manage short-term, low-risk, liquid financial portfolios of securities

municipal bonds (munis)

long-term debt obligations issued by state or local governments that often have important tax advantages relative to corporate bonds

negotiable certificate of deposit

very large CDs issued by financial institutions, redeemable only at maturity, but can and often do trade prior to maturity in a broad secondary market; also called jumbo CDs because they sell in increments of \$100,000 or more

non-diversifiable risk

risk that cannot be eliminated by simply holding a portfolio of securities; also known as systematic risk

non-stock corporation

a corporation that does not have owners represented by shares of stock but typically has members who are the functional equivalent of stockholders in a stock corporation (having the right to vote, etc.); describes the vast majority of not-for-profit corporations

nonprofit (not-for-profit) corporation

a legal entity that has been incorporated under the law of its jurisdiction for purposes other than making profits for its owners or shareholders

partnership

a formal arrangement by two or more parties to manage and operate a business and share its profits and liabilities equally

political risk

the risk of local, state, or national governments “changing the rules” and disrupting firm cash flows

press release

an official statement delivered to members of the news media for the purpose of making an announcement or otherwise providing information

primary market

a term used in financial markets to identify the market for the purchase and sale of new securities

principal

the person with the highest authority or most important position in a company, organization, institution, or group

professional corporation

a form of corporate entity used by licensed professionals such as attorneys, architects, engineers, public accountants, and physicians, which is regulated by special provisions in many corporation statutes

public benefit corporation

a specific type of Delaware general corporation that is owned by shareholders who expect the company to make a profit and return some of that money to them in the form of dividends

quarterly report

a document describing a public corporation's operations and financial condition that must be provided to shareholders four times per year; also known as Securities and Exchange Commission (SEC) Form 10-Q

S corporation

a closely held corporation that makes a valid election to be taxed under Subchapter S of Chapter 1 of the Internal Revenue Code, which does not require such corporations to pay income taxes and instead taxes owners as individuals

secretaries of state

the state officials who head the agencies responsible for, among other functions, the chartering of businesses (usually including partnerships and corporations) that wish to operate within their state and, in most states, for maintaining all records on business activities within the state; also known as secretaries of the commonwealth in Massachusetts, Pennsylvania, and Virginia

secondary market

a term used in financial markets to represent the purchase or sale of used securities that trade after the initial sale by the offering firm

Securities and Exchange Commission (SEC)

a large, independent agency of the United States federal government whose primary purpose is to enforce laws against market manipulation; created following the stock market crash of 1929 to protect investors and the national banking system

Securities Investor Protection Corporation (SIPC)

a nonprofit corporation that provides brokerage customers up to \$500,000 coverage for cash and securities held by the firm

shareholder (stockholder)

an individual or institution that legally owns one or more shares of the share capital of a public or private corporation; may be referred to as a member of a corporation

sole proprietor (and sole proprietorship)

a form of business that is operated and run by a single individual, known as the sole trader, with no legal distinction between the owner and the business entity

stakeholder

a person with an interest or concern in a business

stock corporation

a for-profit organization that issues shares of stock to shareholders (also known as stockholders) to raise capital, with each share representing partial ownership of the corporation and granting shareholders certain ownership rights to shape company policies

subscriber

an initial shareholder of a company at the time of its incorporation whose name appears on the memorandum of association, a legal document prepared in the formation and registration process of a company to define its relationship with shareholders

treasurer

position responsible for monitoring cash flow at a firm and frequently is the contact person for bankers, underwriters, and other outside sources of financing

Treasury bills (T-bills)

short-term debt obligations of one year or less issued by the US government

Treasury bonds

long-term debt obligations issued by the US government characterized by having maturities of greater than 10 years and making periodic interest payments as well as principal payment at maturity

Treasury notes

long-term debt obligations issued by the US government characterized by having maturities of 2 to 10 years and making periodic interest payment as well as principal payment at maturity

working capital management

the development, oversight, and management of a firm's short-term assets and liabilities

1.18: Review Questions

1. Identify and briefly define the three areas of study in finance.
2. Identify the three focal areas in *business finance*.
3. Define each of the following types of risk:
 - inflation risk
 - diversifiable risk
 - non-diversifiable risk
 - political risk
4. Identify three common components of good financial planning.
5. The Concepts in Practice feature discusses the importance of data for decision-making. List at least three of the ways the article suggests managers can use financial statements.
6. Describe the role of a financial analyst in a financial institution such as a bank or investment company.
7. Is a dealer or a broker more likely to be a market maker? In your answer, define the activities of a market maker.
8. How can an understanding of micro- and macroeconomic factors aid in small business decision-making?
9. We measure market capitalization by multiplying the number of shares of stock outstanding by the current price per share. Go to finance.yahoo.com and determine the market capitalization of Nike, Tesla, and Walmart. Which company has the greatest market capitalization? Which company has the highest level of sales? If these are not the same companies, why do you think the company with the lower sales level has greater market capitalization?
10. What are the key differences between the potential life of a business that is formed as a sole proprietorship and that of a business set up as a corporation?
11. What are the most common types of firms that are organized as limited liability partnerships?
12. What advantages does a sole proprietorship offer?
13. What are the major disadvantages of a sole proprietorship?
14. If a company wishes to limit the liability of some of its investing partners, what form of business might it consider? Explain briefly.
15. In order to form a corporation, what is the most important document required?
16. What is the difference between a shareholder and a stakeholder?
17. What group within a corporation has the primary responsibility for protecting the interests of shareholders?
18. What is corporate governance?
19. What role does a corporation's board of directors play in corporate governance?
20. Briefly explain the concept of corporate governance.
21. What is the key component of agency theory, and why might this be more important to a public company than to one that is privately held?

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2: ACCOUNTING AND FINANCIAL STATEMENT OVERVIEW

- 2.1: Why It Matters
- 2.2: Cash versus Accrual Accounting
- 2.3: Economic Basis for Accrual Accounting
- 2.4: How Does a Company Recognize a Sale and an Expense?
- 2.5: When Should a Company Capitalize or Expense an Item?
- 2.6: What Is “Profit” versus “Loss” for the Company?
- 2.7: The Income Statement
- 2.8: The Balance Sheet
- 2.9: The Relationship between the Balance Sheet and the Income Statement
- 2.10: The Statement of Owner’s Equity
- 2.11: The Statement of Cash Flows
- 2.12: Operating Cash Flow and Free Cash Flow to the Firm (FCFF)
- 2.13: Common-Size Statements
- 2.14: Reporting Financial Activity
- 2.15: Summary
- 2.16: Key Terms
- 2.17: Review Questions
- 2.18: Problems

2.1: Why It Matters

Emma, an accounting major, was on her way to her Wednesday morning accounting class with her friend Sam. Sam, a finance major, kept complaining to Emma that he didn't enjoy their accounting class at all. "Why do we have to spend so much time worried about debits, credits, accounts, and all this other accounting jargon anyway? I'm a finance major. I won't be spending my days recording entries and counting pennies. I'm dreading class today. I looked at the syllabus; we're studying the accrual method. So what? Just give me the financial statements, so I have the data I need."

Equity securities		
Other		
Investment in The Kraft Heinz Company (Fair Value: March 31, 2017 - \$29,551; December 31, 2016 - \$28,476)		
Receivables		
Inventories		
Property, plant and equipment		
Goodwill		
Other intangible assets		
Deferred charges reinsurance assumed		
Other		
Railroad, Utilities and Energy:		
Cash and cash equivalents		
Property, plant and equipment		
Goodwill		
Regulatory assets		
Other		
Finance and Financial Products:		
Cash and cash equivalents and U.S. Treasury Bills:		
Cash and cash equivalents		
U.S. Treasury Bills		
Total cash, cash equivalents and U.S. Treasury		
Investments in equity and fixed maturity securities		
Other investments		

Figure 2.1.1: Accrual accounting reports revenue when goods are delivered or services are performed but are not necessarily paid for. (credit: modification of work "Reviewing Financial Statements" by Instructional Institutions)

Emma smiled at her friend and thought for a moment before responding. Emma loves the details of debits, credits, and "all that other accounting jargon," as Sam put it. She knows that while not everyone enjoys the details or understands them, they do play a big role in the timing and accuracy of financial statements. "Yeah, yeah, Sam, accounting isn't always easy or fun, but it's important. The financial statements you will use in finance are a part of the foundation for many decisions. They are an important tool. Even though you don't have to create financial statements in a finance role, it's still necessary to understand the accounting principles they are based on. We haven't covered the details yet, but I do know that income or loss in a period can be significantly different if the income statement is prepared under cash versus accrual methods. I would think that it would be important to know if you are the one using the income statement.

People say that accounting is the "language of business." Using the language of business, accountants are able to communicate the financial performance and health of a firm via four key financial statements. These statements are the income statement, balance sheet, statement of owner's equity, and statement of cash flows. Each statement provides different insights into a firm's performance and financial health. Though some users may favor one or two statements over another, they are best used together to get a full picture.

10,42	2,95	10,95	10,17	1.145.671	60	-21,66	0,17	
4,20	2,19	4,20	4,05	9.910.418	60	-31,65	1,00	
1,60	2,56	1,60	1,60	51.751	60	-23,64	1,00	
10,87	-1,11	11,20	10,61	1.621	33	-5,33	0,85	
4,95	-1,00	5,00	4,90	2.077.616	60	-13,32	0,50	
5,63	-2,26	5,77	5,56	13.041	60	-11,01	0,25	
3,14	-2,18	3,23	3,23	32.835.108	60	-9,80	0,75	
1,71	1,18	1,71	1,71	7.507.380	60	2,95	0,50	
8,68	-0,22	8,68	8,68	4.165.902	60	-13,64	0,78	
2,40	2,40	2,40	2,40	552	60	-6,11	0,60	
2,40	2,40	2,40	2,40	800	56	-5,88	1,20	
2,40	2,40	2,40	2,40	2.636.888	60	-9,86	0,15	
2,40	2,40	2,40	2,40	1,05	42.960	60	-0,94	1,00
2,40	2,40	2,40	2,40	14,12	645.133	60	-10,13	0,20
2,40	2,40	2,40	2,40	0,13	263.302	60	-12,75	0,12
2,40	2,40	2,40	2,40	16,00	2010	60	-25,00	0,00

Figure 2.1.2: Financial statements are needed to understand a firm's financial position and performance. (credit: modification of work "Drowning by Numbers" by Jorge Franganillo/flickr, CC BY 2.0)

In this section, you'll be introduced to a firm called Clear Lake Sporting Goods. Clear Lake Sporting Goods is a small merchandising company (a company that buys finished goods and sells them to consumers) that sells hunting and fishing gear. It needs financial statements to understand its profitability and current financial position, manage cash flow, and communicate its finances to outside parties like investors, governing bodies, and lenders. We will walk through each financial statement, its components, how they are connected, and how financial statement users understand each one.

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2.2: Cash versus Accrual Accounting

Learning Objectives

By the end of this section, you will be able to:

- Outline the key concepts of the cash-basis accounting method.
- Explain the key characteristics of the accrual-basis accounting method.
- Identify businesses for which cash accounting or accrual accounting is more appropriate.

In this section, we will explore the basic elements of cash and accrual accounting and the businesses that are most likely to use each one. Some private companies may choose to use **cash-basis accounting** rather than **accrual-basis accounting** to report financial information.

Cash-Basis Accounting

In business, cash is certainly important. In fact, it's so important that it dictates one of two ways we can account for our business transactions. The *cash method* is just as the name implies—it records transactions only when cash flows. We track cash inflows and outflows as they occur. This method is most commonly used by small businesses that deal primarily in cash transactions. The other method, called the *accrual method*, records transactions when they occur, rather than waiting for cash to be accumulated. Using the accrual method, we match cash inflows and the outflows required to generate them. We call this the *matching principle*. This method is used by most publicly traded companies. In this chapter, you'll explore both methods, see how each impacts financial statements differently, note the role of timing in each method, and learn how and when to record capital and expense transactions.

Let's look at an example. Chris just finished the first month of her landscaping business operations at the end of August, and she used the cash method of accounting to figure out her **net income**. Most small start-up companies use the cash method of accounting because it is easy to understand, requires no special training, and helps them focus on one big key to their survival—cash. This means that she simply recorded the cash that came in and the cash that went out of her business. She brought in \$1,400 in revenue in her first month, which she felt was substantial given that it was her first month. But after deducting her expenses, she had only \$250 left, so she worried about the future of her business. Would she have to increase her sales exponentially in order to start bringing in a decent profit each month?

As you move through the chapter, you'll get to see the impact of the two methods of accounting and how these methods impact the insights and decisions Chris made for her new business.

Cash-basis accounting is a method of accounting in which transactions are not recorded in the financial statements until there is an exchange of cash. Cash-basis accounting sometimes impacts the timing of **revenue** and **expense** reporting until cash receipts or outlays occur. For example, as you saw above, Chris measured the performance of her landscaping business for the month of August using cash flows. Cash accounting is far simpler to track than accrual-basis accounting.

Accrual-Basis Accounting

Public companies reporting their financial positions use either US generally accepted accounting principles (GAAP) or International Financial Reporting Standards (IFRS), as allowed under the Securities and Exchange Commission (SEC) regulations. GAAP is a set of accounting standards created by the Financial Accounting Standards Board (FASB) and the Governmental Accounting Standards Board (GASB). It's key to note that though they are similar in many areas, there are still key areas that differ between GAAP and IFRS. Therefore, when using financial statements, it's important to be aware of the standards under which they were prepared. However, public or private companies using GAAP or IFRS must prepare their financial statements using the rules of accrual accounting. Accrual-basis accounting prescribes that revenues and expenses must be recorded in the accounting period in which they were earned or incurred, no matter when cash receipts or payments occur. It is because of accrual accounting that we have the revenue recognition principle and the expense recognition principle (also known as the matching principle). The accrual method is considered to better match revenues and expenses and standardizes reporting information for comparability.

purposes. Having comparable information is important to external users of information trying to make investment or lending decisions and to internal users trying to make decisions about company performance, budgeting, and growth strategies.

The two main principles of accrual accounting are the revenue recognition principle and the matching principle. These principles are the basis of accrual accounting and dictate how we record transactions.

Revenue Recognition Principle

The **revenue recognition principle** states that revenue should be recorded when it is **earned**, regardless of when cash is received. In other words, companies recognize revenue when they have substantially completed their obligation to provide goods or services to a customer.

Matching Principle

The **matching principle** states that expenses should be recorded in the same accounting period as the revenues they helped generate. By matching related revenues and expenses, financial statements provide a more accurate measure of a company's profitability.

Example: If a company sells products in December but receives payment in January, the revenue is recognized in December when the sale occurs. Any costs associated with those products, such as inventory costs (cost of goods sold), are also recorded in December under the matching principle.

Who Uses Each Method?

Cash-basis accounting can be more efficient and well-suited for certain types of businesses, such as farming or professional services provided by lawyers and doctors. However, the accrual basis of accounting is theoretically preferable to the cash basis of accounting because it takes into account the timing of the transactions (when goods and services are provided and when the cash involved in the transactions is received). Cash can often be received a significant amount of time after the initial transaction. Considering this amount allows accountants to provide, in a timely manner, relevant and complete information to stakeholders.

There are several reasons accrual-basis accounting is preferred to cash-basis accounting. Accrual-basis accounting is required by GAAP because it typically provides a better sense of the financial well-being of a company. Accrual-based accounting information allows management to analyze a company's progress, and management can use that information to improve its business. Accrual accounting is also used to assist companies in securing financing because banks will typically require a company to provide accrual-basis financial income statements. The Internal Revenue Service requires businesses to report using accrual-basis information when preparing tax returns. In addition, companies with inventory must use accrual-based accounting for income tax purposes, though there are exceptions to the general rule.

So why might a company use cash-basis accounting? Companies that do not sell stock publicly can use cash-basis instead of accrual-basis accounting for internal management purposes or because they are exempt from such requirements in agreements such as a bank loan. Cash-basis accounting is a simpler accounting system to use than an accrual-basis accounting system when tracking real-time revenues and expenses.

Think It Through: Cash- or Accrual-Basis Accounting?

You are a new accountant at a beauty salon. The salon had previously used cash-basis accounting to prepare its financial records but is now considering switching to an accrual-basis method. You have been tasked with determining if this transition is appropriate.

When you go through the records, you notice that this transition will greatly impact how the salon reports revenues and expenses. The salon will now report some revenues and expenses before it receives or pays cash.

How will this change positively impact its business reporting? How will it negatively impact its business reporting? If you were the accountant, would you recommend the salon transition from a cash basis to an accrual basis?

[Show/Hide Solution]

Solution

Accrual accounting creates a more accurate picture of profit or loss, so the salon's owner can have a better understanding of its profitability from period to period. However, it can be more work to record under accrual accounting. If the salon is small and the profits and costs are easily understood, it might not be worth the extra effort to the owner to use accrual-basis accounting. If the salon is seeking ways to better understand profits and costs, accrual-basis accounting would be a great choice.

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2.3: Economic Basis for Accrual Accounting

Learning Objectives

By the end of this section, you will be able to:

- Assess the impact of business transactions on cash flow.
- Define double-entry accounting and explain how it supports the accounting equation.

How and when we record our transactions can have a significant impact on financial statements, especially the **income statement (net income)**. In this section, you will explore the impact business transactions have on financial statements under each method. In doing so, you'll be introduced to **double-entry accounting** and see how it functions to support the accounting equation.

Timing of Business Activity versus Cash Flow

The first financial statement prepared is the income statement, a statement that shows the organization's financial performance *for a given period of time*. We already saw that Chris, who is a sole proprietor, started a summer landscaping business on August 1, 2020. She categorized her business as a service entity and used the cash-basis method of accounting to record the initial operations for her business. Although Chris was using her family's tractor to get her work done, she was responsible for paying for fuel and any maintenance costs. So, on August 31, Chris realized she had only \$250 in her checking account.

This balance was lower than expected because she had spent only slightly less (\$1,150 for brakes, fuel, and insurance) than she earned (\$1,400)—leaving a net income of \$250. While she would like the checking balance to grow each month, she realized that most of the August expenses were infrequent (brakes and insurance), and the insurance, in particular, was an unusually large expense. She knew that the checking account balance would likely grow more in September because she would earn money from some new customers; she also anticipated having fewer expenses.

This simple landscaping example can be used to discuss the elements of the income statement, which are revenues, expenses, **gains**, and **losses** for a particular period of time (see Figure 2.3.1). Together, these determine whether the organization has net income (where revenues and gains are greater than expenses and losses) or net loss (where expenses and losses are greater than revenues and gains). Revenues, expenses, gains, and losses are further defined in the Income Statement provided.

Chris's Landscaping Income Statement For the Month Ended August 31		
Revenue	\$1,400	
Total revenue		\$1,400
Expenses		
Tractor brake repair	100	
Tractor fuel	50	
Business insurance	<u>1,000</u>	
Total expenses		<u>1,150</u>
Net income		<u>\$ 250</u>

Figure 2.3.1: Income Statement for Chris's Landscaping

The income statement can also be visualized by the formula:

$$\text{Revenue} - \text{Expenses} = \text{Net Income or Net Loss}$$

$\text{Net Income or Net Loss} = \text{Revenue} - \text{Expenses}$

Let's change this example slightly and assume the \$1,000 payment to the insurance company will be paid in September rather than in August. In this case, the ending balance in Chris's checking account would be \$1,250, a result of earning \$1,400 and only spending \$100 for the brakes on the tractor and \$50 for fuel. This stream of cash flows is an example of cash-basis accounting because it reflects when payments are received and made, not necessarily the time period that they affect. At the end of this section, you will address accrual accounting, which does reflect the time period that payments affect.

The Accounting Equation

It may be helpful to think of the **accounting equation** from a “sources and claims” perspective. Under this approach, the assets (items owned by the organization) were obtained by incurring liabilities or were provided by owners. Stated differently, every asset has a claim against it—by creditors and/or owners.

$$\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$$

You may recall from mathematics courses that an equation must always be in balance. Therefore, we must ensure that the two sides of the accounting equation are always equal. We will explore the components of the accounting equation in more detail shortly. First, we need to examine several underlying concepts that form the foundation for the accounting equation: the double-entry accounting system, debits and credits, and the “normal” balance for each account that is part of a formal accounting system.

Think It Through: The Accounting Equation

On a sheet of paper, use three columns to create your own accounting equation. In the first column, list all the things you own (assets). List only the asset itself; don't worry about any associated liabilities (expenses) in that column. In the second column, list any amounts owed (the liabilities). When you are done, total up all the assets. Then total up all the liabilities.

Now, use the accounting equation to calculate the net amount of the asset (equity). To do so, subtract the total assets from the total liabilities. This figure makes the accounting equation balance and represents equity, or an estimate of your net worth.

Here is something else to consider: Is it possible to have negative equity? It sure is . . . ask any college student who has taken out loans. At first glance, there is no asset directly associated with the amount of the loan. But is that, in fact, the case? You might ask yourself why you should make an investment in a college education—what is the benefit (asset) of going to college? The answer lies in the difference in lifetime earnings with a college degree versus without a college degree. This is influenced by many things, including the supply and demand of jobs and employees. It is also influenced by the earnings for the type of college degree pursued.

[Show/Hide Solution]

Solution

Answers will vary but may include vehicles, clothing, electronics (including cell phones and computer/gaming systems), and sports equipment. They may also include money owed on these assets, most likely vehicles and perhaps cell phones. In the case of a student loan, there may be a liability with no corresponding asset (yet). Responses should be able to evaluate the benefit of investing in college and the wage differential between earnings with and without a college degree.

Let's continue our exploration of the accounting equation, focusing on the equity component in particular. Recall that we defined equity as the net worth of an organization. It is helpful to also think of net worth as the accounting *value* of the organization. Recall, too, that revenues (inflows as a result of providing goods and services) *increase* the accounting value of the organization. So every dollar of revenue an organization generates increases the overall value of the organization. Additionally, gains increase the value of the organization.

Likewise, expenses (outflows as a result of generating revenue) *decrease* the value of the organization. So each dollar of expenses an organization incurs decreases the overall value of the organization. Losses also decrease the value of the organization. The same approach can be taken with the other elements of the financial statements:

- Net Income *increases* the value (equity) of the organization.
- Net Loss *decreases* the value (equity) of the organization.
- Investments by owners *increase* the value (equity) of the organization.
- Distributions, dividends, or withdrawals to owners *decrease* the value (equity) of the organization.
- Changes in assets and liabilities can *either* increase or decrease the value (equity) of the organization depending on the net result of the transaction.

Let's look at Chris's Landscaping business again and do the same quick exercise you did with your personal finances. If we were to total all of Chris's assets, we would find just one: \$250 in cash. She's using the family's tractor, but she doesn't own the tractor, so it is not her asset. Her liabilities are currently \$0, as she has paid cash for all the expenses she incurred already. If we total her assets, we get \$250. Liabilities total \$0. Using the accounting equation, we find her equity to currently be \$250, or

$$\text{Assets } (\$250) - \text{Liabilities } (\$0) = \text{Equity } (\$250)$$

Double-Entry Accounting

Accounting is based on a double-entry accounting system, which requires the following:

- Each time we record a transaction, we must record a change in at least two different accounts. Having two or more accounts change will allow us to keep the accounting equation in balance.
- Not only will at least two accounts change, but there must also be at least one **debit** and one **credit** side impacted.
- The sum of the debits must equal the sum of the credits for each transaction.

In order for companies to record the myriad transactions they have each year, there is a need for a simple but detailed system. Journals are useful tools to meet this need.

Debits and Credits

Each account can be represented visually by splitting the account into left and right sides as shown. The graphic representation of a general ledger account is known as a **T-account**. It is called this because it looks like a "T," as you can see with the T-account shown in Figure 2.3.2.

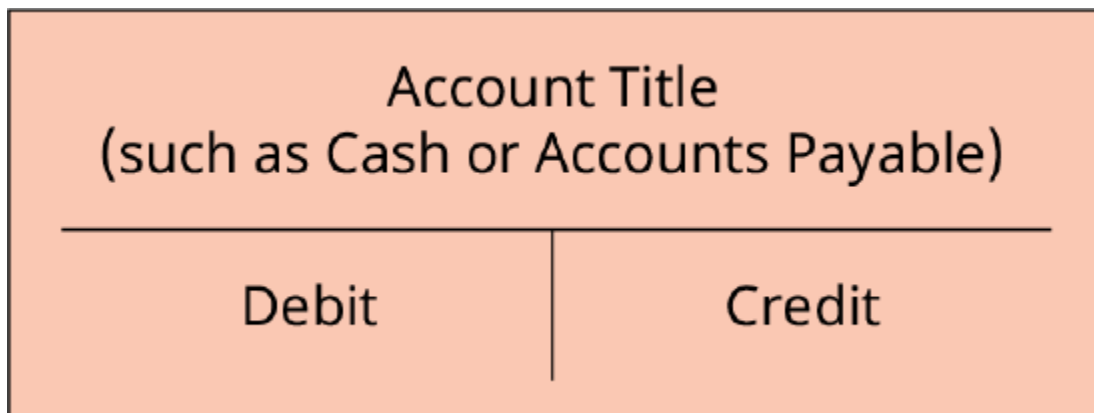


Figure 2.3.2: T-Account

A debit records financial information on the left side of each account. A credit records financial information on the right side of an account. One side of each account will increase, and the other side will decrease. The ending account balance is found by calculating the difference between debits and credits for each account. You will often see the terms *debit* and *credit* represented in shorthand, written as *DR* or *dr* and *CR* or *cr*, respectively. Depending on the account type, the sides that increase and decrease may vary. We can illustrate each account type and its corresponding debit and credit effects in the form of an *expanded* equation (see Figure 2.3.3).

Equity				
+ Common Stock		- Dividends		+
Debit	Credit	Debit	Credit	
Decrease	Increase	Increase	Decrease	

Figure 2.3.3: Expanded Accounting Equation

As we can see from this expanded accounting equation, Assets accounts increase on the debit side and decrease on the credit side. This is also true of Dividends and Expenses accounts. Liabilities increase on the credit side and decrease on the debit side. This is also true of Common Stock and Revenues accounts. This becomes easier to understand as you become familiar with the *normal balance* of an account.

The balance sheet is a reflection of the accounting equation (see Figure 2.3.4). It has two sections, assets in one section and liabilities and equity in the other section. It's key to note that both assets and liabilities are broken down on the balance sheet into current and noncurrent classifications in order to provide more detail and transparency. Current assets are those that are consumed within a year. Assets that will be in use longer than a year are considered noncurrent. Current liabilities are those that will be due within a year. Noncurrent liabilities are those that are due more than a year into the future.

Liabilities				+	Owner's Equity	
Current		Noncurrent				
-	+	-	+			
					Distribution to Owners	
					Expenses	
					Losses	
					Comprehensive Income	

Figure 2.3.4: Graphical Representation of the Accounting Equation. Both assets and liabilities are categorized as current and noncurrent. Also highlighted are the various activities that affect the equity (or net worth) of the business.

Notice each account subcategory (Current Assets and Noncurrent Assets, for example) has an “increase” side and a “decrease” side. As you may recall, these are called T-accounts, and they are used to analyze transactions.

The basic components of even the simplest accounting system are *accounts* and a *general ledger*. An account is a record showing increases and decreases to assets, liabilities, and equity—the basic components found in the accounting equation. Each of these categories, in turn, includes many individual accounts, all of which a company maintains in its general ledger. A general ledger is

a comprehensive listing of all of a company's accounts with their individual balances.

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2.4: How Does a Company Recognize a Sale and an Expense?

Learning Objectives

By the end of this section, you will be able to:

- Explain the revenue recognition principle and how it relates to current and future sales transactions.
- Explain the expense recognition principle and how it relates to current and future purchase transactions.
- Assess the role of ethics in revenue and expense recognition.

You've learned the basics of each method as well as the accounting equation and double-entry accounting. Next, let's turn our attention to when we record transactions, as timing is key.

Revenue Recognition

Revenue is the value of goods and services the organization sold or provided to customers for a given period of time. In our current example, Chris's landscaping business, the "revenue," or the value of services performed, for the month of August would be \$1,400. It is the value Chris received in exchange for the services provided to her clients. Likewise, when a business provides goods or services to customers for cash at the time of the service or in the future, the business classifies the amount(s) as revenue. Just as the \$1,400 revenues from a business made Chris's checking account balance increase, revenues increase the value of a business. In accounting, **revenue recognition** involves recording sales or fees earned within the period earned. Just as earning wages from a business or summer job reflects the number of hours worked for a given rate of pay or payments from clients for services rendered, revenues (and the other terms) are used to indicate the dollar value of goods and services provided to customers for a given period of time.

Think It Through: Coffee Shop Products

Think about a coffee shop in your area. Identify items the coffee shop sells that would be classified as revenues. Remember, revenues for the coffee shop are related to its primary purpose: selling coffee and related items. Or, better yet, make a trip to the local coffee shop and get a first-hand experience.

[Show/Hide Solution]

Solution

Many coffee shops earn revenue through multiple revenue streams, including coffee and other specialty drinks, food items, gift cards, and merchandise.

Short-Term Revenue Recognition Examples

Two brief examples may help illustrate the difference between cash accounting and accrual accounting. Assume that a business sells \$200 worth of merchandise. In some businesses, there are two ways customers pay: cash and credit (also referred to as "on account"). Cash sales include checks and credit cards and are paid at the time of the sale. Credit sales (not to be confused with credit card sales) allow the customer to take the merchandise but pay within a specified period of time, usually up to 45 days.

A cash sale would be recorded in the financial statements under both the cash basis and accrual basis of accounting. It makes sense because the customer received the merchandise and paid the business at the same time. It is considered two events that occur simultaneously (exchange of merchandise for cash).

A credit sale, however, would be treated differently under each of these types of accounting. Under the cash basis of accounting, a credit sale would not be recorded in the financial statements until the cash is received, under terms stipulated by the seller. For example, assume that in the next year of Chris's landscaping business, on April 1, she provides \$500 worth of services to one of her customers. The sale is made on account, with the payment due 45 days later. Under the cash basis of accounting, the revenue would not be recorded until May 16, when the cash was received. Under the accrual basis of accounting, this sale would be recorded in the financial statements at the time the services were provided, April 1. The reason the sale would be recorded is that, under accrual accounting, the business reports that it provided \$500 worth of services to its customer. The fact that the customers will pay later is viewed as a separate transaction under accrual accounting (see Figure 2.4.1).

Cash Flows Recorded (May 31)	Statement For Month
Cash Flow from Operations \$500	Cash Flow from Operations Net Earnings

Figure 2.4.1: Credit versus Cash. On the left is a credit sale recorded under the cash basis of accounting. On the right, the same credit sale is recorded under the accrual basis of accounting.

Let's now explore the difference between the cash basis and accrual basis of accounting using an expense. Assume a business purchases \$160 worth of printing supplies from a supplier (vendor). Similar to a sale, a purchase of merchandise can be paid for at the time of sale using cash (also a check or credit card) or at a later date (on account). A purchase paid with cash at the time of the sale would be recorded in the financial statements under both the cash basis and the accrual basis of accounting. It makes sense because the business received the printing supplies from the supplier and paid the supplier at the same time. It is considered two events that occur simultaneously (exchange of merchandise for cash).

If the purchase was made on account (also called a credit purchase), however, the transaction would be recorded differently under each of these types of accounting. Under the cash basis of accounting, the \$160 purchase on account would not be recorded in the financial statements until the cash is paid, as stipulated by the seller's terms. For example, if the printing supplies were received on July 17 and the payment terms were 15 days, no transaction would be recorded until August 1, when the goods were paid for. Under the accrual basis of accounting, this purchase would be recorded in the financial statements at the time the business received the printing supplies from the supplier (July 17). The reason the purchase would be recorded is that the business reports that it bought \$160 worth of printing supplies from its vendors. The fact that the business will pay later is viewed as a separate issue under accrual accounting. Table 2.4.1 summarizes these examples under the different bases of accounting.

Table 2.4.1: How Transactions Are Viewed under Cash and Accrual Accounting

Transaction	Under Cash-Basis Accounting	Under Accrual-Basis Accounting
\$200 sale for cash	Recorded in financial statements at the time of sale	Recorded in financial statements at the time of sale
\$200 sale on account	Not recorded in financial statements until cash is received	Recorded in financial statements at the time of sale
\$160 purchase for cash	Recorded in financial statements at the time of purchase	Recorded in financial statements at the time of purchase
\$160 purchase on account	Not recorded in financial statements until cash is paid	Recorded in financial statements at the time of purchase

Businesses often sell items for cash as well as on account, where payment terms are extended for a period of time (for example, 30 to 45 days). Likewise, businesses often purchase items from suppliers (also called vendors) for cash or, more likely, on account. Under the cash basis of accounting, these transactions would not be recorded until the cash is exchanged. In contrast, under accrual accounting, the transactions are recorded when the transaction occurs, regardless of when the cash is received or paid.

Concepts In Practice: Ethics in Revenue Recognition

Because each industry typically has a different method for recognizing income, revenue recognition is one of the most difficult tasks for accountants, as it involves a number of ethical dilemmas related to income reporting. To provide an industry-wide approach, Accounting Standards Update No. 2014-09 and other related updates were implemented to clarify revenue recognition rules. The American Institute of Certified Public Accountants (AICPA) announced that these updates would replace US GAAP's current industry-specific revenue recognition practices with a principle-based approach, potentially affecting both day-to-day business accounting and the execution of business contracts with customers.¹ The AICPA and the International Federation of Accountants (IFAC) require professional accountants to act with due care and to remain abreast of new accounting rules and methods of accounting for different transactions, including revenue recognition.

The IFAC emphasizes the role of professional accountants working within a business in ensuring the quality of financial reporting: "Management is responsible for the financial information produced by the company. As such, professional accountants in businesses therefore have the task of defending the quality of financial reporting right at the source where the numbers and figures are produced!"² In accordance with proper revenue recognition, accountants do not recognize revenue before it is earned.

Concepts In Practice: Gift Card Revenue Recognition

Gift cards have become an essential part of revenue generation and growth for many businesses. Although they are practical for consumers and are a low cost for businesses, navigating revenue recognition guidelines can be difficult. Gift cards with expiration dates require that revenue recognition be delayed until customer use or expiration. However, most gift cards now have no expiration date. So when do you recognize revenue?

Companies may need to provide an estimation of projected (or deferred) gift card revenue and usage during a period based on past experience or industry standards. There are a few rules governing reporting. If a company determines that a portion of all the issued gift cards will never be used, it may write this off to income. In some states, if a gift card remains unused, in part or in full, the unused portion of the card is transferred to the state government. It is considered unclaimed property for the customer, meaning that the company cannot keep these funds as revenue because, in this case, they have reverted to the state government.

Expense Recognition

An expense is a cost associated with providing goods or services to customers. In our opening example, the expenses that Chris incurred totaled \$1,150 (consisting of \$100 for brakes, \$50 for fuel, and \$1,000 for insurance). You might think of expenses as the opposite of revenue, in that expenses reduce Chris's checking account balance. Likewise, expenses decrease the value of the business and represent the dollar value of costs incurred to provide goods and services to customers for a given period of time.

Think It Through: Coffee Shop Expenses

While thinking about or visiting a coffee shop in your area, look around (or visualize) and identify items or activities that are the expenses of the coffee shop. Remember, expenses for the coffee shop are related to resources consumed while generating revenue from selling coffee and related items. Do not forget about any expenses that might not be so obvious—as a general rule, every activity in a business has an associated cost.

[Show/Hide Solution]

Solution

Costs of the coffee shop that might be readily observed would include rent, wages for the employees, and the cost of the coffee, pastries, and other items/merchandise that may be sold. In addition, costs such as utilities, equipment, and cleaning or other supplies might also be readily observable. More obscure costs of the coffee shop would include insurance, regulatory costs such as health department licensing, point-of-sale/credit card costs, advertising, donations, and payroll costs such as workers' compensation, unemployment, and so on. There are also unseen costs, such as aging of the building (if owned by the coffee shop) and wear and tear or aging of the equipment.

Footnotes

- [1](#) American Institute of Certified Public Accountants (AICPA). "Revenue Recognition." n.d.
- [2](#) Len Jui and Jessie Wong. "Roles and Importance of Professional Accountants in Business." *China Accounting Journal*. October 21, 2013.

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2.5: When Should a Company Capitalize or Expense an Item?

Learning Objectives

By the end of this section, you will be able to:

- Define the key characteristics of a fixed asset.
- Explain how the cost of a fixed asset is spread throughout its useful life via depreciation.
- Assess the impact to net income of expensing versus capitalizing an item.

Assets are items a business owns. For accounting purposes, assets are categorized as current versus long-term and tangible versus intangible. Any asset that is expected to be used by the business for more than one year is considered a **long-term asset**. These assets are not intended for resale and are anticipated to help generate revenue for the business in the future. Some common long-term assets are computers and other office machines, buildings, vehicles, software, computer code, and copyrights. Although these are all considered long-term assets, some are tangible, and some are intangible.

To better understand the nature of fixed assets, let's get to know Liam and their new business. Liam is excited to be graduating from their MBA program and looks forward to having more time to pursue their business venture. During one of their courses, Liam came up with the business idea of creating trendy workout attire. For their class project, they started silk-screening vintage album cover designs onto tanks, tees, and yoga pants. They tested the market by selling their wares on campus and were surprised by how quickly and how often they sold out. In fact, sales were high enough that they decided to go into business for themselves. One of their first decisions involved whether they should continue to pay someone else to silk-screen their designs or do their own silk-screening. To do their own silk-screening, they would need to invest in a silk screen machine.

Liam will need to analyze the purchase of a silk screen machine to determine the impact on their business in the short term as well as the long term, including the accounting implications related to the expense of this machine. Liam knows that over time, the value of the machine will decrease, but they also know that an asset is supposed to be recorded on the books at its historical cost. They also wonder what costs are considered part of this asset. Additionally, Liam has learned about the matching principle (expense recognition) but needs to learn how that relates to a machine that is purchased in one year and used for many years to help generate revenue. Liam has a lot of information to consider before making this decision.

What Is a Fixed Asset?

An asset is considered a tangible asset when it is an economic resource that has physical substance—it can be seen and touched. Tangible assets can be either short-term, such as inventory and supplies, or long-term, such as land, buildings, and equipment. To be considered a long-term tangible asset, the item needs to be used in the normal operation of the business for more than one year, be of material value, and not be near the end of its useful life, and the company must have no plan to sell the item in the near future. The useful life is the time period over which an asset cost is allocated. Long-term tangible assets are known as fixed assets. It's also key to note that companies will capitalize a fixed asset if it has material value. A \$10 stapler to be used in the office, for example, may last for years, but the value of the item is not significant enough to warrant capitalizing it.

Businesses typically need many different types of these assets to meet their objectives. These assets differ from the company's products. For example, the computers that Apple, Inc. intends to sell are considered inventory (a short-term asset), whereas the computers Apple's employees use for day-to-day operations are long-term assets. In Liam's case, the new silk screen machine would be considered a long-term tangible asset as they plan to use it over many years to help generate revenue for their business. Long-term tangible assets are listed as noncurrent assets on a company's balance sheet. Typically, these assets are listed under the category of Property, Plant, and Equipment (PP&E), but they may be referred to as fixed assets or plant assets.

Apple, Inc. lists a total of \$36.766 million in total Property, Plant, and Equipment (net) on its September 2020 consolidated balance sheet (see Figure 2.5.1). As shown in the figure, this net total includes land and buildings, machinery, equipment, and internal-use software, and leasehold improvements, resulting in a gross PP&E of \$103.526 million—less accumulated depreciation and amortization of \$66.760 million—to arrive at the net amount of \$36.766 million.

Property, Plant, and Internal-Use Software

Expenditures

Property, Plant, and Equipment

Depreciation and Amortization

Property, Plant, and Equipment, Net

Figure 2.5.1: Apple's Property, Plant, and Equipment, Net (September 2020, in \$ million)³ This report shows the company's consolidated financial statement details as of September 30, 2020, and September 30, 2019.

Think It Through: Classifying Assets and Related Expenditures

You work at a business consulting firm. Your new colleague, Milan, is helping a client company organize its accounting records by types of assets and expenditures. Milan is a bit stumped on how to classify certain assets and related expenditures, such as capitalized costs versus expenses. They have given you the following list and asked for your help to sort through it. Help your colleague classify the expenditures as either capitalized or expensed, and note which assets are property, plant, and equipment.

Expenditures:

- Normal repair and maintenance of the manufacturing facility
- Cost of taxes on new equipment used in business operations
- Shipping costs on new equipment used in business operations
- Cost of a minor repair on existing equipment used in business operations

Assets:

- Land next to the production facility is held for use next year as a place to build a warehouse
- Land held for future resale when the value increases
- Equipment used in the production process

[Show/Hide Solution]

Solution

Expenditures:

- Normal repair and maintenance on the manufacturing facility: expensed
- Cost of taxes on new equipment used in business operations: capitalized
- Shipping costs on new equipment used in business operations: capitalized
- Cost of a minor repair on existing equipment used in business operations: expensed

Assets:

- Land next to the production facility is held for use next year as a place to build a warehouse: property, plant, and equipment
- Land held for future resale when the value increases: investment
- Equipment used in the production process: property, plant, and equipment

Why are the costs of putting a long-term asset into service capitalized and written off as expenses (depreciated) over the economic life of the asset? Let's return to Liam's start-up business as an example. Liam plans to buy a silk screen machine to help create clothing that they will sell. The machine is a long-term asset because it will be used in the business's daily operations for many years. If the machine costs Liam \$5,000 and it is expected to be used in their business for several years, GAAP requires the allocation of the machine's costs over its useful life, which is the period over which it will produce revenues. Overall, in determining a company's financial performance, we would not expect that Liam should have an expense of \$5,000 this year and \$0 in expenses for this machine for future years in which it is being used. GAAP addressed this through the expense recognition (matching) principle, which states that expenses should be recorded in the same period as the revenues that the expense helped create. In Liam's case, the \$5,000 for this machine should be allocated over the years in which it helps to generate revenue for the business. Capitalizing the machine allows this to occur. As stated previously, to capitalize is to record a long-term asset on the balance sheet and expense its allocated costs on the income statement over the asset's economic life. Therefore, when Liam purchases the machine, they will record it as an asset on the financial statements (see journal entry in Figure 2.5.2).

Journal	

Figure 2.5.2: Journal Entry for Machine/Cash

When capitalizing an asset, the total cost of acquiring the asset is included in the cost of the asset. This includes additional costs beyond the purchase price, such as shipping costs, taxes, assembly, and legal fees. For example, if a real estate broker is paid \$8,000 as part of a transaction to purchase land for \$100,000, the land would be recorded at a cost of \$108,000.

Over time, as the asset is used to generate revenue, Liam will need to depreciate and recognize the cost of the asset.

What Is Depreciation?

When a business purchases a long-term asset (used for more than one year), it classifies the asset based on whether the asset is used in the business's operations. If a long-term asset is used in the business's operations, it will belong in property, plant, and equipment or intangible assets. In this situation, the asset is typically capitalized. Capitalization is the process by which a long-term asset is recorded on the balance sheet, and its allocated costs are expensed on the income statement over the asset's economic life.

Long-term assets that are not used in daily operations are typically classified as investments. For example, if a business owns land on which it operates a store, warehouse, factory, or offices, the cost of that land would be included in property, plant, and equipment. However, if a business owns a vacant piece of land on which the business conducts no operations (and assuming no current or intermediate-term plans for development), the land would be considered an investment.

Depreciation is the process of allocating the cost of a tangible asset over its useful life, or the period of time that the business believes it will use the asset to help generate revenue.

Fundamentals of Depreciation

As you have learned, when accounting for a long-term fixed asset, we cannot simply record an expense for the cost of the asset and record the entire outflow of cash in one accounting period. Like all other assets, when you purchase or acquire a long-term asset, it must be recorded at the historical (initial) cost, which includes all costs to acquire the asset and put it into use. The initial recording of an asset has two steps:

1. Record the initial purchase on the date of purchase, which places the asset on the balance sheet (as property, plant, and equipment) at cost, and record the amount as notes payable, accounts payable, or an outflow of cash.
2. At the end of the period, make an adjusting entry to recognize the depreciation expense. Depreciation expense is the amount of the asset's cost to be recognized, or expensed, in the current period. Companies may record depreciation expense incurred annually, quarterly, or monthly.

Following GAAP and the expense recognition principle, the depreciation expense is recognized over the asset's estimated useful life.

Recording the Initial Asset

Assets are recorded on the balance sheet at cost, meaning that all costs to purchase the asset and to prepare the asset for operation should be included. Costs outside of the purchase price may include shipping, taxes, installation, and modifications to the asset.

The journal entry to record the purchase of a fixed asset (assuming that a note payable, not a short-term account payable, is used for financing) is shown in Figure 2.5.3.

Journal	
building, etc.)	
payable	
<i>use of fixed asset</i>	

Figure 2.5.3: Journal Entry for Fixed Asset

Applying this to Liam's silk-screening business, we learn that they purchased a silk-screening machine for \$54,000 by paying \$10,000 cash and the remainder in a note payable over five years. The journal entry to record the purchase is shown in Figure 2.5.4.

Journal	
	De
able <i>purchase of silk-screening machine</i>	

Figure 2.5.4: Journal Entry for Equipment/Cash

Concepts In Practice: Estimating Useful Life and Salvage Value

Useful life and salvage value are estimates made at the time an asset is placed in service. It is common and expected that the estimates are inaccurate due to the uncertainty involved in estimating the future. Sometimes, however, a company may attempt to take advantage of estimating salvage value and useful life to improve earnings. A larger salvage value and longer useful life decrease annual depreciation expense and increase annual net income. An example of this behavior is Waste Management, which was disciplined by the SEC in March 2002 for fraudulently altering its estimates to reduce depreciation expense and overstate net income by \$1.7 billion.⁴

Components Used in Calculating Depreciation

The expense recognition principle that requires that the cost of the asset be allocated over the asset's useful life is the process of depreciation. For example, if we buy a delivery truck to use for the next five years, we would allocate the cost and record depreciation expense across the entire five-year period. The calculation of the depreciation expense for a period is not based on anticipated changes in the fair-market value of the asset; instead, the depreciation is based on the allocation of the cost of owning the asset over the period of its useful life.

The following items are important in determining and recording depreciation:

- Book value: the asset's original cost less accumulated depreciation.
- Useful life: the length of time the asset will be productively used within operations.
- Salvage (residual) value: the price the asset will sell for or be worth as a trade-in when its useful life expires. The determination of salvage value can be an inexact science since it requires anticipating what will occur in the future. Often, the salvage value is estimated based on past experiences with similar assets.
- Depreciable base (cost): the depreciation expense over the asset's useful life. For example, if we paid \$50,000 for an asset and anticipate a salvage value of \$10,000, the depreciable base is \$40,000. We expect \$40,000 in depreciation over the time period in which the asset was used, and then it would be sold for \$10,000.

Depreciation records an expense for the value of an asset consumed and removes that portion of the asset from the balance sheet. The journal entry to record depreciation is shown in Figure 2.5.5.

Journal

Use
Depreciation
Depreciation on asset for period

Figure 2.5.5: Journal Entry for Depreciation Expense

Depreciation expense is a common operating expense that appears on an income statement. It represents the amount of expense being recognized in the current period. Accumulated depreciation, on the other hand, represents the sum of all depreciation expenses recognized to date, or the total of all prior depreciation expenses for the asset. It is a contra account, meaning it is attached to another account and is used to offset the main account balance that records the total depreciation expense for a fixed asset over its life. In this case, the asset account stays recorded at the historical value but is offset on the balance sheet by accumulated depreciation. Accumulated depreciation is subtracted from the historical cost of the asset on the balance sheet to show the asset at book value. Book value is the amount of the asset that has not been allocated to expense through depreciation.

It is important to note, however, that not all long-term assets are depreciated. For example, land is not depreciated because depreciation is the allocation of the expense of an asset over its useful life. How can one determine a useful life for land? It is assumed that land has an unlimited useful life; therefore, it is not depreciated, and it remains on the books at historical cost.

Once it is determined that depreciation should be accounted for, there are three methods that are most commonly used to calculate the allocation of depreciation expense: the *straight-line method*, the *units-of-production method*, and the *double-declining-balance method*. A fourth method, the *sum-of-the-years-digits method*, is another *accelerated* option that has been losing popularity and can be learned in intermediate accounting courses. Note that these methods are for accounting and reporting purposes. The IRS allows firms to use the same or different methods to depreciate assets in calculating taxable income.

Think It Through: Fixed Assets

You work for Georgia-Pacific as an accountant in charge of the fixed assets subsidiary ledger at a production and warehouse facility in Pennsylvania. The facility is in the process of updating and replacing several asset categories, including warehouse storage units, fork trucks, and equipment on the production line. It is your job to keep the information in the fixed assets subsidiary ledger up to date and accurate. You need information on original historical cost, estimated useful life, salvage value, depreciation methods, and additional capital expenditures. You are excited about the new purchases and upgrades to the facility and how they will help the company serve its customers better. However, you have been in your current position for only a few years and have never overseen extensive updates, and you realize that you will have to gather a lot of information at once to keep the accounting records accurate. You feel overwhelmed and take a minute to catch your breath and think through what you need. After a few minutes, you realize that you have many people and many resources to work with to tackle this project. Whom will you work with, and how will you go about gathering what you need?

[Show/Hide Solution]

Solution

Though answers may vary, common resources would likely include purchasing managers (those actually buying the new equipment), maintenance managers (those who will repair and take care of the new equipment), and line managers (those in charge of the departments that will use the new equipment). To gather the information needed, set up short meetings to visit with the individuals involved, walk around to see the equipment, and ask questions about functionality, life span, common problems or repairs, and more

Assume that on January 1, Liam bought a silk screen machine for \$54,000. Liam pays shipping costs of \$1,500 and setup costs of \$2,500 and assumes a useful life of five years or 960,000 prints. Based on experience, Liam anticipates a salvage value of \$10,000. Recall that determination of the costs to be depreciated requires including all costs that prepare the asset for use by the company. Liam's example would include shipping and setup costs. Any costs for maintaining or repairing the equipment would be treated as regular expenses, so the total cost would be \$58,000, and after allowing for an anticipated salvage value of \$10,000 in five years, the business could take \$48,000 in depreciation over the machine's economic life (see Figure 2.5.6).

	Total Cost
Purchase Price	\$ 54,000
Shipping Costs	1,500
Set-up Costs	<u>2,500</u>
Total Cost	\$ 58,000
– Salvage Value	<u>(10,000)</u>
Depreciable Base	\$ 48,000

Figure 2.5.6: Purchase Price and Depreciable Base

Straight-line depreciation is a method of depreciation that evenly splits the depreciable amount across the useful life of the asset. Therefore, we must determine the yearly depreciation expense by dividing the depreciable base of \$48,000 by the economic life of five years, giving an annual depreciation expense of \$9,600. The journal entries to record the first two years of expenses are shown, along with the balance sheet information. Here are the journal entry and information for year one (Figure 2.5.7):

Journal		
Account	Debit	
Depreciation Expense: Silk Screen Machine Accumulated Depreciation: Silk Screen Machine <i>To record depreciation on asset for period</i>	9,600	

Silk Screen Machine	\$ 58,000
– Accumulated Depreciation: Silk Screen Machine	(9,600)
Net Book Value	\$ 48,400

Figure 2.5.7: Journal Entry for Silk Screen Machine Depreciation Expense, Year 1

After the journal entry in year one, the machine would have a book value of \$48,400. This is the original cost of \$58,000 less the accumulated depreciation of \$9,600. The journal entry and information for year two are shown in Figure 2.5.8.

Journal		
Account	Debit	
Depreciation Expense: Silk Screen Machine Accumulated Depreciation: Silk Screen Machine <i>To record depreciation on asset for period</i>	9,600	

Silk Screen Machine	\$ 58,000
– Accumulated Depreciation: Silk Screen Machine	(19,200)
Net Book Value	\$ 38,800

Figure 2.5.8: Journal Entry for Silk Screen Machine Depreciation Expense, Year 2

Liam records an annual depreciation expense of \$9,600. Each year, the accumulated depreciation balance increases by \$9,600, and the machine's book value decreases by the same \$9,600. At the end of five years, the asset will have a book value of \$10,000, which is calculated by subtracting the accumulated depreciation of \$48,000 ($5 \times \$9,600$) from the cost of \$58,000.

Units-of-Production Depreciation

Straight-line depreciation is efficient accounting for assets used consistently over their lifetime, but what about assets that are used with less regularity? The units-of-production depreciation method bases depreciation on the actual usage of the asset, which is more appropriate when an asset's life is a function of usage instead of time. For example, this method could account for depreciation of a silk screen machine for which the depreciable base is \$48,000 (as in the straight-line method), but now the number of prints is important.

In our example, the machine will have a total depreciation of \$48,000 over its useful life of 960,000 prints. Therefore, we

would divide \$48,000 by 960,000 prints to get a cost per print of \$0.05. If Liam printed 180,000 items in the first year, the depreciation expense would be $180,000 \text{ prints} \times \$0.05 \text{ per print}$, or \$9,000. The journal entry to record this expense would be the same as with straight-line depreciation: only the dollar amount would have changed. The presentation of accumulated depreciation and the calculation of the book value would also be the same. Liam would continue to depreciate the asset until a total of \$48,000 in depreciation was taken after running 960,000 total prints.

Think It Through: Deciding on a Depreciation Method

Liam is struggling to determine which depreciation method they should use for their new silk screen machine. They expect sales to increase over the next five years. They also expect (hope) that in two years they will need to buy a second silk screen machine to keep up with the demand for products of their growing company. Which depreciation method makes more sense for Liam: higher expenses in the first few years or keeping expenses consistent over time? Or would it be better for them to think not in terms of time, but rather in terms of the usage of the machine?

Double-Declining-Balance Depreciation

The double-declining-balance depreciation method is the most complex of the three methods because it accounts for both time and usage and takes more expense in the first few years of the asset's life. Double declining considers time by determining the percentage of depreciation expense that would exist under straight-line depreciation. To calculate this, divide 100 percent by the estimated life in years. For example, a five-year asset would be $100/5$, or 20 percent a year. A four-year asset would be $100/4$, or 25 percent a year. Next, because assets are typically more efficient and are used more heavily early in their life span, the double-declining method takes usage into account by doubling the straight-line percentage. For a four-year asset, multiply 25 percent ($100\%/4\text{-year life}$) $\times 2$, or 50 percent. For a five-year asset, multiply 20 percent ($100\%/5\text{-year life}$) $\times 2$, or 40 percent.

One unique feature of the double-declining-balance method is that in the first year, the estimated salvage value is not subtracted from the total asset cost before calculating the first year's depreciation expense. Instead, the total cost is multiplied by the calculated percentage. However, depreciation expense is not permitted to take the book value below the estimated salvage value, as demonstrated in Figure 2.5.9.

	Depreciation Expense	Accumulated Depreciation	Book Value
Cost			\$48,000
$\times 40\% =$	\$23,200	\$23,200	
$\times 40\% =$	13,920	37,120	
$\times 40\% =$	8,352	45,472	
$\times 40\% =$	2,528	48,000	
$\times 40\% =$	0	48,000	
$\times 40\% =$	\$48,000	\$48,000	

Figure 2.5.9: Depreciation Expense, Accumulated Depreciation, and Book Value, Years 1–5

Notice that in year four, the remaining book value of \$12,528 was not multiplied by 40 percent. This is because the expense would have been \$5,011.20, and since we cannot depreciate the asset below the estimated salvage value of \$10,000, the expense cannot exceed \$2,528, which is the amount left to depreciate (difference between the book value of \$12,528 and the salvage value of \$10,000). Since the asset has been depreciated to its salvage value at the end of year four, no depreciation can be taken in year five.

In our example, the first year's double-declining-balance depreciation expense would be $\$58,000 \times 40\%$, or \$23,200. For the remaining years, the double-declining percentage is multiplied by the remaining book value of the asset. Liam would continue to depreciate the asset until the book value and the estimated salvage value are the same (in this case, \$10,000). The net effect of the differences in straight-line depreciation versus double-declining-balance depreciation is that, under the double-declining-balance method, the allowable depreciation expenses are greater in the earlier years than those allowed for straight-line depreciation. However, over the depreciable life of the asset, the total depreciation expense taken will be the same no matter which method the entity chooses. In the current example, both straight-line and double-declining-balance depreciation will provide a total depreciation expense of \$48,000 over its five-year depreciable life.

Link to Learning: McDonald's Corporation

See [Form 10-K](#) that was filed with the SEC to determine which depreciation method McDonald's Corporation used for its long-term assets in 2019.

Hint: Use the search feature to search for key words in an annual report to find information more quickly. For example, search "depreciation." You should find the information you are looking for on page 40 of the annual report.

Based on the company's business model and the industry in which it operates, why do you think McDonald's chose this method of depreciating assets? Do you agree with this choice? Why or why not?

Summary of Depreciation

Table 2.5.1 and Figure 2.5.10 compare the three methods discussed. Note that although each time-based (straight-line and double-declining balance) annual depreciation expense is different, after five years, the total amount depreciated (accumulated depreciation) is the same. This occurs because at the end of the asset's useful life, it was expected to be worth \$10,000; thus, both methods depreciated the asset's value by \$48,000 over that time period.

Table 2.5.1: Three Methods of Calculating Depreciation Expense

Depreciation Method	Calculation
Straight line	$(\text{Cost} - \text{Salvage Value}) / \text{Useful Life}$
Units of production	$(\text{Cost} - \text{Salvage Value}) \times (\text{Units Produced in Current Period} / \text{Estimated Total Units to Be Produced})$
Double-declining balance	$\text{Book Value} \times \text{Straight-Line Annual Depreciation Percentage} \times 2$

Straight-Line Depreciation Method	Units of Production Method	Double-Declining Balance Method
\$ 9,600	(180,000 units) \$ 9,000	\$23,200
9,600	(200,000 units) 10,000	17,600
9,600	(210,000 units) 10,500	14,080
9,600	(190,000 units) 9,500	10,560
9,600	(180,000 units) 9,000	8,128
<u>\$48,000</u>	<u>\$48,000</u>	<u>\$48,000</u>

Figure 2.5.10: Straight-Line Depreciation, Units of Production, Double-Declining Balance Method, Years 1–5

When analyzing depreciation, accountants are required to make a supportable estimate of an asset's useful life and its salvage value. However, "management teams typically fail to invest either time or attention into making or periodically revisiting and revising reasonably supportable estimates of asset lives or salvage values, or the selection of depreciation methods, as prescribed by GAAP."⁵ This failure is not an ethical approach to properly accounting for the use of assets.

Accountants need to analyze the depreciation of an asset over the entire useful life of the asset. As an asset supports the cash flow of the organization, expensing its cost needs to be allocated, not just recorded as an arbitrary calculation. An asset's depreciation may change over its life according to its use. If asset depreciation is arbitrarily determined, the recorded "gains or losses on the disposition of depreciable property assets seen in financial statements"⁶ are not true best estimates. Due to operational changes, the depreciation expense needs to be periodically reevaluated and adjusted.

Any mischaracterization of asset usage is not proper GAAP and is not proper accrual accounting. Therefore, "financial statement preparers, as well as their accountants and auditors, should pay more attention to the quality of depreciation-related estimates and their possible mischaracterization and losses of credits and charges to operations as disposal gains."⁷ An accountant should always follow GAAP guidelines and allocate the expense of an asset according to its usage.

Concepts In Practice: Ethical Considerations

How WorldCom's Improper Capitalization of Costs Almost Shut Down the Internet

In 2002, telecommunications giant WorldCom filed for the largest Chapter 11 bankruptcy to date, a situation resulting from the manipulation of its accounting records.⁸ At the time, WorldCom operated nearly a third of the bandwidth of the 20 largest US internet backbone routes, connecting over 3,400 global networks that serviced more than 70,000 businesses in 114 countries.⁹

WorldCom used a number of accounting gimmicks to defraud investors, including capitalizing costs that should have been expensed. Under normal circumstances, this might have been considered just another accounting fiasco leading to the end of a company. However, WorldCom controlled a large percentage of backbone routes, a major component of the hardware supporting the internet, as even the Securities and Exchange Commission recognized. If such an event were to happen today, it could shut down international commerce and would be considered a national emergency.¹⁰ As demonstrated by WorldCom, the unethical behavior of a few accountants could have shut down the world's online businesses and international commerce. An accountant's job is fundamental and important: to keep businesses operating in a transparent fashion.

(Sources: "WorldCom (UNNET)." *Cybertelecom*. n.d. <http://www.cybertelecom.org/industry/wcom.htm>; Dennis R. Beresford, Nicholas DeB. Katzenbach, and C. B. Rogers, Jr. "Report of the Special Investigative Committee of the Board of Directors of WorldCom, Inc." US Securities and Exchange Commission. March 31, 2003. www.sec.gov/Archives/edgar/d...862/dex991.htm)

Footnotes

- ³ In the Chapter 4 financial statements, a number contained within parentheses is a negative number, such as the "Accumulated depreciation and amortization" line item.
- ⁴ United States Securities and Exchange Commission. "Waste Management, Inc. Founder and Five Other Former Top Officers Sued for Massive Earnings Management Fraud." March 26, 2002. www.sec.gov/litigation/litre...es/lr17435.htm
- ⁵ Howard B. Levy. "Depreciable Asset Lives: The Forgotten Estimate in GAAP." *The CPA Journal*. September 2016. cpajournal.com/2016/09/08/depreciable-asset-lives/
- ⁶ Ibid.
- ⁷ Ibid.
- ⁸ Luisa Beltran. "WorldCom Files Largest Bankruptcy Ever." *CNN Money*. July 22, 2002.
- ⁹ Jeff Keefe. *Monopoly.com: Will the WorldCom-MCI Merger Tangle the Web?* Washington, DC: Economic Policy Institute, 1998.
- ¹⁰ Dan Schiller. *Bad Deal of the Century: The Worrisome Implications of the WorldCom-MCI Merger*. Washington, DC: Economic Policy Institute, 1998.

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2.6: What Is “Profit” versus “Loss” for the Company?

Learning Objectives

By the end of this section, you will be able to:

- Outline the components necessary to calculate profit or loss.
- Contrast revenue and gains versus expenses and losses.
- Differentiate revenue and expense from the receipt or payment of cash.

It's a common misconception that if a business has cash, they are making a profit, and if they are suffering a loss, it must not have any cash. While this could be true, it's not necessarily true. In this section, you'll explore key differences between cash flow, revenue, expenses, profits, and losses.

Calculating Profit and Loss

Net income (net loss) is determined by comparing revenues and expenses. Net income is a result of revenues (inflows) being greater than expenses (outflows). A net loss occurs when expenses (outflows) are greater than revenues (inflows). In accounting it is common to present net income in the following format:

Recall that revenue is the value of goods and services a business provides to its customers and increases the value of the business. Expenses, on the other hand, are the costs of providing the goods and services and decrease the value of the business. When revenues exceed expenses, companies have net income. This means the business has been successful at earning revenues, containing expenses, or a combination of both. If, on the other hand, expenses exceed revenues, companies experience a net loss. This means the business was unsuccessful in earning adequate revenues, sufficiently containing expenses, or a combination of both. While businesses work hard to avoid net loss situations, it is not uncommon for a company to sustain a net loss from time to time. It is difficult, however, for businesses to remain viable while experiencing net losses over the long term.

Shown as a formula, the net income (loss) function is:

$$\begin{aligned}\text{Revenues } (R) - \text{Expenses } (E) &= \text{Net Income (when } R > E) \\ \text{Revenues } (R) - \text{Expenses } (E) &= \text{Net Loss (when } E > R)\end{aligned}$$

To be complete, we must also consider the impact of gains and losses. While gains and losses are infrequent in a business, it is not uncommon for a business to present a gain and/or loss in its financial statements. Recall that gains are similar to revenue and losses are similar to expenses. Therefore, the traditional accounting format would be as shown in Figure 2.6.1.

Gains and Losses

Revenue (sometimes called Sales or Fees Earned)
 Gains
 Expenses
 Losses
 Net Income (or Net Loss)

Figure 2.6.1: Gains and Losses

Shown as a formula, the net income (loss) function, including gains and losses, is:

$$\begin{aligned} \text{Revenues } (R) + \text{Gains } (G) - \text{Expenses } (E) - \text{Losses } (L) &= \text{Net Income [when } (R + G) > (E + L)] \\ \text{Revenues } (R) + \text{Gains } (G) - \text{Expenses } (E) - \text{Losses } (L) &= \text{Net Loss [when } (E + L) > (R + G)] \end{aligned}$$

When assessing a company's net income, it is important to understand the source of the net income. Businesses strive to attain "high-quality" net income (earnings). High-quality earnings are based on sustainable earnings, also called permanent earnings, while relying less on infrequent earnings, also called temporary earnings. Recall that revenues represent the ongoing value of goods and services the business provides (sells) to its customers, while gains are infrequent and involve items ancillary to the primary purpose of the business. For example, assume a bakery sells the truck it uses to deliver wedding cakes and experiences a gain on the sale. The bakery is not in the business of buying and selling trucks. It is in the baked goods business. Thus, the gain on the sale of the truck would be ancillary to the primary purpose of the business and represent a gain rather than revenue. We should use caution if a business attains a significant portion of its net income as a result of gains rather than revenues. Likewise, net losses derived as a result of losses should be put into the proper perspective due to the infrequent nature of losses. While net losses are undesirable for any reason, net losses that result from expenses related to ongoing operations, rather than losses that are infrequent, are more concerning for the business.

Profit versus Cash Flow

Knowing the difference between the cash basis and accrual basis of accounting is necessary to understand the need for the statement of cash flows. Stakeholders need to know the financial performance (as measured by the income statement—that is, net income or net loss) and financial position (as measured by the balance sheet—that is, assets, liabilities, and owners' equity) of the business. This information is provided in the income statement, statement of owner's equity, and balance sheet. However, since these financial statements are prepared using accrual accounting, stakeholders do not have a clear picture of the business's cash activities. The statement of cash flows solves this inadequacy by specifically focusing on the cash inflows and cash outflows. It also helps better delineate the difference between revenues and cash flow in versus expenses and cash flow out. As mentioned in prior sections, revenue can occur without cash actually flowing. For example, a customer may buy a good on account. Revenues would be recorded, but cash would not yet be received. The same is true on the expenses side. An expense can be incurred, such as an electric bill, but cash may not have been paid out yet. Thus, an expense is recorded and recognized on the income statement, but cash has not yet been given up. The statement of cash flows helps reconcile the difference between net income (a result of recorded revenues and expenses) and actual cash flow.

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2.7: The Income Statement

Learning Objectives

By the end of this section, you will be able to:

- Outline the purpose and importance of the income statement.
- Identify the structure and key elements of the income statement.
- Discuss the use of EBITDA as a measure of a company's profit.

Financial information flows from one financial statement to the next. Thus, the statements are prepared in a specific order. The first statement prepared is the income statement.

Functionality of the Income Statement

The **income statement** shows a firm's performance over a specific period of time. The statement helps financial statement users understand the sales generated during the period and the expenses incurred to generate those sales. If the **expenses** are smaller than the sales, the net result is profitability, or net income, rather than a net loss.

Breaking the income statement down into smaller pieces provides a more transparent view of the firm's performance, allowing users to see more clearly what areas of the business incurred expenses. This is helpful to management in driving improvements and to outside users in assessing performance.

Sales and Gross Profit

The first section of the income statement begins with sales. Though financial statements are required to follow a certain format, account names can differ slightly from one firm to another. You may see the first line, often referred to as *the top line*, called *sales*, *sales revenue*, **revenue**, *service revenues*, and other similar titles. All of these titles are meant to reflect the sales generated by selling product to customers in the day-to-day business. On Clear Lake's income statement in Figure 2.7.1, we see its top line referred to as Sales.

Income from items that aren't common to the firm's day-to-day business are reported as **gains** and losses, and they are reported further down in the income statement rather than at the top line with its regular, core business activities. This is to ensure that anomalies like selling a machine or a loss on retiring a bond don't mislead financial statement users as to the general performance of the firm and impact their assumptions of future results.

Firms report their sales and any reductions to sales separately on the income statement. They begin with gross sales, which includes all sales to customers. Clear Lake reported gross sales of \$105,000 last year and \$126,000 this year. The next line is sales returns and allowances, which is deducted from gross sales in order to find net sales. Clear Lake's sales returns and allowances were \$5,000 and \$6,000 respectively, leaving the company with net sales of \$100,000 and \$120,000 respectively

$$(\$105,000 - \$5,000 \text{ and } \$126,000 - \$6,000).$$

Next, the cost of goods sold (COGS) is deducted from net sales in order to arrive at gross profit. (It is customary to refer to sales minus COGS as gross profit because $\text{gross margin} = \text{gross profit}/\text{sales}$.) Cost of goods sold includes the costs directly involved in making the product that was sold during the period. Common examples of costs included in cost of goods sold include direct labor, direct materials, and the overhead assigned to the product in production. For a service business, this would include its direct labor and any materials used to deliver its services. For a retail firm like Clear Lake Sporting Goods, this would include the costs of all the goods it purchased for resale. Clear Lake's COGS is seen at \$50,000 and \$60,000 for the prior and current years. Note that different types of companies will have different types of costs deducted in their Cost of Goods section. Clear Lake Sporting Goods is a retailer, or merchandiser that buys good to resell. Their cost of goods includes the cost of goods they purchased to resell. In the link to learning, you will explore Apple, a technology manufacturer. Their cost of goods would include the cost to manufacture the goods they sell. Another type of firm is a service firm. A law office, for example, would include primarily

the cost of labor in their cost of services.

Gross profit is a reflection of how profitable the firm's performance was in its core business function. It includes only the core business and direct costs of performing that business. If the company were a shoe company, gross profit would show how profitable the company was in simply making the shoes it sold. If it were a bakery, gross profit would show how profitable the company was in simply baking the goods it sold. Gross profit shows financial statement users how effective the business is at generating top-line profits on their core business function. It does not reflect the performance of other areas of the firm such as other operating costs to support the direct production process, indirect costs, and financing.

For Clear Lake Sporting Goods, we see its gross profit in Figure 5.2. The company earned \$50,000 of gross profit (\$100,000 – \$50,000) the prior year and \$60,000 in the current year (\$120,000 – \$60,000).

Clear Lake Sporting Goods Comparative Year-End Income Statements		
	Prior Year	Current Year
Gross Sales	\$105,000	\$126,000
Sales Returns & Allowances	5,000	6,000
Net Sales	100,000	120,000
Cost of Goods Sold	50,000	60,000
Gross Profit	\$ 50,000	\$ 60,000

Figure 2.7.1: Income Statement through Gross Profit Line

Link to Learning: Gross Profit

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate the income statement (it begins on page 31). Review gross sales, sales returns and allowances, and net sales for the last few years. What can you learn about the company's recent performance in the area of sales? Is the gross sales line improving? How about the sales returns and allowances line? Has it improved or declined or simply changed incrementally with gross sales?

Review the firm's gross profit for the past few years. Has it improved or declined? Consider the company's improvement (or decline) in gross sales as compared to the improvement or decline in gross profit. Does it reflect any change in performance over time (earning more or less gross profit on its gross sales)?

Income from Operations

Gross profit is a very helpful measure, but it is only the first of several provided by the income statement. After gross profit is calculated, other operating expenses are deducted in order to calculate the firm's income from operations, also commonly called operating income. Common operating costs found in this section include building rent and utilities, property taxes, wages and salaries, and other overhead costs. In Figure 2.7.2, we can see Clear Lake's operating expenses. To sell its hunting and fishing equipment in the current year, Clear Lake Sporting Goods paid rent for its building (\$5,500) and utilities for its retail and warehouse spaces (\$2,500); recorded **depreciation** on equipment, buildings, and store furnishings (shelves, racks, etc.) (\$3,600); and paid salaries to its indirect employees in accounting, purchasing, and human resources (\$5,400). The company's operating expenses are deducted from gross profit to arrive at operating income

$$(\$60,000 - 5,500 - 3,600 - 5,400 - 2,500 = \$43,000).$$

While gross profit reflects only how profitable the firm was in making its core product, operating income reflects how profitable the firm's daily operations were as a whole. This still does not include other miscellaneous items outside the scope of a firm's normal business. Just as the name implies, it shows income from the core operations of the firm.

Clear Lake Sporting Goods Comparative Year-End Income Statements		
	Prior Year	Current Year
Gross Sales	\$105,000	\$126,000
Sales Returns & Allowances	5,000	6,000
Net Sales	100,000	120,000
Cost of Goods Sold	50,000	60,000
Gross Profit	50,000	60,000
Rent Expense	5,000	5,500
Depreciation Expense	2,500	3,600
Salaries Expense	3,000	5,400
Utility Expense	1,500	2,500
Operating Income	\$ 38,000	\$ 43,000

Figure 2.7.2: Income Statement through Income from Operations

We can see that the company was able to generate \$20,000 (\$120,000-\$100,000) more in net sales in the current year than the prior year. However, it only generated \$10,000 (\$60,000-\$50,000) in gross profit and \$5,000 (\$43,000-\$38,000) of additional operating income. Further investigation shows that while net sales increased, so did the direct costs of its goods (COGS) and its operating expenses.

We will further explore how to assess each of these expenses later in the chapter using common-size analysis. Common-size analysis reflects each element of a financial statement as a percentage of the base. In the case of the income statement, the base is net sales. Here we would see that COGS was 50 percent of net sales in both the current (\$60,000/\$120,000) and prior year (\$50,000/\$100,000), indicating there wasn't any significant change in performance we could detect from the information provided in the income statement.

Link to Learning: Operating Expenses

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate the company's income statement (the income statement begins on page 31). Review Apple's operating income for the last few years. Has it improved or declined? Does this fall in line with your expectations based on your previous review of the company's net sales and gross profit?

Based on the improvement or decline in operating income, review Apple's operating expenses to investigate. Have any of the operating expenses changed significantly? How did that impact the company's operating income? What might it tell you about the company's performance?

Net Income

Finally, we move on to **net income**, or what is commonly referred to as *the bottom line*. Net income (or loss) reflects the net impact of all financial transactions for the firm, including those that are caused by events outside the normal course of business. The most common items deducted from operating income to arrive at net income include interest expense, gains/losses, and income tax expense. Remember, gains and losses are those that result from unusual transactions outside the normal course of business. Examples include selling a piece of old equipment or a loss on retiring debt.

We can see in Figure 2.7.3 that Clear Lake Sporting Goods has outstanding debt, so it incurred interest expense of \$2,000 in the current year and \$3,000 the prior year. Since it recorded net income (not a loss), it must also record income tax expense of

\$6,000 in the current and \$5,000 in the prior year.

Clear Lake Sporting Goods Comparative Year-End Income Statements		
	Prior Year	Current Year
Gross Sales	\$105,000	\$126,000
Sales Returns & Allowances	5,000	6,000
Net Sales	100,000	120,000
Cost of Goods Sold	50,000	60,000
Gross Profit	50,000	60,000
Rent Expense	5,000	5,500
Depreciation Expense	2,500	3,600
Salaries Expense	3,000	5,400
Utility Expense	1,500	2,500
Operating Income	38,000	43,000
Interest Expense	3,000	2,000
Income Tax Expense	5,000	6,000
Net Income	\$ 30,000	\$ 35,000

Figure 2.7.3: Comparative Year-End Income Statement

EBITDA (Earnings before Interest, Taxes, Depreciation, and Amortization)

Now that we have a full income statement, we can look at another commonly used measure of financial performance called EBITDA. EBITDA stands for earnings before interest, taxes, depreciation, and amortization. Amortization is similar to depreciation. It is the spreading of the cost of an intangible asset over the course of its useful life. Intangible assets are long-term assets that lack physical substance, such as patents and copyrights.

Since EBITDA removes noncash items from the net income equation, it is considered a useful measure in assessing the cash flows provided by operating activities. We will assess cash flows using the **statement of cash flows** and various other cash flow measures later in this chapter as well.

As shown in Figure 2.7.4, Clear Lake Sporting Goods' EBITDA in the prior year was

$$\$19,500(\$30,000 - \$3,000 - \$5,000 - \$2,500)$$

and in the current year was

$$\$23,400(\$35,000 - \$2,000 - \$6,000 - \$3,600).$$

Clear Lake Sporting Goods Comparative Year-End Income Statements		
	Prior Year	Current Year
Gross Sales	\$105,000	\$126,000
Sales Returns & Allowances	5,000	6,000
Net Sales	100,000	120,000
Cost of Goods Sold	50,000	60,000
Gross Profit	50,000	60,000
Rent Expense	5,000	5,500
Depreciation Expense	2,500	3,600
Salaries Expense	3,000	5,400
Utility Expense	1,500	2,500
Operating Income	38,000	43,000
Interest Expense	3,000	2,000
Income Tax Expense	5,000	6,000
Net Income	\$ 30,000	\$ 35,000

Figure : EBITDA (Earnings before Interest, Taxes, Depreciation, and Amortization)

Think It Through: Net Income

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate the company's income statement (the income statement begins on page 31). Review net income for the last few years. Has it improved or declined? Does this fall in line with your expectations based on your previous review of the company's operating income?

[Show/Hide Solution]

Solution

Net income improved in the current year over last year but declined from 2018 to 2019 (from \$59,531 to \$55,256). Apple's EBITDA in 2020 was 108.89. (Amounts are in millions.)

2.8: The Balance Sheet

Learning Objectives

By the end of this section, you will be able to:

- Outline the purpose and importance of the balance sheet.
- Identify the structure and key elements of the balance sheet.

The Accounting Equation and the Classified Balance Sheet

Recall that the income statement shows the performance of a firm over the course of time. The classified balance sheet shows the financial state of a company as of a specific point in time. It is a key distinction between the two statements. The classified balance sheet is prepared in sections that align with the accounting equation.

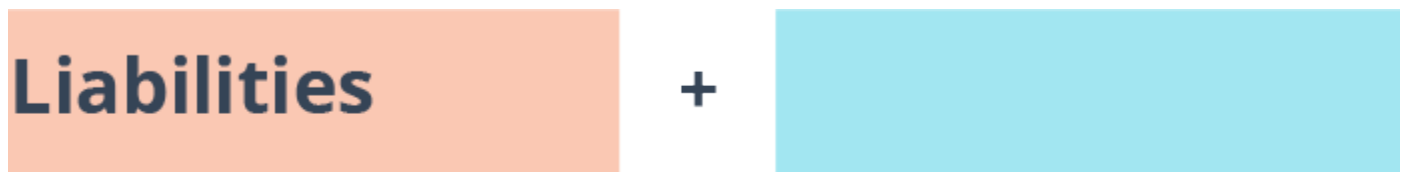
Remember, the **accounting equation** reflects the **assets** (items owned by the organization) and how they were obtained (by incurring **liabilities** or provided by owners). Liabilities are debts owed to other parties. Stated differently, every asset has a claim against it—by creditors and/or owners.

$$\text{Assets} = \text{Liabilities} + \text{Owner's Equity}$$

The classified balance sheet is thus broken down into three sections: assets, liabilities, and owner's equity. If prepared correctly, the total assets on the balance sheet equal the total liabilities and owner's equity sections of the balance sheet.

The classified balance sheet is considered or termed *classified* when the assets and liabilities within the balance sheet are grouped into even smaller sections: current and noncurrent (see Figure 2.8.1). Both assets and liabilities are broken down on the balance sheet into current and noncurrent classifications in order to provide more detail and transparency, as well as abide by the convention of reporting in descending order of liquidity. **Current assets** are those that can be used or converted to cash within a year. Common examples of current assets include cash, inventory, accounts receivable, and short-term investments. Assets that will be in use longer than a year are considered noncurrent. Common examples of **noncurrent assets** include notes receivable, machinery and equipment, buildings, and land.

Just as we noted a few key differences in the income statements based on the type of firm, you may also notice a few slight differences in the balance sheet depending on the firm type. Clear Lake Sporting Goods is a retailer. Thus, you will see that their inventory for resale on their balance sheet is simply called "Inventory." These are the goods they have purchased for resale but have not yet sold. A manufacturer, like Apple, Inc. in the Link to Learning sections, will have a variety of inventory types, including raw materials, work in progress, and finished goods inventory. These represent the various states of the inventory (ready to use, partially complete, and fully completed products). A service firm, on the other hand, may not have inventory at all. If it does, it may be simple goods it uses to help deliver its service. For example, a cleaning company may keep an inventory of cleaning supplies.



nt Noncurrent

Figure 2.8.1: Graphical Representation of the Accounting Equation. Both assets and liabilities are categorized as current and noncurrent.

Clear Lake Sporting Goods has cash, accounts receivable, inventory, short-term investments, and equipment. It rents its facilities, so it has no buildings on its balance sheets. Of all its assets, only the equipment is long-term. The assets section for Clear Lake's

classified balance sheet is shown in Figure 2.8.2.

Clear Lake Sporting Goods Comparative Year-End Balance Sheets		
	Prior Year	Current Year
Assets		
Current Assets:		
Cash	\$ 90,000	\$110,000
Accounts Receivable	20,000	30,000
Inventory	35,000	40,000
Short-Term Investments	15,000	20,000
Total Current Assets	<u>160,000</u>	<u>200,000</u>
Noncurrent Assets:		
Equipment	40,000	50,000
Total Assets	<u>\$200,000</u>	<u>\$250,000</u>

Figure 2.8.2: Assets Section of Classified Balance Sheet

Think It Through: Current and Noncurrent Assets

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate the company's balance sheet (the balance sheet begins on page 33). What types of current assets does the company have? What types of noncurrent assets does it have? How has the total of each type of asset changed over time?

[Show/Hide Solution]

Solution

Apple reports cash and cash equivalents, marketable securities, accounts receivable, inventories, vendor non-trade receivables, and "other" current assets on its balance sheet. The company's current assets decreased from \$162,819 in 2019 to \$143,713 in 2020. Apple reports marketable securities, property, plant and equipment, and other noncurrent assets in the noncurrent asset section of its balance sheet. The company's noncurrent assets increased from \$175,697 in 2019 to \$180,175 in 2020. (Amounts are in millions.)

We've covered the assets side of the accounting equation; now let's turn our attention to the other side of the equation and the other two sections of the balance sheet: liabilities and equity. Just like the assets section, the liabilities section is broken down into current and noncurrent. Current liabilities are those that will be due within a year. Common examples of current liabilities include accounts payable, wages payable, and unearned revenue. Noncurrent liabilities are those that are due more than a year into the future. Notes payable are a common noncurrent liability.

Clear Lake Sporting Goods has accounts payable and has collected payments from a few customers to whom it hasn't yet shipped its product to (unearned revenue). It also owes money on a note payable. Its accounts payable and unearned revenue are both current liabilities. The note payable is not due for several years, thus making it a noncurrent liability (see Figure 2.8.3).

	Prior Year	Current Year
Current Liabilities:		
Accounts Payable	\$ 60,000	\$ 75,00
Unearned Revenue	10,000	25,00
Total Current Liabilities	<u>70,000</u>	<u>100,00</u>
Noncurrent Liabilities:		
Notes Payable	40,000	50,00
Total Liabilities	<u><u>\$110,000</u></u>	<u><u>\$150,00</u></u>

Figure 2.8.3: Liability Section of Classified Balance Sheet

Think It Through: Current and Noncurrent Liabilities

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate its balance sheet (the balance sheet begins on page 33). What types of current and noncurrent liabilities does the company have? How has the total of each type of liability changed over time?

[Show/Hide Solution]

Solution

Apple has accounts payable, deferred revenue, commercial paper, and term debt listed as current liabilities. Its current liabilities declined by only a small amount from 2019 to 2020 (\$105,718 to \$105,392). The company has term debt and “other” listed as noncurrent liabilities, which increased from 2019 to 2020 (\$142,310 to \$153,157). (Amounts are in millions.)

The stockholders’ equity section of the balance sheet for corporations contains two primary categories of accounts. The first is contributed capital, which is funds paid in by owners. The second category is earned capital, which is funds earned by the corporation as part of business operations. On the balance sheet, **retained earnings** is a key component of the earned capital section, while the stock accounts, such as common stock, preferred stock, and additional paid-in capital, are the primary components of the contributed capital section.

Clear Lake Sporting Goods has just one contributed capital account—common stock—and one earned capital account—retained earnings. The equity section of its balance sheet is shown in Figure 2.8.4.

	Prior Year	Cu
--	------------	----

er Equity

Stock	\$ 75,000
ained Earnings	15,000
holders' Equity	<u>90,000</u>
ities and Stockholder Equity	<u><u>\$200,000</u></u>

Figure 2.8.4: Stockholders' Equity Section of Classified Balance Sheet

Think It Through: Assets, Liabilities, and Equity

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate the company's balance sheet (the balance sheet begins on page 33). What is the amount of the company's total assets for the most recent year? What is the amount of its total liabilities and equity?

[Show/Hide Solution]

Solution

Apple's total assets for 2020 were \$323,888, and its total liabilities and equity were also \$323,888. (Amounts are in millions.)

Importance of the Balance Sheet

Now that we have gone to all the work to carefully assemble a classified balance sheet, what do we use it for? The answer lies within the accounting equation itself. Think of the accounting equation from a "sources and claims" perspective. Under this approach, the assets (items owned by the organization) were obtained by incurring liabilities or were provided by owners. Stated differently, every asset has a claim against it—by creditors and/or owners. The balance sheet shows us what the firm has (its assets), who owns them (equity), and who the firm owes (its liabilities).

Limitations of the Balance Sheet

The balance sheet is indeed a very helpful financial statement, but it also poses challenges. First, assets on the balance sheet, under generally accepted accounting principles (GAAP), are recorded at historical cost. Historical cost is simply the cost paid for the item at the time it was purchased. Changes in the market value of big-ticket items like land or buildings are not reflected in the balance sheet. Land remains at historical cost, and depreciable items like buildings are reflected at their current book value (historical cost less accumulated depreciation). If the asset has appreciated over time, the higher market value of the asset would not be seen on the balance sheet.

Estimates are another limitation of the balance sheet. Items on the balance sheet, such as allowance for doubtful accounts and allowance for bad debt, are based on estimates. The useful lives for calculating depreciation are another common estimate. If these estimates are incorrect, the net value of the asset can be under- or overstated.

Another key limitation is the fact that a balance sheet reflects balances at only one given point in time. This means that the account value could have been quite different on the day before or the day after the date of the balance sheet. For example, if a firm were concerned with certain ratios or investor/lender expectations of its cash balance, it could choose not to pay several vendor payments in the last week of December. Thus, on December 31, the firm reflects a high cash balance on its balance sheet. However, by the end of the first week of January, it has caught up on late vendor payments and again shows a low cash balance.

Finally, there are many possible things of value that are not recorded on the balance sheet. Internally generated assets and the firm's human capital are two common examples. Internally generated assets can be anything from a website, a process, to an idea.

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2.9: The Relationship between the Balance Sheet and the Income Statement

Learning Objectives

By the end of this section, you will be able to:

- Identify connected elements between the balance sheet and the income statement.
- Differentiate between expenses and payables.

Net Income and Retained Earnings

As mentioned earlier, the financial statements are linked by certain elements and thus must be prepared in a certain order. The income statement was first since net income (or loss) is a required figure in preparing the balance sheet. During the period close process, all temporary accounts are closed to the income summary account, which is then closed to retained earnings. All revenue and expense accounts are closed since they are temporary. The net result is either net profit or net loss as the balance in the income summary account.

Remember that the retained earnings account reflects all income the firm has earned since its inception, less any **dividends** paid out to shareholders. Thus, the result (net income) of the income statement feeds the retained earnings account on the balance sheet. Retained earnings is also an element of the statement of stockholders' equity, which we will cover later in this chapter.

In Figure 2.9.1, we see net income in the current year of \$35,000, which was added to the company's prior year retained earnings balance of \$15,000. Notice, however, that the prior year balance was \$10,000, and the current year balance is only \$20,000. It does not total \$50,000 as we might have expected.

Remember, retained earnings represent all earnings since inception less any dividends paid out. Clear Lake Sporting Goods must have paid out \$30,000 in dividends in the current year. We will see this information laid out in the statement of retained earnings. In the prior year, they began with a \$10,000 balance in retained earnings. Income of \$30,000 increased retained earnings, and dividends paid back out to investors reduced retained earnings, leaving an ending balance in the prior year of \$15,000. This rolls over and is the beginning balance for the current year. In the current year, Clear Lake had net income of \$35,000 and paid \$30,000 of its earnings out to shareholders, essentially resulting in a \$5,000 increase to the retained earnings account.

Clear Lake Sporting Goods Statement of Retained Earnings		
	Prior Year	Current
Beginning Retained Earnings Balance Jan 1	\$10,000	
Net Income	30,000	
Dividends Paid to Shareholders	25,000	
Retained Earnings Dec 31	<u>\$15,000</u>	

Figure 2.9.1: Statement of Retained Earnings

Now we can see the full flow of information from the income statement to the statement of retained earnings (Figure 2.9.1) and finally to the balance sheet. Clear Lake's net income flows from the income statement into retained earnings, which is reflected on the statement of retained earnings. The balance in retained earnings is then reflected on the balance sheet. This flow is depicted in Figure 2.9.2.

Clear Lake Sporting Goods Comparative Year-End Income Statements			Clear Lake Sporting Goods Comparative Year-End Balance Sheets		
	Prior Year	Current Year		Prior Year	Current Year
Gross Sales	\$105,000	\$126,000	Assets		
Sales Returns & Allowances	5,000	6,000	Current Assets:		
Net Sales	100,000	120,000	Cash	\$ 90,000	\$110,000
Cost of Goods Sold	50,000	60,000	Accounts Receivable	20,000	30,000
Gross Margin	50,000	60,000	Inventory	35,000	40,000
Rent Expense	5,000	5,500	Short-Term Investments	15,000	20,000
Depreciation Expense	2,500	3,600	Total Current Assets	160,000	200,000
Salaries Expense	3,000	5,400	Noncurrent Assets:		
Utility Expense	1,500	2,500	Equipment	40,000	50,000
Operating Income	38,000	43,000	Total Assets	200,000	250,000
Interest Expense	3,000	2,000	Current Liabilities:		
Income Tax Expense	5,000	6,000	Accounts Payable	60,000	75,000
Net Income	\$ 30,000	\$ 35,000	Unearned Revenue	10,000	25,000
			Total Current Liabilities	70,000	100,000
			Noncurrent Liabilities:		
			Notes Payable	40,000	50,000
			Total Liabilities	110,000	150,000
			Stockholder Equity		
			Common Stock	75,000	80,000
			Ending Retained Earnings	15,000	20,000
			Total Stockholders' Equity	90,000	100,000
			Total Liabilities and Stockholder Equity	\$200,000	\$250,000

Clear Lake Sporting Goods Statement of Retained Earnings		
	Prior Year	Current Year
Beginning Retained Earnings Balance Jan 1	\$10,000	\$15,000
Plus Net Income	30,000	35,000
Less Dividends Paid to Shareholders	25,000	30,000
Ending Retained Earnings Dec 31	\$15,000	\$20,000

Figure 2.9.2: Connections between Clear Lake Sporting Goods' Balance Sheet and Income Statement

Link to Learning: Apple's Income Statement and Balance Sheet

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate the company's income statement and balance sheet (they begin on page 31). What is the company's net income for the most recent year? What is the amount of retained earnings on the balance sheet for the current and prior years? Does it appear the company paid out dividends this year?

Expenses versus Payables

There is another key relationship between the income statement and the balance sheet that can often be confusing to non-accountants: an expense versus a payable. The two are often assumed to be the same thing. However, it is important to note that the two are distinctly different.

Let's look at an example to outline the key differences. Clear Lake Sporting Goods incurred utility expenses during the current period (electric and gas). Its utilities totaled \$1,500. In the month that followed, the utilities vendor sent an invoice for \$1,500. Clear Lake has incurred an expense. It will reflect an expense of \$1,500 on the income statement for the utilities expense. This is the income statement impact of the transaction. So is it safe to assume that because Clear Lake has an expense, it also used cash? Not necessarily. Or is it safe to assume that if the company has an expense, it is the same as a payable? Again, the answer is no.

Remember, the accounting equation rests on the foundation of the double-entry accounting system. This means that every transaction has two sides: a debit and a credit. They must be equal. When Clear Lake records an expense of \$1,500, it must also record the other half of that transaction. In this case, the company incurred utilities expenses throughout the period "on account," which means it records an increase in its accounts payable. When the invoice comes due, another transaction must then be recorded to reduce accounts payable and reduce cash. Accounts payable is a liability found on the balance sheet, normally a current liability. The expense incurred caused the payable, but it is distinctly separate from the payable (see Figure 2.9.3).

Clear Lake Sporting Goods Comparative Year-End Income Statements			Clear Lake Sporting Goods Comparative Year-End Balance Sheets		
	Prior Year	Current Year		Prior Year	Current Year
Gross Sales	\$105,000	\$126,000	Assets		
Sales Returns & Allowances	5,000	6,000	Current Assets:		
Net Sales	100,000	120,000	Cash	\$ 90,000	\$110,000
Cost of Goods Sold	50,000	60,000	Accounts Receivable	20,000	30,000
Gross Profit	50,000	60,000	Inventory	35,000	40,000
Rent Expense	5,000	5,500	Short-Term Investments	15,000	20,000
Depreciation Expense	2,500	3,600	Total Current Assets	160,000	200,000
Salaries Expense	3,000	5,400	Equipment	40,000	50,000
Utility Expense	1,500	2,500	Total Assets	200,000	250,000
Operating Income	38,000	43,000	Current Liabilities:		
Interest Expense	3,000	2,000	Accounts Payable	60,000	75,000
Income Tax Expense	5,000	6,000	Unearned Revenue	10,000	25,000
Net Income	\$ 30,000	\$ 35,000	Total Current Liabilities	70,000	100,000
			Noncurrent Liabilities:		
			Notes Payable	40,000	50,000
			Total Liabilities	110,000	150,000
			Stockholder Equity		
			Common Stock	75,000	80,000
			Ending Retained Earnings	15,000	20,000
			Total Stockholders' Equity	90,000	100,000
			Total Liabilities and Stockholder Equity	\$200,000	\$250,000

Figure 2.9.3: Connections between Expenses and Accounts Payable

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2.10: The Statement of Owner's Equity

Learning Objectives

By the end of this section, you will be able to:

- Explain the concept of owner's equity.
- Outline the purpose and importance of the statement of owner's equity.
- Identify the structure and key elements of the statement of owner's equity.

What Is Equity?

Recall that the accounting equation can help us see what is owned (assets), who is owed (liabilities), and finally, who the owners are (equity). The statement of owner's equity addresses the last segment of the accounting equation in detail by laying out the equity elements of the firm and highlighting changes in these elements throughout the period.

Equity represents the ownership of the firm. The stockholders' equity section of the balance sheet for corporations contains two primary categories of accounts. The first is paid-in capital or contributed capital—consisting of amounts paid in by owners. The second category is earned capital, consisting of amounts earned by the corporation as part of business operations. On the balance sheet, retained earnings is a key component of the earned capital section, while the stock accounts, such as common stock, preferred stock, and additional paid-in capital, are the primary components of the contributed capital section.

Common stock represents ownership in the firm. Common stockholders normally have voting rights. Preferred stock has unique rights that are “preferred,” or more advantageous, to those of common stock. Unlike common stockholders, preferred shareholders typically do not have voting rights and do not share in the common stock dividend distributions. Instead, the “preferred” classification entitles shareholders to a dividend that is fixed (assuming sufficient dividends are declared). Treasury stock is shares that were outstanding and have been repurchased by the firm but not retired. Thus, they are still issued, but not outstanding. Additional paid-in capital is the difference between the issue price and par value of the common stock. For example, if a firm issued and sold stock at a market price of \$20 that had a \$5 par value, \$5 for each share would be recorded into common stock, and the excess \$15 per share would be recorded into the additional paid-in capital account.

If we review the balance sheet for Clear Lake Sporting Goods, we see just two elements of equity: common stock and retained earnings. Common stock in the prior year was \$75,000 and increased to \$80,000 in the current year, indicating Clear Lake issued additional common stock (see Figure 2.10.1).

Clear Lake Sporting Goods Comparative Year-End Balance Sheets

	Prior Year	Current Year
Stockholder Equity		
Common Stock	\$ 75,000	\$ 80,000
Adding Retained Earnings	15,000	20,000
Total Stockholders' Equity	<u>90,000</u>	<u>100,000</u>
Total Liabilities and Stockholder Equity	<u>\$200,000</u>	<u>\$250,000</u>

Figure 2.10.1: Stockholder Equity Section of Balance Sheet

Think It Through: Equity Accounts

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate the company's balance sheet (it begins on page 33). What types of equity accounts does it report?

[Show/Hide Solution]

Solution

Apple reports common stock, retained earnings, and accumulated other comprehensive income.

Distributions to Owners

When firms earn a profit, they have two options as to what to do with their earnings. They can keep (retain) them and reinvest them back into the business, or they can pay them out to their shareholders in the form of dividends. Dividends are commonly in the form of cash, but dividends can be paid out in the form of stock or other assets as well.

To pay a cash dividend, the firm must have enough cash on hand and sufficient retained earnings. They cannot pay out a dividend beyond the retained earnings available. Some companies issue shares of stock as a dividend rather than cash or property. This often occurs when the company has insufficient cash but wants to keep its investors happy. When a company issues a stock dividend, it distributes additional shares of stock to existing shareholders.

A property dividend occurs when the firm pays out dividends in the form of something other than stock or cash, often one of its assets or something they hold in inventory. For example, Walt Disney Company may choose to distribute tickets to visit its theme parks. A property dividend may be declared when a company wants to reward its investors but doesn't have the cash to distribute, or if it needs to hold on to its existing cash for other investments.

Remember, the retained earnings account reflects the cumulative earnings of a firm since it began business, less dividends paid out to shareholders. This includes all forms of dividends (cash, stock, and other assets). Note that dividends are distributed or paid only to shares of stock that are outstanding. Treasury shares are not outstanding, so no dividends are declared or distributed for these shares. Regardless of the type of dividend, the declaration always causes a decrease in the retained earnings account.

Think It Through: Dividends

Visit the [Apple, Inc. Annual Report](#) for 2020. Review the notes to the financial statements found on pages 19 and 20. What kind of dividends did the company pay (cash, property, stock)? Review the notes regarding dividends on page 26. What does Apple intend to do regarding dividends in the future, pending board approval?

[Show/Hide Solution]

Solution

Apple issued cash dividends. On page 26, it notes that the company intends to increase the dividend annually, pending approval by the board.

Elements of the Statement of Owner's Equity

Now that we have covered the basic elements of equity and know what dividends are, we have the basic pieces we need to create the statement of **owner's equity**. The statement is broken out into columns, one for each element of equity: common stock, preferred stock, additional paid-in capital, retained earnings, and treasury stock.

The first line of the statement provides the balance of each segment as of the first day of the period. Each following line provides information on any events during the period that changed the value of any of the accounts. Common examples of events found on the statement include net income or loss for the period, issuing common or preferred stock, purchasing or selling treasury stock, and declaring a dividend.

Clear Lake Sporting Goods has just common stock and retained earnings to report in its statement of owner's equity. They had just two events to report in their statement that impacted their equity accounts; they reported net income, and they issued dividends (see Figure 2.10.2).

	Common Stock	Additional Paid-in Capital	Retained Earnings
	\$75,000	\$0	\$15,000
			35,000
holders			(30,000)
	5,000		
	\$80,000	\$0	\$20,000

Figure 2.10.2: Statement of Stockholder Equity for Clear Lake Sporting Goods

Link to Learning: Cash Flows

[Khan Academy](#) explains cash flows in a unique way.

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2.11: The Statement of Cash Flows

Learning Objectives

By the end of this section, you will be able to:

- Outline the purpose and importance of the statement of cash flows.
- Identify the structure and key elements of the statement of cash flows.

The final financial statement is the statement of cash flows. It is a crucial statement, as it shows the sources of and uses of cash for the firm during the accounting period. Remember, under accrual accounting, transactions are recorded when they occur, not necessarily when cash moves. Thus, the income statement does not provide all the insights necessary to understand a firm's cash flows. To fully understand the firm's flow of cash, the statement of cash flows is needed.

Importance of the Statement of Cash Flows

Remember, most firms use accrual accounting. Revenues and expenses are recorded when they occur, not necessarily when cash moves. This can create timing differences between profits and cash flows. A firm can be profitable and still not have an adequate flow of cash. The opposite is also true: it can experience a net loss and still have cash on hand. Earning a profit is wonderful, but it is not the only goal an organization has. It must also have adequate cash flow to support daily operations. To support cash planning and to provide external financial statement users, such as lenders and investors, with information about the firm's cash flow, the statement of cash flows is prepared. Cash flow is also a crucial metric for determining the value of a company.

External financial statement users also rely on the statement of cash flows to help them evaluate the quality of the firm's earnings. Users compare earnings to cash flow to assess the validity of the earnings data. For example, a firm reporting a strong profit but very little cash flow might raise some questions as to what was recorded to drive profits that isn't also driving cash flow.

The statement of cash flows also helps external users determine the driving forces behind the firm's cash flows. They can see if cash is generated primarily by daily operations or if cash is being generated or consumed by events outside the firm's normal course of business.

There are two key methods of preparing the statement: direct and indirect. FASB (Financial Accounting Standards Board) favors the **direct method**. Despite that, the most common method used by far in general practice is the **indirect method**. The direct method lists cash flows directly from revenues and expenses, whereas the indirect method reconciles income to cash flows. The indirect method begins with net income and reconciles each account in order to arrive at net cash flow. It essentially reconciles **accrual basis** accounting to **cash basis**, or cash flow.

Operating Activities

To provide clear information about what areas of the business generated and used cash, the statement of cash flows is broken down into three key categories: operating, financing, and investing. The operating section reflects cash flows generated by and used by the day-to-day operations of the business. Investing activities include investments in other firms as well as investments in the firm itself (items like machinery, land, or other fixed assets). Finally, financing activities are those used to provide funds to run the business (loans, interest).

As mentioned, operating activities are those that are used or generated by the day-to-day operations of the firm. The operating activities section of the statement of cash flows begins with net income. All lines thereafter, in that section, are then adjustments to reconcile net income to actual cash flows by adding back **noncash expenses** like depreciation and adjusting for changes in asset and liability accounts. For example, depreciation is a noncash expense. Thus, depreciation is added back to net income.

To prepare the statement of cash flows for Clear Lake Sporting Goods, we need the beginning cash balance from the balance sheet, net income and depreciation expense from the income statement, and a set of comparative balance sheets to see the change in asset and liability accounts (see Figure 2.11.1).

Clear Lake Sporting Goods Comparative Year-End Income Statements			Clear Lake Sporting Goods Comparative Year-End Balance Sheets		
	Prior Year	Current Year		Prior Year	Current Year
Gross Sales	\$105,000	\$126,000	Assets		
Sales Returns & Allowances	5,000	6,000	Current Assets:		
Net Sales	100,000	120,000	Cash	\$ 90,000	\$110,000
Cost of Goods Sold	50,000	60,000	Accounts Receivable	20,000	30,000
Gross Margin	50,000	60,000	Inventory	35,000	40,000
Rent Expense	5,000	5,500	Short-Term Investments	15,000	20,000
Depreciation Expense	2,500	3,600	Total Current Assets	160,000	200,000
Salaries Expense	3,000	5,400	Noncurrent Assets:		
Utility Expense	1,500	2,500	Equipment	40,000	50,000
Operating Income	38,000	43,000	Total Assets	200,000	250,000
Interest Expense	3,000	2,000	Current Liabilities:		
Income Tax Expense	5,000	6,000	Accounts Payable	60,000	75,000
Net Income	\$ 30,000	\$ 35,000	Unearned Revenue	10,000	25,000
			Total Current Liabilities	70,000	100,000
			Noncurrent Liabilities:		
			Notes Payable	40,000	50,000
			Total Liabilities	110,000	150,000
			Stockholder Equity		
			Common Stock	75,000	80,000
			Ending Retained Earnings	15,000	20,000
			Total Stockholders' Equity	90,000	100,000
			Total Liabilities and Stockholder Equity	\$200,000	\$250,000

Figure 2.11.1: Comparative Income Statements and Balance Sheets

Clear Lake's statement of cash flows begins with the current year's net income of \$35,000 from the income statement. Next, noncash expenses are deducted. Clear Lake's only noncash expense on its current-year income statement is depreciation of \$3,600. Since depreciation is an expense that reduces income but is not actually paid out in cash in the current period, it must be added back to net income to reconcile net income to cash flow.

Next, changes in operational assets and liabilities are used to continue reconciling net income to actual cash flow. For example, Clear Lake's accounts receivable increased from the prior period to the current period. This means that there were more sales recorded but not yet received in cash in this period than there were in the prior period, making an increase in accounts receivable a reduction on the statement. Inventory increased, which means additional cash was spent to acquire it, making it a use of cash or a reduction in net income to move closer to cash. Accounts payable and unearned revenue, both liability accounts, increased. Since these are liabilities, an increase would indicate that the liability was incurred but not as quickly paid out; thus, it is an increase to the statement.

Tallying all these adjustments to net income shows Clear Lake's net cash flows provided by operating activities of \$53,600 (see Figure 2.11.2).

Clear Lake Sporting Goods Statement of Cash Flows Indirect Method

Cash Flow from Operating Activities	
Net Income	\$35,000
Adjustment to Reconcile Net Income to Net Cash Flow from Operating Activities:	
Depreciation	\$ 3,600
Accounts Receivable Increase	(10,000)
Inventory Increase	(5,000)
Accounts Payable Increase	15,000
Unearned Revenue Increase	15,000
Net Cash Flow from Operating Activities	<u>\$53,600</u>

Figure 2.11.2: Operating Activities Section of the Statement of Cash Flows

Investing Activities

As mentioned, investing activities include investments in other firms as well as investments in the firm itself (items like machinery, land, or other fixed assets). These are items that are capitalized (placed on the balance sheet and depreciated over time) and thus did not reduce net income. They did, however, cause an impact on cash flow (see Figure 2.11.3).

During the current year, Clear Lake purchased an additional \$5,000 in short-term investments (see the comparative balance sheets; the balance in that account increased by \$5,000 since the prior year). They also purchased additional plant assets in the amount of \$13,600. This amount can be figured by comparing the difference in the current and prior plant assets accounts and including the impact of current year depreciation (\$50,000 current year balance less \$40,000 prior year balance and \$3,600 of depreciation = \$13,600 of new assets purchased).

Investing Activities	
Short-Term Investments	\$(5,000)
Plant Assets	(13,600)
Investing Activities	

Figure 2.11.3: Investing Activities Section of the Statement of Cash Flows

Financing Activities

Recall that financing activities are those used to provide funds to run the business. Common items in this section of the statement include the payment of dividends, issuance of common or preferred stock, and issuance or payment of notes payable (see Figure 2.11.4).

In the current year, Clear Lake took out additional notes payable (a cash inflow). We can see this by the increase in their notes payable account from the prior year to the current year (\$40,000 to \$50,000). This is an inflow of cash and thus an increase on the statement. Dividends of \$30,000 were paid to shareholders (found on the statement of retained earnings and the statement of owner's equity). Finally, we see that Clear Lake must have issued additional common stock, as its common stock balance increased from \$75,000 to \$80,000.

Financing Activities

Payable	\$10,000
non Stock	5,000
ends	(30,000)

Financing Activities

Figure 2.11.4: Financing Activities Section of the Statement of Cash Flows

Link to Learning: Statement of Cash Flows

Visit the [Apple, Inc. Annual Report](#) for 2020 and locate the company's statement of cash flows (it begins on page 35). What is the cash provided by/used by operating activities? Review the key adjustments in the operating section. What are the biggest adjustments? Review the investing section of the statement. Did the company have a net cash inflow or net cash used by investing? What key items appear in this section? What was the net cash provided by or used by financing activities? What key items appear in this section for Apple?

The final task to wrap up the statement of cash flows is to tally net cash generated or used by summing all three sections. This amount is then used to adjust the beginning cash balance from the balance sheet. Assuming the statement was prepared correctly, the sum should equal the ending cash balance on the balance sheet.

In the full statement, we can see that Clear Lake has a net cash flow of \$20,000. The beginning cash balance was \$90,000, making the ending cash balance \$110,000 (see Figure 2.11.5).

Clear Lake Sporting Goods Statement of Cash Flows Indirect Method			
Cash Flow from Operating Activities			
Net Income		\$	35,000
Adjustment to Reconcile Net Income to Net Cash Flow from Operating Activities:			
Depreciation	\$	3,600	
Accounts Receivable Increase		(10,000)	
Inventory Increase		(5,000)	
Accounts Payable Increase		15,000	
Unearned Revenue Increase		15,000	18,600
Net Cash Flow from Operating Activities			53,600
Cash Flow from Investing Activities			
Purchase of Short-Term Investment		(5,000)	
Cost of New Plant Assets		(13,600)	
Net Cash Flow: Investing Activities			(18,600)
Cash Flow from Financing Activities			
Additional Notes Payable		10,000	
Issuance of Common Stock		5,000	
Payment of Dividends		\$(30,000)	
Net Cash Flow from Financing Activities			(15,000)
Total Cash Flow Increase/Decrease			20,000
Beginning Cash Balance			90,000
Ending Cash Balance			\$110,000

Figure 2.11.5: Full Statement of Cash Flows

Analyzing Performance

The statement of cash flows can be used in a number of ways to assess firm performance by both internal and external financial statement users. Internal users can assess sources of and uses of cash in order to aid in adapting, as necessary, to ensure adequate future cash flows. External users also use the statement. Recall that comparing net income to operational cash flows can help assess the quality of earnings. In the next section, you'll explore operating cash flow and **free cash flow** to the firm, two key points of analysis in assessing cash flows.

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2.12: Operating Cash Flow and Free Cash Flow to the Firm (FCFF)

Learning Objectives

By the end of this section, you will be able to:

- Calculate operating cash flow and free cash flow.
- Assess organizational cash management performance.

Operating Cash Flow

Now that we have a statement of cash flows prepared, we can move on to a few key elements of the statement used to assess organizational cash management performance. Operating cash flow, or net cash flow from operating activities, is calculated in the first section of the statement of cash flows. It depicts the cash generated (or used by) the primary business activities. Remember, operating cash flow is calculated under the indirect method by adjusting net income for noncash expenses like depreciation and adjustments for changes in current asset and liability accounts (changes in working capital).

$$\text{Operating Cash Flow} = \text{Operating Income} + \text{Depreciation} - \text{Taxes} + \text{Change in Working Capital}$$

Operating cash flow is helpful in assessing organizational cash management performance as it relates to the core business function—operations. Key management practices in this area can have a profound impact on the firm's cash flow. Practices and policies include customer payment terms, collection policies and practices, and vendor payment terms. Though changing a customer or vendor payment terms will not change the profit or loss for the firm, it will have an impact on the timing to cash flows. This is a key element of managing operational cash flow.

Free Cash Flow

Free cash flow (FCF) is calculated by taking operating cash flows less capital expenditures. Free cash flow is an important measure, as it depicts the cash available to support the business's operations and maintain its fixed assets. It is commonly used by investors as part of their overall evaluation of an investment, as it is a key measure of cash flow management practices and a firm's ability to generate enough cash to cover operations and capital assets, and it shows if there is any left over for other considerations such as dividend payments, debt repayment, and contributions to increase working capital for future growth.

$$\text{Free Cash Flow (FCF)} = \text{Operating Cash Flow} - \text{Capital Expenditures}$$

Using the data for Clear Lake Sporting Goods, we can calculate its free cash flow as follows:

$$\text{Free Cash Flow (FCF)} = \$53,600 - \$13,600 = \$40,000$$

This means that Clear Lake Sporting Goods has \$40,000 of cash available to repay debt or pay cash dividends after having covered the cash needs of its operations and capital asset investments.

Managing Cash Flow

Managing cash flow is not an easy task. A firm has a myriad of places that its cash flows from or to. However, there are a few key areas to pay attention to in order to manage or improve cash flows. First, consider where cash is coming from—customers. Managing terms and collection efforts with customers can have a significant impact on a firm's cash flow. For example, a customer with terms of net 10 will likely yield payment quite quickly—10 days, give or take. A customer with terms of net 60, on the other hand, will require roughly 60 days to collect, assuming they pay on time. The 50-day difference between these two examples means that the firm will go 50 additional days, having expended the resources to provide the customer with their good or service, but with no cash flow yet to cover it.

The same theory holds true on the opposite side with accounts payable and the vendors a firm uses. Accepting net 10 terms requires the firm to give up its cash quickly, while pushing for more favorable terms like net 30 or net 60 allows the firm to wait much longer to give up its cash.

It is important to assess both sides of cash flow and the impact it has on the firm, as well as the customer and vendor relationships it maintains. Some customers may not have difficulty negotiating a more favorable payment term in order for the firm to improve its cash flow. Others, however, may not be willing to accept shorter payment terms. In order to be competitive in the industry, the firm must assess the customer relationships, industry standards, and its own ability to support cash flow when considering its customer payment terms.

When there is a gap in cash flow, it is crucial that it is recognized early, with proper cash flow forecasting, so financing can be obtained to bridge the gap. A common tool used to manage the ebb and flow of cash flow for a firm is an open line of credit with a bank. This allows the firm to borrow and repay from month to month as cash flow fluctuates.

Now that you've become more familiar with the four basic financial statements, let's move on to a tool helpful in evaluating them: common-size statements. Common-size financial statements, also termed vertical analysis, restate the financial statement items as a percentage of a base item. Doing so helps reveal relationships between items, aids in assessing performance over time, and makes it easier to compare one company to another, regardless of size (thus the name common-size).

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2.13: Common-Size Statements

Learning Objectives

By the end of this section, you will be able to:

- Prepare common-size statements.
- Assess organizational performance using common-size statements.
- Use industry comparisons to assess organizational performance.

Common-Size Income Statements

A common-size income statement is created by restating each line as a percentage of net sales. Expressing each item on the income statement as a percentage rather than in absolute dollars makes it much easier to make comparisons, particularly to other divisions or competitors of varying sizes. The formula to calculate each item on the income statement is:

$$\text{Common-Size Item} = \frac{\text{Income Statement Line Item}}{\text{Net Sales}}$$

Using Clear Lake Sporting Goods' current-year income statement, we can see how each line item in it is divided by net sales in order to assemble a common-size income statement (see Figure 2.13.1).

Clear Lake Sporting Goods Comparative Year-End Income Statements			
	Current Year	Current Year %	Formula
Gross Sales	\$126,000		
Sales Returns & Allowances	6,000		
Net Sales	120,000	100%	=120,000/120,000
Cost of Goods Sold	60,000	50%	=60,000/120,000
Gross Margin	60,000	50%	=60,000/120,000
Rent Expense	5,500	5%	=5,500/120,000
Depreciation Expense	3,600	3%	=3,600/120,000
Salaries Expense	5,400	5%	=5,400/120,000
Utility Expense	2,500	2%	=2,500/120,000
Operating Income	43,000	36%	=43,000/120,000
Interest Expense	2,000	2%	=2,000/120,000
Income Tax Expense	6,000	5%	=6,000/120,000
Net Income	\$ 35,000	29%	=35,000/120,000

Figure 2.13.1: Common-Size Income Statement

It may seem cumbersome to create a common-size statement. However, a simple tool like Microsoft Excel can be quite handy in making the process easier and faster. The same formula can be copied and replicated in each income statement line, making the calculations much faster. In Figure 2.13.2, you can see the formulas used to create Clear Lake Sporting Goods' common-size income statement in Excel. Notice that the \$ can be inserted to anchor a cell reference, making it easier to copy and paste the same formula onto many lines or columns.

	A	B	C	D	E	F	G
1		Prior Year	Prior Year %	Formula	Current Year	Current Year %	Formula
2	Gross Sales	\$ 105,000			\$ 126,000		
3	Sales Returns	5,000			6,000		
4	Net Sales	100,000	100%	=B4/\$B\$4	120,000	100%	=E4/\$E\$4
5	Cost of Goods Sold	50,000	50%	=B5/\$B\$4	60,000	50%	=E5/\$E\$4
6	Gross Margin	50,000	50%	=B6/\$B\$4	60,000	50%	=E6/\$E\$4
7	Rent Expense	5,000	5%	=B7/\$B\$4	5,500	5%	=E7/\$E\$4
8	Depreciation Expense	2,500	3%	=B8/\$B\$4	3,600	3%	=E8/\$E\$4
9	Salaries Expense	3,000	3%	=B9/\$B\$4	5,400	5%	=E9/\$E\$4
10	Utility Expense	1,500	2%	=B10/\$B\$4	2,500	2%	=E10/\$E\$4
11	Operating Income	38,000	38%	=B11/\$B\$4	43,000	36%	=E11/\$E\$4
12	Interest Expense	3,000	3%	=B12/\$B\$4	2,000	2%	=E12/\$E\$4
13	Income Tax Expense	5,000	5%	=B13/\$B\$4	6,000	5%	=E13/\$E\$4
14	Net Income	\$ 30,000	30%	=B14/\$B\$4	\$ 35,000	29%	=E14/\$E\$4

Figure 2.13.2: Clear Lake Sporting Goods Common-Size Income Statements with Excel Formulas

Common-Size Balance Sheet

The common-size balance sheet functions much like the common-size income statement. Each line item on the balance sheet is restated as a percentage of total assets.

$$\text{Common-Size Item} = \frac{\text{Balance Sheet Line Item}}{\text{Total Assets}}$$

Using Clear Lake Sporting Goods' current balance sheet, we can see how each line item in its statement is divided by total assets in order to assemble a common-size balance sheet (see Figure 2.13.3).

Clear Lake Sporting Goods Comparative Year-End Balance Sheets			
	Current Year	Current Year %	Formula
Assets			
Current Assets:			
Cash	\$110,000	44%	=110,000/250,000
Accounts Receivable	30,000	12%	=30,000/250,000
Inventory	40,000	16%	=40,000/250,000
Short-Term Investments	20,000	8%	=20,000/250,000
Total Current Assets	<u>200,000</u>	80%	=200,000/250,000
Noncurrent Assets:			
Equipment	50,000	20%	=50,000/250,000
Total Assets	<u>250,000</u>	100%	=250,000/250,000
Current Liabilities:			
Accounts Payable	75,000	30%	=75,000/250,000
Unearned Revenue	25,000	10%	=25,000/250,000
Total Current Liabilities	<u>100,000</u>	40%	=100,000/250,000
Noncurrent Liabilities:			
Notes Payable	50,000	20%	=50,000/250,000
Total Liabilities	<u>150,000</u>	60%	=150,000/250,000
Stockholder Equity			
Common Stock	80,000	32%	=80,000/250,000
Ending Retained Earnings	20,000	8%	=20,000/250,000
Total Stockholders' Equity	<u>100,000</u>	40%	=100,000/250,000
Total Liabilities and Stockholder Equity	<u>\$250,000</u>	100%	=250,000/250,000

Figure 2.13.3: Common-Size Balance Sheet

Excel can also be used to create a common-size balance sheet. Once the formula is created, it can be copied into each line, making the process of creating a common-size statement much easier (see Figure 2.13.4):

	A	B	C	D
		Current Year	Current Year %	Formula
1				
2	Assets			
3	Current Assets:			
4	Cash	\$ 110,000	44%	=B4/B\$11
5	Accounts Receivable	30,000	12%	=B5/B\$11
6	Inventory	40,000	16%	=B6/B\$11
7	Short-Term Investments	20,000	8%	=B7/B\$11
8	Total Current Assets	200,000	80%	=B8/B\$11
9	Noncurrent Assets:			
10	Equipment	50,000	20%	=B10/B\$11
11	Total Assets	\$ 250,000	100%	=B11/B\$11
12	Current Liabilities:			
13	Accounts Payable	75,000	30%	=B13/B\$11
14	Unearned Revenue	25,000	10%	=B14/B\$11
15	Total Current Liabilities	100,000	40%	=B15/B\$11
16	Noncurrent Liabilities:			
17	Notes Payable	50,000	20%	=B17/B\$11
18	Total Liabilities	150,000	60%	=B18/B\$11
19	Stockholder Equity			
20	Common Stock	80,000	32%	=B20/B\$11
21	Ending Retained Earnings	20,000	8%	=B21/B\$11
22	Total Stockholders' Equity	100,000	40%	=B22/B\$11
23	Total Liabilities and Stockholder Equity	\$ 250,000	100%	=B23/B\$11

Figure 2.13.4: Common-Size Balance Sheet with Excel Formulas

It is important to note that while we have provided two years of data here to explore the process, when performing analysis for a firm or investment, several years of data are commonly used to provide a better view of historical performance.

Analyzing Organizational Performance

Common-size financial statements facilitate the analysis of financial performance by converting each element of the statements to a percentage. This makes it easier to compare figures from one period to the next, compare departments within an organization, and compare the firm to other companies of any size as well as industry averages. On the income statement, analysts can see how much of sales revenue is spent on each type of expense. They can see this breakdown for each firm and compare how different firms function in terms of expenses proportionally. They can also look at the percentage for each expense over time to see if they are spending more or less on certain areas of the business, such as research and development. On the balance sheet, analysts commonly look to see the percentage of debt and equity to determine capital structure. They can also quickly see the percentage of current versus noncurrent assets and liabilities.

In Clear Lake Sporting Goods' common-size income statement for the current and prior years, we can see that cost of goods as a percentage of sales remained the same (see Figure 2.13.5). This means that while sales increased, so did the cost of goods sold, but it increased at the same proportion as sales. No improvement or decline occurred in the company's cost of goods sold. The same is true for rent, depreciation, and utilities expenses. One key item did change slightly as a percentage: salaries expense. The 2 percent decrease in operating income from the prior year's 38 percent to the current year's 36 percent was caused by the increase in salaries expense as a percentage of sales.

Net income, however, only declined by 1 percent from 30 percent in the prior year to 29 percent in the current year because interest expense dropped by 1 percent, offsetting the 2 percent increase in salaries expense.

Clear Lake Sporting Goods Comparative Year-End Income Statements				
	Prior Year	Prior Year %	Current Year	Current Year %
Gross Sales	\$105,000		\$126,000	
Sales Returns & Allowances	5,000		6,000	
Net Sales	100,000	100%	120,000	100%
Cost of Goods Sold	50,000	50%	60,000	50%
Gross Profit	50,000	50%	60,000	50%
Rent Expense	5,000	5%	5,500	5%
Depreciation Expense	2,500	3%	3,600	3%
Salaries Expense	3,000	3%	5,400	5%
Utility Expense	1,500	2%	2,500	2%
Operating Income	38,000	38%	43,000	36%
Interest Expense	3,000	3%	2,000	2%
Income Tax Expense	5,000	5%	6,000	5%
Net Income	\$ 30,000	30%	\$ 35,000	29%

Figure 2.13.5: Common-Size Income Statement

Link to Learning: Common-Size Income Statement

Visit the [Apple, Inc. Common-Size Income Statement](#) provided by the Stock Analysis on Net website. Review the company's cost of sales, gross profit, operating income, other income, and net income percentages for the current and prior years. What can you learn about the company's recent performance in these areas? Has it improved or declined, or has it simply changed incrementally with gross sales?

On the Clear Lake Sporting Goods' common-size balance sheet, we see that current assets remained at 80 percent of total assets from the prior to the current year (see Figure 2.13.6). The mix of current assets that comprise that 80 percent changed only slightly with a 1 percent decrease in cash, a 2 percent increase in accounts receivable, a 2 percent decrease in inventory, and no change in short-term investments. Noncurrent assets include only equipment. While the balance in the equipment account did change as a percentage of total assets, equipment remained the same at 20 percent.

On the debt and equity side of the balance sheet, however, there were a few percentage changes worth noting. In the prior year, the balance sheet reflected 55 percent debt and 45 percent equity. In the current year, that balance shifted to 60 percent debt and 40 percent equity. The firm did issue additional stock and showed an increase in retained earnings, both totaling a \$10,000 increase in equity. However, the equity increase was much smaller than the total increase in liabilities of \$40,000. Long-term debt increased by only \$10,000 by issuing additional notes payable. The remainder of that increase is seen in the 5 percent increase in current liabilities. In that increase, most of it was in unearned revenue.

Clear Lake Sporting Goods Comparative Year-End Balance Sheets				
	Prior Year	Prior Year %	Current Year	Current Year %
Assets				
Current Assets:				
Cash	\$ 90,000	45%	\$110,000	44%
Accounts Receivable	20,000	10%	30,000	12%
Inventory	35,000	18%	40,000	16%
Short-Term Investments	15,000	8%	20,000	8%
Total Current Assets	<u>160,000</u>	80%	<u>200,000</u>	80%
Noncurrent Assets:				
Equipment	<u>40,000</u>	20%	<u>50,000</u>	20%
Total Assets	<u>200,000</u>	100%	<u>250,000</u>	100%
Current Liabilities:				
Accounts Payable	60,000	30%	75,000	30%
Unearned Revenue	10,000	5%	25,000	10%
Total Current Liabilities	<u>70,000</u>	35%	<u>100,000</u>	40%
Noncurrent Liabilities:				
Notes Payable	<u>40,000</u>	20%	<u>50,000</u>	20%
Total Liabilities	<u>110,000</u>	55%	<u>150,000</u>	60%
Stockholder Equity				
Common Stock	75,000	38%	80,000	32%
Ending Retained Earnings	<u>15,000</u>	8%	<u>20,000</u>	8%
Total Stockholders' Equity	<u>90,000</u>	45%	<u>100,000</u>	40%
Total Liabilities and Stockholder Equity	<u>\$200,000</u>	100%	<u>\$250,000</u>	100%

Figure 2.13.6: Common-Size Balance Sheet

Link to Learning: Common-Size Assets and Common-Size Liabilities and Equity

Visit the [Apple, Inc. Common-Size Assets](#) Balance Sheet and [Common-Size Liabilities and Equity](#) Balance Sheet provided by the Stock Analysis on Net website. Review the composition of the company's assets, liabilities, and equity. How have assets changed? Has the capital structure changed? If so, what elements impacted the change?

Industry Comparison

Recall that a key benefit of common-size analysis is comparing the firm's performance to the industry's. Expressing the figures on the income statement and balance sheet as percentages rather than raw dollar figures allows for comparison to other companies regardless of size differences.

Clear Lake Sporting Goods, for example, might compare its financial performance on its income statement to that of a key competitor, Charlie's Camping World. Charlie is a much bigger retailer for outdoor gear, as Charlie has nearly seven times greater sales than Clear Lake. Common-size statements allow Clear Lake to compare its statements in a meaningful way (see Figure 2.13.7). Notice that Clear Lake spends 50 percent of its sales on cost of goods sold, while Charlie spends 59 percent. This is a significant difference that would be an indicator that Clear Lake and Charlie have key differences in their operations, purchasing policies, or general performance in their core products.

We know that Charlie is a bigger retailer, and we see this clearly in the rent expense as a percentage of sales. Charlie spends 11 percent of its sales on building rent, while Clear Lake spends only 5 percent. A clear difference in performance is hinted at here, alluding to Charlie spending more per square foot on rent or using its retail space differently, causing it to rent more space for its product per sales dollar than Clear Lake does. Depreciation expense, though not a large figure, is smaller for Charlie, giving us a hint that Charlie has less capital equipment than Clear Lake, perhaps tied to the higher rent expense. It is possible that Charlie rents some of its equipment, which would help explain the higher rent percentage. Finally, Charlie's salary percentage is significantly higher at 12 percent than Clear Lake's 5 percent. Though the simple percentage does not tell us why, it does provide us with a hint and allow for further questions or investigation. Charlie may pay its employees a much higher wage than Clear Lake. They may also have far more sales associates on the floor in their larger spaces than Clear Lake does in its smaller retail spaces.

Note that although we have compared just two years of data for Charlie and Clear Lake, it is more common to use several years of data to get a more robust view of long-term trends.

Charlie's Camping World Common-Size Income Statement			Clear Lake Sporting Goods Common-Size Income Statement	
	Prior Year	Prior Year %	Current Year	Current Year %
Gross Sales	\$748,000		\$126,000	
Sales Returns & Allowances	41,000		6,000	
Net Sales	707,000	100%	120,000	100%
Cost of Goods Sold	418,000	59%	60,000	50%
Gross Profit	289,000	41%	60,000	50%
Rent Expense	75,000	11%	5,500	5%
Depreciation Expense	5,000	1%	3,600	3%
Salaries Expense	85,000	12%	5,400	5%
Utility Expense	25,000	4%	2,500	2%
Operating Income	99,000	14%	43,000	36%
Interest Expense	1,000	0%	2,000	2%
Income Tax Expense	14,000	2%	6,000	5%
Net Income	\$ 84,000	12%	\$ 35,000	29%

Figure 2.13.7: Comparison of Common-Size Income Statements

Link to Learning: Microsoft versus Apple

Locate the sales, cost of goods sold, and gross profit data for Microsoft's most current period using Yahoo! Finance. Calculate the common-size percentage for cost of goods sold and gross profit (cost of goods sold divided by net sales, and gross profit divided by net sales). Compare these percentages to those of [Apple, Inc.](#), a key competitor, on its common-size income statement. What can you learn about the performance of each firm based on these two percentages?

Now that you have covered the basic financial statements and a little bit about how they are used, where do we find them? How often are they prepared? Who gets them? In this next section, we will explore the requirements for what needs to be reported, when, and to whom.

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2.14: Reporting Financial Activity

Learning Objectives

By the end of this section, you will be able to:

- Identify the most common types of accounting periods.
- Outline key considerations and accounting principles that dictate the timing of financial reporting.
- Describe the SEC reporting requirements relevant to financial statements.
- Identify the key elements of a company's annual report.

Defining Accounting Periods

An accounting period can be any period of time, but the most common accounting periods are months, quarters, and a year. Accounting periods are important, particularly in accrual accounting, so there are clear cutoffs for recording transactions.

It is important to note that Generally Accepted Accounting Principles (GAAP) require companies to provide quarterly financial statements. However, most firms, even those not covered by GAAP, prepare financial statements monthly in order to provide timely data to their financial statement users both internally and externally.

Time Period Principle

Providing information to financial statement users in a timely fashion brings us to our next key topic, which is the time period principle. In order for information to be useful, it must be timely. This means that financial statement users need to get the statements quickly enough to be able to make relevant decisions with them. Providing statements on a timely basis is the foundation of the time period accounting principle.

Fiscal versus Calendar Year

Though a firm may present financial statements monthly, quarterly, and annually, not all time periods are created equal. Firms have the option to choose between a fiscal and a calendar year. The calendar year, which begins January 1 and ends December 31, is the traditional year we are accustomed to. The calendar year, however, doesn't always work well with a firm's business cycle. Due to seasonality or other factors, a firm may choose to adopt a fiscal year with its own beginning and end date. For example, a firm may choose to start its fiscal year on June 1 and end it on May 31. A firm can opt to change from a fiscal to a calendar year or vice versa, but must only do so for a justifiable reason.

Think It Through: Fiscal versus Calendar Year

Visit the [Apple, Inc. Annual Report](#) for 2020 and review the title of the table of contents on page 1. The title reads "Apple Inc. Form 10-K." The next line provides information on the company's chosen time period. Does Apple use a fiscal or calendar year?

[Show/Hide Solution]

Solution

Apple uses a fiscal year. Their fiscal year ended on September 26, 2020.

The Annual Report

An annual report is part of the 10-K filing that publicly traded firms must provide to the SEC and investors each year. The report details the firm's operations and performance for the year and its current financial conditions. The report contains general company information, the firm's financial statements, notes to the financial statements, various required disclosures pertaining to accounting policies, the management discussion and analysis (MD&A) statement, a letter from the CEO to the shareholders, and the firm's audit report.

Think It Through: Annual Report Key Elements

Visit the [Apple, Inc. Annual Report](#) for 2020 and review the title of the table of contents on page 1. What key elements would you be drawn to review if you were a potential investor? In Part II of the table of contents, find the MD&A report (page 20) and use the table of contents link to navigate to it. What key highlights and challenges did the company report for the year?

[Show/Hide Solution]

Solution

Answers may vary. A few key items of note might include risk factors, financial statements, the MD&A letter, and disclosures about market risk. Apple's MD&A reported significant updates on the impact of the COVID-19 pandemic, a few financial updates, product updates, segment performance data, a conversation about its debt, contractual obligations, and accounting policies.

SEC Reporting Requirements

The Securities and Exchange Commission (SEC) requires publicly traded firms to regularly provide several reports. The two most common are the 10-K and the quarterly report (10-Q). Certain unique events also require an additional filing called an 8-K. There are many events that might require reporting. A few key examples include changes to rights of shareholders, changes in control of the company, and amendments to the company charter or bylaws.

The quarterly report is much like the annual report already discussed. It contains the firm's financial statements, required accounting disclosures, statements on internal control, and a management discussion and analysis (MD&A) letter. It does not contain an auditor's report, as firms are not audited on a quarterly basis. Quarterly reports are helpful to investors because they provide information on a timely enough basis to be relevant.

Link to Learning: Investor Relations

Visit the Apple, Inc. Investor Relations page, SEC Filings section. Notice how many different reports Apple files regularly with the SEC. Locate the most recent quarterly (10-Q) and annual reports (10-K) and scan the table of contents. How does the quarterly report differ from the annual report? Do you notice key items in the annual report not provided in the quarterly report?

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2.15: Summary

Cash versus Accrual Accounting

Cash-basis accounting records revenues and expenses only when cash is received or distributed. Accrual-basis accounting, on the other hand, records revenues and expenses when they are earned or incurred rather than waiting until cash changes hands. Most publicly traded companies are required by the SEC to use accrual-basis accounting. Generally, smaller businesses that deal primarily in cash are the best candidates for using the cash basis since the accrual method more accurately depicts net income or net loss each period.

Economic Basis for Accrual Accounting

Double-entry accounting means that each time a transaction is recorded, there are at least two accounts impacted by the entry. Each entry's debits must total its credits in order to support and maintain the balance in the accounting equation. The accounting equation is expressed as

$$\text{Assets} = \text{Liabilities} + \text{Owner's Equity}.$$

How Does a Company Recognize a Sale and an Expense?

In accrual accounting, the timing of revenues (when to record them) is governed by the revenue recognition principle. The principle indicates that revenue is only recognized on the income statement once it is earned. This means goods or services must have been delivered or rendered. Expenses, on the other hand, are guided by the expense recognition principle, which dictates that expenses must be recorded in the period in which they are incurred.

When Should a Company Capitalize or Expense an Item?

Determining when an item is actually an expense depends on whether it is capitalized (a fixed asset) or not. Fixed assets are those that are of significant value and last longer than one year. The cost of fixed assets is capitalized (placed on the balance sheet as an asset) and expensed over the useful life of the asset by recording depreciation. Depreciation can be calculated using straight-line, double-declining-balance, or units-of-production methods.

What Is “Profit” versus “Loss” for the Company?

Profit or loss for a company is calculated by subtracting expenses from revenue. The result is a profit if revenues are larger than expenses. Profit (or loss) is the money earned from the day-to-day general business operations. Gains and losses, on the other hand, occur when the business does something they don't normally do (like selling a piece of its equipment) and earns or loses money on the transaction. It's key to note that the timing of cash flows can vary from the timing of recording revenues or expenses. Thus, revenue does not necessarily equal cash in, and an expense does not necessarily equal a cash flow out.

The Income Statement

The income statement reflects a firm's performance over a period of time. Most financial statements are prepared monthly, quarterly, and annually. The income statement reflects sales less cost of goods sold to arrive at gross profit. Operating costs are deducted to arrive at operating income. Finally, other nonoperational costs like interest and taxes are deducted to arrive at net income.

The Balance Sheet

The balance sheet reflects the financial position of a firm as of a particular point in time. It is laid out to clearly depict and support

the accounting equation: $\text{assets} = \text{liabilities} + \text{owner's equity}$. A classified balance sheet breaks down the assets and liabilities sections into current and noncurrent for greater transparency.

The Relationship between the Balance Sheet and the Income Statement

The financial statements are all tied together. The income statement is generated first, as net income is needed in order to determine the ending balance of retained earnings, a key account in the equity section of the balance sheet.

The Statement of Owner's Equity

The statement of owner's equity is divided by each type of equity the firm has: common stock, preferred stock, additional paid-in capital, and retained earnings, for example. Beginning balances are provided, and all key transactions impacting equity are provided in order to show how ending balances were derived. Key transactions commonly include recording net income or loss, issuing additional stock, and paying out dividends.

The Statement of Cash Flows

Under accrual accounting, transactions are recorded when they occur, not necessarily when cash moves. This creates a timing difference. Net profit, therefore, does not necessarily mean a firm has cash, and a net loss doesn't mean they don't have any cash. To reconcile net income to actual cash flow and see how a firm generates and uses its funds, a statement of cash flows is prepared. The statement reflects cash flow from operating activities, financing activities, and investing activities.

Operating Cash Flow and Free Cash Flow to the Firm (FCFF)

Operating cash flow reflects the cash generated by (or used by) the core business function. Free cash flow to the firm (FCFF) or simply free cash flow (FCF) is calculated by deducting capital expenditures from operating cash flow. FCF reflects the cash available to repay debts, pay dividends to shareholders, and contribute to cash needs for growth.

Common-Size Statements

Common-size statements are a restatement of the financial statements with all dollar figures restated as percentages. On the income statement, each line is restated as a percentage of net sales. On the balance sheet, each line is restated as a percentage of total assets. Common-size statements are useful for analysis and are particularly helpful in comparing firms of different sizes.

Reporting Financial Activity

Publicly traded firms must file company and financial data with the Securities and Exchange Commission (SEC) on a regular basis. Key reports include the quarterly report, called a 10-Q, and the annual report, called a 10-K.

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2.16: Key Terms

accounting equation

$\text{assets} = \text{liabilities} + \text{owner's}$

accrual basis

accounting system in which revenue is recorded or recognized when earned yet not necessarily received, and in which expenses are recorded when legally incurred and not necessarily when paid

assets

tangible or intangible resources owned or controlled by a company, individual, or other entity with the intent that they will provide economic value

capitalize

the process in which a long-term asset is recorded on the balance sheet and its allocated costs are expensed on the income statement over the asset's economic life

credit

a record of financial information on the right side of an account

current assets

asset typically used up, sold, or converted to cash in one year or less

current liabilities

debt or obligation due within one year or, in rare cases, a company's standard operating cycle, whichever is greater

debit

a record of financial information on the left side of each account

depreciation

process of allocating the costs of a tangible asset over the asset's economic life

direct method

approach used to determine net cash flows from operating activities, whereby accrual basis revenue and expenses are converted to cash basis collections and payments

dividends

portion of the net worth (equity) that is returned to owners of a corporation as a reward for their investment

double-entry accounting

an accounting method that requires the sum of the debits to equal the sum of the credits for each transaction

expense recognition

(also, matching principle) matches expenses with associated revenues in the period in which the revenues were generated

expenses

costs associated with providing goods or services

free cash flow

operating cash, reduced by expected capital expenditures

gains

increases in organizational value from activities that are "incidental or peripheral" to the primary purpose of the business

income statement

financial statement that measures the organization's financial performance for a given period of time

indirect method

approach used to determine net cash flows from operating activities, starting with net income and adjusting for items that impact net income but do not require an outlay of cash

liabilities

probable future sacrifice of economic benefits arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events

long-term asset

asset used in the normal, ongoing course of business for more than one year that is not intended to be resold

loss

decrease in organizational value from activities that are “incidental or peripheral” to the primary purpose of the business

net income

revenues and gains that are greater than expenses and losses

noncash expenses

expenses that reduce net income but are not associated with a cash flow; most common example is depreciation expense

noncurrent assets

assets used in the normal course of business for more than one year that are not intended to be resold

noncurrent liabilities

liabilities that are expected to be settled in more than one year

owner's equity

residual interest in the assets of an entity that remains after deducting its liabilities

retained earnings

cumulative, undistributed net income or net loss for the business since its inception

revenue

inflows or other enhancements of assets of an entity or settlements of liabilities from delivering or producing goods, rendering services, or other activities that constitute the entity's ongoing major or central operations

revenue recognition

principle stating that a company must recognize revenue in the period in which it is earned; it is not considered earned until a product or service has been provided

statement of cash flows

financial statement listing the cash inflows and cash outflows for the business for a period of time

T-account

a graphic representation of a general ledger account in which each account is visually split into left and right sides

tangible asset

an asset that has physical substance

2.17: Review Questions

1. Joe runs a small barbershop. Most of his customers pay with cash. He has only a few monthly expenses, including wages for one employee and utilities. Which method of accounting should Joe use?
2. Which method of accounting generally provides the most accurate information on organizational performance (income or loss)?
3. Under the accrual basis of accounting, when is an expense recorded?
4. Describe the basic elements of a T-account.
5. What is double-entry accounting?
6. What is the expense recognition principle?
7. What is the revenue recognition principle?
8. What is the difference between a tangible and an intangible fixed asset? List common examples of each.
9. How is the cost of a fixed asset recorded and recognized over time?
10. What is the difference between gross profit and net income?
11. If a classified balance sheet has total assets of \$900,000 and total owner's equity of \$350,000, what must the company's total liabilities be?
12. What key element of the income statement flows through to the balance sheet?
13. What key columns are commonly found on the statement of owner's equity?
14. Ted's firm reported net income for the current period of \$65,750. Is it safe to assume that because Ted's firm reported such a large net income, it has plenty of cash to fund its operations? Why or why not?
15. What useful insights does free cash flow (FCF) provide in financial analysis?
16. Describe how common-size statements are useful.
17. What is the difference between a calendar year and a fiscal year?

2.18: Problems

1. Padma's Pools Inc. paid \$500 for office supplies. What was the impact of this transaction on Padma's cash flow?
2. Sally's BigBox Store issued 1,000 shares of common stock with a par value of \$10 each and a market value of \$16 each in exchange for a new building. What was the impact of this transaction on Sally's cash flow?
3. Jose sells \$500 worth of merchandise to a client on June 1. He delivers the product and invoices the customer on June 10. The customer pays Jose on July 9. What is Jose's revenue for June and July, respectively, under the cash and accrual methods of accounting?
4. Jamal's Car Repair purchases a new piece of equipment with a 10-year useful life for \$10,000. What is the impact on Jamal's net income in the year of purchase if he expenses the equipment? If he capitalizes it using straight-line depreciation?
5. Mariela's Shop had revenues of \$10,000 and expenses of \$6,000 and has cash on hand of \$5,000. What is Mariela's net income or net loss?
6. Rickey's Retail has the following financial information for the most recent accounting period. Prepare an income statement.

Rickey's Retail Income Statement	
Gross Sales	\$864,740
Sales Returns & Allowances	47,399
Cost of Goods Sold	483,237
Rent Expense	86,705
Interest Expense	1,156
Income Tax Expense	16,185
Depreciation Expense	5,780
Salaries Expense	98,266
Utility Expense	\$ 28,902

Figure 2.18.1: Sample Income Statement for Rickey's Retail

7. Big Box has the following accounts. In which section of its classified balance sheet does each belong?
 - Cash
 - Wages payable
 - Taxes payable
 - Accounts receivable
 - Retained earnings
 - Common stock
 - Land
 - Note payable due in 10 years
 - Prepaid insurance
8. Big Box Outlet has \$10,350 of supplies expense on its income statement. Does this mean that there must also be a supplies payable account balance of \$10,350 on its balance sheet? Why or why not?
9. What are the three key types of dividends a firm might distribute to its shareholders? Describe each.
10. Big Box Outlet had an increase in its accounts payable account this period and a decrease in its accounts receivable, took out a long-term note payable, paid dividends to its shareholders, had depreciation on its equipment, bought new equipment, increased its inventory account, and repaid a bond. In which section of the statement of cash flows would each of these items appear?

11. Kokoya's Firm calculates its free cash flow at only \$2,000, which the company feels is quite low based on its historical performance and compared to that of others in its industry. What actions might Kokoya's Firm take to improve its overall cash flow?
12. Complete the common-size income statement for Big Box Outlet using the information below:

Big Box Outlet		
Common-Size Income Statement		
	Current Year	Current Year %
Gross Sales	\$1,089,836	_____
Sales Returns & Allowances	59,737	_____
Net Sales	1,030,099	_____
Cost of Goods Sold	609,026	_____
Gross Profit	421,073	_____
Rent Expense	109,275	_____
Depreciation Expense	7,285	_____
Salaries Expense	123,845	_____
Utility Expense	36,425	_____
Operating Income	144,243	_____
Interest Expense	1,457	_____
Income Tax Expense	20,398	_____
Net Income	<u>\$ 122,388</u>	_____

Figure 2.18.2: Example Income Statement for Bog Box Outlet

13. List at least eight items commonly found in a firm's annual report filed with the SEC.

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3: SHORT FINANCIAL MANAGEMENT AND CASH BUDGET

- 3.1: Why It Matters
- 3.2: What Is Working Capital?
- 3.3: What Is Trade Credit?
- 3.4: Cash Management
- 3.5: Receivables Management
- 3.6: Inventory Management
- 3.7: Using Excel to Create the Short-Term Plan
- 3.8: Summary
- 3.9: Key Terms
- 3.10: Review Questions

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3.1: Why It Matters

During hard times, many families and small businesses realized the importance of financial resiliency. In personal finance, financial resiliency is the ability to overcome financial difficulties such as sudden job loss or significant unexpected expenses—to spring back quickly.

To help promote resiliency, personal financial planners advise clients to maintain liquid assets equal to three to six months of living expenses, keep debt levels low, manage the household budget, keep insurance in force (health, property, and life), establish a solid credit history, and make wise use of credit cards and home equity lines of credit.



Figure 3.1.1: Working capital describes the resources that are needed to meet the daily, weekly, and monthly operating cash flow needs. (credit: modification of "Sealey Power Products Warehouse" by Mark Hunter/flickr, CC BY 2.0)

In business finance, financial resiliency is not only important during hard times but is also important through the ups and downs of seasonal cycles and economic downturns. Managing cash, accounts receivable, and inventory while making optimal use of trade credit (accounts payable) makes for a business that meets its operating needs and pays its debts when due.

Working capital management is also critical during good times. Even though profits might be rising, a business with growing demand for its products and services still needs to have working capital management tools to pay its bills. Growth in sales and profits does not immediately mean sufficient cash flow, so planning ahead with tools such as a cash budget is key.

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3.2: What Is Working Capital?

Learning Objectives

By the end of this section, you will be able to:

- Define working capital.
- Calculate a firm's operating cycle and cash cycle.
- Compute inventory days, accounts receivable days, and accounts payable days.

The concept of business capital is often associated with the cash and assets (such as land and equipment) that the owners contributed to the business. Early economists identified this concept of capital, along with labor and entrepreneurship, as the factors of production.

That general idea of capital is important and critical to a company's productive capacity. This chapter is about a specific type of capital—**working capital**—that is just as important as long-term capital. Working capital describes the resources that are needed to meet the daily, weekly, and monthly operating cash flow needs. Employees are paid out of working capital as well as cash from operations; the fulfillment of merchandise orders is possible because of working capital, and the liquidity of a company hinges upon how well management plans and controls working capital.

Understanding working capital begins with the concept of **current assets**—those resources of a business that are cash, near cash, or expected to be turned into cash within a year through the normal operations of the business. Current assets are necessary for the everyday operation of the firm, and they are synonymous with the term **gross working capital**.

Cash is needed to pay the bills and meet the payroll. Excess cash is invested in cash alternatives such as **marketable securities** (Money market accounts or other short term investments), creating **liquidity** that can be tapped when operating cash flow needs exceed the amount of cash on hand (checking account balances). Investment in inventory is necessary to meet the demand for products (sales), and if the firm extends credit to its customers so that a sale can be made, the balance sheet will also show accounts receivable—a very common current asset that derives its value from the probability that customers will pay their bills.

Working capital is often spoken about in two versions: *gross working capital* and *net working capital*. As was previously stated, gross working capital is equivalent to current assets, particularly those that are cash, cash-like, or will be converted to cash within a short period of time (i.e., in less than one year).

Net working capital (NWC) is a more refined concept of working capital. It is best understood by examining its formula:

Current Assets minus Current Liabilities = Net Working Capital

Goal of Working Capital Management

The goal of working capital management is to maintain adequate working capital to:

- Meet the operational needs of the company
- Satisfy obligations (current liabilities) as they come due
- Maintain an optimal level of current assets such as cash (provides no return), accounts receivable, and inventory

Working capital management encompasses all decisions involving a company's current assets and current liabilities. One very important aspect of working capital management is to provide enough cash to satisfy both maturing short-term obligations and operational expenditures—keeping the company sufficiently liquid.

In summary, working capital management helps a company run smoothly and mitigates the risk of illiquidity. Well-run companies make effective use of current liabilities to finance an optimal level of current assets and maintain sufficient cash balances to meet short-term operating goals and to satisfy short-term obligations. Working capital management is accomplished through:

- Cash management
- Credit and receivables management
- Inventory management
- Accounts payable management

Components of Working Capital Management

In contrast to net working capital, gross working capital is synonymous with current assets, particularly those current assets that are either cash or cash equivalents or that will be converted to cash within a short period of time (i.e., in less than one year).

Below is a list of the components of gross working capital.

- Cash and cash equivalents
- Marketable securities
- Accounts receivable
- Inventory

Here is an example. On December 31, a company has the following balances and gross working capital:

Cash and Equivalents	\$ 100,000
Marketable Securities	250,000
Accounts Receivable	330,000
Inventory	425,000
Gross Working Capital	<u>\$1,105,000</u>

Figure 3.2.1: Sample balances

Think of the \$1,105,000 of gross working capital as a source of funds for the most pressing obligations (i.e., current liabilities) of the company. Gross working capital is available to pay the bills. However, some of the current assets would need to be converted to cash first. Accounts receivable need to be collected, and inventory would need to be sold before it too can become cash. What if the company had \$600,000 of current liabilities? That amount of current obligations could not be paid out of cash until the marketable securities were sold and a significant portion of accounts receivable were collected.

The second, more refined and useful concept of working capital is **net working capital**:

$$\text{NWC} = \text{Current Assets} - \text{Current Liabilities}$$

For example, if a company has \$1,000,000 of current assets and \$750,000 of current liabilities, its net working capital would be \$250,000 (\$1,000,000 less \$750,000).

NWC provides a better picture because it takes into account the liability “coverage” provided by the current assets. As the above example shows, the current assets would “cover” the current liabilities with an excess of \$250,000. Think of it this way: if the current assets could be converted to cash, they could be used to meet the current obligations with another \$250,000 of cash leftover.

Current liabilities include

- Accounts payable
- Dividends payable
- Notes payable (due within a year)

- Current portion of deferred revenue
- Current maturities of long-term debt
- Interest payable
- Income taxes payable
- Accrued expenses such as compensation owed to employees

Net working capital possibilities can be thought of as a spectrum from negative working capital to positive, as explained in Table 3.2.1.

Table 3.2.1: Spectrum of Net Working Capital

Negative Net Working Capital	Zero Net Working Capital	Positive Net Working Capital
Current liabilities are greater than current assets.	Current assets equal current liabilities.	Current assets are greater than current liabilities.
Could indicate a liquidity problem. There is difficulty satisfying current obligations.	Indicates that current assets could cover current obligations. However, there is no positive margin (safety cushion) or “liquid reserve” to satisfy unexpected cash needs.	Indicates that the company can meet its current obligations. However, excessively high net working capital could mean too little cash and therefore an opportunity cost (forgoing rates of return on alternative investments).

Measures of Financial Health provides information on a variety of financial ratios to help users of financial statements understand the strengths and weakness of companies’ financial statements. Three of the financial ratios covered in that chapter are brought back into this chapter’s discussion to demonstrate how financial managers examine working capital and liquidity. Liquidity is the ease with which an asset can be converted into cash. Those **ratios** are the current ratio, the quick ratio, and the cash ratio. A higher ratio indicates a greater level of liquidity.

The formulas for the three liquidity ratios are

Current Ratio = Current Assets minus Current Liabilities

Quick Ratio (Acid Test) = (Current Assets minus inventory) minus Current Liabilities

Cash Ratio = (Cash plus Marketable Securities) divided by Current Liabilities

Notice how the current ratio includes the two elements of net working capital—current assets and current liabilities. It makes for a quick comparison of relative size or proportion.

Think It Through: Current Ratio

A company has \$2,000,000 of current assets, while its current liabilities are \$1,000,000. What is the current ratio, and what does it mean?

[Show/Hide Solution]

Solution

The current ratio would be $2 = \$2,000,000 / \$1,000,000$, which is a 2:1 proportion of current asset value to the amount of the current liabilities. This means that if all the current assets could be converted to cash, then the current liabilities could be satisfied two times.

There are two drawbacks to the current ratio:

1. It is a working capital analysis as of a point in time but is not indicative of future liquidity or future cash flows.
2. As an indicator of liquidity, it can be deceptive if a significant proportion of the current assets are inventory, supplies, or prepaid expenses. Inventory is not very liquid as it can take an extended time period to convert to cash, and assets such as supplies and prepaid expenses never become cash and therefore are not a source of funds to pay bills.

The quick ratio is considered a more conservative indication of liquidity since it does not include a firm's inventory:

(Current Assets minus inventory) ÷ Current Liabilities

Think It Through: Quick Ratio

A company's current assets total \$2,000,000, but \$500,000 of that is inventory, and the current liabilities total \$1,000,000. What is the quick ratio, and what does it mean?

[Show/Hide Solution]

Solution

The quick ratio would be $1.5 = \$1,500,000 / \$1,000,000$ and would indicate a smaller cushion of net working capital.

Think It Through: Cash Ratio

The cash ratio is even more conservative in that it presents a picture of liquidity by excluding all current assets except cash and marketable securities.

A company's total current assets are \$2,000,000, but only \$1,100,000 of the current assets consist of cash and marketable securities. Assuming \$1,000,000 of current liabilities, what would be the cash ratio and what does it mean?

[Show/Hide Solution]

Solution

The cash ratio would be $1.1 = \$1,100,000 / \$1,000,000$, and the amount of cash is enough to pay the current bills by \$100,000.

Working capital ratios, like any financial ratio, are most valuable when examined in light of trends and in comparison to industry/peer averages. For example, a deteriorating current ratio over several quarters (a decline in the company's current ratio) could indicate a reduced ability to pay bills.

Working capital ratios are also compared to industry averages, which are available in databases produced by such financial publishers as Dun & Bradstreet, Dow Jones Company, and the Risk Management Association (RMA). These information services are available via subscriptions and through many libraries. For example, if a company's current ratio is 0.9 while the industry average is 2.0, then the company is less liquid than the average company in its industry, and strategies and techniques need to be considered to change things and to better compete with peer groups. Industry averages can be aspirational, motivating management to set liquidity goals and best practices for working capital management.

It is common to think about working capital with a simple assumption: current assets are being "financed" by current liabilities. However, such an assumption may be an oversimplification. Some level of current assets is often necessary to meet longer-term obligations, and in that way, you could think of some amount of current assets as a permanent base of working capital that may need to be financed with longer-term sources of capital.

Think of a company with seasonal business. During busy times, more working capital will be needed than during certain other portions of the year, such as less busy times. But there will always be some level—a permanent base—of working capital needed. Think of it this way: the total working capital of many companies will ebb and flow depending on many variables such as the operating cycle, production needs, and the growth of revenue. Therefore, working capital can be thought of as having a permanent base that is always needed and a total working capital amount that increases when activity levels (i.e., production and sales volume) are higher (see Figure 3.2.2).

The Cash Cycle

The **cash cycle**, also called the **cash conversion cycle**, is the time period between when a business begins production and acquires resources from its suppliers (for example, acquisition of materials and other forms of inventory) and when it receives cash from its customers. This is offset by the time it takes to pay suppliers (called the payables deferral period).

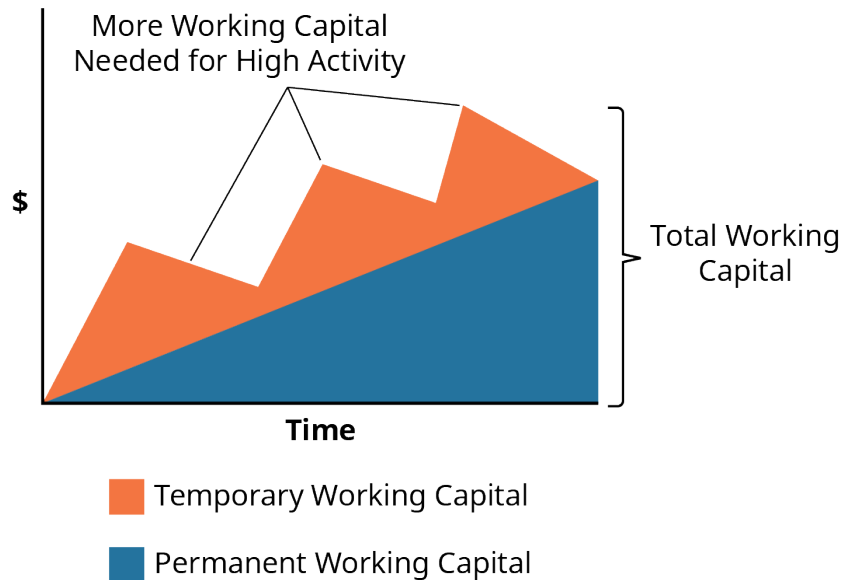


Figure 3.2.2: Working Capital Needs Can Vary: Temporary and Permanent Working Capital

The cash cycle is measured in days, and it is best understood by examining its formula:

Cash Cycle = Inventory Conversion Period plus Receivables Collection Period minus Payables Deferral Period

The inventory conversion period is also called the **days of inventory**. It is the time (days) it takes to convert inventory to sales and is calculated by following these steps:

1. First, calculate the Inventory Turnover Ratio using this formula:

$$\text{Inventory Turnover Ratio} = \text{Cost of Goods Sold} \div \text{Average Inventory}$$

The Average Inventory is arrived at as follows:

$$\text{Average Inventory} = \text{Beginning Inventory} + \text{Ending Inventory} \div 2$$
2. Then, use the Inventory Turnover Ratio to calculate the Inventory Conversion Period in days:

$$\text{Inventory Conversion Period} = 365 \div \text{Inventory Turnover}$$

The receivables collection period, also called the **days sales outstanding** (DSO) or the average collection period, is the number of days it typically takes to collect cash from a credit sale. It is calculated by following these steps:

1. First, calculate the Accounts Receivable Turnover using this formula:

$$\text{Accounts Receivable Turnover} = \text{Credit Sales} \div \text{Average Accounts Receivable}$$

The Average Accounts Receivable is arrived at as follows:

$$\text{Average Accounts Receivable} = \text{Beginning Accounts Receivable} + \text{Ending Accounts Receivable} \div 2$$
2. Then, use the Accounts Receivable Turnover to calculate the Receivables Collection Period in days:

$$\text{Receivables Collection Period} = 365 \div \text{Accounts Receivable Turnover}$$

The payables deferral period, also known as **days in payables**, is the average number of days it takes for a company to pay its suppliers. It is calculated by following these steps:

1. First, calculate the Accounts Payable Turnover using this formula:

$$\text{Accounts Payable Turnover} = \text{Cost of Goods Sold} \div \text{Average Accounts Payable}$$

The Average Accounts Payable is arrived at as follows:

$$\text{Average Accounts Payable} = \text{Beginning Accounts Payable} + \text{Ending Accounts Payable} \div 2$$
2. Then, use the Accounts Payable Turnover to calculate the Payables Deferral Period in days:

Payables Deferral Period = 365 divided by Accounts Payable Turnover

Think It Through: Periods of the Cash Cycle

Scenario 1: King Sized Products (KSP) Inc. has annual credit sales of \$40,000,000. The average inventory is \$3,000,000, and the company has average accounts receivable of \$6,000,000 and average accounts payable of \$2,800,000. The cost of goods sold for KSP Inc. is \$30,000,000. The cash cycle for the company is 57.2 days. Calculate the inventory conversion, receivables collection, and payable deferral periods.

[Show/Hide Solution]

Solution

Inventory conversion period:

$$\text{Inventory Turnover Ratio} = \frac{\$30,000,000}{\$3,000,000} = 10 \text{ times}$$

$$\text{Inventory Conversion Period} = \frac{365}{10} = 36.5 \text{ days}$$

Receivables collection period:

$$\text{Accounts Receivable Turnover} = \frac{\$40,000,000}{\$6,000,000} = 6.67 \text{ times}$$

$$\text{Receivables Collection Period} = \frac{365}{6.67} = 54.7 \text{ days}$$

Payables deferral period:

$$\text{Accounts Payable Turnover} = \frac{\$30,000,000}{\$2,800,000} = 10.71 \text{ times}$$

$$\text{Payables Deferral Period} = \frac{365}{10.71} = 34 \text{ days}$$

The solution (the entire cash conversion cycle) is also illustrated in a chart, Figure 3.2.3.

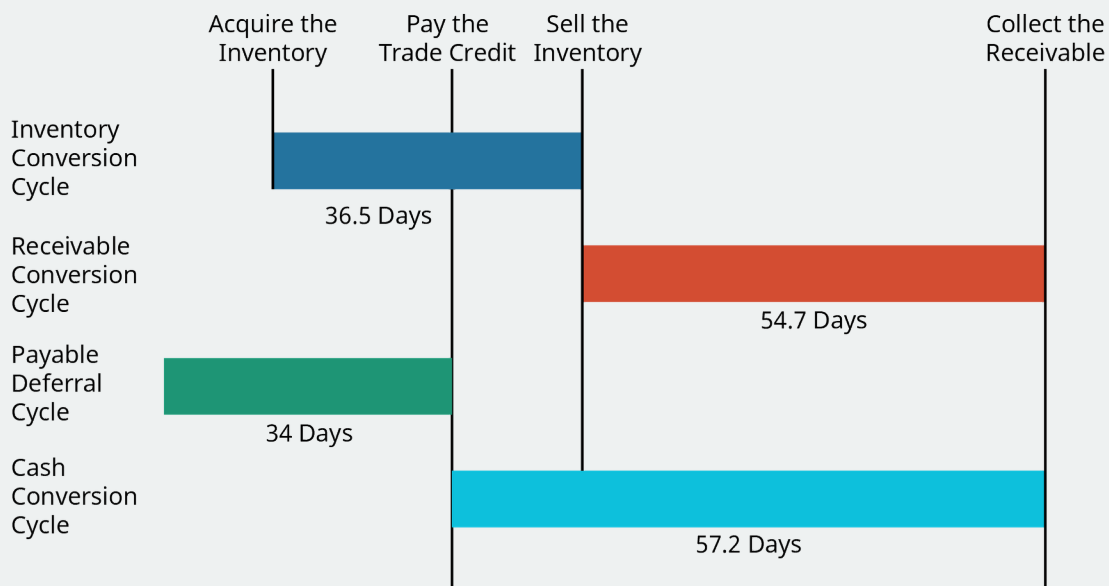


Figure 3.2.3: Cash Conversion Cycle

Shortening the inventory conversion period and the receivables collection period, or lengthening the payables deferral period, shortens the cash conversion cycle. Financial managers monitor and analyze each component of the cash conversion cycle. Ideally, a company's management should minimize the number of days it takes to convert inventory to cash while maximizing the amount of time it takes to pay suppliers.

Quickly converting inventory to sales speeds up cash inflows and shortens the cash cycle, but it also could help reduce inventory losses as a result of obsolescence. Inventory becomes obsolete because of a variety of factors, including time—inventory that has not been sold for a long period of time and is not expected to be sold in the future has to be written down or written off according to accounting rules. Write-offs of inventory can result in significant losses for a company. In the food business, inventory conversion periods take on great importance because of the spoilage of perishable goods; in retailing, seasonal items lose value the longer they stay on the shelves.

Various inventory management techniques are used to shorten production time in manufacturing, and in retailing, strategies are used to reduce the amount of time a product sits on the shelf or is stored in the warehouse. Production techniques such as **just-in-time inventory** systems and marketing and pricing strategies can have an impact on the number of days in the inventory conversion cycle.

For the receivables collection period, a relatively long receivables collection period means that the company is having trouble collecting cash from its customers, and so whatever can be done to speed up collections while still offering competitive credit terms should be pursued by financial managers. For example, companies that converted paper invoicing to e-invoicing most likely reduced the average collection period by some number of days, as it makes sense that if a bill is transmitted electronically, lag time is cut (no delays because of "snail mail") and collections (payments back to the company from customers) may happen sooner. Other credit management techniques, some of which are explained in subsequent sections, can help minimize and control the receivables collection period.

The payables deferral period is the one element that probably cannot be optimized without violating credit terms. Certainly, cash balances can be conserved by delaying payments to vendors for as long as possible; however, payments on trade credit need to be made on time or the company's relationship with the supplier can suffer. In a worst-case scenario, the company's **credit rating** could also deteriorate.

A credit rating, also called a credit score, is a measure produced by an independent agency indicating the likelihood that a company will meet its financial obligations as they come due; it is an indication of the company's ability to pay its creditors. Three business credit rating services are Equifax Small Business, Experian Business, and Dun & Bradstreet.

Think It Through: The Cash Conversion Cycle

Considering the previous Think It Through (Scenario 1), what if you could reduce inventory levels, hold lower accounts receivable balances, and rely more heavily on accounts payable while maintaining the same sales level?

Here's Scenario 2. Because of better inventory management, credit and collections management, and negotiation of longer payment periods with vendors, King Sized Products (KSP) Inc. needs less investment in inventory and accounts receivable and is able to utilize a greater amount of trade credit financing.

Annual credit sales are \$40,000,000, average inventory is \$2,800,000, average accounts receivable are \$5,500,000, average accounts payable are \$3,300,000, and cost of goods sold is \$30,000,000. What is the cash conversion cycle?

[Show/Hide Solution]

Solution

Inventory conversion period:

- Inventory Turnover Ratio = $\frac{\$30,000,000}{\$2,800,000} = 10.71$ times
- Inventory Conversion Period = $\frac{365}{10.71} = 34.07$ days
- Inventory Conversion Period = $\frac{365}{10.71} = 34.07$ days

Receivables collection period:

- Accounts Receivable Turnover = $\frac{\$40,000,000}{\$5,500,000} = 7.27 \text{ times}$ Accounts Receivable Turnover = $\frac{\$40,000,000}{\$5,500,000} = 7.27 \text{ times}$
- Receivables Collection Period = $\frac{365}{7.27} = 50.21 \text{ days}$ Receivables Collection Period = $\frac{365}{7.27} = 50.21 \text{ days}$

Payables deferral period:

- Accounts Payable Turnover = $\frac{\$30,000,000}{\$3,300,000} = 9.09 \text{ times}$ Accounts Payable Turnover = $\frac{\$30,000,000}{\$3,300,000} = 9.09 \text{ times}$
- Payables Deferral Period = $\frac{365}{9.09} = 40.15 \text{ days}$ Payables Deferral Period = $\frac{365}{9.09} = 40.15 \text{ days}$

$$\text{Cash Conversion Cycle} = 34.07 \text{ days} + 50.21 \text{ days} - 40.15 \text{ days} = 44.13 \text{ days}$$

Notice that the investment in inventory and accounts receivable is less, and the average accounts payable is more, with no change in credit sales and cost of goods sold—you would certainly anticipate a reduction in the cash conversion cycle. The improvement would be about 13 days (from 57.2 in Scenario 1 to 44.1 days in Scenario 2). Figure 3.2.4 shows a bar chart comparison of the two scenarios.

Table 3.2.2: Comparison of Two Scenarios

	Scenario 1	Scenario 2
Inventory Conversion Period	36.50	34.07
Receivables Collection Period	54.75	50.21
Payables Deferral Period	34.07	40.15
Cash Conversion Cycle	57.18	44.10

Comparison of Cash Conversion Cycles

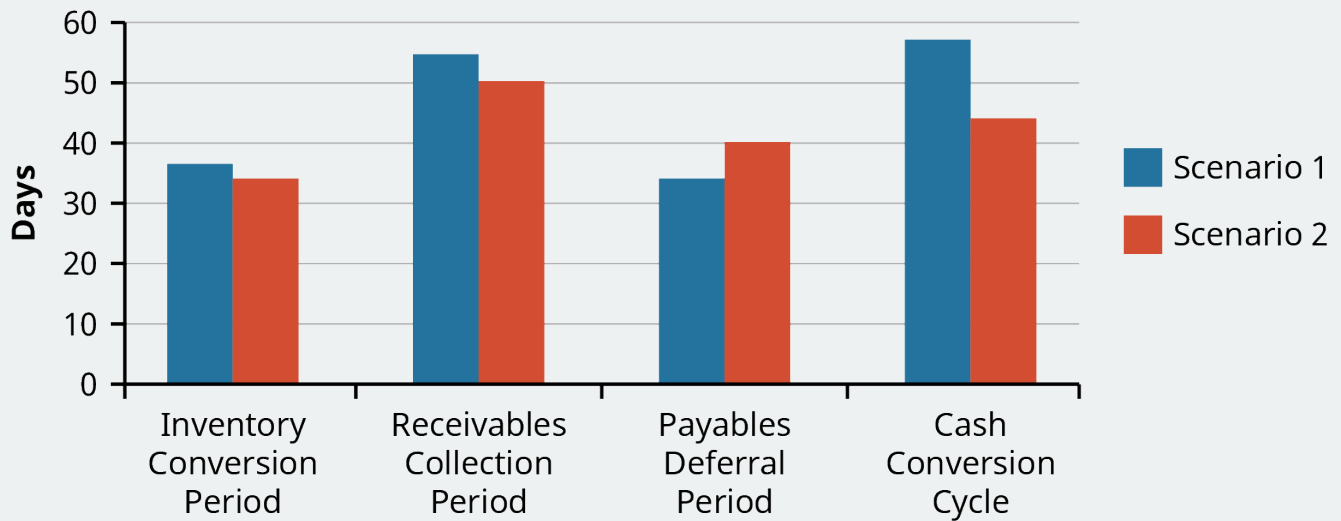


Figure 3.2.4: Scenario 1 and 2 Comparison: Shortening the Cash Conversion Cycle

Link to Learning

A Harvard Business School blog post, [How Amazon Survived the Dot-Com Bubble](#), discusses how Amazon managed its cash conversion cycle to the point where it was receiving payment for the things it sold before Amazon had to pay for them. In that way, Amazon had a negative cash conversion cycle (which is really a huge positive for a company trying to manage positive cash flow!).

Working Capital Needs by Industry

When comparing working capital needs by industry, you can see some variation. For example, some companies in the grocery business can have very low cash conversion cycles, while construction companies can have very high cash conversion cycles. And some companies, like those in the restaurant business, can have very low numbers and even have negative cash conversion cycles.

Working capital can also differ from one industry to another. An often-cited general rule is that a current ratio of 2 is considered optimal. However, general rules of thumb must be treated with caution. A better **benchmarking** approach is to compare a firm's ratios—current ratio and quick ratio—to the average of the industry in which the subject company operates.

Take, for example, a home construction company. A firm has a long **operating cycle** because of the production process (building homes), and the “storage of finished goods” can result in very high current ratios—such as 11 or 12 times current liabilities—whereas a retailer like Walmart or Target would have much lower current ratios.

In recent years, Walmart Stores Inc. (NYSE: WMT) has had a current ratio of around 0.9 and has been able to manage its working capital needs by efficient management of its supply chain, quick turnover of inventory, and a very small investment in accounts receivable.¹ Big retailers like Walmart are effective at negotiating favorable payment terms with their vendors. The ability to generate consistent positive cash flow from operations allows a retailer like Walmart to operate with relatively low amounts of working capital.

The credit policies of a company also affect working capital. A company with a liberal credit policy will require a greater amount of working capital, as collection periods of accounts receivable are longer and therefore tie up more dollars in receivables.

Almost all businesses will have times when additional working capital is needed to pay bills, meet the payroll (salaries and wages), and plan for accrued expenses. The wait for the cash to flow into the company's treasury from the collection of receivables and cash sales can be longer during tough times.

It isn't just during downturns that working capital is strained. Growing companies, even if they are extremely profitable, need additional working capital as they ramp up operations by acquiring raw materials, component parts, supplies, or other forms of inventory; hiring temporary or additional employees; and taking on new projects. Whenever additional resources are needed, working capital is also needed.

Some of the current assets and expenditures needed in a growing company may need to be financed from sources that are not spontaneous financing—**trade credit** (accounts payable). Such forms of external financing such as lines of credit, short-term bank loans, inventory-based loans (also called **floor planning**), and the **factoring** of accounts receivable might have to be relied upon.

Footnotes

- 1 Walmart Inc. “2020 Annual Report.” 2020. corporate.walmart.com/media-...1-b3fea8490000
- 2 US Small Business Administration. “PPP Loan Forgiveness.” n.d.

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3.3: What Is Trade Credit?

Learning Objectives

By the end of this section, you will be able to:

- Compute the cost of trade credit.
- Define cash discount.
- Define discount period.
- Define credit period.

Trade credit, also known as *accounts payable*, is a critical part of a business's working capital management strategy. Trade credit is granted by vendors to creditworthy companies when those companies purchase materials, inventory, and services.

A company's purchasing system is usually integrated with other functions such as production planning and sales forecasting. Purchasing managers search for and evaluate vendors, negotiate order quantities, and prepare purchase orders. In carrying out the purchasing process, credit terms are granted by the company's vendors, and purchases of inventory and services can be made on trade credit accounts—allowing the purchaser time to pay. The purchaser carries an accounts payable balance until the account is paid.

Trade credit is referred to as spontaneous financing, as it occurs spontaneously with the gearing up of operations and the additional investment in current assets. Think of it this way: If sales are increasing, so too is production. Increased sales mean more current assets (accounts receivable and inventory), and increased sales mean increases in accounts payable (financing happening spontaneously with increased sales and inventory purchases). Compared to other financing arrangements, such as lines of credit and bank loans, trade credit is convenient, simple, and easy to use.

Once a company is approved for trade credit, there is no paperwork or contracts to sign, as is the case with various forms of bank financing. Invoices specify the credit terms, and there is usually no interest expense associated with trade credit. Accounts payable is a type of obligation that is interest-free and is distinguished from debt obligations, such as notes payable, that require the creditor to pay back principal and interest.

How Trade Credit Works

Trade credit is common in B2B (business-to-business) transactions and is analogous to consumer spending using a credit card. With a credit card, a consumer opens an account with a credit limit. Most trade credit is offered to a company with an open account that has a credit limit up to which the company can purchase goods or services without having to pay the cash up front. As long as the payments are made in accordance with the terms of the agreement (also called credit terms), no interest or additional fees are charged on the credit balance except possibly for a fee for late payment.

Initially, the vendor's credit department approves both a trade credit limit and credit payment terms (i.e., the number of days after the invoice date that payment is due). Timely payments on accounts payable (trade credit) help create a credit history for the purchasing firm.

Trade Credit Terms

Trade credit arrangements often carry credit terms that offer an incentive, called a discount, for a company (the buyer) to pay its bill within a relatively short period of time. **Net terms**, also referred to as the **full credit period**, are the number of days that a business (purchaser) has before it must pay its invoice. A common net term is Net 30, with payment due in full within 30 days of the invoice.

Many vendors also offer **cash discounts** to customers who pay their bill early. A company's invoice that specifies payment terms of "2/10 n/30" (stated as: "two ten net 30") would allow a 2 percent discount if the buyer's account balance is paid within 10 days of the invoice date; otherwise, the net amount owed would be due in 30 days. The "10 days" in the example is the **discount**

period—the number of days the buyer has to take advantage of the cash discount for an early payment, also known as **quick payment**.

For example, Jackson's Premium Jams Inc. received a \$10,500 invoice for the purchase of jelly jars. The invoice has payment terms of 2/10 n/30. Jackson's pays the bill within 10 days of the invoice date. Jackson's payment would be

$$\$10,290 = (\$10,500 \times (100\% - 2\%))$$

Concepts In Practice: Trade Credit of International Trade

When international trade occurs, two important documents are commonly required: a **letter of credit** and a **bill of lading**. A letter of credit is issued by a financial institution on behalf of the foreign buyer (importer). The bill of lading is a legal document that gives proof of a contract between a transportation company and the buyer and is one important piece of documentation that allows the buyer to draw on the letter of credit. A bill of lading serves as a document of title and proof of receipt of goods by the shipper.

The letter of credit secures a promise of payment to the seller (exporter) provided that the terms of the sale are met. For an international trade transaction, the letter of credit is the main mechanism that establishes a liability for the buyer. Instead of a trade payable, the buyer uses a line of credit from a bank.

Cost of Trade Credit

Trade credit is often referred to as a no-cost type of financing. Unlike with other credit arrangements (e.g., bank loans, lines of credit, and commercial paper), there is usually no interest expense associated with trade credit, and as long as your account does not become delinquent, there are no special fees. Some accounts payable arrangements specify an interest penalty or a late fee when the account goes delinquent, but as long as payments are made on time, trade credit is thought of as a low-cost source of working capital.

However, there is one possible cost associated with trade credit for companies that don't take advantage of cash discounts when offered by sellers. Using accounts payable to purchase goods and services can involve an **opportunity cost**—a cost of the forgone opportunity of making a quick payment and benefiting from a cash discount. A business that does not take advantage of a cash discount for early payment of trade credit will pay more for goods and services than a business that routinely takes advantage of discounts.

The annual percentage rate of the foregoing quick payment discounts can be estimated with the following formula:

$$\text{APR of Forgoing Quick Payment Discounts} = \frac{360}{\text{Full Credit Period} - \text{Discount Period}} \times \frac{\text{Discount}}{100 - \text{Discount\%}}$$

Example: Novelty Accessories Inc. (NAI) purchases products from a vendor that offers credit payment terms of 2/10, net 30. The annual cost to NAI of not taking advantage of the discount for quick payment is 36.73 percent.

$$\text{APR of Quick Payment Discounts} = \frac{360}{30 - 10} \times \frac{2\%}{100\% - 2\%} = \frac{360}{20} \times \frac{2\%}{98\%} = 36.73\%$$

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3.4: Cash Management

Learning Objectives

By the end of this section, you will be able to:

- Explain why firms hold cash.
- List instruments available to a financial manager for investing cash balances.

Cash management means efficiently collecting cash from customers and managing cash outflows. To manage cash, the **cash budget**—a forward-looking document—is an important planning tool. To understand cash management, you must first understand what is meant by cash holdings and the motivations (reasons) for holding cash.

Cash Holdings

The cash holdings of a company are more than the currency and coins in the cash registers or the treasury vault. Cash includes currency and coins, but usually those amounts are insignificant compared to the cash holdings of checks to be deposited in the company's bank account and the balances in the company's checking accounts.

Motivations for Holding Cash

The initial answer to the question of why companies hold cash is pretty obvious: because cash is how we pay the bills—it is the medium of exchange. The **transactional motive** of holding cash means that checks and electronic funds transfers are necessary to meet the payroll (pay the employees), pay the vendors, satisfy creditors (principal and interest payments on loans), and reward stockholders with dividend payments. Cash for transactions is one reason to hold cash, but there is another reason—one that stems from uncertainty and the precautions you might take to be ready for the unexpected.

Just as you keep cash balances in your checking and savings accounts and even a few dollars in your wallet or purse for unexpected expenditures, cash balances are also necessary for a business to provide for unexpected events. Emergencies might require a company to write a check for repairs, for an unexpected breakdown of equipment, or for hiring temporary workers. This motive of holding cash is called the **precautionary motive**.

Some companies maintain a certain amount of cash instead of investing it in marketable securities or in upgrades or expansion of operations. This is called the **speculative motive**. Companies that want to quickly take advantage of unexpected opportunities want to be quick to purchase assets or to acquire a business, and a certain amount of cash or quick access to cash is necessary to jump on an opportunity.

Sometimes cash balances may be required by a bank with which a company conducts significant business. These balances are called **compensating balances** and are typically a minimum amount to be maintained in the company's checking account.

For example, Jack's Outback Restaurant Group borrowed \$500,000 from First National Bank and Trust. As part of the loan agreement, First National Bank required Jack's to keep at least \$50,000 in its company checking account as a way of compensating the bank for other corporate services it provides to Jack's Outback Restaurant Group.

Cash Alternatives

Cash that a company has that is in excess of projected financial needs is often invested in short-term investments, also known as cash equivalents (cash alternatives). The reason for this is that cash does not earn a rate of return; therefore, too much idle cash can affect the profitability of a business.

Table 3.4.1 shows a list of typical investment vehicles used by corporations to earn interest on excess cash. Financial managers search for opportunities that are safe and highly liquid, and that will provide a positive rate of return. Cash alternatives, because of their short-term maturities, have low interest rate risk (the risk that an investment's value will decrease because of changes in

market interest rates). In that way, prudent investment of excess cash follows the risk/return trade-off; in order to achieve safe returns, the returns will be lower than the possible returns achieved with risky investments. Cash alternative investments are not committed to the stock market.

Table 3.4.1: Typical Cash Equivalents

Security	Description
US Treasury bills	Obligations of the US government with maturities of 3 and 6 months
Federal agency securities	Obligations of federal government agencies such as the Federal Home Loan Bank and the Federal National Mortgage Association
Certificates of deposit	Issued by banks, a type of savings deposit that pays interest
Commercial paper	Short-term promissory notes issued by large corporations with maturities ranging from a few days to a maximum of 270 days

Footnotes

- 3 Creditcardprocessing.com. “How Long Does it Take for a Merchant to Receive Funds?” n.d.

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3.5: Receivables Management

Learning Objectives

By the end of this section, you will be able to:

- Discuss how decisions on extending credit are made.
- Explain how to monitor accounts receivable.

For any business that sells goods or services on credit, effective accounts receivable management is critical for cash flow and profitability planning and for the long-term viability of the company. Receivables management begins before the sale is made, when a number of factors must be considered.

- Can the customer be approved for a credit sale?
- If the credit is approved, what will be the credit terms (i.e., how long do we give customers to pay their bills)?
- Will there be a cash discount for quick payment?
- How much credit should be extended to each customer (credit limit)?

Accounts receivable is not about accepting credit cards. Credit card sales are not technically accounts receivable. When a credit card is accepted, it means that the credit card company (e.g., VISA, MasterCard, or American Express) will guarantee the payment. The cash will be deposited in the merchant's bank account in a very short period of time.

When a business makes a sale on account, management (e.g., a credit manager or analyst) does its best to distinguish between customers who have a high likelihood of paying and customers who have a low likelihood. Customers with low credit risk are approved; the decision is based on an effective analysis of creditworthiness.

Creditworthiness is judged by looking at a number of factors, including an evaluation of the customer's financial statements, financial ratios, and credit reports (credit scores) based on a customer's payment history on credits owed to other firms. If a company has a prior relationship with a customer seeking trade credit, the customer's payment history with the firm is also carefully evaluated before additional credit is granted.

Link to Learning: Corporate Finance Institute

Credit managers use various tools and techniques to evaluate the creditworthiness of customers. The Corporate Finance Institute's website states that "the '5 Cs of Credit' is a common phrase used to describe the five major factors [character, capacity, collateral, capital, and conditions] used to determine a potential borrower's creditworthiness." It goes on to say that "a credit report provides a comprehensive account of the borrower's total debt, current balances, credit limits, and history of defaults and **bankruptcies**, if any."⁵ More on the 5 Cs of credit can be found on the [Corporate Finance Institute's website](#).

Determining the Credit Policy

A company's credit policy encompasses rules of credit granting and procedures for the collection of accounts. It's how a company will process credit applications, utilize credit scoring and credit bureaus, analyze financial statements, make credit limit decisions, and conduct collection efforts when accounts become *delinquent* (still outstanding after their due date).

Establishing Credit Terms

Trade credit terms were discussed earlier. Recall that part of the terms and conditions of a sale are the **credit terms**—elements of a sales agreement (contract) that indicate when payment is due, possible discounts (for quick payments), and any late fee charges.

If open credit is for a sales transaction, an agreement is made as to the length of time for which credit is to be granted (payment period) and a discount for early payment. Although companies are free to establish credit terms as they see fit, most companies look to the practice of the particular industry in which they operate. The credit terms offered by the competition are a factor. Net terms usually range between 30 days and 90 days, depending on the industry. Discounts for early payments also differ and are typically from 1 to 3 percent.

Establishing credit terms offered can be thought of as a decision process similar to setting a price for products and services. Just as a price is the result of market forces, so too are credit terms. If credit terms are not competitive within the industry, sales can suffer. Typically, companies follow standard industry credit terms. If most companies in an industry offer a discount for early payments, then most companies will follow suit and also offer an equal discount.

Once credit terms are established, they can be changed based on both marketing strategies and financial management goals. For example, discounts for early payments can be more generous, or the full **credit period** can be extended to stimulate additional sales. Both discount periods and full credit periods can be tightened to try to speed up collections. The establishment of and changes to credit terms are usually made in consultation with the sales and financial management departments.

Monitoring Accounts Receivables

Financial managers monitor accounts receivable using some basic tools. One of those tools is the **accounts receivable aging schedule** (report). To prepare the aging schedule, a classification of customer account balances is performed with age as the sorting attribute.

An account receivable begins its life as a credit sale. The age of a receivable is the number of days that have transpired since the credit sale was made (the date of the invoice). For example, if a credit sale was made on June 1 and is still unpaid on July 15, that receivable is 45 days old. Aging of accounts is thought to be a useful tool because of the idea that the longer the time owed, the greater the possibility that individual accounts receivable will prove to be uncollectible.

An aging schedule is a report that organizes the outstanding (unpaid) receivable balances into age categories. The receivables are grouped by the length of time they have been outstanding, and an uncollectible percentage is assigned to each category. The length of uncollectible time increases the percentage assigned. For example, a category might consist of accounts receivable that are 0–30 days past due and is assigned an uncollectible percentage of 6 percent. Another category might be 31–60 days past due and is assigned an uncollectible percentage of 15 percent. All categories of estimated uncollectible amounts are summed to get a total estimated uncollectible balance.

The aging of accounts is useful to the credit and collection managers, both from a global view—estimating how much of the accounts receivable asset might be bad debts—and on a micro basis—being able to drill down to see which specific customers are slow-paying or delinquent so as to implement collection tactics.

Accountants and auditors also find the aging of accounts to determine a reasonable amount to be reported as **bad debt expense** and to establish a sufficient balance in the **allowance for doubtful accounts**. Bad debt expense is the cost of doing business because some customers will not pay the amounts they owe (accounts receivable), while the allowance for doubtful accounts is a **contra-asset** (it will be deducted from accounts receivable on the balance sheet) that contains management's best guess (management's estimate) as to how much of its accounts receivable will never be collected.

In Figure 3.5.1, Foodinia Inc.'s accounts receivable aging report shows that the total receivables balance is \$189,000. The company splits its accounts into four age categories: not due, 30 to 60 days past due, 61 to 90 days past due, and more than 90 days past due. Of the \$189,000 owed to Foodinia by its customers, \$75,500 (\$189,000 less \$113,500) of invoices have been outstanding (not paid yet) beyond their due dates.

Customer Name	Not Due	30 to 60 Days Past Due	61 to 90 Days Past Due	More than 90 Days Past Due	Total Receivables
Arithmio	\$ 15,000				\$ 15,000
Bakely Inc.		\$16,000	\$ 5,000	\$4,000	25,000
Bakeville	30,000				30,000
Boxfully		27,000			27,000
City Shop	5,000				5,000
Deskmeter		5,000			5,000
Flavorica	6,000				6,000
Merchain	7,000				7,000
Mshops	8,500				8,500
Next Dessert			12,000		12,000
Pichets				5,000	5,000
Shopahoo	19,000				19,000
SportsBuzz Ltd	2,000	1,500			3,500
Wearsy USA	21,000				21,000
Totals	<u>\$113,500</u>	<u>\$49,500</u>	<u>\$17,000</u>	<u>\$9,000</u>	<u>\$189,000</u>

Figure 3.5.1: Foodinia Inc. Aging of Accounts Receivable Schedule

In addition to preparing aging schedules, financial managers also use financial ratios to monitor receivables. The accounts receivable turnover ratio determines how many times (i.e., how often) accounts receivable are collected during an operating period and converted to cash. A higher number of times indicates that receivables are collected quickly. In contrast, a lower accounts receivable turnover indicates that receivables are collected at a slower rate, taking more days to collect from a customer.

Another receivables ratio is the number of days' sales in receivables ratio, also called the receivables collection period—the expected days it will take to convert accounts receivable into cash. A comparison of a company's receivables collection period to the credit terms granted to customers can alert management to collection problems. Both the accounts receivable turnover ratio and receivables collection period are covered, including the formulas for calculating the ratios, in the previous section of this chapter.

Accounts Receivable and Notes Receivable

Accounts receivable is an informal arrangement between a seller (a company) and a customer. Accounts receivable are usually paid within a month or two. Accounts receivable don't require any complex paperwork, are evidenced by an invoice, and do not involve interest payments. In contrast, a note receivable is a more formal arrangement that is evidenced by a legal contract called a promissory note specifying the payment amount, date, and interest.

The length of a note receivable can be for any time period, including a term longer than the typical account receivable. Some notes receivable have a term greater than a year. The assets of a bank include many notes receivable (a loan made by a bank is an asset for the bank).

A note receivable can be used in exchange for products and services or in exchange for cash (usually in the case of a financial lender). Sometimes a company might request that a slow-paying customer sign a promissory note to further secure the receivable, charge interest, or add some type of collateral to the arrangement, in which case the receivable would be called a secured promissory note. Several characteristics of notes receivable further define the contract elements and scope of use (see Table 3.5.1).

Table 3.5.1: Key Feature Comparison of Accounts Receivable and Notes Receivable

Accounts Receivable	Notes Receivable
• An informal agreement between the customer and the company • Receivable in less than one year or within a company's operating cycle • Does not include interest	• A legal contract with established payment terms • Receivables beyond one year and outside of a company's operating cycle • Includes interest • Could stipulate collateral

Footnotes

- [5](#) Corporate Finance Institute. "What Are the 5 Cs of Credit?" n.d.

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3.6: Inventory Management

Learning Objectives

By the end of this section, you will be able to:

- Outline the costs of holding inventory.
- Outline the benefits of holding inventory.

Financial managers must consider the impact of inventory management on working capital. Earlier in the chapter, the concept of the inventory conversion cycle was covered. The number of days that goods are held by a business is one of the focal points of inventory management.

Managers look to minimize inventory balances and raise inventory turnover ratios while trying to balance the needs of operations and sales. Purchasing personnel need to order enough inventory to “feed” production or to stock the shelves. The sales force wants to meet or surpass their sales budgets, and the operations people need inventory for the factories, warehouses, and e-commerce sites.

The days in inventory ratio measures the average number of days between acquiring inventory (i.e., purchasing merchandise) and its sale. This ratio is a metric to be watched and monitored by inventory managers and, if possible, minimized. A high days in inventory ratio could mean “aging” inventory. Old inventory could mean obsolescence or, in the case of perishable goods, spoilage. In either case, old inventory means losses.

Imagine a company selling high-tech products such as consumer electronics. A high days in inventory ratio could mean that technologically obsolete products will be sold at a discount. There are similar issues with older inventory in the fashion industry. Last year’s styles are not as appealing to the fashion-conscious consumer and are usually sold at significant discounts. In the accounting world, the *lower of cost or market value* is a test of inventory value to determine if inventory needs to be “written down,” meaning that the company takes an expense for inventory that has lost significant value. The lower of cost or market is required by Generally Accepted Accounting Principles (GAAP) to state inventory valuations at realistic and conservative values.

Inventory is a very significant working capital component for many companies, such as manufacturers, wholesalers, and retailers. For those companies, inventory management involves management of the entire **supply chain**: sourcing, storing, and selling inventory. At its very basic level, inventory management means having the right amount of stock at the right place and at the right time while also minimizing the cost of inventory. This concept is explained in the next section.

Inventory Cost

Controlling inventory costs minimizes working capital needs and, ultimately, the cost of goods sold. Inventory management impacts profitability; minimizing cost of goods sold means maximizing gross profit (Gross Profit = Net Sales Less Cost of Goods Sold).

There are four components to inventory cost:

- **Purchasing costs:** the invoice amount (after discounts) for inventory; the initial investment in inventory
- **Carrying costs:** all costs of having inventory in stock, which include storage costs (i.e., the cost of the space to store the inventory, such as a warehouse), insurance, inventory obsolescence and spoilage, and even the opportunity cost of the investment in inventory
- **Ordering costs:** the costs of placing an order with a vendor; the cost of a purchase and managing the payment process
- **Stockout costs:** an opportunity cost incurred when a customer order cannot be filled, and the customer goes elsewhere for the product; lost revenue

Minimizing total inventory costs is a combination of many strategies, the scope and complexity of which are beyond the scope of this text. Concepts such as *just-in-time (JIT)* inventory practices and *economic order quantity (EOQ)* are tools used by inventory managers, both of which help keep a company lean (minimizing inventory) while making sure the inventory resources are in place

in time to complete the sale.

Benefit of Holding Inventory

Brick-and-mortar stores need goods in stock so that the customer can see and touch the product and be able to acquire it when they need it. Customers are disappointed if they cannot see and touch the item or if they find out upon arrival at the store that it is out of stock.

Customers of all kinds don't want to wait for the delivery of a purchase. We have become accustomed to Amazon orders being delivered to the door the next day. Product fulfillment and availability is important. Inventory must be in stock, or sales will be lost.

In manufacturing, the inventory of materials and component parts must be in place at the start of the value chain (the conversion process), and finished goods need to be ready to meet scheduled shipments. Holding sufficient inventory meets customer demand, whether it is products on the shelves or in the warehouse that are ready to move through the supply chain and into the hands of the customer.

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3.7: Using Excel to Create the Short-Term Plan

Learning Objectives

By the end of this section, you will be able to:

- Create a one-year budget.
- Create a cash budget.

A cash budget is a tool of cash management and therefore assists financial managers in the planning and control of a critical asset. The cash budget, like any other budget, looks to the future. It projects the cash flows into and out of the company. The budgeting process of a company is really an integrated process—it links a series of budgets together so that company objectives can be achieved. For example, in a manufacturing company, a series of budgets such as those for sales, production, purchases, materials, overhead, selling and administrative costs, and planned capital expenditures would need to be prepared before cash needs (cash budget) can be predicted.

Just as you might budget your earnings (salary, business income, investment income, etc.) to see if you will be able to cover your expected living expenses and planned savings amounts, to be successful and to increase the odds that sufficient cash will be available in the months ahead, financial managers prepare cash budgets to:

- Meet payrolls
- Allocate dollars for contingencies and emergencies
- Analyze if planned collections and disbursements policies and procedures result in adequate cash balances
- Plan for borrowings on lines of credit and short-term loans that might be needed to balance the cash budget

A cash budget is a model that often goes through several iterations before managers can approve it as the plan going forward. Changes in any of the “upstream” budgets—budgets that are prepared before the cash budget, such as the sales, purchases, and production budgets—may need to be revised because of changing assumptions. New economic forecasts and even cost-cutting measures will require a revision of the cash budget.

Although a budget might be prepared for each month of a future 12-month period, such as the upcoming fiscal year, a rolling budget is often used. A rolling budget changes often as the planning period (e.g., a fiscal year) plays out. When one month ends, another month is added to the end (the next column) of the budget. For example, if in your budget January is the first month of the planning period, once January is over, next January’s cash budget column would be added—right after December’s column (at the far right of the budget).

Sample One-Year (Annual) Operating Budget

Preparing an annual operating budget can be a complex task. In essence, a company budget is a series of budgets, many of which are interrelated.

The sales budget is prepared first and has an impact on many other budgets. Take the example of a production budget of a manufacturer. The sales budget impacts what needs to be produced (production budget), and the production budget influences planned purchases of material (purchases budget), overhead resources (overhead budget), and the amount of labor costs for the year ahead (direct labor budget)

For a merchant (such as a wholesaler or retailer), the annual budget would be less complex than that of a manufacturing firm but would still require an inventory purchase budget and an operating expense budget (such as selling and administrative expenses). For a service firm, a purchase budget for inventory would not be necessary, but an operating budget would be. All businesses need a cash budget, which is the topic of the next section of this chapter.

The example operating budget presented here is of a merchandising company. Budgets are prepared following a process that begins with a sales (or revenue) forecast. The sales forecast is normally based on information obtained from both internal and external sources and predicts the number of units to be sold in the planning period—usually one year into the future.

A company's management, in consultation with its marketing and sales executives, would prepare a sales budget by making assumptions about the number of units that are expected to be sold and the prices that will be charged. From the sales budget, projections are made as to cash receipts each month, and therefore assumptions have to be made as to how much of each month's sales will be cash sales and how much cash will flow into the company from the collection of credit sales (including cash flow in from the prior month's sales). Figure 3.7.1 provides an example of a sales budget and projected accounts receivable collections and cash sales for the months of January through December. Keep in mind that projected monthly sales amounts are not equal to cash collected from sales. Because of sales on credit, some cash from sales lags credit sales, as collections can extend beyond the month of sale. Credit terms such as net 30 (net amount owed to be paid in 30 days) have to be considered when developing a forecasted cash collection pattern.

	A	B	C	D	E	F	G
10		January	February	March	April	May	June
11	Total Sales	\$ 460,000	\$ 500,000	\$ 600,000	\$ 540,000	\$ 486,000	\$ 534,600
	Accounts Receivable						
12	Collections/Cash Sales	400,000	460,300	513,000	568,000	518,700	491,130
13							
14		July	August	September	October	November	December
15	Total Sales	580,000	667,000	653,000	640,000	576,000	460,000
	Accounts Receivable						
16	Collections/Cash Sales	\$ 532,828	\$ 587,880	\$ 645,810	\$ 637,390	\$ 611,850	\$ 538,680

Figure 3.7.1: Example of a Sales and Collections Budget

Download the [spreadsheet file](#) containing key chapter Excel exhibits.

Sales budgets "drive" the preparation of other budgets. If sales are expected to increase, purchases of inventory and some operating expenses would also increase. To meet the demand for goods and services (as defined in the sales budget), a purchases (inventory) budget would be prepared. In this example (Figure 3.7.2), the purchases budget shows projected purchases of inventory (merchandise) and the projected payments (also called disbursements) for each month.

Cash outflows as a result of purchases often do not equal the projected purchase amount. That is because payments for purchases are usually on credit (accounts payable), and so purchases for one month typically get spread out over a period of time that encompasses the current month and the month (or months) thereafter. To keep this example simple, the assumption is that the purchases are paid for in the following month (an average days payable outstanding of 30 days). However, in other cases, payment patterns may be based on other payment periods such as 45, 60, or even 90 days, depending on the trade credit terms.

	A	B	C	D	E	F	G
1		January	February	March	April	May	June
2	Purchases	\$ 225,000	\$ 270,000	\$ 243,000	\$ 219,000	\$ 241,000	\$ 260,000
3	Payments	190,000	225,000	270,000	243,000	219,000	241,000
4							
5		July	August	September	October	November	December
6	Purchases	300,000	293,000	288,000	259,000	207,000	200,000
7	Payments	\$ 260,000	\$ 300,000	\$ 293,000	\$ 288,000	\$ 259,000	\$ 207,000

Figure 3.7.2: Purchases Budget

An operating expense budget is prepared next and is basically a prediction of the selling and administrative expenditures of the company. Notice in Figure 3.7.3 that in the operating expense budget, cost of goods sold (an expense) is not included, nor are noncash expenses such as depreciation. The cash outlays related to goods sold, at least in a merchandising operation, are

accounted for in the purchases budget (payments for purchases of inventory)

With the sales, purchases, and operating expense budgets prepared, the cash budget can be prepared. Some of the “inputs” to the cash budget are from the sales (collections of cash), purchases (payments), and the operating expense budget (cash expenditures for selling and administrative expenses). A sample cash budget and a discussion of its preparation follow in the next section.

Sample Cash Budget

A cash budget is the last budget to be prepared and is often part of the financial budget (cash budget, budgeted income statement, and budgeted balance sheet). The purpose of the cash budget is to estimate cash flows, to help ensure sufficient cash balances are maintained during the planning period, and to plan for external financing during periods of cash deficits.

When a budget is prepared in Excel, cash budget analysts can play “what if” with different scenarios to see when cash surpluses and deficits are expected. Cash surpluses mean that funds can be invested in marketable securities to earn a rate of return, while cash deficits mean that financing, such as a line of credit, will be necessary (assuming forecasts are accurate).

Although the example shown in Figure 3.7.4 is a monthly cash budget, a cash budget could be prepared using any useful time elements: weekly, monthly, or quarterly.

One common practice is to use a rolling cash budget. A rolling cash budget is continually updated to add a new budget period, such as a month’s amount of cash flow activity, as the most recent budgeted month expires. For example, assume that a 12-month cash budget is prepared for a period covering January 20X1 to December 20X1. Once the month of January 20X1 has concluded, a 12-month planning period continues by adding January 20X2 to the last column of the budget. The rolling cash monthly budget is an extension of the initial cash budget model, adding one month and thereby always extending cash flow projections one year into the future.

	A	B	C	D	E	F	G
1		January	February	March	April	May	June
2	Wages and Salaries	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000
3	Payroll Taxes	20,000	20,000	20,000	20,000	20,000	20,000
4	Advertising and Marketing	50,000	50,000	50,000	50,000	50,000	50,000
5	Repairs and Maintenance	12,000	12,000	12,000	12,000	12,000	12,000
6	Rent	3,000	3,000	3,000	3,000	3,000	3,000
7	Shipping	5,520	6,000	7,200	6,480	5,832	6,415
8	Utilities	1,500	1,500	1,500	1,500	1,500	1,500
9	Insurance	2,050	2,050	2,050	2,050	2,050	2,050
10	Supplies	400	400	400	400	400	400
11	Taxes	7,000	7,000	7,000	7,000	7,000	7,000
12	Total	<u>\$301,470</u>	<u>\$301,950</u>	<u>\$303,150</u>	<u>\$302,430</u>	<u>\$301,782</u>	<u>\$302,365</u>
13							
14		July	August	September	October	November	December
15	Wages and Salaries	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000
16	Payroll Taxes	20,000	20,000	20,000	20,000	20,000	20,000
17	Advertising and Marketing	50,000	60,000	60,000	55,000	50,000	50,000
18	Repairs and Maintenance	12,000	12,000	12,000	12,000	12,000	12,000
19	Rent	3,000	3,000	3,000	3,000	3,000	3,000
20	Shipping	6,960	8,004	7,836	7,680	6,912	5,520
21	Utilities	1,500	1,500	1,500	1,500	1,500	1,500
22	Insurance	2,050	2,050	2,050	2,050	2,050	2,050
23	Supplies	400	400	400	400	400	400
24	Taxes	7,000	7,000	7,000	7,000	7,000	7,000
25	Total	<u>\$302,910</u>	<u>\$313,954</u>	<u>\$313,786</u>	<u>\$308,630</u>	<u>\$302,862</u>	<u>\$301,470</u>

Figure 3.7.3: Operating Expenses Budget

	A	B	C	D	E	F	G
1		January	February	March	April	May	June
2	Beginning Cash Balance	\$350,000	\$258,530	\$191,880	\$131,730	\$154,300	\$152,218
3	Cash Collections	400,000	460,300	513,000	568,000	518,700	491,130
4	Cash Disbursements	491,470	526,950	573,150	545,430	520,782	543,365
5	Net Cash Flow	(91,470)	(66,650)	(60,150)	22,570	(2,082)	(52,235)
6	Preliminary Ending Cash Balance	258,530	191,880	131,730	154,300	152,218	99,983
7	Less: Minimum Cash Balance	50,000	50,000	50,000	50,000	50,000	50,000
8	Cash Surplus (Deficiency)	\$208,530	\$141,880	\$81,730	\$104,300	\$102,218	\$49,983
9	Ending Cash Balance	\$258,530	\$191,880	\$131,730	\$154,300	\$152,218	\$99,983
10							
11		July	August	September	October	November	December
12	Beginning Cash Balance	\$99,983	\$69,901	\$50,000	\$89,024	\$129,784	\$179,772
13	Cash Collections	532,828	587,880	645,810	637,390	611,850	538,680
14	Cash Disbursements	562,910	613,954	606,786	596,630	561,862	508,470
15	Net Cash Flow	(30,082)	(26,074)	39,024	40,760	49,988	30,210
16	Preliminary Ending Cash Balance	69,901	43,827	89,024	129,784	179,772	209,982
17	Less: Minimum Cash Balance	50,000	50,000	50,000	50,000	50,000	50,000
18	Cash Surplus (Deficiency)	\$19,901	(\$6,173)	\$39,024	\$79,784	\$129,772	\$159,982
19	Ending Cash Balance	\$69,901	\$50,000	\$89,024	\$129,784	\$179,772	\$209,982

Figure 3.7.4: Sample Cash Budget

Using Figure 3.7.3 as an example, Table 3.7.1 shows the formulas that form the skeleton of a monthly cash budget.

Table 3.7.1: Excel Formulas for Monthly Cash Budget

Type	Description
Beginning Cash Balance	This is the amount of cash the company expects to have on the first day of the month. For example, in Figure 3.7.4, cell B2 is the amount of cash on Jan. 1 to start the year (the planning period). The remaining beginning cash balances for the months February through December are the ending cash balances of the previous month. For example, February's beginning cash balance (C2) is referenced from cell B9 (ending cash balance for January).
Cash Collections	These are the projected cash inflows from collections from customers (accounts receivable), cash sales, and any other significant cash inflows, such as dividends and interest on investments or the sale of fixed assets. For example, the Cash Collections shown in the Sample Cash Budget (Figure 3.7.4) are referenced from the Sales and Collections Budget (Figure 3.7.1). January's Cash Collections (cell B3) in the Sample Cash Budget are from cell B12 of the Sales and Collection Budget.
Cash Disbursements	Cash disbursements are the projected cash outflows, such as those for operating expenses and payment of payables. For example, Cash Disbursements in the Sample Cash Budget for January (Figure 3.7.4) are the sum of January's payments for purchases in the Purchases Budget (Figure 3.7.2, cell B3) and the January operating expenses (Operating Expenses Budget, Figure 3.7.3, cell B12).
Net Cash Flow	The formula for net cash flow is: For example, in Figure 3.7.4, the January Net Cash Flow is calculated in cell B5.
Preliminary Ending Cash Balance	Beginning Cash Balance + or - Net Cash Flow. This is the projected cash balance before taking into account the target cash balance to be maintained (minimum cash balance). In the Sample Cash Budget (Figure 3.7.4), the preliminary ending cash balance formula for January is =B2+B5 (B2 is the Beginning Cash Balance and B5 is the Net Cash Flow for the month).
Less: Minimum Cash Balance	This is a target cash balance that management sets; it is the minimum amount of cash that should be maintained by the company (in Figure 3.7.4, cells B2:G7 and B17:G17).
Cash Surplus (Deficiency)	A cash surplus means that cash can be invested in marketable securities. A cash deficiency means that some type of financing, such as a line of credit or bank loan, will be needed to provide enough cash for operations and to maintain a minimum cash balance. This number is found by subtracting the minimum cash balance from the preliminary ending cash balance. For example, the cash surplus for January in Figure 3.7.4 is calculated with this formula: =B6-B7. Notice that all months in the Sample Cash Budget show a surplus except for August's forecast of a deficit, which may require drawing on a line of credit to provide enough cash to meet obligations in August.

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3.8: Summary

3.1 What Is Working Capital?

Working capital is not only necessary to run a business; it is a resource that will expand and contract with business cycles and must be carefully managed and monitored. The daily, weekly, and monthly needs of business operations are met by cash. Financial managers understand the significance of net working capital (current assets – current liabilities) and various liquidity ratios as they attempt to ensure that bills can be paid. The cash conversion cycle and the cash budget provide additional working capital management tools.

3.2 What Is Trade Credit?

Trade credit is very prevalent in the business world, especially in B2B (business-to-business) transactions. Many business exchanges (sales) could not take place without trade credit and the credit terms that are offered. Like any component of working capital, trade credit must be planned and managed. The creditor (the company granting the credit) does so based on an analysis of creditworthiness and must monitor payments and manage slow-paying accounts. The debtor (accounts payable) needs to make payments on time to keep a clean credit history and to take advantage of discounts.

3.3 Cash Management

Cash management is simply making sure you have enough cash to meet expected obligations and for contingencies (unexpected or emergency cash needs). Excess cash should be invested in low-risk and highly liquid marketable securities. The cash budget is a critical tool of cash management.

3.4 Receivables Management

Accounts receivable are monitored by management with tools such as the ratios accounts receivable turnover and average collection period, and the aging of receivables. The credit managers' mantra rings true: "The older the receivable, the greater the likelihood that the account will not be collected."

3.5 Inventory Management

Inventory, usually the least liquid of the current assets, presents its own set of management challenges. Finding the optimal level of inventory is probably more of an art than a science. JIT helps to reduce the investment in inventory and lower the costs of storage, but stockout costs can be very damaging to profitability.

3.6 Using Excel to Create the Short-Term Plan

Short-term plans of a business are funded with cash, with cash budgets being a critical tool of planning. The cash budget takes into account a target amount of cash, factoring in all the motives for holding cash. A cash budget looks ahead—predicting cash inflows and outflows, allocating for minimum cash balances to be maintained, and helping management determine short-term financing needed. Although it is the last budget prepared, the preparation of the cash budget is an important financial planning exercise of companies, small and large.

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3.9: Key Terms

accounts receivable aging schedule

a report that shows amounts owed by customers by the age of the account, as measured by the number of days since the sale

allowance for doubtful accounts

an account that contains the estimated amount of accounts receivable that will not be collected

bad debt expense

an expense that a business incurs as a result of uncollectible accounts receivable

bankruptcies

federal court procedures that protect distressed businesses from creditor collection efforts while allowing the debtor firm to liquidate its assets or devise a reorganization plan

benchmarking

the process of performance analysis that involves comparing financial condition and operating results against a standard, called a benchmark

bill of lading

a document that is a detailed list of goods that have been shipped; a receipt given by the carrier (shipping company) to the seller as evidence that the goods have been shipped to the buyer

carrying costs

all costs associated with having inventory in stock including storage costs, insurance, inventory obsolescence, and spoilage

cash budget

a report that shows an estimation of cash inflows, outflows, and cash balances over a specific period of time, such as monthly, quarterly, or annually

cash cycle or cash conversion cycle

the time period (measured in days) between when a business begins production and acquires resources from its suppliers (for example, acquisition of materials and other forms of inventory) and when it receives cash from its customers; offset by the time it takes to pay suppliers (called the payables deferral period)

cash discount

discount granted to a customer who has purchased goods or services on account (credit) and pays the invoice within a certain number of days as specified by credit terms

compensating balance

minimum balance of cash that a business must deposit and maintain in a bank account to obtain a loan

contra-asset

an account with a balance that is used to offset (reduce) its related asset on the balance sheet (for example, allowance for doubtful accounts reduces the value of accounts receivable reported on the balance sheet)

credit period

the number of days that a business purchaser has before they must pay their invoice

credit rating

a type of score that indicates a business's creditworthiness

credit terms

the terms that are part of a sales credit agreement that indicate when payment is due, possible discounts, and any fees that will be charged for a late payment

current assets

assets that are cash or cash equivalents or are expected to be converted to cash in a short period of time and will be consumed, used, or expire through business operations within one year or the business's operating cycle, whichever is shorter

discount period

the number of days the buyer has to take advantage of the cash discount for an early payment

factoring

the process of selling accounts receivable to a financial institution or, in some cases, using the accounts receivables as security for a loan from a financial institution

floor planning

a type of inventory financing whereby a financial institution provides a loan so that the company can acquire inventory with proceeds from the sale of inventory used to pay down the loan; a common method of financing inventory for automobile dealers and sellers of other big-ticket (high-priced) items

gross working capital

synonymous with the current assets of a company, those assets that include cash and other assets that can be converted into cash within a period of 12 months

just-in-time inventory

inventory management method in which a company maintains as little inventory on hand as possible while still being able to satisfy the demands of its customers

letter of credit

a letter issued by a bank that is evidence of a guarantee for payments made to a specified entity (such as a supplier) under specified conditions; common in international trade transactions

liquidity

ability to convert assets into cash in order to meet primarily short-term cash needs or emergencies

marketable securities

investments that can be converted to cash quickly; short-term liquid securities that can be bought or sold on a public exchange (market) and tend to mature in a year or less

net terms

also referred to as the full credit period; the number of days that a business purchaser has before they must pay their invoice

net working capital

the difference between current assets and current liabilities ($\text{Current Assets} - \text{Current Liabilities} = \text{Net Working Capital}$)

operating cycle

the time it takes a company to acquire inventory, sell inventory, and collect the cash from the sale of said goods; synonymous with cash cycle

opportunity cost

the cost of a forgone opportunity

ordering costs

costs associated with placing an order with a vendor or supplier

precautionary motive

a reason to hold cash balances for unexpected expenditures such as repairs, costs associated with the unexpected breakdown of equipment, and hiring temporary workers to meet unexpected production demands

quick payment

a payment made on an account payable during a period of time that falls within the discount period

ratios

numerical values taken from financial statements that are used in formulas to examine financial relationships and create metrics of performance, strengths, and weaknesses to help analysts gain insight and meaning

speculative motive

a reason for holding an amount of cash—to be able to take advantage of investment opportunities

stockout costs

an opportunity cost (lost revenue) incurred when a customer order cannot be filled because the item is out of stock and the customer goes elsewhere for the product

supply chain

the network of participants and activities between a company and its suppliers and the company and its customers; exists to distribute a product or to provide a service to the final buyer

trade credit

credit granted to a business, also called accounts payable; allows a business to buy goods and services on account and pay the cash at some point in the future

transactional motive

holding an amount of cash to meet operational expenditures such as payroll, payments to vendors, and loan payments

working capital

the resources that are needed to meet the daily, weekly, and monthly operating cash flow needs

3.10: Review Questions

1. Intelligent Cookies Inc. (ICI) sold \$30,000,000 of product in a year that had a cost of goods sold of \$10,000,000. The average inventory carried by ICI was \$500,000. On average, it takes 35 days for ICI's customers, such as grocery stores and restaurants, to pay on their accounts. ICI buys ingredients, including flour, spices, and eggs, from its vendors on credit, and ICI takes about 40 days to pay its suppliers. How many days is ICI's cash conversion cycle?
2. Shown below are account balances for Electra Engines Inc., a manufacturer. The accounts are shown in a random order. What is the amount of net working capital?

Net Working Capital \$_____	
Property, Plant, and Equipment	\$500,000
Accounts Payable	6,000
Intangible Assets	5,000
Cash	10,000
Marketable Securities (maturing in 6 months or less)	30,000
Retained Earnings	25,000
Interest Payable	2,000
Notes Payable (due in 24 months)	10,000
Accounts Receivable	20,000
Notes Payable (due in 6 months)	20,000
Common Stock	45,000
Dividends Payable	3,000
Inventory	\$ 50,000

Figure 3.10.1: Example account balances for Electra Engines Inc.

3. Shown below are account balances for Electra Engines Inc., a manufacturer. The accounts are shown in a random order. What is the current ratio and the quick ratio?

Property, Plant, and Equipment	\$500,000
Accounts Payable	9,000
Intangible Assets	5,000
Cash	12,000
Marketable Securities (maturing in 6 months or less)	25,000
Retained Earnings	25,000
Interest Payable	2,500
Notes Payable (due in 24 months)	10,000
Accounts Receivable	25,000
Notes Payable (due in 6 months)	20,000
Common Stock	45,000
Dividends Payable	3,000
Inventory	55,000

Figure 3.10.2: Example of random order account balances for Electra Engines Inc.

4. Imagine that these are the cash collection cycles for some well-run companies:

Company	Cash Conversion Cycle
Grocery Chain	6.20
Building/Construction Company	162.69
Restaurant Chain	(4.06)
Department Store	63.60

Figure 3.10.3: Example cash collection cycles

What types of conclusions can you reach when you see this kind of variability?

Imagine that those cash conversion cycles are based on this information:

Company Type	Inventory Turnover	Accounts Receivable Turnover	Accounts Payable Turnover
Grocery Chain	14.60	91.00	16.00
Building/Construction Company	2.00	121.67	16.00
Restaurant Chain	150.00	100.00	36.00
Department Store	2.78	91.00	3.00

Figure 3.10.4: Sample turnover data

What would be your analysis of the cash conversion cycles based on the above information (inventory turnover, accounts receivable turnover, and accounts payable turnover)? Use the worksheet below to summarize your conclusions.

Company	Cash Conversion Cycle	Analysis
Grocery Chain	6.20	
Building/Construction Company	162.69	
Restaurant Chain	(4.06)	
Department Store	63.60	

Figure 3.10.5: Worksheet

- What is the estimated annual percentage rate (APR) of not taking advantage of the early payment discount based on these terms: 4/15, n/45?
- If you were a credit manager reviewing a potential customer's request for a \$20,000 line of credit, what would you analyze? Generally, how would the 5Cs of Credit guide your analysis and help lead you to a prudent decision to accept or reject the request?

7. Aspire Excellent Inc. is a book publisher. On March 1, Aspire sells \$25,000 of books to Get Your Books Inc. (YBI), a large bookstore chain. The sale is made on account with terms net 60. Aspire's customers usually take the full 60 days to pay their invoices. The books cost Aspire \$10,000 to manufacture. Below, summarize the effect on the accounts on March 1 from the standpoint of the seller, Aspire Excellent Inc., and the buyer, YBI.

Aspire's Accounts	Change (Amount and Direction of Change: + or -) in the Account
Accounts Receivable Inventory Sales	
YBI's Accounts	Change (Amount and Direction of Change: + or -) in the Account
Accounts Payable Inventory	

Figure 3.10.6: Example of Aspire and YBI accounts

8. The financial manager of New England Blissful Dairies, a distributor of milk, cream, and ice cream products, has finished the 12-month operating budget. For the month of June, the following projections were made:

June 1 Cash Balance \$90,000
 Cash Receipts \$300,000
 Cash Disbursement \$350,000

Taking into account an amount of cash that the firm likes to maintain as a target (minimum cash balance) of \$75,000, prepare the cash budget for June using the format below. Assume that, if necessary, the company will draw upon a preestablished line of credit with their bank to be able to maintain the target cash balance.

June
Beginning Cash Balance
Cash Collections
Cash Disbursements
Net Cash Flow
Preliminary Ending Cash Balance
Less: Minimum Cash Balance
Cash Surplus (Deficiency)
Ending Cash Balance

Figure 3.10.7: Worksheet for cash budget

Will the company need short-term financing?

9. The sales for Re-Works Inc., a company that fabricates iron fencing from recycled metals, are all on account. For the first three months of the year, Re-Works management expects the following sales:

Sales	
January	\$120,000
February	\$130,000
March	\$140,000

Figure 3.10.8: Example of Re-Works' sales

Based on past collection patterns, management expects the following:

Month of Sale	10%
Month after Sale	50%
Remainder - Second Month after Sale	40%

Figure 3.10.9: Sample expectations

Also, based on past experience, management forecasts that 5 percent of accounts receivable will be uncollectible and will eventually be written off.

What are the expected cash receipts for March?

10. With the same sales forecasts as in question 9, Re-Works Inc. management would like to implement some changes to credit policy and credit terms that they believe would change the collection pattern going forward and would lower the uncollectible accounts prediction to 3 percent.

What would be the expected cash receipts for March?

Month of Sale	15%
Month after Sale	55%
Remainder	30%
Bad Debt Expense	3%

Figure 3.10.10: Sample revised expectations

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4: CAPITAL BUDGETING

- 4.1: Capital Budgeting Fundamentals
- 4.2: Capital Budgeting Concepts and Process
- 4.3: Non-Discounted Cash Flows (DCF) Capital Budgeting Techniques
- 4.4: Discounted Cash Flows (DCF) Capital Budgeting Techniques
- 4.5: Capital Rationing and Project Selection
- 4.6: Capital Budgeting Applications
- 4.7: Estimate Project Cash Flows
- 4.8: Estimate Project Risk and the Discount Rate
- 4.9: Analyse Project Risk Using Quantitative Tools
- 4.10: Real Options in Capital Budgeting
- 4.11: Summary

4.1: Capital Budgeting Fundamentals

Learning Objectives

This section explores the fundamentals of capital budgeting, equipping you with essential knowledge and tools to make informed financial decisions. The key learning outcomes include:

- **Understand the Concept and Process of Capital Budgeting:** Explore its significance in strategic decision-making and long-term financial planning.
- **Apply Non-DCF Methods:** Utilize tools such as the payback period and accounting rate of return to evaluate investment viability.
- **Utilize Discounted Cash Flow (DCF) Methods:** Employ NPV and IRR techniques to assess and compare long-term investment opportunities.
- **Explore Capital Rationing and Project Selection:** Analyze approaches for prioritizing investments when faced with resource constraints.

By mastering these concepts, you will gain the skills to evaluate complex investment opportunities, align financial decisions with organizational goals, and contribute to long-term value creation.

Introduction to Capital Budgeting

Capital budgeting is a critical process in financial management, enabling organizations to evaluate and select long-term investments that align with their business goals of maximizing shareholders' wealth. Whether deciding to launch a new product, expand operations, or replace outdated equipment, capital budgeting ensures that resources are allocated to projects that **maximize value** while balancing risk and reward. This process goes beyond financial calculations—it forms the foundation for achieving a company's vision and sustaining competitive advantage.

Capital budgeting decisions not only determine the financial trajectory of a company but also define its products, services, and identity in the marketplace. Strategic investments often shape how a company is perceived by customers, investors, and competitors. For instance, **Apple Inc.** is widely recognized for its commitment to innovation and design, a reputation built through careful capital budgeting decisions. Apple's investment in the development and launch of the **iPhone** is a prime example. This decision involved significant financial resources allocated to research, product development, and marketing. The success of the iPhone redefined Apple's identity, transitioning it from a computer company to a **global leader in consumer electronics and lifestyle technology**. Such transformative capital budgeting decisions demonstrate how strategic investments can shape a company's offerings and establish its position in the market, creating enduring brand value and competitive advantage.

Concepts In Practice: BHP Group

The strategic importance of capital budgeting is evident in real-world corporate decisions. As another example, **BHP Group**, one of Australia's leading mining companies, committed \$5.7 billion to the expansion of its Jansen Potash Project in Canada. This decision was guided by a comprehensive capital budgeting analysis, evaluating financial metrics like Net Present Value (NPV) and Internal Rate of Return (IRR) alongside strategic factors such as meeting the growing global demand for potash, a key agricultural fertilizer.

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4.2: Capital Budgeting Concepts and Process

Learning Objectives

By the end of this section, you will be able to:

- Understand the purpose of capital budgeting and explain how it supports value-creating investment decisions.
- Describe the key steps in the capital budgeting process, including identifying opportunities, estimating cash flows, evaluating projects, and assessing risk.
- Distinguish between major types of capital budgeting projects (e.g., expansion, replacement, cost reduction) and classify projects as independent, mutually exclusive, or contingent.

What is Capital Budgeting?

Capital budgeting is the process a business undertakes to **evaluate potential major projects or investments** and hence forms a very important part of the **investment decision**. By using capital budgeting techniques, management can systematically analyze business opportunities to determine which projects are worth pursuing. The primary goal of capital budgeting decisions is to select investments that **increase the company's value**. A project creates value when it generates cash inflows that exceed its costs. Additionally, the projects a firm chooses to invest in play a significant role in shaping its business risk, as these investments directly impact the company's operations, financial performance, and market positioning.

Capital budgeting encompasses decisions ranging from small asset replacements in a small business to massive, strategic projects in large corporations. For instance, a small bakery might use capital budgeting to evaluate the **replacement of an aging oven** with a newer, energy-efficient model. This seemingly minor investment can significantly improve operational efficiency and reduce costs, directly impacting the bakery's profitability. On the other hand, a large corporation like **BHP Group** might use capital budgeting to decide on a **multi-billion-dollar expansion** of its mining operations, such as the \$5.7 billion Jansen Potash Project. Regardless of scale, the capital budgeting process ensures that businesses, big or small, **allocate resources effectively** to investments that maximize value and align with their strategic objectives.

The Capital Budgeting Process

The capital budgeting process involves a series of structured steps that help businesses evaluate and prioritize long-term investments. The key stages are:

- **Identify Investment Opportunities:** Generate ideas for projects or investments, such as new products, expansions, or equipment upgrades.
- **Estimate Cash Flows:** Calculate the expected cash inflows (e.g., revenues, savings) and outflows (e.g., initial investment, operating costs) for each project.
- **Evaluate Projects Using Financial Metrics:** Apply capital budgeting techniques to assess project viability:
 - **Net Present Value (NPV):** Measures the difference between the present value of inflows and outflows.
 - **Internal Rate of Return (IRR):** Calculates the rate at which the project breaks even in present value terms.
 - **Payback Period:** Determines how long it will take to recover the initial investment.
 - **Profitability Index (PI):** Evaluates the return per dollar invested.
- **Perform Risk Analysis:** Analyze uncertainties such as market conditions, cost variations, or regulatory changes.
- **Select the Best Investment:** Compare projects based on financial metrics and prioritize projects that maximize shareholder value.
- **Monitor and Review:** Track the project's performance to ensure it delivers expected returns and make adjustments as necessary to address challenges or optimize outcomes.

This systematic approach ensures that businesses, whether small or large, make informed and strategic decisions, allocating resources to projects that provide the greatest value.

Types of Capital Budgeting Projects

Capital budgeting projects can be categorized based on their purpose and strategic objectives. Understanding these types helps businesses prioritize investments that align with their goals. Here are the major types, along with examples.

Table 4.2.1: Major types of capital projects

Project Type	Purpose	Example
Expansion	To increase the company's production capacity or enter new markets	A manufacturing company investing in a new production facility to meet growing demand for its products. For instance, an Australian car manufacturer may build a new assembly plant to expand its presence in the Asia-Pacific region
Replacement	To replace outdated or inefficient equipment with newer, more efficient alternatives, often to reduce costs or improve productivity	A small bakery replacing an old oven with a modern, energy-efficient model to lower energy costs and improve output quality
New Product or Market Development	To launch a new product line or enter an untapped market, driving growth and diversifying revenue streams	Apple's investment in developing the iPhone, which opened up a completely new revenue stream and positioned the company as a leader in consumer electronics
Cost Reduction	To reduce operational costs and improve profitability, typically through automation or efficiency improvements	A logistics company is investing in warehouse automation systems to decrease labour costs and improve inventory management efficiency
Regulatory and Compliance	To meet government regulations or safety standards, often mandatory to continue operations	A chemical manufacturing plant investing in wastewater treatment facilities to comply with environmental regulations

Additionally, projects may be classified as **independent**, **mutually exclusive**, or **contingent**, depending on how they relate to other investment opportunities.

- **Independent** projects are those that can be undertaken simultaneously without affecting each other's feasibility. Accepting one project does not exclude the acceptance of others. As an example, a company invests in upgrading its IT infrastructure while also expanding its marketing campaign. Both projects can proceed independently as they do not compete for the same resources.
- **Mutually Exclusive** projects are those where only one can be selected, as they compete for the same resources or fulfill the same purpose. For example, a retail company evaluates two potential store locations but chooses only one due to limited capital. Selecting one location excludes the other, as both serve the same target market.
- **Contingent** projects are those where the acceptance of one project is dependent on another project. For example, Woolworths plans to open a new supermarket in a suburban area (Project A). However, the success of this store is contingent on the completion of a logistics hub nearby to support its operations (Project B). Project A depends on Project B being completed, as the store cannot function effectively without reliable supply chain support. Conversely, Project B would only be pursued if Project A is approved, as its primary purpose is to support the new store. In this scenario, Woolworths must evaluate both projects jointly, considering their combined costs and benefits to determine whether the investment aligns with the company's strategic goals and financial feasibility.

4.3: Non-Discounted Cash Flows (DCF) Capital Budgeting Techniques

Learning Objectives

By the end of this section, you will be able to:

- Explain the purpose and mechanics of non-discounted cash flow (non-DCF) capital budgeting techniques, including how the payback period and accounting rate of return (ARR) are calculated and interpreted.
- Evaluate the advantages and limitations of the payback period and ARR methods.
- Apply non-DCF techniques to investment scenarios by computing payback periods and ARR values, and by assessing whether projects meet organizational acceptance criteria.

Non-Discounted Cash Flow (Non-DCF) capital budgeting techniques are simpler methods used to evaluate investment projects **without considering the time value of money**. These techniques focus on basic metrics like how quickly an investment can recover its initial cost or its average return over time, making them easier to apply and understand. Common non-DCF methods include the **payback period**, which measures how long it takes to recover the initial investment, and the **accounting rate of return (ARR)**, which calculates the average annual accounting profit as a percentage of the investment.

The Payback Period

The payback period is the time it takes for an investment to generate enough net cash flows to recover its initial cost. A project is typically considered acceptable if its payback period is shorter than a predetermined threshold, such as 5 years. This method can also serve as a risk indicator, as projects with faster payback periods are generally less risky, given the quicker recovery of the invested capital.

The following formula can be used to calculate the payback period

$$\text{Payback Period (PB)} = \frac{\text{Years Before Cost Recovery}}{\text{Remaining Cost to Cover Cash Flow During the Year}}$$

Concepts In Practice: Example of the Payback Period Calculation

A project needs an initial investment of \$70,000 at time 0, which is the present time. The annual expected net cash flows and the cumulative cash flows from the project are detailed in the table below. **Cumulative cash flow** refers to the total net cash inflows or outflows accumulated over time for a particular project or investment. It is calculated by summing up the net cash flows from each period, starting from the initial investment.

Table 4.3.1: Cash Flow Example

YEAR	CASH FLOW	CUMULATIVE CASH FLOW
0	-70000	-70,000
1	30000	-70,000+30,000 = -40,000
2	30000	-40,000+30,000 = -10,000
3	20000	-10,000+20,000 = 10,000
4	15000	+10,000+15,000 = 25,000

In this example, the cumulative cash flow turns positive in Year 3; hence, the payback period is less than 3 years.

$$\text{Payback Period} = 2 + 10000/20000 = 2.5 \text{ years}$$

The acceptance rule relating to the payback period is based on comparing the calculated payback period of a project to a pre-specified maximum allowable payback period set by the organization. If the payback period is **less than or equal to** the pre-specified maximum threshold (for example, 5 years), accept the project. On the contrary, the project should be rejected if the payback period is **greater than** the pre-specified maximum threshold.

The payback period is particularly beneficial for **small companies** where liquidity is a critical concern. This method provides a straightforward way to determine how quickly an investment will recover its initial cost, helping small businesses prioritize projects that generate cash inflows rapidly. By focusing on shorter payback periods, small companies can reduce financial risk, improve cash flow management, and ensure they have sufficient liquidity to meet day-to-day operational needs. Its simplicity and emphasis on quick capital recovery make the payback period a valuable tool for small businesses operating with limited resources.

Advantages of Payback Period Method

- **Simplicity of the measure:** The payback period calculation is straightforward to understand, which makes it accessible to a wide range of stakeholders, including business owners, investors, and managers.
- **Measures liquidity:** The payback period measures the liquidity of an investment, which is the ability of an investment to generate cash flows and recover its initial cost quickly. This is important for businesses that need to maintain a certain level of liquidity to operate effectively.
- **Considers risk:** The payback period takes into account the time it takes to recover the initial investment, which is a critical factor in assessing the investment's risk. A shorter payback period indicates a lower risk investment as the initial cost is recovered more quickly.
- **Can be a benchmark:** The payback period can be used as a benchmark to compare different investment options. This can help businesses evaluate which investment will provide the most significant return on their investment in the shortest amount of time.
- **Encourages capital conservation:** The payback period encourages capital conservation as it measures the time it takes to recover the initial investment. This can help businesses evaluate whether an investment is worth the cost and avoid investing in projects that may take too long to recover the initial cost.

Disadvantages of the Payback Period Method

- **Ignores time value of money:** The payback period calculation does not consider the time value of money, which means that it does not take into account the fact that money received in the future is worth less than money received today. This can lead to an inaccurate assessment of the investment's profitability.
- **Ignores cash flows beyond the payback period:** The payback period only measures the time it takes for an investment to recover its initial cost. It does not consider the cash flows generated by the investment beyond the payback period. This can lead to a limited view of an investment's profitability potential.
- **Ignores risk:** The payback period does not take into account the risk associated with an investment, such as the volatility of cash flows or the uncertainty of future market conditions. This can lead to an inaccurate assessment of the investment's overall potential.
- **Subjective determination of payback period:** The determination of the payback period involves subjective decisions about the appropriate length of time to recover the initial investment. Different people may arrive at different payback periods for the same investment, which can lead to inconsistency in decision-making.

To overcome the limitations of the payback period, which include ignoring the time value of money, the **discounted payback period** can be utilized. Unlike the traditional payback period, it discounts future cash flows to their present value before calculating the recovery time. This approach provides a more accurate assessment of an investment's risk and liquidity by accounting for the declining value of money over time. A shorter discounted payback period indicates faster recovery of the initial investment, making the project less risky. However, it still does not consider cash flows beyond the payback period, limiting its ability to assess long-term profitability.

Accounting Rate of Return (ARR)

The **Accounting Rate of Return (ARR)** method is a technique that evaluates an investment's profitability by comparing its average annual accounting profit to the initial or average investment. ARR is calculated as:

$$ARR = \frac{\text{Average Annual Accounting Profit}}{\text{Initial Investment or Average Investment}} \times 100$$

This method focuses on accounting profits rather than cash flows, making it simple to calculate using financial statements. A project is typically accepted if its ARR exceeds a company's required rate of return determined by management.

Concepts In Practice: The Great Recession: Example of Accounting Rate of Return (ARR) Calculation

A company is considering an investment in new machinery costing \$200,000. The machinery is expected to generate accounting profits of \$50,000 annually for 5 years. The company calculates ARR to evaluate the project's profitability.

Step 1: Calculate the Average Annual Accounting Profit

Since the project generates constant profits of \$50,000 annually over 5 years:

$$\text{Average Annual Accounting Profit} = \frac{\text{Total Accounting Profit}}{\text{Number of Years}} = \frac{50,000 \times 5}{5} = 50,000$$

Step 2: Calculate the ARR

Using the formula:

$$ARR = \frac{\text{Average Annual Accounting Profit}}{\text{Initial Investment}} \times 100$$
$$ARR = \frac{50,000}{200,000} \times 100 = 25\%$$

The ARR for this investment is **25%**. If the company's required rate of return is less than or equal to 25%, the project would be considered acceptable. If the required rate of return is higher, the project might be rejected.

Advantages of ARR

- **Simple measure:** The ARR calculation is straightforward to understand, which makes it accessible to a wide range of stakeholders, including business owners, investors, and managers.
- **Uses accounting data:** The ARR relies on accounting data, such as net income and book value, which are readily available in a company's financial statements. This makes it easy to calculate and compare the returns of different investments.
- **Focuses on profitability:** The ARR measures the profitability of an investment, which is a critical factor in decision-making. It helps businesses assess whether an investment will likely generate a sufficient return to justify the investment.
- **Long-term view:** The ARR considers the expected returns over the investment's entire life, which is a more comprehensive approach than other metrics, such as payback period or net present value, which only consider the initial investment and cash flows.
- **Considers non-cash items:** The ARR takes into account non-cash items, such as depreciation and amortization, which can have a significant impact on a company's profitability.

Disadvantages of ARR

- **Ignores the time value of money:** ARR does not take into account the time value of money, which means that it does not consider the fact that money received in the future is worth less than money received today due to inflation and other factors. This can lead to an inaccurate assessment of the investment's profitability.
- **Relies on accounting data:** While using accounting data is an advantage, it can also be a disadvantage. The ARR calculation is based on historical accounting data, which may not reflect the current or future market conditions. Therefore, it may not

be a reliable indicator of an investment's profitability.

- **Ignores cash flows:** The ARR does not consider the timing and amount of cash flows associated with an investment. This can lead to an inaccurate assessment of the investment's profitability, particularly in cases where cash flows are uneven or vary significantly over time.
- **Ignores the risk:** The ARR does not consider the risk associated with an investment. An investment with a higher ARR may not necessarily be a better investment if it has a higher level of risk than an investment with a lower ARR.
- **Subjectivity:** The ARR calculation involves making assumptions and estimates, such as the useful life of an asset or the salvage value, which can be subjective and may vary from person to person. This can lead to different people arriving at different ARR values for the same investment.

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4.4: Discounted Cash Flows (DCF) Capital Budgeting Techniques

Learning Objectives

By the end of this section, you will be able to:

- Explain the purpose of discounted cash flow (DCF) techniques and describe how methods such as Net Present Value (NPV) and Internal Rate of Return (IRR) incorporate the time value of money to evaluate long-term investments.
- Apply the steps involved in calculating NPV and IRR.

Discounted Cash Flow (DCF) techniques are advanced capital budgeting methods that evaluate investment projects by accounting for the time value of money. These techniques assess the present value of future cash flows to determine whether a project will generate sufficient returns. DCF methods provide a more accurate and comprehensive analysis than non-DCF techniques, making them essential for long-term investment decisions.

Net Present Value (NPV)

NPV method estimates the amount by which the benefits (cash inflows) from a project exceed the cost of the project in present value (dollar) terms. NPV is a capital budgeting technique that is consistent with the goal of maximizing shareholder wealth. NPV provides a \$ value of how much cash is flowing out or into the firm.

$$\text{NPV} = \text{PV of cash inflows} - \text{PV of cash outflows}$$

Net Present Value Analysis

Net Present Value (NPV) analysis is used in finance to evaluate investment projects by comparing the present value of expected cash inflows to the present value of expected cash outflows, considering the time value of money. The basic principle underlying NPV analysis is that a dollar received in the future is worth less than a dollar received today because of the opportunity cost of not investing that money today.

In simple terms, NPV analysis involves taking the expected cash inflows and outflows associated with an investment project and discounting them back to their present value using a discount rate, which reflects the cost of capital or minimum required return. The resulting net present value represents the difference between the present value of the expected cash inflows and the present value of the expected cash outflows.

If the NPV is positive, it suggests that the investment project will generate more cash than the initial investment, and therefore, it may be worth pursuing. If the NPV is negative, it suggests that the investment project will not generate enough cash to cover the initial investment, and it may not be worth pursuing.

NPV analysis can be a powerful tool for businesses and investors to make informed decisions about capital allocation and risk management. By taking into account the time value of money, expected cash flows, and the cost of capital, NPV analysis helps in making sound investment decisions.

Steps to Calculate Net Present Value (NPV)

1. **Identify the Initial Investment:**
 - Determine the upfront cost of the project or investment (cash outflow at time zero).
2. **Estimate Future Cash Flows:**
 - Forecast the expected cash inflows and outflows for each period of the project's lifespan.
3. **Determine the Discount Rate:**

- Select an appropriate discount rate, often the company's cost of capital or required rate of return, to reflect the time value of money and risk.

Discount the Future Cash Flows:

Calculate the present value of each future cash flow using the formula:

$$PV = \frac{\text{Future Cash Flow}}{(1 + r)^t}$$

where r = Discount rate

t = Time period (years)

1. Sum the Discounted Cash Flows:

- Add up the present values of all future cash flows.

2.

3. Interpret the Result:

- If $NPV > 0$: The project is expected to generate value and should be considered.
- If $NPV < 0$: The project is likely to destroy value and should be rejected.
- If $NPV = 0$: The project is expected to break even.

Subtract the initial investment from the total discounted cash flows to find the NPV.

Concepts In Practice: Concepts in Practice: Example - Calculating NPV

A company is considering investing in a new project that requires an initial investment of **\$100,000**. The project is expected to generate the following cash inflows over the next 4 years:

The company's required rate of return (discount rate) is **10%**. Let's calculate the NPV.

Step 1: Calculate the Present Value of Each Cash Flow

Using the formula for present value:

$$PV_1 = \frac{30,000}{(1 + 0.10)^1} = \frac{30,000}{1.10} = 27,273$$

$$PV_2 = \frac{40,000}{(1 + 0.10)^2} = \frac{40,000}{1.21} = 33,058$$

$$PV_3 = \frac{50,000}{(1 + 0.10)^3} = \frac{50,000}{1.331} = 37,558$$

$$PV_4 = \frac{20,000}{(1 + 0.10)^4} = \frac{20,000}{1.4641} = 13,665$$

Step 2: Sum the Present Values of All Cash Flows

$$\text{Total Present Value} = 27,273 + 33,058 + 37,558 + 13,665 = 111,554$$

Step 3: Subtract the Initial Investment

$$NPV = \text{Total Present Value} - \text{Initial Investment}$$

$$NPV = 111,554 - 100,000 = 11,554$$

Step 4: Interpret the Result

The NPV of the project is **\$11,554**. Since the NPV is positive, the project is expected to generate value above the company's required return. Therefore, the project should be accepted.

Internal Rate of Return (IRR)

The **Internal Rate of Return (IRR)** method is a technique used to evaluate investment projects by calculating the discount rate at which the Net Present Value (NPV) of a project equals zero. In other words, it is the rate of return at which the present value of future cash inflows matches the initial investment.

The IRR helps managers determine the profitability of a project. A project is generally accepted if its IRR exceeds the company's required rate of return or cost of capital.

Concepts in Practice: Example - Calculating IRR

A company is considering a project that requires an initial investment of **\$100,000** and is expected to generate the following cash inflows over the next 4 years:

The goal is to calculate the **Internal Rate of Return (IRR)**, which is the discount rate (r) at which the **Net Present Value (NPV)** equals zero. The formula for NPV is:

$$NPV = \sum_{t=1}^n \frac{\text{Cash Flow}_t}{(1+r)^t} - \text{Initial Investment}$$

For IRR:

$$0 = \sum_{t=1}^n \frac{\text{Cash Flow}_t}{(1+IRR)^t} - \text{Initial Investment}$$

Step 1: Solve the NPV Equation for IRR

The equation to solve is:

$$0 = \frac{30,000}{(1+IRR)^1} + \frac{40,000}{(1+IRR)^2} + \frac{50,000}{(1+IRR)^3} + \frac{20,000}{(1+IRR)^4} - 100,000$$

Step 2: Trial-and-Error Method or Use Financial Software

Manually solving this equation requires iterative trial-and-error by testing different values for r until

$$NPV = 0.$$

Alternatively, financial calculators or spreadsheet software (e.g., Excel) can find the IRR efficiently.

Using Excel Formula:

Step 3: Interpret the Result

The IRR of **14.4%** means that the project is expected to generate an annual return of 14.4%. If the company's required rate of return or cost of capital is less than 14.4%, the project should be accepted, as it provides a higher return than the minimum threshold.

Advantages of IRR

- **Simplicity of Interpretation:** The IRR is expressed as a percentage, making it easy to understand and compare with a company's required rate of return or cost of capital.
- **Considers the Time Value of Money:** Unlike non-DCF methods, IRR accounts for the timing of cash flows, ensuring a more

accurate evaluation of a project's profitability.

- **Useful for Comparing Projects:** IRR provides a standardized measure, making it easier to compare the profitability of different investment opportunities, especially when resources are limited.
- **Indicates Profitability Potential:** IRR directly shows the rate of return an investment is expected to generate, helping managers assess if the project meets financial objectives.
- **Alignment with NPV** (in many cases): For standalone, conventional cash flow projects, IRR and NPV often lead to the same acceptance or rejection decisions.

Disadvantages of IRR

- **Ignores Scale of Investment:** IRR does not consider the size of the project or the absolute value it adds. A smaller project may have a higher IRR but contribute less value overall than a larger project with a lower IRR.
- **Assumes Constant Reinvestment Rate:** IRR assumes that intermediate cash flows are reinvested at the IRR itself, which may not be realistic. This can lead to overestimation of a project's profitability.
- **Difficulty with Non-Conventional Cash Flows:** For projects with alternating positive and negative cash flows, IRR may produce multiple rates or fail to provide meaningful results.
- **Conflict with NPV for Mutually Exclusive Projects:** For mutually exclusive projects, IRR might favor a project with a higher percentage return, while NPV might favor one that adds more absolute value.
- **No Indication of Risk:** IRR does not directly account for risk factors or the variability of cash flows, which are critical in decision-making.

NPV vs. IRR - A Comparison

The Internal Rate of Return (IRR) and Net Present Value (NPV) methods will always align in selecting a project when:

- The projects are **independent** (not competing with each other).
- The projects have **conventional cash flows**, meaning that after the initial investment, where the cash flow is negative, all subsequent net cash flows are positive.

The IRR and NPV methods may lead to different accept/reject decisions in the following situations:

- The project has **unconventional cash flows**, such as cash inflows and outflows occurring at multiple points over its lifespan.
- **Mutually exclusive projects** are being compared, where selecting one project precludes the selection of another.

IRR and Unconventional Cash Flows

Unconventional cash flows can occur in various patterns, including:

- An initial negative cash flow is followed by positive net cash flows, with a final negative cash flow at the end.
- Future net cash flows fluctuate between positive and negative values over the project's lifespan.

In such cases:

- The IRR method can yield multiple solutions, making its results unreliable.
- Therefore, the IRR method is not recommended for accept/reject decisions when a project involves unconventional cash flows.

IRR and Mutually Exclusive Projects

For mutually exclusive projects, it is possible for the Net Present Values (NPVs) of the projects to be equal at a specific discount rate. This point is known as the **crossover point**. Depending on whether the required rate of return (discount rate) is above or below this crossover point, the ranking of the projects may differ.

IRR and Reinvestment Rate Assumption

A significant limitation of the IRR method compared to the NPV method is its assumption about the reinvestment rate:

- The IRR method assumes that cash flows from the project are reinvested at the **project's IRR**, whereas the NPV method assumes reinvestment at the **company's cost of capital**.
- This reinvestment assumption in the IRR method can result in some projects being accepted when they should be rejected.

IRR vs. NPV: Final Comment

Although the IRR method has intuitive appeal to managers because it provides results as a rate of return (e.g., 8%), it has critical limitations. In contrast:

- The NPV method aligns with the goal of **maximizing shareholder wealth**.
- NPV provides the **dollar value** by which a project is expected to increase the company's value.

When IRR and NPV yield conflicting decisions, the **NPV method should always take precedence**. For the reasons outlined above, the NPV method is the preferred approach for making capital budgeting decisions.

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4.5: Capital Rationing and Project Selection

Learning Objectives

By the end of this section, you will be able to:

- Explain the concept of capital rationing and describe why firms may face internal or external limits on available investment funds.
- Apply the Profitability Index (PI) to evaluate and rank projects under capital constraints.
- Select an optimal bundle of projects under capital rationing by ranking projects by PI, allocating limited capital, and identifying the combination that maximizes total value within the budget.

Capital Rationing

Capital rationing refers to the process by which a company allocates its limited financial resources among competing investment opportunities. It occurs when a firm imposes restrictions, either externally or internally, on the amount of capital it can invest in new projects during a given period. External restrictions may arise due to market conditions, such as limited access to funding or high borrowing costs, while internal constraints may stem from strategic goals, budgetary limits, or a desire to maintain financial stability.

For example, imagine a company with a budget of \$1 million to invest in new projects, but it has three potential projects requiring investments of \$500,000, \$600,000, and \$400,000, respectively. The projects are expected to generate Net Present Values (NPVs) of \$200,000, \$250,000, and \$150,000. Due to its limited budget, the company cannot fund all three projects, so it must prioritize. By evaluating the NPVs relative to the investment required, the company might decide to fund the \$600,000 project (highest NPV) and the \$400,000 project, maximizing its return within the capital constraint.

Capital rationing often arises when firms aim to maintain financial discipline, avoid over-leveraging, or adhere to strategic priorities. While it helps the company remain financially stable and focused, it can also limit the firm's ability to undertake all value-generating projects, potentially leaving profitable opportunities unexplored. Effective capital rationing ensures that resources are directed toward the most value-creating investments, thereby maximizing shareholder wealth despite financial constraints. However, if not managed carefully, it may lead to suboptimal investment decisions, reducing the firm's long-term growth potential.

Project Selection Under Capital Rationing

The **Profitability Index (PI)** is a valuable tool for making project selection decisions under capital rationing. It measures the value created per unit of investment and is calculated by dividing the present value of a project's future cash inflows by the initial investment required. The formula is:

- **Profitability Index (PI) = Present Value of Future Cash Inflows divided by the Initial Investment**
- A PI greater than 1 indicates that the project is expected to generate value in excess of its cost, making it a potentially attractive investment.

Under capital rationing, where resources are limited, the PI allows companies to prioritize projects based on their efficiency in generating returns. Projects with the highest PI are selected first because they provide the greatest return per dollar invested. This ensures that the limited capital is allocated to maximize overall value creation.

The process of identifying the bundle of projects that creates the greatest total value and allocating the available capital to these projects is known as **investment decisions under capital rationing**. It involves choosing the set of projects that generates the greatest value per dollar invested in a given period.

Concepts in Practice: Project Selection

For example, consider a company with a budget of \$1 million and three potential projects:

- **Project A:** Requires \$500,000, has a present value of \$700,000, and a PI of 1.4.
- **Project B:** Requires \$600,000, has a present value of \$840,000, and a PI of 1.4.
- **Project C:** Requires \$400,000, has a present value of \$520,000, and a PI of 1.3.

Using the PI, the company would prioritize **Project A** and **Project B**, as they have the highest PI values. These projects would use up the entire budget while maximizing returns.

In summary, the steps to follow to select projects under capital rationing are as follows:

- **Calculate the PI for Each Project:**
Use the formula: Profitability Index (PI) = Present Value of Future Cash Inflows divided by the Initial Investment
 - A PI greater than 1 indicates the project generates value in excess of its cost.
- **Rank Projects by PI:**
Arrange projects in descending order of their PI values, prioritizing those with the highest PI.
- **Allocate Capital:**
Starting from the top of the ranked list, allocate the available capital to projects until the budget is fully utilized.
- **Select the Optimal Bundle:**
Choose the combination of projects that maximizes the total value created while staying within the budget constraint.

This method ensures that limited resources are directed to projects that provide the greatest return per dollar invested, maximizing overall value creation under capital constraints.

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4.6: Capital Budgeting Applications

Learning Objectives

Key learning outcomes for this topic include:

- **Estimate Project Cash Flows:** Forecast all incremental cash inflows and outflows associated with a project, considering revenues, costs, taxes, and changes in working capital.
- **Estimate Project Risk and the Discount Rate:** Analyze the project's risks, including industry and macroeconomic factors, and determine an appropriate discount rate using techniques like Weighted Average Cost of Capital (WACC).
- **Analyze Project Risk Using Quantitative Tools:** Apply sensitivity analysis, scenario analysis, and Monte Carlo simulations to assess and manage risk quantitatively.
- **Real Options in Capital Budgeting:** Recognize and evaluate real options such as delaying, expanding, or abandoning projects, highlighting the strategic flexibility available in decision-making.

At the end of this topic, you will understand how companies use capital budgeting techniques not only to analyze profitability and acceptance of projects but also to adapt to uncertainty, ensuring robust and informed decision-making.

Introduction to Capital Budgeting Applications

Capital budgeting decisions are at the core of strategic financial planning, determining which projects or investments are worth pursuing. Consider Tesla evaluating whether to expand its production capacity by building a new gigafactory. This decision involves estimating the project's **future cash flows**, **assessing risks** such as fluctuating material costs or demand for electric vehicles, and discounting those cash flows to determine their **present value**. Beyond traditional capital budgeting methods, Tesla might also consider **real options**—such as the flexibility to delay construction until market conditions are favorable or to scale operations based on demand trends.

The focus of this topic is on the practical application of capital budgeting techniques introduced in the previous topic. Building on foundational concepts such as Net Present Value (NPV), Internal Rate of Return (IRR), Payback Period, and Profitability Index, this topic emphasizes how these tools are employed to **evaluate real-world investment decisions**. Through case studies and examples, you will learn how to apply these techniques to estimate cash flows, assess project risks, determine discount rates, and incorporate strategic considerations like real options. This approach bridges theory and practice, preparing you to make informed and effective investment decisions.

4.7: Estimate Project Cash Flows

Learning Objectives

By the end of this section, you will be able to:

- Explain the importance of estimating project cash flows in capital budgeting, including the distinction between accounting profit and cash flow.
- Identify and evaluate the components of incremental project cash flows.
- Apply the stand-alone principle to derive free cash flow (FCF) from operating profit and calculate initial, annual, and terminal cash flows.

Estimating a project's cash flows is a critical initial step in capital budgeting because it provides a clear picture of the actual financial benefits and costs associated with a project. Unlike accounting profit, which includes non-cash items like depreciation, cash flows focus on the movement of money in and out of the business, offering a more accurate representation of a project's financial impact.

Cash flows are the basis for calculating metrics such as Net Present Value (NPV) and Internal Rate of Return (IRR), which rely on the timing and magnitude of cash inflows and outflows. By focusing on cash flows, businesses can evaluate a project's true potential to generate liquidity, cover costs, and deliver returns, ensuring decisions are grounded in financial realities rather than accounting conventions.

This focus is especially important in capital-intensive projects, where the timing of cash flows significantly influences the project's viability and risk assessment.

Project Cash Flows

Project cash flows refer to all cash inflows and outflows directly attributable to a specific project. These cash flows represent the financial impact of undertaking the project, distinct from the general operations of the business. They encompass revenues generated by the project, operating expenses, taxes, capital expenditures, and changes in working capital. Importantly, project cash flows focus on actual cash movements rather than accounting measures like profit, providing a realistic basis for evaluating the project's financial performance.

A key concept in estimating project cash flows is **incremental cash flows**, which are the additional cash inflows and outflows directly resulting from the decision to undertake the project. Incremental cash flows isolate the financial changes that would not occur if the project were not pursued, allowing for a clearer evaluation of its contribution to the firm's value. For example, when launching a new product line, incremental cash flows would include new revenue from product sales, additional production costs, and any changes in overhead expenses directly linked to the project, while excluding unrelated costs. By focusing on incremental cash flows, businesses can accurately assess a project's financial viability and its impact on overall profitability.

A key test to determine whether a cash flow is incremental is to ask: **"Would this cash flow occur if we do not undertake the project?"** If the answer is **no**, then the cash flow is considered incremental, meaning it is directly related to the project and should be included in the analysis.

Common Incremental Cash Flows Items

Common incremental cash flows associated with a typical project that need to be part of the project cash flow estimates include:

- **Initial Investment Costs:** These include capital expenditures required to start the project, such as purchasing equipment, construction costs, and installation expenses. For example, a company spends \$500,000 to purchase and install machinery for a new production line. This is treated as a **cash outflow at $t = 0$** .
- **Operating Cash Flows:** These are cash inflows and outflows from the project's operations such as:

- **Revenue:** Additional income generated by the project, e.g., sales of a new product.
- **Operating expenses:** Costs directly related to producing goods or providing services, including raw materials, labour, and utilities.
- **Taxes:** Apart from the fact that cash flows should be on an after-tax basis, any changes in tax obligations resulting from the project should be accounted for. A typical item is **tax savings from depreciation and amortisation**. To illustrate how the tax savings from depreciation are calculated, consider the following example. A company invests \$500,000 in new machinery, which is depreciated using the straight-line method over 5 years. Assuming a corporate tax rate of 30% per annum. The annual depreciation is:
 - Depreciation per year = Cost of machinery / Useful Life = $500,000 / 5 = 100,000$
 - Depreciation reduces taxable income, resulting in **Tax Savings** = Depreciation $\times$ Tax Rate = $100,000 \times 0.30 = 30,000$ annually
- Operating cash flows tend to occur annually; hence, they should be incorporated in the **annual cash flow estimate throughout the life of the project**.
- **Changes in Working Capital:** Adjustments in current assets and liabilities required to support the project, such as increased inventory, accounts receivable, or accounts payable. As additional or reduced investments in working capital, such as inventories, require a cash outflow (in the case of additional investments) or a cash inflow (in the case of reduced investments), the changes in working capital represent cash flows and need to be accounted for in the cash flow forecasts.
 - For example, to support increased production, the company invests \$50,000 in inventory and accounts receivable, offset by a \$20,000 increase in accounts payable, resulting in a net working capital change of \$30,000, which is accounted for as a cash outflow at $t = 0$.
- **Terminal Cash Flows:** These are cash flows that occur at the end of the project and typically include:
 - **Salvage value:** Proceeds from selling project-related assets, which are a cash inflow at the point of sale.
 - **Tax Effect from Disposing of Assets:** When an asset is sold, any difference between its sale price and its book value creates a taxable gain or loss. For instance:
 - If the sale price exceeds the book value, a taxable gain arises, leading to additional taxes.
 - If the sale price is below the book value, a tax deduction may reduce the project's tax burden.
 - For example, at the end of the project, the company sells the used machinery for \$100,000. The book value of the machine is \$60,000 (i.e. it is not fully depreciated), resulting in a taxable gain of $100,000 - 60,000 = 40,000$. At a corporate tax rate of 30% pa, the tax liability (cash outflow) is $40,000 \times 0.3 = 12,000$. So, the net cash inflow from the sale is $100,000$ (sale price) $- 12,000$ (tax liability) = $88,000$.
 - **Recovery of Working Capital:** A project may require a higher level of working capital at the outset. At the end of the project, the level of working capital will be scaled back to the original level, leading to the recovery of the additional working capital investment
 - For example, if the company invests an additional \$30,000 (one-off) at $t=0$, they will be able to recover this amount at the end of the project. At the end of the project, the recovery of working capital represents a cash inflow of \$30,000.
- **Opportunity Costs:** The value of benefits foregone by using company resources for the project instead of alternative uses.
 - For example, the company uses a parcel of land it owns for the project. The land could otherwise have been sold for \$200,000, representing an opportunity cost. In this instance, the \$200,000 should be treated as an incremental cash flow and represents a cash outflow at $t = 0$.
 - Another example is that the company uses existing IT personnel with an annual salary of \$400,000 to work on a new project. As these personnel can work on alternative projects should they not be deployed to work on this particular project, their salaries (\$400,000 pa) are incremental and should be part of the cash flow estimates.
- **Side Effects/Externalities:** These cash flows capture the impact of the project under consideration on other parts of the business. There are two main side effects:
 - **Cannibalisation:** Reduced sales of an existing product due to the introduction of a new product. For example, a new product line reduces sales of an existing product by \$50,000 annually. In this case, \$50,000 should be treated as a cash outflow annually in the cash flow estimate for the new project.
 - **Synergies:** Benefits from complementary projects, such as increased sales of related products. For example, launching a new product increases sales of complementary products by \$20,000 annually. In this instance, the additional \$20,000 per annum in sales should be treated as cash inflows for the new project.

Common Non-Incremental Cash Flows Items

The below items do not affect the incremental cash flows generated by the project or represent costs directly attributable to the decision to undertake the project. Including them could distort the capital budgeting analysis, leading to suboptimal investment decisions. Hence, the following items need to be **excluded** from the project's cash flow estimates.

- **Sunk Costs:** Costs that have already been incurred and cannot be recovered, regardless of whether the project proceeds.
 - A company spends \$50,000 on a feasibility study before deciding to start the project. This cost is sunk and should not be included in the cash flow analysis.
 - Sunk costs can be hard to ignore, as psychologically, the more time and money that was spent on the project, the harder it is to ignore these costs.
- **Financing Costs:** Costs associated with funding the project, such as interest payments or dividends. Financing costs are accounted for separately in the discount rate (e.g., Weighted Average Cost of Capital) and should not be double-counted in cash flows.

Estimating Cash Flows from Operating Profit

The **stand-alone principle** is a foundational concept in capital budgeting that treats each project as a separate entity, independent of the rest of the firm's operations. Under this principle, the project's viability is evaluated based solely on its own **incremental cash flows**, without considering the financial performance or cash flows of the overall company. Accordingly, for each project, you can forecast revenues and expenses directly related to the project, based on which a **free cash flow** estimate can be derived.

Free Cash Flow (FCF) is derived by calculating the cash that a project or company generates after accounting for all necessary expenditures to maintain or expand operations. FCF provides a measure of the actual cash available to the investors (both equity and debt holders) and is a critical input in project evaluation and firm valuation.

- **Start with Operating Profit (EBIT):** Operating profit, or Earnings Before Interest and Taxes (EBIT), represents the profit generated from core operations before financing costs and taxes.
 - For example, if a project generates \$400,000 in revenue and \$250,000 in operating expenses, EBIT is: $400,000 - 250,000 = \$150,000$
- **Adjust for Taxes:** Taxes reduce the cash available, so EBIT is adjusted for taxes using the corporate tax rate.
 - $\text{EBIT after tax} = \text{EBIT before tax} \times (1 - \text{tax rate})$
- **Add back Non-cash Expenses such as Depreciation and Amortisation:** Depreciation and amortisation reduce taxable income but do not involve actual cash outflows, so it is added back to calculate cash flow.
- **Adjust for changes in Working Capital:** changes in working capital affect the balance sheet but do not affect the operating profit. However, investments in working capital (e.g., inventory, receivables) tie up cash, while decreases release cash. Accordingly, they need to be adjusted to achieve a reliable estimate of cash flow.
- **Subtract Capital Expenditure (CapEx):** CapEx represents cash spent on acquiring or upgrading long-term assets necessary for the project. This can be thought of as an investment in long-term assets (to be contrasted with investment in Working Capital, which is a short-term asset).

Free Cash Flow (FCF) = $[\text{EBIT} \times (1 - \text{Tax Rate})] + \text{Depreciation} - \text{Changes in Working Capital} - \text{Capital Expenditures}$

Concepts in Practice: Initial Investment Calculation

Rayban Fleet considers purchasing a replacement truck to add to the fleet. The truck costs \$110,000 (including stamp duty and on-road costs) and requires additional working capital investment of \$5,000. The old truck can be sold for \$20,000 despite its book value of \$10,000. Estimate the initial investment for this truck replacement project. Assume a corporate tax rate of 30%.

The calculation of the initial investment (also known as initial outlay) is detailed in the table below.

Table 4.7.2: Initial Outlay

Cash Flow Item	t = 0
Cost of Machine	-110,000
Increase in WC	-5,000
Sale of Old Machine	+20,000
Tax on sale of Old Machine*	-3000

Cash Flow Item	t = 0
Initial Investment	-98,000

*The tax on the sale of the old machine can be calculated as

$(\text{Market Value} - \text{Book Value}) \times \text{Corporate tax rate} = (20,000 - 10,000) \times 0.3$

Concepts in Practice: Annual FCF Calculation

The truck that RayBan Fleet just purchased is expected to increase revenue by \$50,000 per annum and incurred annual operating expenses of \$20,000. The truck has an estimated life of 20 years and will be fully depreciated using the straight-line method. Estimate the annual FCF for this truck replacement project.

Using the FCF formula

Free Cash Flow (FCF) = $[\text{EBIT} \times (1 - \text{Tax Rate})] + \text{Depreciation} - \text{Changes in Working Capital} - \text{Capital Expenditures}$

the annual FCF for the project can be estimated as follows:

Table 4.7.3: Annual Free Cash Flow

Free Cash Flow Item	Amount
Revenue	\$50,000
Less Cash Operating Expenses	-\$20,000
Less Depreciation and Amortisation*	-\$5,500
EBIT (Earnings before interest & tax)	\$24,500
Less Tax @30%	-\$7,350
Net Operating Profit After Tax (NOPAT)	\$17,150
Add back Depreciation and Amortisation	\$5,500
Less Increase in WC	-\$5,000
Net Free Cash Flow (excluding the capital expenditure)	\$17,650

*Depreciation = $\text{Purchase cost} / \text{Useful Life} = \$110,000 / 20 = \$5,500$

The amount of \$17,650 is the net cash flow from Year 1 to Year 20, which is the end of the truck life.

Concepts in Practice: Terminal Cash Flow Calculation

At the end of its life (t=20), the salvage value of the truck is \$4,000. The terminal cash flow will be estimated as follows:

Table 4.7.4: Terminal cash flow

Terminal Cash Flow Item	t = 20
Salvage Value	+4,000
Tax on the Salvage sale*	-1,200

Terminal Cash Flow Item	t = 20
Recovery of Working Capital	+5,000
FCF for the final year	+17,650
Terminal Cash Flow	+25,450

*Tax on salvage sale = (Salvage value - Book Value) x Corporate tax rate = (4,000 - 0) x 0.3 = \$1,200

Hence, the cash flow at the final year of the project (t=20) is estimated to be \$25,450.

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4.8: Estimate Project Risk and the Discount Rate

Learning Objectives

By the end of this section, you will be able to:

- Explain the role of the discount rate in capital budgeting.
- Describe how a project's discount rate is derived using the weighted average cost of capital (WACC) and how capital structure influences the project's cost of capital.

In capital budgeting, after estimating the expected cash flows of a project, the next critical step is to determine an appropriate **discount rate**. The discount rate is used to evaluate the present value of these future cash flows, reflecting the time value of money and the risk associated with the project. The discount rate is also known as the **required rate of return** on the project because it represents the minimum return that investors or stakeholders expect to earn on the project or investment to justify the associated risks. It reflects the opportunity cost of capital—what investors could earn from an alternative investment with a similar risk profile—and compensates them for the time value of money and project-specific risks.

The process of deriving the discount rate often involves using the weighted average cost of capital (WACC), which considers the cost of equity, the cost of debt, and the project's capital structure.

A project's capital structure refers to the specific mix of funding sources used to finance the project. It typically includes a combination of debt and equity, which together represent the total capital invested in the project.

Debt represents borrowed funds that must be repaid with interest over time, while equity represents the investment made by the project's owners or shareholders, often in exchange for ownership stakes or future returns. The capital structure is a critical factor in determining the project's cost of capital, as debt and equity have different costs and risk implications. For example, debt is generally less expensive due to tax-deductible interest payments but increases financial risk because of fixed repayment obligations. Equity, while more flexible, usually demands a higher return to compensate for the greater risk borne by investors. The balance between debt and equity in a project's capital structure affects its financial stability, risk profile, and the derived discount rate used in capital budgeting.

The most accurate way to estimate a project's discount rate is to determine the specific cost of capital for the project itself. This involves assessing the project's unique risk profile and financing structure to derive a discount rate that accurately reflects the expected returns required by investors and lenders. However, in situations where it is not feasible to estimate the project-specific cost of capital, the company's overall cost of capital can be used as a proxy. This approach assumes that the project carries a risk level similar to the company's average operations and that it will be financed in a manner consistent with the company's existing capital structure. While using the company's cost of capital is a common practical solution, it may not fully capture the nuances of project-specific risks or deviations in financing strategy, potentially leading to less precise evaluations.

Companies typically use their overall cost of capital as a starting point for determining a project's discount rate because it reflects the average return required by investors and lenders across all the company's activities. However, not all projects carry the same level of risk as the company's core operations.

To account for project-specific risks, companies adjust the baseline cost of capital by adding or subtracting a risk premium. For instance, if a project is deemed riskier than the company's average business activities—such as entering a new market or developing innovative technology—a higher discount rate is applied to reflect the increased uncertainty. Conversely, if the project is considered lower risk, the discount rate may be adjusted downward.

This approach ensures that the discount rate more accurately represents the unique characteristics of the project, providing a tailored measure for evaluating its potential returns relative to its risks. It helps companies allocate resources more effectively by distinguishing between high- and low-risk opportunities.

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4.9: Analyse Project Risk Using Quantitative Tools

Learning Objectives

By the end of this section, you will be able to:

- Explain why risk analysis is essential in capital budgeting.
- Describe and apply key risk-assessment tools to evaluate how changes in assumptions affect project outcomes like NPV and IRR.
- Interpret the results of risk-analysis techniques.

Risk analysis is a critical component of capital budgeting. While capital budgeting aims to evaluate the profitability and viability of projects, it operates under significant uncertainty. Cash flow estimates can be influenced by a range of unpredictable factors, including market volatility, operational challenges, regulatory changes, and economic fluctuations. Consequently, these estimates may deviate from actual outcomes, potentially leading to suboptimal decisions if risks are not adequately assessed.

To address this uncertainty, decision makers employ various tools and techniques to understand and quantify the potential variability in cash flows and project outcomes. Common tools include:

- **Sensitivity analysis**, which examines how changes in key assumptions affect project performance.
- **Scenario analysis**, which evaluates outcomes under different sets of assumptions (e.g., best-case, worst-case, and most likely scenarios);

By integrating these tools into the capital budgeting process, organizations can make more informed decisions, balancing potential returns with the associated risks to optimize their investment strategies.

Sensitivity Analysis

Sensitivity analysis examines the sensitivity of net present value (NPV) or internal rate of return (IRR) to changes in key variables. It explores how much a project's NPV or IRR would change due to an increase or decrease in individual assumptions about cash inflows or other critical inputs. Typically, only one variable is changed at a time while others are held constant, enabling a clear understanding of which variables have the most significant impact on project outcomes.

To conduct a sensitivity analysis on Net Present Value (NPV), follow these steps:

1. **Calculate the Base NPV:** Begin by computing the NPV using the most likely or baseline values for all relevant variables. This serves as the reference point for comparison.
2. **Adjust a Single Variable:** Select one variable, such as sales volume, discount rate, or percentage of expenses, and change its value while keeping all other variables constant. Recalculate the NPV to observe the impact of this change.
3. **Restore the Original Value:** Reset the adjusted variable to its original baseline value to isolate the effects of individual changes.
4. **Change Another Variable:** Select a different variable, such as the initial outlay, and alter its value. Compute the NPV again to analyse the effect of this adjustment.
5. **Repeat for All Variables:** Continue this process for each relevant variable, changing them one at a time and recording the corresponding NPV.
6. **Tabulate Results:** Organize all computed NPVs into a table to provide a clear view of how each variable influences the outcome.
7. **Identify Sensitive Variables:** Determine which variables cause the largest changes in NPV. These are the most sensitive variables and represent areas of greatest impact and risk.
8. **Explore Risk Mitigation Strategies:** For the most sensitive variables, investigate ways to improve estimates or reduce uncertainty. This might involve better forecasting methods, securing more reliable agreements, or adjusting project parameters to manage risks effectively.

Concepts in Practice: Sensitivity Analyses

The following tables provide an example of the output of sensitivity analyses that allow managers to gain an understanding of how the NPV of the project changes as key variables change and hence aid in better decision making.

Table 4.9: Sensitivity Analysis Output Example

Sales Growth	NPV
-5%	125.36
0%	134.99
+5%	145.27
+10%	156.20

The sensitivity analysis relating to the sales growth indicates that the project still returns a positive NPV when sales growth is negative, indicating that the project can be accepted with confidence.

Table 4.9: Sensitivity Analysis Related to Sales Growth Example

Discount Rate	NPV
5%	185.26
10%	156.20
15%	132.95
20%	114.14

Similarly, the NPV of the project remains positive when the discount rate increases to 20%, which once again indicates low risk and acceptance of the project.

Scenario Analysis

Scenario analysis is a risk assessment technique that evaluates how the results of a project, such as Net Present Value (NPV) or Internal Rate of Return (IRR), change under **alternative scenarios** or “states of the world.” A scenario describes a combination of project inputs, such as sales volume, costs, and economic conditions, that could occur in different circumstances. By constructing and analysing scenarios—such as a strong economy, a weak economy, and an average economy—it is possible to assess how these differing conditions influence project outcomes.

This method involves defining multiple scenarios that reflect potential variations in key inputs, calculating the NPV or IRR for each scenario, and comparing the results. The range of NPVs or IRRs obtained from these scenarios provides insights into the level of uncertainty and risk associated with the project. A wide range indicates high uncertainty and a potentially risky project, while a narrow range suggests more stability.

For example, in a scenario analysis for a proposed investment, one could model the following scenarios:

- **Best-case scenario:** The economy performs well, leading to higher-than-expected sales, lower costs, and favorable market conditions.
- **Worst-case scenario:** The economy underperforms, resulting in lower sales, higher costs, and challenging market dynamics.
- **Base-case scenario:** The economy remains stable, with performance aligning closely with the original assumptions.

Scenario analysis also allows decision-makers to identify which factors are most critical to project success and to consider contingency plans or risk mitigation strategies. By incorporating this approach into the capital budgeting process, companies can better prepare for uncertainty and make more informed investment decisions.

The table below provides a simple example of the outcome of a scenario analysis.

Table 4.9: Outcome of Sensitivity Analysis Example

Economy	Sales Growth	Discount Rate	Expense	NPV
Good	10%	15%	40%	161.28
Average	0%	10%	50%	134.99
Bad	-5%	5%	60%	116.15

The scenario analysis allows decision makers to see clearly that even when the economy is bad, the project can still generate a positive NPV which gives them confidence to accept the project.

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4.10: Real Options in Capital Budgeting

Learning Objectives

By the end of this section, you will be able to:

- Explain the concept of real options in capital budgeting and how they add value by providing managerial flexibility under uncertainty.
- Distinguish among major types of real options and describe how each option influences project value and decision-making in dynamic environments.
- Recognize how real options can be valued using tools.

In standard capital budgeting analysis, methods like Net Present Value (NPV) or Internal Rate of Return (IRR) typically assume that project outcomes are fixed and decisions are irreversible. However, this is rarely the case in reality. Projects often operate in dynamic environments where market conditions, technological advancements, and regulatory changes can significantly alter outcomes.

Real options in capital budgeting refer to the flexibility embedded in investment projects, allowing managers to make decisions that adapt to changing circumstances and uncertainties over time.

For example, a company may invest in a new manufacturing facility with the option to scale production up or down depending on market demand. Similarly, a firm may defer an investment until market conditions become more favorable, reducing downside risk. By incorporating the value of such flexibility into the analysis, real options complement traditional capital budgeting techniques, providing a more comprehensive evaluation of a project's potential under uncertain conditions.

Real options are particularly valuable in industries characterized by high volatility or rapid technological change, where the ability to adapt can significantly influence a project's success.

When the value of real options is recognized, the NPV of projects should be more comprehensively captured as

$$\text{Project NPV} = \text{NPV without options} + \text{value of real options}$$

Option to Expand

The option to expand is a type of real option in capital budgeting that provides a company with the flexibility to **increase the scale of a project** if future conditions prove favorable. This option is particularly valuable in projects where initial investments can lead to further opportunities for growth, such as entering a new market, launching new product lines, or increasing production capacity. By embedding the option to expand into the investment decision, companies can capitalize on favorable market developments while limiting their exposure to downside risks if conditions are less favorable.

For example, consider a retail company planning to open a new store in a growing suburban area. Initially, the company might choose to build a smaller store to test market demand while securing adjacent land for potential expansion. If the store performs well and the area's population continues to grow, the company can expand the store to accommodate increased customer traffic. The initial investment in securing the land and building a scalable infrastructure represents the option to expand, adding strategic value to the project beyond its immediate cash flows.

An option to expand is typically valued using an option pricing model as the option to expand can be modeled as a **call option** where the company can “exercise” this option by paying the initial outlay of the expansion project (the exercise price). While we will not go into details of the pricing of the option to expand, two common option pricing models are:

- **Decision Tree Analysis:** Map out possible future states (e.g., high demand vs. low demand), the likelihood of each state, and the cash flows associated with expanding or not expanding. Discount these cash flows back to the present to calculate the expected value of the expansion option.
- **Black-Scholes Model or Binomial Tree Analysis:** Treat the expansion option as a call option. The underlying asset is the

incremental cash flows from expansion, the exercise price is the cost of expansion, and the time to maturity is the window during which the expansion decision must be made.

Option to Abandon

In contrast to the option to expand, the option to abandon allows a company to **terminate a project** or investment if future conditions make it unprofitable or unsustainable. This flexibility provides a form of risk management by enabling decision-makers to limit losses and reallocate resources to more promising opportunities when unfavourable circumstances arise. Unlike traditional capital budgeting methods, which assume projects are carried out to completion, the option to abandon acknowledges the dynamic nature of business environments and incorporates the value of exit strategies into decision-making.

For example, consider a manufacturing company that invests in a new production line. If market demand for the product unexpectedly declines due to technological advancements or competitor innovations, the company may exercise the **option to abandon the project**. This could involve halting production and selling off the equipment or repurposing the facility for other uses. By exiting the project early, the company avoids ongoing losses and can recover some of its initial investment, thereby minimizing overall financial impact.

The option to abandon is especially valuable in industries with high uncertainty or rapidly changing market conditions, such as technology or energy. It provides a safety net for investments, ensuring that companies have the flexibility to adapt to adverse scenarios and optimize resource allocation over time.

The option to abandon can be thought of as a put option that allows the company to sell off assets and standard option pricing models can be used to value the option to abandon.

Option to Delay

The option to delay, also known as the deferral option, provides the flexibility to **postpone the initiation of a project** or investment until more information about market conditions, risks, or other uncertainties becomes available. By **delaying a decision**, companies can reduce the risk of committing resources prematurely and improve the quality of their investment decisions. This option is especially valuable in volatile markets or industries where conditions can change rapidly, such as technology, energy, or real estate.

For example, a real estate developer considering the construction of a commercial property in a newly developing area might choose to delay the project. This allows the company to observe market trends, such as population growth and demand for office spaces, before proceeding with construction. If the market outlook improves, the company can proceed with confidence; if conditions deteriorate, the project can be reassessed or abandoned, minimizing potential losses.

The option to delay is particularly useful in projects with high upfront costs and significant uncertainty. By incorporating this flexibility into the capital budgeting process, companies can adapt their strategies to evolving circumstances and maximize the value of their investments.

The option to delay is analogous to a **call option** in financial markets. This is because it gives the holder (the company) the right, but not the obligation, to “buy” the project by committing the necessary investment at a future date. The underlying asset is the project’s expected cash flows, and the exercise price is the cost of initiating the project. If conditions become favorable (i.e., the underlying asset value exceeds the exercise price), the company “exercises” the option by starting the project.

Other Flexibility Options

In addition to the real options explained above, there are several other flexibility options embedded in investment projects. Some examples are:

- **Option to Switch:** This includes the ability to switch inputs, outputs, or processes based on changing circumstances. For example, a power plant might switch between natural gas and coal depending on fuel prices.
- **Option to Stage (Phased Investment):** This involves breaking a project into stages, with the decision to continue, modify, or abandon after each phase. For instance, a pharmaceutical company might proceed with drug development in phases, evaluating the viability at each stage.

- **Option to Lease or Outsource:** This allows a company to lease equipment or outsource operations temporarily rather than committing to a full investment, maintaining flexibility to adapt as conditions evolve.
- **Option to Enter or Exit a Market:** This provides the ability to enter a new market or exit an existing one based on changing market dynamics. For example, a global firm might establish operations in a foreign market with the option to withdraw if geopolitical risks increase.

4.11: Summary

Key Concepts

1. **Concept and Process of Capital Budgeting:** Capital budgeting is the process by which organizations evaluate and select long-term investment projects to maximize shareholder wealth. It involves:
 - **Identifying potential projects** based on strategic goals.
 - **Evaluating projects** using financial and non-financial criteria.
 - **Selecting projects** that align with organizational objectives.
 - **Implementing and monitoring** the chosen projects to ensure they deliver expected returns.
2. **Non-DCF Capital Budgeting Methods:** Non-discounted cash flow methods are simpler approaches to evaluating investment projects. Common methods include:
 - **Payback Period:** Measures how quickly the initial investment is recovered but ignores cash flows after the payback period and the time value of money.
 - **Accounting Rate of Return (ARR):** Focuses on average accounting profits relative to investment but does not account for cash flows or the time value of money.
3. **DCF Capital Budgeting Methods:** Discounted cash flow methods consider the time value of money, making them more accurate for project evaluation. Key methods include:
 - **Net Present Value (NPV):** Calculates the present value of future cash inflows minus the initial investment. Projects with $NPV > 0$ add value to the firm and are preferred.
 - **Internal Rate of Return (IRR):** Determines the discount rate at which the NPV of a project equals zero. While widely used, IRR can be unreliable for projects with unconventional cash flows or when comparing mutually exclusive projects.
4. **Capital Rationing and Project Selection:**

Capital rationing occurs when a firm faces constraints on the capital available for investment. In such cases:

 - The firm must prioritize projects to maximize value creation within the budget.
 - **The Profitability Index** is often used to rank projects based on their efficiency in generating returns per dollar invested.
 - The process involves identifying the combination of projects that generates the greatest total value while staying within capital limits.
5. **Estimate Project Cash Flows:** Accurate estimation of project cash flows is fundamental to capital budgeting. This involves identifying all relevant cash inflows and outflows over the project's life, including initial investment, operating cash flows, tax impacts, and terminal values. These estimates provide the foundation for evaluating project profitability using metrics like Net Present Value (NPV) and Internal Rate of Return (IRR).
6. **Estimate Project Risk and the Discount Rate:** Project risk reflects uncertainties that may affect future cash flows, such as market conditions or operational challenges. The discount rate, which adjusts cash flows for risk and the time value of money, is typically derived from the company's weighted average cost of capital (WACC) or adjusted for project-specific risks. Higher-risk projects require higher discount rates to compensate investors for increased uncertainty.
7. **Analyze Project Risk Using Quantitative Tools:** Risk analysis tools enhance decision-making by quantifying uncertainties in cash flow estimates. Sensitivity analysis assesses how changes in key variables (e.g., sales volume or costs) impact project outcomes. Scenario analysis evaluates project performance under alternative future conditions (e.g., best-case, worst-case scenarios).
8. **Real Options in Capital Budgeting:** Real options embed strategic flexibility into investment decisions, enabling companies to adapt to changing circumstances. Examples include the option to expand operations if demand increases, the option to delay a project until conditions improve, or the option to abandon a failing project. Valuing these options involves adapting financial option pricing techniques, such as the Black-Scholes model or decision tree analysis, to assess the added value of flexibility.

5: CAPITAL STRUCTURE AND LEVERAGE

- 5.1: Capital Structure and Cost of Capital
- 5.2: Characteristics of Equity and Debt
- 5.3: Concept and Measure of Capital Structure
- 5.4: Capital Structure Theories
- 5.5: Debt Financing Expanded
- 5.6: Summary

5.1: Capital Structure and Cost of Capital

Learning Objectives

The key learning outcomes for this topic include:

- **Understand the Main Sources of Financing:** Identify and explain the primary sources of financing available to companies, including debt (e.g., loans, bonds) and equity (e.g., retained earnings, issuing shares). Discuss the advantages, disadvantages, and suitability of each financing source based on business needs and market conditions.
- **Comprehend the Concept and Measures of Capital Structure:** Define capital structure and its role in corporate finance. Understand how to measure a company's capital structure using financial ratios such as the debt-to-equity ratio, debt ratio, and equity ratio. Explore how these measures provide insights into a company's financial health and risk profile.
- **Explore Capital Structure Theories:** Examine key theories of capital structure, including the Modigliani-Miller theorem, the trade-off theory, the pecking order theory, and the agency theory. Analyze how these theories guide decision-making and the implications of choosing between debt and equity financing.
- **Expand on Debt Financing.** Learn the various components of debt financing, including interest, principals, amortization schedules and its learn its effect on the financial statements, ratios, leverage and capital structure.

Introduction to Capital Structure and Cost of Capital

In capital budgeting, accurately estimating the cost of capital is critical to assessing project risk and determining the Net Present Value (NPV) or Internal Rate of Return (IRR). **A company's cost of capital** is directly influenced by its **capital structure**, and these two concepts are the focus of this topic.

Capital structure refers to the mix of debt and equity a company uses to finance its operations and investments, while **cost of capital** is the rate of return required by investors and lenders to fund these activities. As explained in the last topic, the cost of capital plays a central role in capital budgeting as it serves as the discount rate used to evaluate the viability of long-term investment projects.

Capital structure is directly related to the **financing decision**, the second key area of corporate financial decision-making. The financing decision focuses on determining how a company will fund its operations and investments by choosing an appropriate mix of debt and equity. Capital structure represents the outcome of this decision, reflecting the proportions of these funding sources.

An **optimal capital structure** balances the benefits and costs of debt and equity, minimizing the company's overall cost of capital while managing financial risk. For example, using debt can be advantageous due to tax-deductible interest payments, but excessive reliance on debt increases the risk of financial distress. Equity, while more expensive, provides flexibility and reduces default risk. The financing decision ensures that the capital structure aligns with the company's strategic objectives, risk tolerance, and market conditions, ultimately influencing its ability to achieve sustainable growth and value creation.

5.2: Characteristics of Equity and Debt

Learning Objectives

By the end of this section, you will be able to:

- Distinguish between equity and debt financing by explaining their key characteristics.
- Evaluate the advantages and disadvantages of equity and debt from the company's perspective.
- Analyze how the choice between debt and equity affects a firm's cost of capital, risk profile, and long-term financial strategy.

Debt and equity are the two primary sources of finance for a company, each with distinct characteristics, advantages, and implications for decision-making.

Equity Financing

When a company raises funds through equity, it typically does so by issuing ordinary shares (common stock) during an initial public offering (IPO) in the capital market. In an IPO, investors purchase the newly issued shares, providing the company with the capital generated from the total sale of those shares. This capital becomes part of the company's equity, which can then be used to finance operations, growth initiatives, or other strategic objectives.

Equity possesses the following characteristics

- **Residual Claim:** Dividend payments to ordinary shareholders are discretionary, meaning they are only distributed after a company has fulfilled its financial obligations to all other claimants, including suppliers, employees (wages and salaries), lenders (debt and interest payments), and the government (taxes). In the event of liquidation, ordinary shareholders have a residual claim on the proceeds from the sale of the company's assets, after all prior obligations are settled. Because ordinary shareholders bear the highest risk, they expect a higher return compared to debt investors.
- **Not Tax-Deductible:** Dividend payments made to shareholders are not tax-deductible for the company, unlike interest payments on debt. As a result, the company does not receive any tax benefit from using equity financing.
- **Infinite Maturity:** Ordinary shares have no maturity date, meaning they remain outstanding as long as the company operates and is listed on the stock exchange. Shareholders cannot "cash in" their shares with the company directly but can sell them in the secondary market.
- **Dividend Entitlement:** Shareholders are entitled to a proportional share of any dividends declared by the company's board of directors. However, these payments are not guaranteed and depend on the company's profitability and financial policy.
- **Management Control:** Ordinary shareholders hold voting rights that allow them to influence the management of the company. They typically have the right to vote on significant matters, such as electing members to the board of directors, granting them some control over the company's operations. Generally, each share held corresponds to one vote.
- **Liquidity in the Secondary Market:** Ordinary shareholders have the right to sell their shares on the stock exchange, providing liquidity. This allows them to exit their investment without requiring the company to repurchase the shares.

From the point of view of the company, there are a number of advantages associated with equity as a form of financing.

- **Discretionary Dividend Payments:** The company is not obligated to pay dividends to ordinary shareholders; dividend payments are made at the discretion of the board of directors.
- **No Maturity Obligation:** Ordinary shares have no maturity date, meaning the issuing company is under no obligation to redeem them, and they remain outstanding indefinitely as long as the company operates.
- **Impact on Debt Financing Costs:** A higher proportion of equity in a firm's capital structure reduces the risk to lenders, as equity serves as a buffer against potential losses. This lower risk can result in reduced interest rates on debt financing, decreasing the overall cost of borrowing for the company.

However, there are also disadvantages of this form of financing, which include:

- **Ownership Dilution from New Share Issuance:** When new shares are issued, existing shareholders face the choice of purchasing a portion of the new shares to maintain their ownership percentage or experiencing a dilution of their ownership and control in the company. This effect is particularly significant for shareholders with substantial stakes, such as institutional investors.
- **Higher Transaction Costs:** Issuing new shares typically incurs higher transaction costs compared to borrowing a similar amount. These costs include expenses for preparing a prospectus, legal and regulatory compliance, and fees paid to underwriters, making equity financing more expensive upfront.
- **Non-Tax Deductibility of Equity Costs:** The cost of equity financing, such as dividend payments, is not tax-deductible. Unlike interest payments on debt, which reduce taxable income, dividends provide no tax benefits to the company.

Debt Financing

Debt financing involves borrowing funds from external sources, such as banks, financial institutions, or bondholders, with an obligation to repay the principal amount along with interest over a specified period. It is a common method of raising capital for businesses to fund operations, expand capacity, or undertake new projects.

Debt financing has the following characteristics:

- **Legal Claim and High Priority in Financial Distress:** Borrowers are obligated to make regular interest payments and repay the principal amount to lenders as agreed. In the event of default, lenders have legal recourse to recover their funds. For secured loans, this may involve taking possession of pledged assets, while unsecured loans may lead to legal action against the borrower.
- **Tax-Deductible Interest:** Interest expenses incurred on debt are tax-deductible, providing a tax shield that reduces the company's taxable income. For instance, if a company pays \$1,000,000 in annual interest and the corporate tax rate is 30%, it saves \$300,000 in taxes (30% of \$1,000,000). This tax benefit lowers the effective cost of debt financing.
- **Fixed Maturity:** Debt typically comes with a specified maturity date by which the principal amount must be fully repaid. For example, a 10-year \$10,000 bond issued on April 1, 2017, will mature on April 1, 2027, requiring repayment of the full \$10,000 at that time.
- **No Direct Management Control:** Lenders generally do not have control over a company's operations as long as the borrower meets its debt obligations. However, if the company defaults, lenders can exert significant influence, such as seizing pledged assets, appointing an administrator, or placing the company into receivership or liquidation. While lenders lack direct management control, their potential control in cases of default is considerable.

Debt financing can be an attractive financing option for companies due to the following advantages:

- **Tax Benefits:** One of the most significant advantages of debt is that interest payments are tax-deductible, reducing the company's taxable income and providing a tax shield. This lowers the effective cost of borrowing, making debt a cost-efficient source of financing.
- **Retained Ownership and Control:** Unlike equity financing, debt does not dilute the ownership of existing shareholders. The company retains full control over its operations as long as it meets its debt obligations, preserving shareholder influence and decision-making authority.
- **Predictable Cost:** Debt financing involves fixed interest payments and a predefined repayment schedule, providing predictability in financial planning. This makes it easier for companies to forecast expenses and manage cash flows.
- **Leverage Benefits:** Properly structured debt can enhance returns for equity holders. By leveraging borrowed funds to finance profitable projects, a company can increase its return on equity (ROE), magnifying shareholder value.

The major issue with using debt is it leads to increased financial risk, which manifests when the company is unable to meet its payment obligations. Due to the financial risk associated with borrowing, companies that have a high level of borrowing may experience:

- **Potential Loss of Assets:** For secured debt, lenders may seize pledged assets in the event of default, which can severely impact the company's operations and financial stability.
- **Higher Cost of Borrowing with Increased Debt:** As the company takes on more debt, lenders may perceive a higher risk of default and demand higher interest rates, increasing the overall cost of borrowing.
- **Impact on Credit Rating:** Excessive debt can negatively affect the company's credit rating, making it more difficult and expensive to secure additional financing in the future.

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5.3: Concept and Measure of Capital Structure

Learning Objectives

By the end of this section, you will be able to:

- Explain the concept of capital structure and identify key determinants that influence a firm's mix of debt and equity.
- Measure a company's capital structure.
- Evaluate a firm's ability to manage its debt obligations.

What is Capital Structure?

Capital structure refers to the mix of debt and equity a company uses to finance its operations, growth, and investments. This mix is critical because it influences the company's overall cost of capital, financial risk, and ability to generate returns for stakeholders. Companies strive to achieve an optimal capital structure that minimizes the cost of financing while maximizing shareholder value. However, the composition of debt and equity varies significantly between companies due to several internal and external factors. These factors, known as the determinants of capital structure, help explain why different companies may adopt different financing strategies.

Some important determinants of capital structure include:

- **Nature of the Business:**
 - Companies in stable and asset-intensive industries, like utilities, often use more debt because of predictable cash flows that support regular interest payments.
 - Conversely, firms in volatile or growth-oriented sectors, like technology, prefer equity to avoid fixed repayment obligations.
- **Profitability:**
 - Highly profitable companies often rely more on retained earnings (a form of equity) and may use less debt because they can fund growth internally.
 - Less profitable firms may turn to debt due to limited access to equity markets or to preserve ownership.
- **Asset Structure:**
 - Companies with a significant proportion of tangible assets, such as manufacturing firms, are more likely to use debt because these assets can serve as collateral.
 - Businesses with intangible assets, like tech or service firms, may face difficulties securing debt and lean more toward equity financing.
- **Taxation:**
 - Countries with high corporate tax rates make debt more attractive due to the tax shield provided by interest deductions.
 - In jurisdictions with lower tax benefits for debt, companies might rely more on equity.

How to Measure a Company's Capital Structure?

A company's capital structure can be measured using two main ratios:

1. **Debt-to-Equity Ratio (D/E):** Measures the proportion of a company's debt relative to its equity, highlighting the balance between borrowed funds and shareholder contributions.
2. **Debt-to-Capital Ratio (D/V):** Represents the proportion of debt in the company's total capital structure, where capital is the sum of equity (E) and debt (D), also referred to as the firm's value (V).

$$\text{Firm Value (V)} = \text{Equity (E)} + \text{Debt (D)}$$

These ratios provide insights into the financial risk and stability of a company by indicating its reliance on debt to finance its operations.

The extent to which a company uses debt is known as financial leverage or gearing. A higher level of debt indicates a higher degree of financial leverage or gearing.

A secondary measure of the ability of the company to make its interest payment, known as the **Interest Cover Ratio**, can sometimes be used to determine whether the level of debt a company carries is manageable and healthy. It is calculated as:

$$\text{Interest Cover Ratio} = \frac{\text{Earnings Before Interest and Taxes (EBIT)}}{\text{Interest Expense}}$$

A high interest cover ratio suggests that the company generates sufficient earnings to comfortably cover its interest payments, indicating a healthy level of debt. Comparing the interest cover ratio to industry standards helps assess whether the company's debt levels are appropriate relative to peers. For instance, a manufacturing firm with stable earnings may sustain a lower interest cover ratio compared to a technology startup with volatile revenues. Finally, monitoring changes in the interest cover ratio provides insights into a company's evolving financial health. A declining ratio may signal increasing financial strain, while an improving ratio suggests better debt management.

5.4: Capital Structure Theories

Learning Objectives

By the end of this section, you will be able to:

- Explain the major capital structure theories and describe the core principles behind each.
- Compare how different theories interpret firms' financing behavior.
- Analyze the practical implications and limitations of each theory.

Capital structure theories aim to provide a framework for understanding how different capital structures impact shareholder wealth and corporate decision-making. While the optimal capital structure varies depending on a company's unique characteristics and external environment, these theories offer general principles and insights to guide financial strategy.

Some of the most prominent capital structure theories include:

- **Modigliani-Miller Theorem:** Proposes that, in a world without taxes or transaction costs, a company's capital structure is irrelevant to its value. Extensions of this theory introduce the impact of taxes and financial distress.
- **Trade-Off Theory:** Suggests that companies balance the tax benefits of debt with the costs of financial distress to determine their optimal capital structure.
- **Pecking Order Theory:** Argues that companies prioritize internal financing, followed by debt, and use equity as a last resort due to information asymmetry between managers and investors.
- **Agency Theory:** Examines how conflicts of interest between shareholders, managers, and creditors influence capital structure decisions.

Modigliani-Miller Theorem

The **Modigliani-Miller (MM) Theorem**, developed by Franco Modigliani and Merton Miller in 1958, is a foundational concept in corporate finance. It addresses the impact of a company's capital structure on its overall value and cost of capital. The theorem is based on two main propositions:

- **Proposition I (Capital Structure Irrelevance):**
In a world without taxes, bankruptcy costs, or market imperfections, the value of a company is independent of its capital structure. This means that whether a company is financed entirely by equity, entirely by debt, or a mix of both, its total value remains unchanged. The reasoning is that the firm's value is determined by its ability to generate cash flows from operations, not by how it is financed.
- **Proposition II (Cost of Equity and Leverage):**
The cost of equity increases with financial leverage because equity holders demand higher returns to compensate for increased risk from using debt. However, the weighted average cost of capital (WACC) remains constant across all levels of leverage.

Note that the MM theorem only holds under key assumptions of perfect capital markets that are characterized as:

1. Companies and individuals can borrow at the same interest rate.
2. There are no taxes.
3. There are no costs associated with the liquidation of a company.
4. Companies have fixed investment policies, meaning that investment decisions are not affected by financing decisions.

Concepts in Practice: Modigliani-Miller Theorem

To illustrate the MM theorem, consider an example.

Imagine two companies, **A** and **B**, operating in the same industry and generating identical operating income of \$1,000,000 annually. Both companies are valued at \$10,000,000, but their capital structures differ:

- **Company A:** Fully equity-financed, with 1,000,000 shares outstanding, each worth \$10.
- **Company B:** 50% debt-financed, with \$5,000,000 in debt (at 5% interest) and 500,000 shares of equity outstanding.

According to MM Proposition I, the value of both companies should remain the same, \$10,000,000, regardless of their capital structure. The total value is based on their operating income, not the mix of debt and equity.

For **Company B**, the cost of equity would increase because equity holders face higher risk due to the financial leverage. If the cost of equity rises to 12% (compared to 10% for Company A), the higher cost offsets the cheaper cost of debt, leaving the WACC unchanged.

In practice, the MM theorem serves as a theoretical baseline, highlighting the conditions under which capital structure would not matter. However, real-world factors such as taxes, bankruptcy costs, and market imperfections do exist, influencing companies' financing choices. For instance:

- **Tax Shield Benefit:** Debt provides a tax advantage, reducing the effective cost of borrowing.
- **Financial Distress Costs:** Excessive debt increases the risk of bankruptcy, affecting company value.

The MM theorem offers valuable insights into the fundamental trade-offs in capital structure decisions while acknowledging that real-world complications are critical to practical applications.

Trade-Off Theory of Capital Structure

The **trade-off theory** of capital structure builds on the Modigliani-Miller (MM) theorem by incorporating real-world factors such as taxes and financial distress costs. Unlike the MM theorem, which suggests that capital structure is irrelevant in a perfect market, the trade-off theory acknowledges that firms face a trade-off between the benefits of debt and the costs associated with it. Hence, the optimal capital structure is one that is a balanced trade-off between the benefits and costs of having debt.

The major benefit of debt is the **tax shield** because interest payments are tax-deductible. This reduces the company's taxable income and lowers the overall cost of debt, making debt an attractive option.

The major cost of debt is the higher risk of **financial distress**, a situation where a company's financial obligations cannot be met or met only with difficulty. There are direct and indirect costs of financial distress:

- Direct costs of financial distress or bankruptcy are out-of-pocket expenses incurred during the bankruptcy process, such as legal fees, accounting and auditing fees, administrative costs, and consulting fees. These costs can be significant, as illustrated in the case of Enron, once a leading US energy company, which filed for bankruptcy in 2011. It is estimated that the total legal and accounting costs exceeded \$1 billion.
- Indirect costs of financial distress are the less visible, often longer-term economic consequences that a company faces due to financial instability. These costs arise from the erosion of business value and operational inefficiencies, even before formal bankruptcy proceedings begin. They typically include: loss of customers and revenue, suppliers' stricter supply agreements, employee turnover, and difficulty raising capital leading to lost investment opportunities. While direct costs of financial distress (e.g., legal fees) are measurable, **indirect costs often exceed direct costs** and have a more profound impact on a firm's long-term value.

The trade-off theory posits that there is an optimal level of debt where the marginal tax shield benefit of debt equals the marginal cost of financial distress. At this point, the firm's value is maximized, and its Weighted Average Cost of Capital (WACC) is minimized.

This theory can be graphically presented as follows, where the optimal amount of debt is determined at the point where the firm value is maximized.

As the debt equity ratio (i.e. leverage) increases, there is a trade-off between the interest tax shield and bankruptcy, causing an optimum capital structure, D/E^* . The top curve shows the tax shield gains of debt financing, while the bottom curve includes that minus the costs of bankruptcy.

Figure 5.4.1: Trade-off theory of capital structure from Wikipedia CC BY SA 4.0

The implications of the trade-off theory of capital structure on firms' choice of financing are therefore:

- **Profitable Firms Use More Debt:** Profitable firms have higher taxable incomes, making the tax shield from debt more valuable. By using debt, they reduce their taxable income, which effectively lowers the cost of financing. For example, utilities companies often have stable and significant profits, which makes the tax benefits of debt attractive. Firms like ExxonMobil or BP are highly profitable and use debt to take advantage of tax deductions while financing large-scale capital projects.
- **Firms with Tangible Assets Use More Debt:** Tangible assets can be used as collateral, reducing lenders' risk and the costs associated with financial distress. Companies like real estate investment trusts (REITs) heavily use debt because their assets (e.g., buildings and land) can serve as reliable collateral.
- **Volatile and Intangible-Asset-Heavy Firms Use Less Debt:** Firms with volatile cash flows or primarily intangible assets (e.g., intellectual property) face higher costs of financial distress and difficulty securing debt. Software firms tend to rely more on equity to finance operations because their assets are largely intangible, and cash flows can be uncertain. Similarly, R&D-focused firms such as biotechnology companies, often in the early stages of profitability, use less debt to avoid financial distress risks.

Pecking Order Theory of Capital Structure

The **pecking order theory** of capital structure, proposed by Myers and Majluf (1984), is commonly considered an alternative theory to the trade-off theory in explaining capital structure. It suggests that firms prioritize their financing choices based on the principle of minimizing costs and asymmetries associated with external financing. It highlights the influence of financing costs and information asymmetry on capital structure decisions, providing a complementary perspective to other theories.

According to this theory, companies prefer:

1. **Internal Financing:** Using retained earnings first, as it involves no transaction costs or information asymmetry.
2. **Debt Financing:** If internal funds are insufficient, firms issue debt, as it is generally less costly than equity and signals less negative information to the market.
3. **Equity Financing:** As a last resort, firms issue new equity, as it is the most expensive and risky due to significant information asymmetry.

Key assumptions underlying the pecking order theory are information asymmetry, a situation where managers have better knowledge of the firm's value and future prospects than external investors. This creates a preference for financing methods that do not require revealing private information, such as debt. This theory also implies that companies aim to minimize costs in choosing their funding methods; hence, they prefer internal funds with no issuance costs, followed by debt with moderate costs (interest and financial distress) and equity with high costs (issuance expense and risk of the market undervaluing the shares).

The implications of this theory on firms' financing behaviour are therefore:

- Profitable firms rely on retained earnings and avoid external financing, while less profitable firms with insufficient internal funds may resort to debt before equity. In practice, some of the most profitable companies in the world, such as Microsoft and Apple, rely primarily on internal funds and have very minimal borrowings.
- Firms with stable and high internal cash flows tend to have lower leverage, while firms with higher capital needs and lower profits rely more on external financing.

Agency Theory of Capital Structure

The **agency theory of capital structure**, developed by Jensen and Meckling (1976), explores how conflicts of interest between different stakeholders (e.g., managers, shareholders, and debt holders) influence a firm's financing decisions. It highlights how capital structure can be used to mitigate or exacerbate these conflicts, impacting firm value.

One key **agency conflict** in a firm is a conflict between managers and shareholders. Managers (agents) may prioritize personal

benefits (e.g., job security, perks) over maximizing shareholder value (principals). Therefore, debt can be used as a disciplinary tool in that debt can reduce agency costs by limiting free cash flow available to managers, forcing them to focus on efficient project selection and repayment obligations. For example, high leverage may reduce wasteful spending, as managers are pressured to generate cash to meet debt obligations.

The agency problem can be exacerbated when the company has excess **free cash flows**, i.e. the cash flows in excess of what they need for future investments. When there is excess cash in the company, managers may have a tendency to misuse the cash, such as overpay on mergers and acquisitions or accept projects without proper risk analysis. In this situation, debt commitments can constrain free cash flow, aligning managerial actions with shareholder interests.

Another key agency conflict within a firm is one between shareholders and debt holders because Shareholders may take actions that benefit them at the expense of debt holders, such as Investing in risky projects to increase potential returns for equity holders, while debt holders bear more risk (**asset substitution**) or avoiding low-risk projects that benefit debt holders but offer limited returns to shareholders (**underinvestment**). Higher debt levels increase the likelihood of these conflicts, potentially raising the cost of borrowing or limiting access to debt markets. In addition, debt covenants and collateral requirements are often used to protect debt holders.

When agency conflicts are considered, an optimal capital structure is a trade-off between reducing managerial agency cost by using debt to discipline managers (benefit) and avoiding excessive leverage that could lead to costly debt covenants or financial distress (cost).

Some real-world implications of the agency theory of capital structure are as follows:

- Private equity firms use high leverage to discipline managers of target firms, ensuring cash flows are directed towards debt repayment and operational efficiency.
- Family businesses often prefer lower leverage to retain control and avoid external interference, reflecting an aversion to agency conflicts with creditors/debt holders.
- Companies frequently negotiate covenants to align shareholder and debt holder interests, such as limits on additional borrowing or requirements for maintaining certain financial ratios.

Key Differences Between the Theories

The **trade-off theory**, **pecking order theory**, and **agency theory** share a common goal of explaining how firms make financing decisions to maximize value. All three recognize the importance of balancing the benefits and costs of debt and equity, influenced by factors such as profitability, risk, and asset structure. They acknowledge that financing decisions involve trade-offs, whether between tax benefits and financial distress costs, minimizing information asymmetry, or resolving stakeholder conflicts. Additionally, these theories highlight the dynamic nature of capital structure, evolving as firms grow and adapt to new opportunities or risks. Despite their differences, they converge on the idea that no single financing strategy fits all firms.

However, there are key differences between these theories, which are summarized in the table below.

Table 5.4.1: Theory Differences

Aspect	Trade-Off Theory	Pecking Order Theory	Agency Theory
Core Principle	Firms balance the tax benefits of debt against the costs of financial distress to determine an optimal capital structure.	Firms prioritize financing sources based on cost and information asymmetry (internal funds → debt → equity).	Capital structure is influenced by conflicts between managers, shareholders, and debt holders.
Focus	Optimal debt-to-equity ratio.	Financing hierarchy, not an optimal ratio.	Mitigating agency conflicts to maximize firm value.
Tax Shield Emphasis	Strong emphasis on the tax benefits of debt.	Does not explicitly consider tax benefits.	Considers tax indirectly through its role in reducing free cash flow agency costs.
Financial Distress Costs	Integral to the theory; firms avoid excessive debt to limit distress costs.	Implies firms avoid debt primarily due to funding preferences, not distress costs.	Considers distress costs as a driver of shareholder-debtor conflicts.

Aspect	Trade-Off Theory	Pecking Order Theory	Agency Theory
Information Asymmetry	Less emphasis on information asymmetry.	Central to the theory; equity issuance signals potential overvaluation to investors.	Not a central focus, but can influence managerial behaviour.
Role of Profitability	Profitable firms may use more debt to benefit from the tax shield.	Profitable firms rely on internal funds and have less debt.	Debt disciplines managers regardless of profitability.
Debt as a Disciplinary Tool	Not explicitly addressed.	Not a focus.	Debt constrains managerial behaviour by limiting free cash flow.
Behavioural Assumptions	Firms actively manage their capital structure to achieve optimal levels.	Firms follow a financing hierarchy passively.	Firms use debt strategically to mitigate agency conflicts.
Practical Implications	Encourages firms to find a balance between debt and equity based on benefits and costs.	Suggests firms rely on internal funds first, then debt, and equity as a last resort.	Recommends debt levels that minimize conflicts while aligning stakeholder interests.
Examples of Application	Utility companies with stable cash flows maintain higher leverage for tax benefits.	Technology firms often rely on internal funds due to high information asymmetry.	Leveraged buyouts use high debt to align managerial actions with shareholder interests.
Key Limitations	Assumes firms can accurately assess the costs and benefits of debt.	Does not explain why some firms maintain stable leverage ratios.	Oversimplifies stakeholder dynamics and may not account for managerial motivations.

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5.5: Debt Financing Expanded

Learning Objectives

By the end of this section, you will be able to:

- Explain the role of debt financing in a firm's capital structure.
- Distinguish between principal repayment and interest expense.
- Interpret a debt amortization schedule.
- Explain how debt payments affect the income statement, balance sheet, and statement of cash flows.
- Explain the interest and principal components of a debt payment.
- Explain how debt paydown affects leverage, liquidity, profitability, and financial risk.
- Understand the relationship among debt financing, taxes, and the cost of capital.
- Evaluate the trade-offs between using debt and equity to finance a business.

Introduction to Debt Financing

Businesses require capital to purchase assets, hire employees, develop products, expand operations, and fund working capital. Two fundamental sources of long-term financing are **debt** and **equity**.

Debt financing involves obtaining funds from lenders with a contractual obligation to repay the borrowed amount, generally with interest, according to specified terms. Common forms of business debt include bank loans, corporate bonds, mortgages, equipment loans, revolving credit facilities, and other forms of borrowing.

Equity financing, by contrast, involves raising capital from owners or investors. Equity does not normally require scheduled repayment, but equity investors bear the residual risk of the business and expect a return through dividends, share-price appreciation, or both.

The decision about how much debt and equity to use is one of the central issues in corporate finance.

Debt can be attractive because it allows existing owners to retain control and because interest expense may provide a tax benefit. However, debt also creates contractual obligations. Regardless of whether the business has a profitable year or a poor year, required interest and principal payments generally remain due.

This distinction is critical.

Equity generally shares in the uncertainty of the business, whereas debt creates contractual claims that must be satisfied according to the terms of the borrowing agreement.

The Basic Economics of Borrowing

Suppose a company borrows \$500,000 from a bank at an annual interest rate of 8%.

The company has received \$500,000 of cash, but it has also incurred a liability of \$500,000.

At the time the loan is issued:

- Cash increases by \$500,000.
- Debt increases by \$500,000.
- Equity does not increase merely because the company borrowed money.

The initial balance-sheet effect is therefore:

Table 5.5.1: Balance-Sheet Effect

Balance Sheet Account	Change
Cash	+\$500,000
Debt	+\$500,000
Equity	\$0

The company has not generated revenue or profit simply by borrowing money. It has exchanged one economic resource—future repayment capacity—for another—current cash.

Over time, the company must generally make two types of payments:

1. **Interest payments**, which compensate the lender for providing capital.
2. **Principal payments**, which reduce the amount originally borrowed.

These two components have very different accounting and financial effects.

Interest Versus Principal

One of the most important concepts in understanding debt financing is the distinction between interest and principal.

Principal

Principal is the amount of debt outstanding.

If a company borrows \$500,000 and subsequently repays \$100,000 of principal, the remaining principal is:
 $\$500,000 - \$100,000 = \$400,000$

Principal repayment reduces the company's debt liability.

Interest

Interest is the cost of borrowing.

If the outstanding loan balance is \$500,000 and the annual interest rate is 8%, the annual interest expense, assuming a simple annual calculation, is:
 $\$500,000 \times 8\% = \$40,000$

Interest represents a cost of financing and generally appears as an expense on the income statement.

The distinction can be summarized as follows:

Table 5.5.2: Interest vs Principal

Component	Economic Meaning	Income Statement	Balance Sheet
Interest	Cost of borrowing	Expense	Reduces retained earnings through net income
Principal	Repayment of borrowed capital	Not an expense	Reduces debt

This distinction becomes particularly important when analyzing cash flow. A company may make a \$50,000 loan payment, but it would be incorrect to assume that the entire \$50,000 is an expense.

For example, a \$50,000 payment might consist of:

- \$15,000 interest
- \$35,000 principal

Only the \$15,000 interest component is an interest expense. The \$35,000 principal repayment reduces the outstanding debt.

Amortizing Debt

Many business loans are **amortizing loans**. An amortizing loan requires the borrower to make periodic payments that gradually reduce the outstanding principal.

A typical payment contains both interest and principal.

For a fully amortizing loan, the outstanding balance eventually reaches zero at the end of the scheduled repayment period.

Examples include:

- Commercial real estate loans
- Equipment loans
- Term loans
- Automobile loans
- Residential mortgages
- Certain acquisition loans

An amortization schedule shows how each payment is divided between interest and principal and how the outstanding loan balance changes over time.

Consider a business that borrows:

- Loan principal: **\$100,000**
- Annual interest rate: **6%**
- Term: **5 years**
- Payment frequency: **annual**
- Fully amortizing loan

The amortization schedule is:

Table 5.5.3: Amortization Schedule

Year	Beginning Balance	Payment	Interest	Principal	Ending Balance
1	\$100,000.00	\$23,739.64	\$6,000.00	\$17,739.64	\$82,260.36
2	\$82,260.36	\$23,739.64	\$4,935.62	\$18,804.02	\$63,456.34
3	\$63,456.34	\$23,739.64	\$3,807.38	\$19,932.26	\$43,524.08
4	\$43,524.08	\$23,739.64	\$2,611.44	\$21,128.20	\$22,395.88
5	\$22,395.88	\$23,739.64	\$1,343.75	\$22,395.89	approximately \$0

How Debt Paydown Affects the Financial Statements

Debt repayment affects all three major financial statements, but it affects them in different ways.

Consider a company making a debt payment of \$23,739.64, consisting of:

- \$6,000 interest
- \$17,739.64 principal

The effects can be analyzed separately.

The **interest component** is an expense.

Interest expense reduces:

- Earnings before taxes
- Pre-tax income
- Net income

assuming no other changes.

The principal repayment does **not** appear as an expense on the income statement.

Thus, it would be incorrect to record the entire \$23,739.64 payment as an expense.

The principal repayment reduces the company's debt.

Before payment:

Debt=\$100,000 After a \$17,739.64 principal repayment in year 1: Debt=\$82,260.36

Cash also decreases by the total payment: Cash decreases by \$23,739.64

At the same time, the interest expense reduces net income. Lower net income ultimately reduces retained earnings, all else equal.

Therefore, ignoring taxes and other transactions, the balance-sheet effects include:

Table 5.5.4: Balance-Sheet Effects

Account	Effect
Cash	Decrease \$23,739.64
Debt	Decrease \$17,739.64
Retained earnings/equity	Decrease through interest expense

The accounting equation remains balanced because the interest expense affects equity while the cash payment and debt reduction affect the asset and liability sides.

Debt Maturity and Amortization Structure

Not all debt is repaid in the same way.

Fully amortizing debt

The loan is completely repaid through scheduled payments by the maturity date.

Partially amortizing debt

Scheduled payments reduce some principal, but a balance remains at maturity.

Bullet debt

Little or no principal is repaid during the life of the loan, with a large principal payment due at maturity.

Revolving debt

The borrower can generally draw, repay, and redraw funds subject to the terms of the facility.

The amortization structure affects financial risk.

A fully amortizing loan creates larger periodic cash requirements but gradually reduces debt.

A bullet loan may have lower periodic principal payments but creates substantial **maturity risk** because a large amount may become due at one time.

Debt Service

The term **debt service** generally refers to the cash required to meet contractual debt obligations over a period.

For an amortizing loan: Interest + Principal Repayment

For example: \$23,739.64

Debt service is particularly important for lenders because lenders are concerned not only with whether a company is profitable but also with whether it generates sufficient cash to make required payments.

One commonly used measure is the **Debt Service Coverage Ratio (DSCR)**: Cash Flow Available for Debt Service divided by Debt Service

Suppose cash flow available for debt service is \$60,000 and annual debt service is \$30,000: 2.0

A DSCR of 2.0 means the company generates approximately twice the amount of cash required for debt service.

The precise definition of cash flow used in DSCR varies by lender and loan agreement, so students should avoid assuming that every DSCR calculation uses the same numerator.

Debt Paydown and Leverage

One major benefit of paying down debt is that it reduces financial leverage.

Consider a company with:

- Assets: \$1,000,000
- Debt: \$600,000
- Equity: \$400,000

The debt-to-equity ratio is: 1.50

Now assume the company repays \$100,000 of principal using cash.

After the repayment:

- Assets = \$900,000
- Debt = \$500,000
- Equity = \$400,000

The new debt-to-equity ratio is: 1.25

Debt has fallen relative to equity.

The company is therefore less financially leveraged.

Using cash to repay debt reduces both debt and cash. The transaction does not necessarily increase equity.

Debt Paydown and Interest Expense

Debt paydown also reduces future interest expense.

Suppose a company has \$1 million of debt at an interest rate of 8%.

Annual interest is approximately: \$80,000

If the company repays \$250,000 and the remaining debt continues to carry an 8% rate, annual interest on the remaining principal would be approximately: \$60,000

The company has therefore reduced annual interest expense by approximately: \$20,000

This creates a second-order benefit from debt repayment.

The company does not simply owe less money. It also reduces the financing cost associated with that debt.

The Tax Shield from Debt

One reason companies may choose debt rather than relying exclusively on equity is the tax treatment of interest.

In many tax systems, interest expense is deductible subject to applicable rules and limitations. When interest reduces taxable income, it creates an **interest tax shield**.

For example, suppose a company has:

- Interest expense: \$100,000
- Marginal tax rate: 25%

The potential tax reduction associated with the deductible interest is: \$25,000

The after-tax cost of the interest is therefore approximately: \$75,000

This can be expressed as: $r_d(1-T)$

where:

- (r_d) = pre-tax cost of debt
- (T) = applicable tax rate

For example, if the cost of debt is 8% and the tax rate is 25%: 6%

Thus, the after-tax cost of debt is approximately 6%, assuming the interest is fully deductible and ignoring other considerations.

Students should understand that the tax shield is a potential benefit, not a reason to assume that more debt is always better.

The Trade-Off: Benefits and Costs of Debt

Debt creates both advantages and disadvantages.

Potential advantages

1. **Lower cost than equity:** Debt investors generally have a contractual return rather than a residual claim on the business.
2. **Interest tax benefits:** Deductible interest may reduce taxable income.
3. **Retention of ownership:** Borrowing does not normally require the company to issue additional ownership interests.
4. **Financial leverage:** Debt can magnify returns to equity holders when the company's assets generate returns greater than the effective cost of borrowing.
5. **Greater capital availability:** Debt can allow a company to acquire assets or expand operations without waiting to accumulate sufficient internal funds.

Potential disadvantages

1. **Required payments:** Interest and principal must generally be paid according to the loan agreement.
2. **Financial distress risk:** A company may experience financial difficulty even if its underlying business is economically viable if it cannot meet contractual debt obligations.
3. **Reduced financial flexibility:** Cash committed to debt service cannot be used for acquisitions, investment, dividends, hiring, or other purposes.
4. **Covenants and restrictions:** Lenders may impose financial or operating restrictions through debt covenants.
5. **Refinancing risk:** Debt that matures may need to be refinanced, potentially at a higher interest rate or under less favorable terms.
6. **Interest-rate risk:** Variable-rate debt can become more expensive when market interest rates increase.

The central capital-structure question is therefore not:

"Is debt good or bad?"

Rather, it is:

"What amount and type of debt provides an appropriate balance between financing benefits and financial risk?"

Debt Paydown and the Company's Risk Profile

When a company pays down debt, several things generally happen simultaneously:

Financial leverage decreases

There are fewer creditor claims relative to equity.

Interest expense decreases

A smaller debt balance generally produces less interest expense, assuming the interest rate remains unchanged.

Cash decreases

The company uses cash to repay the principal.

Future financial obligations decrease

The company has less debt that must eventually be repaid.

Financial flexibility may increase

Lower required debt service can leave more future cash available for investment and other corporate purposes.

However, debt paydown also has an opportunity cost.

If a company uses \$1 million of cash to repay debt, that \$1 million cannot simultaneously be used to:

- Purchase another business
- Build a new facility
- Develop a product
- Purchase equipment
- Repurchase shares
- Pay dividends
- Maintain a larger cash reserve

Therefore, debt repayment should be viewed as a capital-allocation decision.

Debt Paydown Versus Holding Cash

Consider a company with \$1 million of excess cash and \$1 million of debt carrying an 8% interest rate.

The company could use the \$1 million to repay the debt, saving approximately \$80,000 of annual interest before considering taxes.

Alternatively, it could retain the cash.

The decision depends on several factors, including:

- The return the company can earn by investing the cash.
- The risk associated with those investments.
- The company's liquidity needs.
- Its expected future cash flows.
- Its access to credit markets.
- Debt covenants.
- The tax consequences.
- The strategic value of maintaining cash.

If the company can safely earn 10% on an investment while its debt costs 8%, retaining the cash may appear attractive.

But the comparison is not simply 10% versus 8%. The risk of the investment, taxes, liquidity, and the strategic value of reducing leverage must also be considered.

This illustrates a broader corporate-finance principle:

The appropriate capital structure depends not only on the cost of capital but also on risk, flexibility, and the expected uses of capital.

5.6: Summary

Characteristics of Debt and Equity

Debt and equity are the primary sources of financing for companies, each with distinct characteristics:

- **Debt:**
 - Fixed obligations, such as interest payments, are tax-deductible.
 - Lower cost compared to equity due to the tax shield, but increases financial risk (e.g., bankruptcy risk).
 - Examples: Bonds, loans, and credit facilities.
- **Equity:**
 - Represents ownership in the company, with returns in the form of dividends and capital gains.
 - No fixed repayment obligation, but it has a higher cost due to the higher risk for investors.
 - Examples: Common shares, preferred shares.

A company's decision to use debt, equity, or a mix impacts its financial health and risk profile.

Capital Structure Concept and Measure

Capital structure refers to the proportion of debt and equity used to finance a company's operations and growth. It can be measured using the following ratios:

- **Debt-to-Equity Ratio:**

$$\text{D/E Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

- **Debt-to-Capital Ratio:**

$$\frac{D}{D + E}$$

An optimal capital structure balances the benefits of debt (tax shield) with its risks (financial distress) while minimizing the overall cost of capital.

Capital Structure Theory

Several theories explain how firms choose their capital structure:

- **Trade-Off Theory:** Firms balance the tax benefits of debt against the costs of financial distress to determine the optimal debt-equity mix.
- **Pecking Order Theory:** Firms prefer internal financing first, then debt, and equity as a last resort, due to information asymmetry and cost differences.
- **Agency Theory:** Debt can mitigate conflicts between managers and shareholders by limiting free cash flow, but excessive debt may cause conflicts with creditors.

These theories provide frameworks for understanding the trade-offs firms face when structuring their financing.

Debt Financing and Capital Structure Strategy

Debt financing allows a company to obtain capital without issuing additional ownership interests, but it creates contractual obligations that affect future cash flows and financial risk. Understanding debt therefore requires more than knowing the amount borrowed. Financial managers must understand the timing and composition of payments, the cost of borrowing, the effect of debt on financial statements, and the implications for leverage and liquidity.

An amortization schedule provides a practical bridge between these concepts. Each payment can be divided into interest and principal, allowing managers and analysts to forecast interest expense, debt balances, cash requirements, and financial ratios.

The central lesson is that **debt is simultaneously a financing source and a financial obligation**. It can increase the resources available to a growing company and potentially improve returns to equity holders, but it also commits future cash flows to lenders. Effective capital-structure management therefore requires balancing the benefits of leverage against the risks and constraints associated with debt.

Capital structure decisions involve balancing several competing objectives.

A company wants sufficient capital to pursue profitable opportunities while maintaining an acceptable level of financial risk.

Debt can provide relatively inexpensive capital, but excessive debt can constrain the company.

A useful conceptual framework is:

Potential benefits include:

- Interest tax shields
- Lower financing costs
- Retention of ownership
- Increased financial leverage

Potential costs include:

- Financial distress
- Default risk
- Reduced flexibility
- Covenant restrictions
- Refinancing risk
- Interest-rate exposure

The optimal capital structure is therefore not necessarily the one with the greatest possible amount of debt.

6: MANAGERIAL ACCOUNTING AND COST CONCEPTS

6.1: Accounting and Cost Classification

6.2: Cost Behavior

6.3: Income Statements

6.4: Practice Problems

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6.1: Accounting and Cost Classification

Learning Objectives

By the end of this section, you will be able to:

- Distinguish between managerial accounting and financial accounting by explaining their purposes, users, and reporting requirements.
- Classify costs as product or period costs for both merchandising and manufacturing businesses.
- Apply cost-classification principles to real-world examples by determining which costs belong in inventory and which should be expensed.

Managerial Accounting versus Financial Accounting

In general, **financial accounting** is concerned with classifying, recording, and reporting financial transactions in a formal accounting system. Financial accounting is relatively uniform and prescribed by various regulatory bodies, such as the Securities and Exchange Commission, the Financial Accounting Standards Board, and the Public Company Accounting Oversight Board. Accountants, higher management, creditors, investors, and other external users are the primary users of financial accounting reports.

Managerial accounting is concerned with classifying, analyzing, and reporting data for internal decision-making. Internal users at all levels of the organization use managerial accounting reports. Managerial accounting tools are used by management to plan, control, and evaluate business operations and to make internal business decisions.

Cost Classification: Product versus Period

Cost classification is the process of separating costs into different categories. The costs incurred by an organization can be classified in many different ways. An important cost classification in accounting is distinguishing product costs from period costs. In financial accounting, product costs are treated differently from period costs. As a general rule, product costs are capitalized as a part of the inventory asset account, whereas period costs are expensed as incurred.

- **Product costs** are all costs associated with purchasing or producing inventory for resale.
- **Period costs** are all other costs not associated with purchasing or producing inventory for resale but are necessary for sustaining the organization, selling the inventory, and servicing customers.

Merchandising Business: Product and Period Cost Classifications

A **merchandising business** is a business entity that purchases finished inventory products from the business that manufactures the inventory with the intent to resell it and make a profit. A merchandiser makes a profit by marking up the inventory and selling it at a higher price to its customers. Retail stores such as Walmart and Target are examples of merchandising operations.

For a merchandiser, the costs of purchasing and holding the inventory are **product costs**. All other costs associated with sustaining the organization and selling the product are classified as period costs. **Period costs** include all non-inventory costs such as rent, utilities, wages, customer service, and advertising. Period costs are important to sustaining the organization, selling the inventory, and servicing customers, but they are not included in the cost of the inventory.

To illustrate, assume that Kelly owns a small business selling seat cushions at sporting events. She buys the cushions from a wholesale company for \$1 each and resells them to customers at the stadium for \$5 each. Last year, she sold 10,500 seat cushions. She also paid \$15,000 for rent on her booth and \$9,600 for miscellaneous expenses. In this example, total product costs are calculated as \$1 per cushion times 10,500 sold equals \$10,500. Or, her product costs equal the costs of the inventory or product. Period costs are \$15,000 rent plus \$9,600 miscellaneous expenses for a total of \$24,600. Period costs are the other

non-inventory costs Kelly incurred to run her business.

Manufacturing Business: Product and Period Cost Classifications

A **manufacturing business** is a business entity that uses raw materials, parts, or other components to make a finished good. The finished good is then considered inventory in a manufacturing organization. A manufacturer makes a profit by selling the inventory for more than it costs them to produce the inventory for resale.

For a manufacturer, the costs associated with making the inventory are product costs. The three categories of costs included in **product costs** when manufacturing inventory are:

- **Direct materials**—raw materials costs that can be easily and economically traced to the production of the product
- **Direct labor**—manufacturing labor costs that can be easily and economically traced to the production of the product
- **Manufacturing overhead**—all other indirect costs associated with manufacturing the product that are not direct material or direct labor. All indirect—not direct material or direct labor—costs incurred in the manufacturing process are included in manufacturing overhead. Examples of manufacturing overhead costs include indirect materials, e.g., glue, nails, and sandpaper; indirect labor, e.g., the production supervisor's salary or quality control; and all other production costs incurred to run the production facility, e.g., rent, utilities, and taxes on the production facility.

All other costs associated with sustaining the organization and selling the product are classified as period costs. **Period costs** include all non-inventory costs, such as the costs to provide administrative and selling services, including rent, utilities, wages, customer service, and advertising. Period costs are important to sustaining the organization, selling the inventory, and servicing customers, but they are not included in the cost of producing inventory.

Concepts in Practice: Identifying Product and Period Cost Classifications for a Manufacturer

Cincy Chips produces microchips for small electronic devices. Classify the following costs as product or period. If the cost is a product cost, classify the cost as direct material (DM), direct labor (DL), or manufacturing overhead (OH).

Table 6.1.1: Manufacturing Cost Classifications

Cost	Product vs. Period	DM, DL, or OH
Wages for assembly line workers	Product	DL
Rent for the production factory	Product	OH
Salaries for the customer service department	Period	N/A
Copper for microchips	Product	DM
Depreciation on office equipment	Period	N/A
Salary for an accountant	Period	N/A
Salary for an assembly line supervisor	Product	DL
Utilities for a production factory	Product	OH
Rent for corporate headquarters	Period	N/A

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6.2: Cost Behavior

Learning Objectives

By the end of this section, you will be able to:

- Explain the three major cost-behavior patterns and describe how each responds to changes in production or sales activity.
- Apply cost-behavior concepts to classify costs in merchandising and manufacturing settings, determine per-unit versus total cost effects, and analyze how costs behave within the relevant range of production.
- Use cost-behavior information to predict future costs for budgeting and planning.

Cost Behavior: Variable, Fixed, and Mixed

Another important classification in managerial accounting is cost behavior. **Cost behavior** is how a cost reacts to changes in production, usage, or sales quantity. Cost behavior is classified as variable, fixed, or mixed.

- **Variable:** The same cost per unit, but the total cost depends on the quantity produced, used, or sold
- **Fixed:** The same cost in total regardless of the quantity produced, used, or sold, but the per-unit cost changes depending on the quantity produced, used, or sold
- **Mixed:** A cost that has both a variable and a fixed component

An effective manager **must** consider cost behavior in order to predict future costs.

Concepts in Practice: Cost Behavior

To illustrate cost behavior, assume that Big Drink Company sells drinks in souvenir cups at an entertainment venue. Big Drink purchases the souvenir cups from a manufacturer for \$1 each. Then they sell the cups for \$10, filled with the customer's choice of beverage.

The cost of the souvenir cups is a variable cost. The cost per cup is always \$1 per unit, but the total cost incurred depends on how many drinks are sold. For example, if they sell 100 drinks, the total costs are \$1 times 100 equals \$100. If they sell 500 drinks, the total cost is \$1 times 500 equals \$500.

The cost of renting the booth at the entertainment venue is a fixed cost. Assume Big Drink pays \$3,500 per month to rent a booth at the entertainment venue. The total cost for rent is always the same regardless of how many drinks they sell. However, the per-unit cost allocated to drinks sold changes depending on the quantity sold. For example, if Big Drink sells 100 drinks, the rent amount allocated per unit is \$3,500 divided by 100, which equals \$35 per drink. If they sell 500 drinks, the rent amount allocated per unit is \$3,500 divided by 500, which equals \$7 per drink.

The cost charged for utilities is usually a mixed cost. For example, Big Drink likely pays a minimum charge regardless of how much electricity is used. This minimum charge is fixed because it does not change depending on actual usage. Then they pay a charge per kilowatt-hour used. This part of the electric bill is variable since it depends on usage. The total electric bill has both a fixed and variable component, so it is considered a mixed cost.

Concepts in Practice: Cost Classifications and Cost Behavior

Cincy Chips produces microchips for small electronic devices. They produced and sold 600 microchips in the current month. Select financial data for Cincy Chips is provided below. Determine the cost classifications and cost behavior for the costs below.

Table 6.2.1: Cincy Chips' Financial Data

Type	Cost	Product or Period	Fixed, Variable, or Mixed
Sales	\$80 per unit	N/A - Revenue	N/A - Revenue
Cost of goods sold (cost to produce inventory sold)	\$30 per unit	Product	Variable
Shipping	\$5 per unit	Period	Variable
Rent for corporate office	\$7,000 per month	Period	Fixed
Electricity corporate office	\$400 fixed, \$0.25 per unit	Period	Mixed
General office expenses	\$12,000 per month	Period	Fixed

Relevant Range of Production

The **relevant range of production** is the range between a minimum and a maximum production activity where certain revenue and expense levels can be expected to occur. Revenue and expense amounts will likely increase or decrease when production activity falls outside of the relevant range. In a manufacturing environment, product and period costs can be estimated with a reasonable degree of accuracy within the relevant range. Cost estimates are less likely to be accurate when production falls outside of the relevant range.

For example, at Cincy Chips, the manufacturing line can produce up to 1,000 units per day. Production in excess of 1,000 units per day would require the company to purchase a new manufacturing line, which would significantly change the current cost estimates. Therefore, maximum production in the relevant range is set at 1,000 units.

Concepts in Practice: Using Cost Behavior to Predict Future Costs

Stephanie, the production manager, is collecting data for the November budget. Cost data are generated by the manager for each department. The production manager is responsible for estimating the costs for rent expense, cost of goods sold, and electricity. Data for September and October are provided below. Predict the costs for November.

Table 6.2.2: Example Cost Data

Production Output	September 3,000 Units	October 3,300 Units	November 3,100 Units
Rent	\$7,500	\$7,500	\$7,500
Cost of Good Sold	\$3,600	\$3,960	\$3,720
Electricity	\$900	\$930	\$845

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6.3: Income Statements

Learning Objectives

By the end of this section, you will be able to:

- Distinguish between a traditional income statement and a contribution margin income statement by explaining how each classifies costs.
- Analyze how contribution margin reporting supports internal decision-making.

Traditional Income Statement Versus Contribution Margin Income Statement

An **income statement** also referred to as a profit and loss statement, reports an organization's revenue and expenses for a specified period of time. The formula to compute net income is revenues less expenses. If an organization has more revenue, the resulting number is positive and represents net income or profit. If an organization has more expenses, the resulting number is negative and represents a net loss. On a **traditional income statement**, costs are classified as product or period. On a **contribution margin income statement**, costs are classified as variable or fixed. Regardless of how the costs are classified, reported net income or profit is always the same on both income statements.

Traditional Income Statement

A traditional income statement is primarily used for financial reporting purposes. A traditional income statement reports an organization's revenue and expenses for a specified period of time. On a **traditional income statement**, the organization's expenses are presented based on product and period cost classifications.

An example of a traditional income statement is presented below.

Table 6.3.1: Traditional Income Statement

Category	Expenses	Revenue
Sales		\$ 720,000
Cost of goods sold		<u>\$324,000</u>
Gross margin		\$396,000
Selling & administrative expenses:		
Facilities expenses	\$ 68,100	
Administrative salaries	\$151,200	
Selling and advertising expenses	<u>\$ 93,660</u>	
Total selling & administrative expenses		<u>\$312,960</u>
Net operating income		\$ 83,040

Concepts in Practice: Traditional Income Statement

Cincy Chips produces microchips for small electronic devices. They produced and sold 600 microchips in the current month. Select financial data for Cincy Chips is provided below. Prepare a traditional income statement.

Table 6.3.2: Cincy Chips Select Financial Data

Category	Cost
Sales	\$80 per unit
Cost of goods sold	\$30 per unit
Shipping	\$5 per unit
Rent for corporate office	\$7,000 per month
Electricity corporate office	\$400 fixed, \$0.25 per unit
General office expenses	\$12,000 per month

Table 6.3.3: Traditional Income Statement

Category	Expenses	Revenue
Sales		\$ 48,000 (80 * 600 units)
Cost of goods sold		<u>\$ 18,000</u> (30 * 600 units)
Gross margin		\$ 30,000 (48,000 - 18,000)
Selling & administrative expenses:		
Facilities expenses	\$7,550 (7,000 + 400 + (.25 * 600 units))	
Administrative salaries	\$ 12,000	
Selling and advertising expenses	\$ 3,000 (5 * 600 units)	
Total selling & administrative expenses		<u>\$22,550</u>
Net operating income		\$ 7,450 (30,000 - 22,550)

Contribution Margin Income Statement

A contribution margin income statement is primarily used by internal users, usually management, for planning operations, controlling operations, and making decisions. Like a traditional income statement, the contribution margin income statement reports an organization's revenue and expenses for a specified period of time. The **contribution margin income statement** classifies expenses on the basis of cost behavior—variable versus fixed.

Below is an example of a contribution margin income statement.

Table 6.3.4: Contribution Margin Income Statement

Category	Q 1,000	Per Unit	CM Ratio
Sales	\$720,000	\$720	100%
Less variable costs	<u>\$430,000</u>	<u>\$430</u>	<u>60%</u>
Equals contribution margin	\$290,000	\$290	40%
Less fixed costs	<u>\$209,960</u>		
Equals net income	\$ 83,040		

Concepts in Practice: Contribution Margin Income Statement

Cincy Chips produces microchips for small electronic devices. They produced and sold 600 microchips in the current month. Select financial data for Cincy Chips is provided below. Prepare a contribution margin income statement.

Table 6.3.5: Cincy Chips Select Financial Data

Category	Cost
Sales	\$80 per unit
Cost of goods sold	\$30 per unit
Shipping	\$5 per unit
Rent corporate office	\$7,000 per month
Electricity corporate office	\$400 fixed, \$0.25 per unit
General office expenses	\$12,000 per month

Table 6.3.6: Contribution Margin Income Statement

Category	Q	Per Unit	CM Ratio
Sales	\$ 48,000	\$ 80.00	100.00 %
Less variable costs	<u>\$21,150</u>	<u>\$35.25</u>	<u>44.06%</u>
Equals contribution margin	\$ 26,850	\$44.75	55.94%
Less fixed costs	<u>\$19,400</u>		
Equals net income	\$ 7,450		

First, separate the costs into **variable** and **fixed**:

- Sales = \$80/unit
- Variable COGS = \$30/unit
- Variable Shipping = \$5/unit
- Variable Electricity = \$0.25/unit
- Fixed Rent = \$7,000
- Fixed Electricity = \$400
- Fixed General Office Expenses = \$12,000

For 600 units:

- Sales = $600 \times \$80 = \$48,000$
- Variable Costs:
 - COGS = $600 \times \$30 = \$18,000$
 - Shipping = $600 \times \$5 = \$3,000$
 - Electricity (variable portion) = $600 \times \$0.25 = \$150$
 - Total Variable Costs = **\$21,150**
- Contribution Margin = $\$48,000 - \$21,150 = \$26,850$
- Fixed Costs:
 - Rent = \$7,000
 - Electricity (fixed portion) = \$400
 - General Office Expenses = \$12,000
 - Total Fixed Costs = **\$19,400**
- Net Income = $\$26,850 - \$19,400 = \$7,450$

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6.4: Practice Problems

Practice Problem: Product, Period, Fixed, and Variable Costs

Crazy Candy's Carpets makes whimsical and eccentric rugs. The relevant range of production is 10,000 to 14,000 units per month. When she produces and sells 12,000 units, the average costs per unit are as follows:

Table 6.4.1: Crazy Candy's Carpets Select Financial Data

Category	Average Cost Per Unit
Direct material	\$9.00
Direct labor	\$3.00
Variable manufacturing overhead	\$1.50
Fixed manufacturing overhead	\$2.00
Fixed selling expenses	\$3.50
Sales commissions	\$1.25
Variable administrative expenses	\$0.75

Required 1: What is the total amount of product costs incurred to make 14,000 units?

Required 2: What is the total amount of period costs incurred to sell 14,000 units?

Required 3: What is the total amount of costs incurred to make and sell 11,000 units?

Practice Problem 2: Traditional Income Statement

Magick Musicals sells custom guitars that they purchase from a local artist. Magick purchases the guitars from the artist for \$960 each, marks them up, and resells them for \$2,200 each. Magick's general and administrative costs are presented below.

In May, Magick purchased and sold 150 guitars.

Table 6.4.2: Magick Musicals Select Financial Data

Costs	Cost Formula
Sales salaries and commissions	\$4,000 per month plus 10% of sales
Shipping guitars to customers	\$12 per guitar
Utilities	\$2,400 per month
Depreciation of office equipment	\$1,200 per month
Administrative salaries	\$25,000 per month
Customer service	\$6,000 per month plus \$15 per sale

Required: Prepare a traditional format income statement for May.

Table 6.4.3: Traditional Income Statement

Category	Expenses	Revenue
Sales		\$?

Category	Expenses	Revenue
Cost of goods sold		\$?
Gross margin		\$?
Selling & administrative expenses:		
Facilities expenses	\$?	
Administrative salaries	\$?	
Selling and advertising expenses	\$?	
Total selling & administrative expenses		\$?
Net operating income		\$?

Practice Problem 3: Contribution Margin Income Statement

Magick Musicals sells custom guitars that they purchase from a local artist. Magick purchases the guitars from the artist for \$960 each, marks them up, and resells them for \$2,200 each. Magick's general and administrative costs are presented below.

Table 6.4.4: Magick Musicals Select Financial Data

Costs	Cost Formula
Sales salaries and commissions	\$4,000 per month plus 10% of sales
Shipping guitars to customers	\$12 per guitar
Utilities	\$2,400 per month
Depreciation of office equipment	\$1,200 per month
Administrative salaries	\$25,000 per month
Customer service	\$6,000 per month plus \$15 per sale

In May, Magick purchased and sold 150 guitars.

Required: Prepare a contribution margin income statement for May. Show revenue and variable costs on both a total and a per-unit basis.

Table 6.4.5: Contribution Margin Income Statement

Category	Q	Per Unit	CM Ratio
Sales	\$?	\$?	? %
Less variable costs	\$?	\$?	? %
Equals contribution margin	\$?	\$?	? %
Less fixed costs	\$?		
Equals net income	\$?		

7: JOB ORDER COSTING AND COST VOLUME PROFIT REPORTING

7.1: Introduction to Job-Order Costing

7.2: Manufacturing Overhead

7.3: Job Cost Sheets

7.4: Multiple Predetermine Manufacturing Overhead Rates

7.5: Cost Volume Profit Analysis

7.6: Break Even and Target Profit

7.7: Practice Problems

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7.1: Introduction to Job-Order Costing

Learning Objectives

By the end of this section, you will be able to:

- Explain the purpose of a job-order costing system and describe how product costs are assigned to individual jobs in organizations that produce unique or custom products.
- Trace the flow of costs through the job-order costing system.
- Distinguish between direct and indirect materials, direct and indirect labor, and actual versus applied manufacturing overhead.

Job-Order Costing

Job-order costing is an accounting system used to assign costs to the products or services that an organization produces. **Product costs**, or inventory costs, include the costs for direct material, direct labor, and manufacturing overhead. In a job-order costing system, product costs are assigned directly to the products or jobs as they are produced or completed. A job-order costing system is typically used by organizations that produce unique or custom products or services.

Job-Order Costing Flow of Inventory Costs

Raw Materials (Direct and Indirect)

All raw materials—direct and indirect—purchased to manufacture the product are debited to the Raw Materials inventory account. The credit for raw materials costs is typically recorded in the Cash account or a related liability account. **Direct materials** are raw materials that can be easily and economically traced to the production of the product. **Indirect materials** are raw materials that cannot be easily and economically traced to the production of the product, e.g., glue, nails, sandpaper, towels, etc.

When materials are requisitioned for manufacturing, all materials are credited out of the Raw Materials inventory account. Direct materials are debited to the Work In Process inventory account, and indirect materials are debited to the Manufacturing Overhead account.

Labor

Direct labor is debited to the Work In Process inventory account, and indirect labor is debited to the Manufacturing Overhead account. Typically, a liability account such as Salaries Payable is credited. **Direct labor costs** are manufacturing labor costs that can be easily and economically traced to the production of the product. **Indirect labor costs** are manufacturing labor costs that cannot be easily and economically traced to the production of the product, e.g., the production supervisor's salary or quality control.

Non-manufacturing labor costs, such as office or administrative wages, are period costs. Non-manufacturing labor costs are debited to an expense account for wages or salaries. A liability account such as Salaries Payable is credited.

Manufacturing Overhead

Actual manufacturing overhead costs are debited to the Manufacturing Overhead account. The credit for these costs is typically recorded in the Cash account or a related liability account. **Manufacturing overhead costs** include all indirect costs associated with manufacturing the product that are not direct material or direct labor, such as indirect materials, indirect labor, and all other production costs incurred to run the production facility, e.g., rent, utilities, janitorial services, and taxes on the production facility.

Manufacturing overhead costs are applied to the jobs in process using a predetermined manufacturing overhead rate. The predetermined manufacturing overhead rate is discussed in detail in subsequent sections of this chapter. When manufacturing overhead is applied to the jobs in process, it is credited from the Manufacturing Overhead account and debited to the Work In Process account.

Work In Process (WIP)

Work in Process (WIP) is the inventory account where product costs, including direct material, direct labor, and manufacturing overhead, are accumulated while the jobs are in the manufacturing process.

Finished Goods Account

When a job is finished, the total costs for the job are moved from the Work In Process inventory account (credit) to the Finished Goods inventory account (debit). The **Finished Goods** inventory account is where finished inventory is reported at the cost to produce—direct material, direct labor, and manufacturing overhead—until it is sold.

Cost of Goods Sold

When the inventory is sold, the total costs for the job are moved from the Finished Goods inventory account (credit) to the Cost of Goods Sold expense account (debit). **Cost of Goods Sold** is the expense account used to report the costs associated with purchasing or manufacturing the inventory sold.

Sales revenue is also recorded when the job is sold. Gross profit for the job is calculated as the sales revenue collected from the customer less the cost of goods sold, which represents total production costs, e.g., direct material, direct labor, and manufacturing overhead.

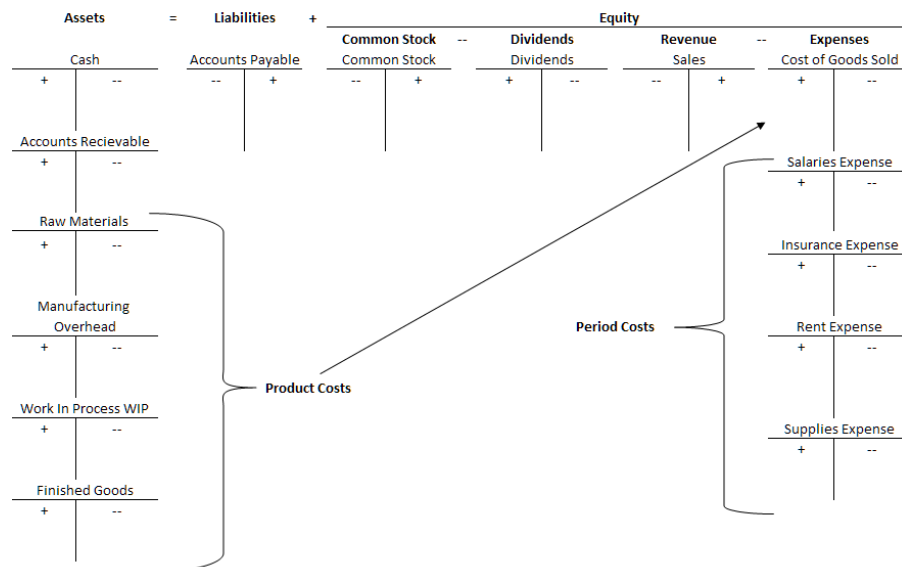


Figure 7.1.1: Demonstrating Cost Flow in a Job-Order Costing System

7.2: Manufacturing Overhead

Learning Objectives

By the end of this section, you will be able to:

- Explain the role of manufacturing overhead in job-order costing.
- Compute and apply a predetermined manufacturing overhead rate.

All manufacturing or product costs that are not direct material or direct labor are recorded in the Manufacturing Overhead account. Direct material and direct labor are applied directly to the jobs and do not flow through the Manufacturing Overhead account. **Manufacturing overhead** includes indirect materials, such as glue, screws, and nails; indirect labor, such as wages for the production supervisor or production maintenance personnel; and all other costs incurred to manufacture a product, such as rent, insurance, taxes, and utilities paid for the manufacturing facilities.

Manufacturing overhead is applied to jobs using a predetermined manufacturing overhead rate. Unlike direct material or direct labor, it is not easy to apply manufacturing overhead costs directly to jobs. Manufacturing overhead costs are not incurred uniformly, and many of these costs are not directly traceable to the jobs in process. For example, an organization might pay property taxes on the production plant twice a year. These property taxes are considered indirect manufacturing costs and should be applied to all jobs produced and not just the jobs in process at the time the taxes are paid.

Think of manufacturing overhead as a pool or bucket of all indirect product costs. At the *beginning* of the period, the total amount of manufacturing overhead costs is *estimated* based on historical data and current year production estimates. Throughout the year, the total amount of estimated manufacturing overhead is uniformly applied to the jobs in process using some type of allocation base or cost driver. An **allocation base or cost driver** is a production activity that drives costs, such as direct labor hours or machine hours. At the end of the year, the estimated applied overhead costs and actual overhead costs incurred are reconciled, and any difference is adjusted.

A single **organizational predetermined manufacturing overhead rate** is computed by dividing the total estimated manufacturing overhead amount by the total estimated allocation base or cost driver. Total estimated overhead includes total fixed overhead and total variable overhead. Allocation bases or cost drivers vary across organizations. Common allocation bases are direct labor hours, direct material dollars, or machine hours.

The formula for computing the organizational predetermined manufacturing overhead rate is presented below.

$$\frac{\text{Total estimated manufacturing overhead (fixed + variable)}}{\text{Total estimated allocation base}} = \text{Predetermined manufacturing overhead rate}$$

Computing an Organizational Predetermined Manufacturing Overhead Rate

Cincy Chips produces microchips for small electronic devices. On January 1, Cincy Chips estimates that they will produce 50,500 microchips and run 2,080 machine hours in the upcoming year. The company uses a single organizational manufacturing overhead rate. Manufacturing overhead is allocated to jobs based on machine hours. The cost formula to estimate manufacturing overhead at the beginning of the year is \$128,960 fixed plus \$33 per machine hour. Compute the organizational predetermined manufacturing overhead rate.

Applying Manufacturing Overhead to Jobs

The predetermined manufacturing overhead rate is computed *before* the period starts, usually at the beginning of a year or quarter. Manufacturing overhead is then applied to the jobs as the work is completed throughout the year. In a normal costing

system, the predetermined overhead rate is applied to the jobs based on the job's actual use of the allocation base or cost driver used to calculate the predetermined rate.

Concepts in Practice: Manufacturing Overhead

Cincy Chips produces microchips for small electronic devices. The predetermined manufacturing overhead rate is \$95 per machine hour (total estimated overhead \$197,600 / 2,080 total estimated machine hours). Job 36A was for 75 microchips and used 3.5 machine hours. Compute the manufacturing overhead applied to Job 36A.

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7.3: Job Cost Sheets

Learning Objectives

By the end of this section, you will be able to:

- Explain the purpose and structure of a job cost sheet.

All manufacturing costs incurred to complete a job are recorded on job cost sheets. Job cost sheets can be kept on physical paper or digitally. A standard **job cost sheet** records all direct material, direct labor, and manufacturing overhead costs applied to a job. Typically, a job cost sheet also records the total costs, the number of units, the cost per unit, as well as the selling price for each job.

Concepts in Practice: Completing a Job Cost Sheet

Cincy Chips produces microchips for small electronic devices. The predetermined manufacturing overhead rate is \$95 per machine hour. Job 69B was for 500 microchips and used 22 machine hours. Production used \$13,500 of direct material and worked 21 direct labor hours at a rate of \$20 per hour. Complete the job cost sheet below for Job 69B.

Table 7.3.1: Job Cost Sheet - Job 69B

Beginning Balance			
Direct Material			Total
Direct Labor	Hours	Rate	Total
Manufacturing Overhead	MH	Rate	Total
Total Job Costs			
Per Unit	#Units	Cost per unit	

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7.4: Multiple Predetermine Manufacturing Overhead Rates

Learning Objectives

By the end of this section, you will be able to:

- Explain why some organizations use multiple predetermined manufacturing overhead rates instead of a single plant-wide rate.
- Compute departmental predetermined manufacturing overhead rates.

In some cases, organizations choose not to use a single organizational predetermined manufacturing overhead rate to apply overhead to the products or services produced. In the preceding sections, an organizational predetermined manufacturing overhead rate was calculated. Many organizations have multiple departments or processes that consume different amounts of manufacturing overhead resources at different rates. In these organizations, a single manufacturing overhead rate, while more simplistic, may not accurately apply overhead to the final product. An organization with multiple departments or processes may choose to apply manufacturing overhead using multiple predetermined manufacturing overhead rates. When **multiple predetermined manufacturing overhead rates** are used, manufacturing overhead costs are allocated to specific departments or processes and then applied to jobs using an allocation base that drives the overhead costs for that department or process.

Before multiple predetermined manufacturing overhead rates can be computed, manufacturing overhead costs must be assigned to departments or processes. Then the departmental or process manufacturing overhead rate is computed by dividing the total estimated manufacturing overhead assigned to the department or process by the total estimated allocation base or cost driver incurred within that department or process.

It is important to note that only manufacturing overhead costs that are allocated to the department or process, as well as the allocation base or cost driver incurred within the same department or process, are used to compute a departmental predetermined manufacturing overhead rate.

The formula for computing the departmental predetermined manufacturing overhead rates is presented below.

$$\frac{\text{Estimated manufacturing overhead allocated to department (fixed + variable)}}{\text{Estimated allocation base incurred in department}} = \text{Departmental predetermined manufacturing overhead rate}$$

Concepts in Practice: Computing Multiple Predetermined Manufacturing Overhead Rates

SunCo, Inc. manufactures widgets. The manufacturing process has two departments—fabrication and finishing. In the fabrication department, laborers pour composite materials into custom-carved molds. Fabrication is a labor-intensive process. After molding, the widgets are sent to the finishing department. In finishing, the widgets are put on an automated production line where they are heated and coated. Finishing is a machine-intensive process.

SunCo, Inc. assigns manufacturing overhead to the products produced using departmental predetermined manufacturing overhead rates. Manufacturing overhead is applied based on labor hours in the fabrication department and machine hours in the finishing department. Relevant data are provided below. Compute the departmental predetermined manufacturing overhead rates for the fabrication and finishing departments.

Table 7.4.1: SunCo Inc.'s Select Financial Data

Type	Overhead	Machine Hours	Labor Hours
Fabrication	\$ 360,000	900	15,000
Finishing	\$ 180,000	12,000	3,300

Type	Overhead	Machine Hours	Labor Hours
Total	\$ 540,000	12,900	18,300

Table 7.4.2: Departmental Predetermined Manufacturing Overhead Rates

Type	Overhead	Cost Driver	Rate
Fabrication	\$ 360,000	15,000	\$24 per labor hour
Finishing	<u>\$180,000</u>	<u>12,000</u>	<u>\$15 per machine hour</u>

Fabrication Department

Uses **labor hours** as the cost driver.

Rate=\$360,000 divided by 15,000 labor hours=\$24 per labor hour

Finishing Department

Uses **machine hours** as the cost driver.

Rate=\$180,000 divided by 12,000 machine hours=\$15 per machine hour

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7.5: Cost Volume Profit Analysis

Learning Objectives

By the end of this section, you will be able to:

- Explain the purpose of cost-volume-profit (CVP) analysis and how it helps managers.
- Use the contribution margin income statement to analyze cost behavior.
- Apply CVP concepts to forecast profit changes from variations in sales activity.

Purpose of Cost Volume Profit (CVP) Analysis

Cost volume profit (CVP) analysis helps managers make many important decisions, such as what products and services to offer, what prices to charge, what marketing strategy to use, and what cost structure to maintain. Its primary purpose is to estimate how profits are affected by the following five factors:

1. Selling prices
2. Sales volume
3. Unit variable costs
4. Total fixed costs
5. Mix of products sold

Cost Volume Profit (CVP) Analysis Using a Contribution Margin Income Statement

Cost volume profit analysis is based on cost behavior. **Cost behavior** is how a cost reacts to changes in production or sales quantity. Cost behavior is classified as variable, fixed, or mixed.

- **Variable cost:** Cost is the same per unit; total depends on quantity
- **Fixed cost:** Cost is the same total regardless of quantity; per unit cost changes
- **Mixed cost:** Cost has both a variable and a fixed component

Cost behavior must be considered to estimate how profits are affected by changes in sales prices, sales volume, unit variable costs, total fixed costs, and the mix of products sold. The **contribution margin income statement** classifies costs on the basis of cost behavior. For this reason, it is an essential tool for cost volume profit analysis.

Concepts in Practice: Contribution Margin Income Statement

Kinsley Shuck, the founder of Kinsley's Concepts, designed a radical new toy that can be programmed to perform various tasks. The programmable toy was an immediate success, and sales grew to the point that Kinsley moved the company's headquarters out of her garage and into a rented manufacturing space. Kinsley sold 500 toys in the first year of operation. Kinsley's Concepts reported the following contribution margin income statement for its first year of operations.

Table 7.5.1: Kinsley's Concepts Contribution Margin Income Statement

Category	Q500	Per Unit	CM Ratio
Sales	\$120,000	\$240	100%
Less variable costs	<u>\$ 72,000</u>	<u>\$144</u>	<u>60%</u>
Equals contribution margin	\$ 48,000	\$ 96	40%

Category	Q500	Per Unit	CM Ratio
Less fixed costs	\$ 30,000		
Equals net income	\$ 18,000		

How much would net income change if Kinsley sold one more unit?

The **contribution margin** represents the gross margin or gross sales revenue you can make or lose as the number of units sold increases or decreases. If Kinsley sells one more unit, she will gain \$240 in sales revenue and incur \$144 of variable expenses. Therefore, net income would increase by \$96 or her current contribution margin. The **contribution margin ratio** represents the percentage of sales dollars of gross margin you can make or lose as the number of units sold increases or decreases.

Using the Contribution Margin Income Statement to Forecast Changes in Profit from an Increase in Sales

The contribution margin income statement can be used to forecast and analyze projected changes in selling prices, sales volume, unit variable costs, total fixed costs, and the mix of products sold.

Kinsley's Concepts is currently selling 500 toys per year. Assume sales increase from 500 toys to 550 toys. How would those numbers change?

Table 7.5.2: Kinsley's Concepts Adjusted Contribution Margin Income Statement

Category	Q?	Per Unit	CM Ratio
Sales	\$ 132,000	\$ 240	100 %
Less variable costs	\$79,200	\$144	60%
Equals contribution margin	\$ 52,800	\$96	40%
Less fixed costs	\$30,000		
Equals net income	\$ 22,800		

If sales increase from **500 toys to 550 toys**, the **per-unit amounts and CM ratio remain the same**.

Step 1: Calculate New Totals

- Sales = $550 \times \$240 = \$132,000$
- Variable Costs = $550 \times \$144 = \$79,200$
- Contribution Margin = $\$132,000 - \$79,200 = \$52,800$
- Fixed Costs remain = **\$30,000**
- Net Income = $\$52,800 - \$30,000 = \$22,800$

Change in Net Income

- Original Net Income = \$18,000
- New Net Income = \$22,800
- **Increase in Net Income = \$4,800**

This equals the additional **50 toys $\times$ \$96 contribution margin per toy = \$4,800**.

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7.6: Break Even and Target Profit

Learning Objectives

By the end of this section, you will be able to:

- Explain the concepts of break-even and target profit.
- Use contribution margin, contribution margin ratio, and cost-volume-profit relationships to compute break-even points and target-profit sales in both units and sales dollars.
- Analyze how break-even and target-profit calculations support managerial decision-making.

The contribution margin income statement can be used to compute break-even and target profit. **Break-even** is the point at which net operating income equals zero. Or, an organization breaks even when its sales revenue covers total costs—both variable and fixed. Break-even is an important calculation, especially in new or start-up organizations. An organization should know how many units it needs to sell in order to cover its costs. In fact, most business plans and start-up business financing requests require the break-even calculation to be reported. For example, an organization might discover they need to sell 10,000 units to break even when the demand for the product is only 2,000 units. In this case, the company cannot break even given current expenses and sales demand, so they should not produce the product, or they need to reduce costs.

Target profit is the point at which net operating income equals a specified amount. The calculation for target profit is closely related to break-even. Target profit is calculated when an organization needs to know the quantity of sales required to cover total costs and earn a certain net profit.

The formulas to compute break-even and target profit are provided below.

$$\text{Break even and target profit in units} = \frac{\text{Fixed Expenses} + \text{Target Profit (\$0 for breakeven)}}{\text{CM ratio}^*}$$

$$\text{Break even and target profit in sales dollars} = \frac{\text{Fixed Expenses} + \text{Target Profit (\$0 for breakeven)}}{\text{CM ratio}^*}$$

*Contribution margin ratio or CM ratio (contribution margin in dollars/sales revenue in dollars)

Concepts in Practice: Calculating Break-Even and Target Profit

Kinsley's Concepts reported the following contribution margin income statement for its first year of operations. Use this data to compute break-even in units and sales dollars.

Table 7.6.1: Kinsley's Concepts Contribution Margin Income Statement

Category	Q500	Per Unit	CM Ratio
Sales	\$120,000	\$240	100%
Less variable costs	<u>\$ 72,000</u>	<u>\$144</u>	<u>60%</u>
Equals contribution margin	\$ 48,000	\$ 96	40%
Less fixed costs	<u>\$ 30,000</u>		

Category	Q500	Per Unit	CM Ratio
Equals net income	\$ 18,000		

Break-even in units sold: $\$30,000$ divided by $\$96 = 312.50$ round up to 313 units

Break-even in sales dollars: $\$30,000$ divided by $.40 = \$75,000$

Assume that the company wants to earn a target profit of $\$10,000$. Compute the number of sales required in units and sales dollars.

Target profit in units sold: $(\$30,000 + \$10,000)$ divided by $96 = 416.67$ round up to 417 units.

Target profit in sales dollars: $(\$30,000 + \$10,000)$ divided by $.40 = \$100,000$

- **Break-even units** = Fixed Costs $\div$ Contribution Margin per Unit
- **Break-even sales dollars** = Fixed Costs $\div$ Contribution Margin Ratio
- **Target profit units** = (Fixed Costs + Target Profit) $\div$ Contribution Margin per Unit
- **Target profit sales dollars** = (Fixed Costs + Target Profit) $\div$ Contribution Margin Ratio

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7.7: Practice Problems

Practice Problem 1: Compute Organizational Predetermined Manufacturing Overhead Rate, Total Job Costs, and Selling Price

Kelly Shuck Productions uses a job-order costing system. At the beginning of the year, the company made the following estimates:

Table 7.7.1: Kelly Shuck Productions' Beginning of the Year Manufacturing Overhead Estimates

Category	Cost
Direct labor hours required to support the estimated production	\$140,000
Machine hours required to support the estimated production	\$70,000
Fixed manufacturing overhead costs	\$784,000
Variable manufacturing overhead costs per direct labor hour	\$2.00
Variable overhead costs per machine hour	\$3.00

During the year, Job KAS3 was started and completed. The following information is available with respect to this job:

Table 7.7.2: Job KAS3

Category	Cost
Direct materials	\$175
Direct labor	\$225
Direct labor hours	15
Machine hours	5

Required 1: Compute the organizational predetermined manufacturing overhead rate (single rate for the entire organization) with direct labor hours as the allocation base.

Required 2: Assume that Kelly uses the organizational predetermined manufacturing overhead rate calculated in requirement 1. Compute the total manufacturing cost of Job KAS3.

Required 3: If Kelly uses a markup percentage of 200% of its total manufacturing cost, what is the selling price for Job KAS3 (based on the total costs of computed in requirement 2)?

Practice Problem 2: Compute Organizational Predetermined Manufacturing Overhead Rate, Total Job Costs, and Selling Price

Kelly Shuck Productions uses a job-order costing system. At the beginning of the year, the company made the following estimates:

Table 7.7.3: Kelly Shuck Productions' Beginning of the Year Manufacturing Overhead Estimates

Category	Cost
Direct labor hours required to support the estimated production	\$140,000
Machine hours required to support the estimated production	\$70,000
Fixed manufacturing overhead costs	\$784,000
Variable manufacturing overhead costs per direct labor hour	\$2.00

Category	Cost
Variable overhead costs per machine hour	\$3.00

During the year, Job KAS3 was started and completed. The following information is available with respect to this job:

Table 7.7.4: Job KAS3

Category	Cost
Direct materials	\$175
Direct labor	\$225
Direct labor hours	15
Machine hours	5

Required 1: Compute the organizational predetermined manufacturing overhead rate (single rate for the entire organization) with machine hours as the allocation base.

Required 2: Assume that Kelly uses the organizational predetermined manufacturing overhead rate calculated in requirement 1. Compute the total manufacturing cost of Job KAS3.

Required 3: If Kelly uses a markup percentage of 200% of its total manufacturing cost, what is the selling price for Job KAS3 (based on the total costs of computed in requirement 2)?

Practice Problem 3: Compute Departmental Predetermined Manufacturing Overhead Rates, Total Job Costs, and Cost Per Unit

Rookwood Pottery makes a variety of pottery products that it sells to retailers. The company uses a job-order costing system. Relevant data are provided below.

Table 7.7.5: Rockwood Pottery Select Financial Data

Category	Molding Department	Painting Department	Total
Direct labor hours	\$12,000	\$60,000	\$72,000
Machine hours	\$70,000	\$8,000	\$78,000
Fixed manufacturing overhead costs	\$497,000	\$615,000	\$1,112,000
Variable manufacturing overhead costs per machine hour	\$1.50	n/a	
Variable overhead costs per labor hour	n/a	\$2.00	

The following information was recorded for Job B53, which was started and completed during the year.

Table 7.7.6: Job B53

Category	Molding Department	Painting Department
Direct labor hours	30	64
Machine hours	110	20
Direct materials	\$770	\$1,332
Direct labor costs	\$525	\$1,470

Required 1: Assume that Rookwood uses departmental predetermined manufacturing overhead rates to apply manufacturing overhead costs to jobs. The predetermined manufacturing overhead rate in the Molding Department is based on machine-hours, and the rate in the Painting Department is based on direct labor-hours. Compute the predetermined manufacturing overhead

rates used in the Molding Department and the Painting Department.

Required 2: Assume that Rookwood uses the departmental predetermined manufacturing overhead rates calculated in requirement 1. Compute the total costs of Job B53.

Required 3: If Job B53 contained 50 units, compute the cost per unit (based on the total costs of Job B53 computed in requirement 2).

Practice Problem 4 Part 1: Cost Volume Profit (CVP) Analysis

Kinsley's Concepts is currently selling 500 toys per year. Kinsley's Concepts reported the following contribution margin income statement for its first year of operations.

Required 1: The sales manager feels that a \$6,000 increase in the monthly advertising budget would increase monthly sales by \$9,600 to a total of 540 units. Should the advertising budget be increased?

Table 7.7.7: Kinsley's Concepts Contribution Margin Income Statement

Category	Q500	Per Unit	CM Ratio
Sales	\$120,000	\$240	100%
Less variable costs	\$ 72,000	\$144	60%
Equals contribution margin	\$ 48,000	\$ 96	40%
Less fixed costs	\$ 30,000		
Equals net income	\$ 18,000		

Table 7.7.8: Kinsley's Concepts Adjusted Contribution Margin Income Statement

Category	Q?	Per Unit	CM Ratio
Sales	\$?	\$?	? %
Less variable costs	\$?	\$?	? %
Equals contribution margin	\$?	\$?	? %
Less fixed costs	\$?		
Equals net income	\$?		

Practice Problem 4 Part 2: Cost Volume Profit (CVP) Analysis

Refer to the original data. Kinsley's Concepts is currently selling 500 toys per year. Kinsley's Concepts reported the following contribution margin income statement for its first year of operations.

Required 2: Kinsley is considering the use of higher-quality components, which would increase variable costs (and thereby reduce the contribution margin) by \$6 per toy. However, the sales manager predicts that using higher-quality components would increase sales to 550 toys per year. Should the higher-quality components be used?

Table 7.7.9: Kinsley's Concepts Contribution Margin Income Statement

Category	Q500	Per Unit	CM Ratio
Sales	\$120,000	\$240	100%
Less variable costs	\$ 72,000	\$144	60%
Equals contribution margin	\$ 48,000	\$ 96	40%
Less fixed costs	\$ 30,000		

Category	Q500	Per Unit	CM Ratio
Equals net income	\$ 18,000		

Table 7.7.10: Kinsley's Concepts Adjusted Contribution Margin Income Statement

Category	Q?	Per Unit	CM Ratio
Sales	\$?	\$?	? %
Less variable costs	<u>\$?</u>	<u>\$?</u>	<u>? %</u>
Equals contribution margin	\$?	\$?	? %
Less fixed costs	<u>\$?</u>		
Equals net income	\$?		

Practice Problem 4 Part 3: Cost Volume Profit (CVP) Analysis

Refer to the original data. Kinsley's Concepts is currently selling 500 toys per year. Kinsley's Concepts reported the following contribution margin income statement for its first year of operations.

Required 3: To increase sales, the sales manager would like to cut the selling price by \$40 per toy and increase the advertising budget by \$15,000 per year. The sales manager believes that if these two steps are taken, unit sales will increase by 200 toys per year. Should the changes be made?

Table 7.7.11: Kinsley's Concepts Contribution Margin Income Statement

Category	Q500	Per Unit	CM Ratio
Sales	\$120,000	\$240	100%
Less variable costs	<u>\$ 72,000</u>	<u>\$144</u>	<u>60%</u>
Equals contribution margin	\$ 48,000	\$ 96	40%
Less fixed costs	<u>\$ 30,000</u>		
Equals net income	\$ 18,000		

Table 7.7.12: Kinsley's Concepts Adjusted Contribution Margin Income Statement

Category	Q?	Per Unit	CM Ratio
Sales	\$?	\$?	? %
Less variable costs	<u>\$?</u>	<u>\$?</u>	<u>? %</u>
Equals contribution margin	\$?	\$?	? %
Less fixed costs	<u>\$?</u>		
Equals net income	\$?		

Practice Problem 5 Part 1: Calculating Break-Even and Target Profit

Sweet Eats reported the following contribution margin income statement for its first year of operations.

Table 7.7.13: Sweet Eats Contribution Margin Income Statement

Category	Q20,000	Per Unit	CM Ratio
Sales	\$360,000	\$18.00	100%
Less variable costs	<u>\$198,000</u>	<u>\$ 9.90</u>	<u>55%</u>

Category	Q20,000	Per Unit	CM Ratio
Equals contribution margin	\$162,000	\$ 8.10	45%
Less fixed costs	<u>\$110,000</u>		
Equals net income	\$ 52,000		

Required 1: Compute the break-even in both sales units and sales dollars for Sweet Eats.

Break-even in units sold:

Break-even in sales dollars:

Required 2: Compute target profit in both sales units and sales dollars, assuming that Sweet Eats is projecting \$75,000 in net income.

Target profit in units sold:

Target profit in sales dollars:

Practice Problem 5 Part 2: Cost Volume Profit (CVP) Analysis

Refer to the original data. Sweet Eats is currently selling 20,000 treats per year.

Required 3: Compute net income assuming the selling price decreases by \$1.50 per unit, fixed expenses increase by \$10,000, and the number of units sold decreases by 5%.

Table 7.7.14: Sweet Eats Contribution Margin Income Statement

Category	Q20,000	Per Unit	CM Ratio
Sales	\$360,000	\$18.00	100%
Less variable costs	<u>\$198,000</u>	<u>\$ 9.90</u>	<u>55%</u>
Equals contribution margin	\$162,000	\$ 8.10	45%
Less fixed costs	<u>\$110,000</u>		
Equals net income	\$ 52,000		

Table 7.7.15: Sweet Eats Adjusted Contribution Margin Income Statement

Category	Q?	Per Unit	CM Ratio
Sales	\$?	\$?	? %
Less variable costs	<u>\$?</u>	<u>\$?</u>	<u>? %</u>
Equals contribution margin	\$?	\$?	? %
Less fixed costs	<u>\$?</u>		
Equals net income	\$?		

Practice Problem 5 Part 3: Cost Volume Profit (CVP) Analysis

Refer to the original data. Sweet Eats is currently selling 20,000 treats per year.

Required 4: Compute net income assuming the selling price increases by 5%, variable expenses decrease by 0.45 cents per unit, and the number of units sold increases by 12%.

Table 7.7.16: Sweet Eats Contribution Margin Income Statement

Category	Q20,000	Per Unit	CM Ratio
Sales	\$360,000	\$18.00	100%
Less variable costs	<u>\$198,000</u>	<u>\$ 9.90</u>	<u>55%</u>
Equals contribution margin	\$162,000	\$ 8.10	45%
Less fixed costs	<u>\$110,000</u>		
Equals net income	\$ 52,000		

Table 7.7.17: Sweet Eats Adjusted Contribution Margin Income Statement

Category	Q?	Per Unit	CM Ratio
Sales	\$?	\$?	? %
Less variable costs	<u>\$?</u>	<u>\$?</u>	<u>? %</u>
Equals contribution margin	\$?	\$?	? %
Less fixed costs	<u>\$?</u>		
Equals net income	\$?		

8: OPERATING BUDGET

8.1: Why It Matters

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8.1: Why It Matters

Though no one in business has a crystal ball, managers must often do all they can to predict the future as accurately as possible. This is called **forecasting**. Accounting and finance professionals use past performance along with what they know about the business, its competitors, the economy, and the company's plans for the future to assemble detailed financial forecasts. Forecasts are useful to many individuals for different reasons. A budget, a type of static forecast, helps accountants and managers see how their plans for the coming year can be achieved. It outlines sales targets and how much can be spent on cost of goods sold and expenses to achieve the company's bottom-line (net income) targets. Investors use financial forecasts to help guide their decisions to buy, sell, or hold stocks or to estimate future potential income through dividends. Perhaps most importantly, for our purposes in finance, forecasts are used to help predict and manage cash flows.



Image 8.1.1: Forecasts are an important financial tool. (credit: modification of "Red Post-It Label, Calculator and Ballpen" by photosteve101/flickr, CC BY 2.0)

A business can have all the profit in the world at the end of the year, but if it doesn't raise enough cash (liquidity) to pay the bills and pay its employees halfway through the year, it could still go bankrupt despite being profitable. Forecasting sales and expenses helps assemble a cash forecast—when sales will be collected and when expenses will be paid—so that financial managers can look forward far enough to have enough time to react accordingly and secure short- or long-term financing to meet gaps in cash flow.

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8.2: The Importance of Forecasting

Learning Objectives

By the end of this section, you will be able to:

- Discuss how to use financial statements in forecasting firm financials.
- Explain why balance sheet items are important in forecasting a firm's financial results.
- Explain why income statement items are important in forecasting a firm's financial results.

In this section, we will briefly review some of the basic elements of financial statements and how we can analyze historical statements to help assemble financial forecasts. Financial forecasting is important to short- and long-term firm success. It helps a firm plan for the resources it will need, ensuring it will have enough cash on hand at the right time to cover daily operations and capital expenditures. It helps the firm communicate its future potential and manage its shareholders' expectations. It also helps management assess future risk and set plans in place to mitigate that risk.

Financial forecasting involves using historical data, analysis tools, and other information we can gather to make an educated guess about the future financial performance of the firm. Historical figures provide a reasonable starting point. We use tools such as ratios, common size, and trend analysis to fine-tune our forecast. And finally, we assess what we know about the firm, its competitors, the economy, and anything else that might impact performance and further fine-tune our forecast from there.

It's important to take a moment to consider the role of ethics in forecasting. Ethics is a huge issue in the world of accounting and finance in general, and forecasting is no different. There can be tremendous pressure on management to perform, to deliver certain levels of profit, and to meet shareholder expectations.

Forecasting, as you will learn throughout this chapter, is not an exact science. There is a great deal of subjectivity that can come into play when forecasting sales and expenses. Ethical behavior is crucial in this area. Those who create forecasts must have a firm understanding of where their data comes from, how reliable it is, and whether or not their assumptions and projections are reasonably justified.

Financial Statement Foundations

In Financial Statements, you were introduced to a firm called Clear Lake Sporting Goods. You learned about the four key financial statements: the **income statement**, **balance sheet**, **statement of stockholders' equity**, and **statement of cash flows**. Each one provides a different view of the firm's financial health and performance.

Clear Lake Sporting Goods is a small merchandising company (a company that buys finished goods and sells them to consumers) that sells hunting and fishing gear. It uses financial statements to understand its profitability and current financial position, to manage cash flow, and to communicate its finances to outside parties such as investors, governing bodies, and lenders. We will use Clear Lake's company information and historical financial statements in this chapter as we explore its forecasting process. It's important to note that in this chapter, we are focusing on just one firm and the one method its managers have chosen to forecast financial performance. There are a variety of types of firms in actual application, and they may choose to forecast their financial performance differently. We are demonstrating just one approach here.

The balance sheet shows all the firm's assets, liabilities, and equity at one point in time. It also supports the accounting equation in a very clear and transparent way. We find that one section of the balance sheet contains all current and noncurrent assets that must total the other section of the balance sheet: total liabilities and equity. In Figure 8.2.1, we see that Clear Lake Sporting Goods has total assets of \$250,000 in the current year, which balances with its total liabilities and equity of \$250,000.

Clear Lake Sporting Goods Comparative Year-End Balance Sheets		
	Prior Year	Current Year
Assets		
Current Assets:		
Cash	\$ 90,000	\$110,000
Accounts Receivable	20,000	30,000
Inventory	35,000	40,000
Short-Term Investments	15,000	20,000
Total Current Assets	<u>160,000</u>	<u>200,000</u>
Noncurrent Assets:		
Equipment	40,000	50,000
Total Assets	<u>\$200,000</u>	<u>\$250,000</u>
Liabilities		
Current Liabilities:		
Accounts Payable	60,000	75,000
Unearned Revenue	10,000	25,000
Total Current Liabilities	<u>70,000</u>	<u>100,000</u>
Noncurrent Liabilities:		
Notes Payable	40,000	50,000
Total Liabilities	<u>\$110,000</u>	<u>\$150,000</u>
Stockholder Equity		
Common Stock	75,000	80,000
Ending Retained Earnings	15,000	20,000
Total Stockholder Equity	<u>90,000</u>	<u>100,000</u>
Total Liabilities and Stockholder Equity	<u>\$200,000</u>	<u>\$250,000</u>

Figure 8.2.1: Balance Sheet

The income statement reflects the performance of the firm over a period of time. It includes net sales, cost of goods sold, operating expenses, and net income. In Figure 8.2.2, we see that Clear Lake had \$120,000 in net sales, \$60,000 in cost of goods sold, and \$35,000 in net income in the current year.

Clear Lake Sporting Goods Comparative Year-End Income Statements		
	Prior Year	Current Year
Gross Sales	\$105,000	\$126,000
Sales Returns & Allowances	5,000	6,000
Net Sales	<u>100,000</u>	<u>120,000</u>
Cost of Goods Sold	50,000	60,000
Gross Profit	<u>50,000</u>	<u>60,000</u>
Rent Expense	5,000	5,500
Depreciation Expense	2,500	3,600
Salaries Expense	3,000	5,400
Utility Expense	1,500	2,500
Operating Income	<u>38,000</u>	<u>43,000</u>
Interest Expense	3,000	2,000
Income Tax Expense	5,000	6,000
Net Income	<u>\$ 30,000</u>	<u>\$ 35,000</u>

Figure 8.2.2: Full Income Statement

Finally, the statement of cash flows is used to reconcile net income to cash balances. The statement begins with net income, then reflects adjustments to balance sheet accounts and noncash expenses. The statement of cash flows is broken down into three key categories: operating, investing, and financing. This allows users to clearly see what elements of the business are generating or using cash. In Figure 8.2.3, we see that Clear Lake had cash flow from **operating activities** of \$53,600, cash used for **investing activities** of (\$18,600), and cash used for **financing activities** of (\$15,000).

Clear Lake Sporting Goods Statement of Cash Flows Indirect Method		
Cash Flow from Operating Activities		
Net Income		\$ 35,000
Adjustment to Reconcile Net Income to Net Cash Flow from Operating Activities:		
Depreciation	\$3,600	
Accounts Receivable Increase	(10,000)	
Inventory Increase	(5,000)	
Accounts Payable Increase	15,000	
Unearned Revenue Increase	15,000	18,600
Net Cash Flow from Operating Activities		53,600
Cash Flow from Investing Activities		
Purchase of Short-Term Investments	(5,000)	
Cost of New Plant Assets	(13,600)	
Net Cash Flow: Investing Activities		(18,600)
Cash Flow from Financing Activities		
Additional Notes Payable	10,000	
Issuance of Common Stock	5,000	
Payment of Dividends	(30,000)	
Net Cash Flow from Financing Activities		(15,000)
Total Cash Flow Increase/Decrease		20,000
Beginning Cash Balance		90,000
Ending Cash Balance		<u>\$110,000</u>

Figure 8.2.3: Statement of Cash Flows

Another key concept to remember about the financial statements is that the statement of cash flows is necessary to truly understand how the firm is using and generating cash. A common misconception is that if a firm reports net income on its income statement, then it must have plenty of cash, and if it reports a loss, it must be short on cash. Although this can be true, it's not necessarily the case. Historically speaking, we need the statement of cash flows to get the full picture of how cash was used or generated in the past. Looking to the future, we need a cash flow forecast to plan for possible gaps in cash flow and, potentially, how to make the best use of any cash surplus. Throughout this chapter, we will see how to use historical financial statements to help develop the future cash forecast.

It's also important to remember that the four financial statements are tied together. Net income from the income statement feeds into retained earnings, which live on the balance sheet. Equity balances on the balance sheet feed information to the statement of stockholders' equity. And information from both the income statement (net income and noncash expenses) and the balance sheet (changes in working capital accounts) all feed into the statement of cash flows. These relationships will be helpful to understand when using historical statements and preparing forecasts.

Balance Sheet Analysis

Fully understanding the items that are on the balance sheet and how they relate to one another and to other financial statements will help you create a financial forecast. On the classified balance sheet, both assets and liabilities are broken down into current and noncurrent categories. The balance sheet must live up to its name—it must balance. This means that total assets (what the company owns) must equal total liabilities and equity (what the company owes).

We use elements of the balance sheet to assess financial health. Ratios based on balance sheet accounts can be useful for understanding relationships between balance sheet items—how they relate in the past and then, in forecasting, how those relationships might change or remain the same in the future. Examples of balance sheet ratios include the current ratio, quick ratio, cash ratio, debt-to-assets ratio, and debt-to-equity ratio.

To prepare a common-size analysis of the balance sheet, every item on the statement must be expressed as a percentage of total assets. Seeing each item as a percentage—that is, seeing its relationship to total assets—is also helpful for assessing historical statements and how those percentages or relationships can be used to predict future balances in the forecast. For example, in Figure 8.2.4, you can see that Clear Lake's current assets represented 80% of its total assets in both the current and prior years.

Clear Lake Sporting Goods Comparative Year-End Balance Sheets				
	Prior Year	Prior Year %	Current Year	Current Year %
Assets				
Current Assets:				
Cash	\$ 90,000	45%	\$110,000	44%
Accounts Receivable	20,000	10%	30,000	12%
Inventory	35,000	18%	40,000	16%
Short-Term Investments	15,000	8%	20,000	8%
Total Current Assets	<u>160,000</u>	<u>80%</u>	<u>200,000</u>	<u>80%</u>
Noncurrent Assets:				
Equipment	40,000	20%	50,000	20%
Total Assets	<u>\$200,000</u>	<u>100%</u>	<u>\$250,000</u>	<u>100%</u>
Liabilities				
Current Liabilities:				
Accounts Payable	60,000	30%	75,000	30%
Unearned Revenue	10,000	5%	25,000	10%
Total Current Liabilities	<u>70,000</u>	<u>35%</u>	<u>100,000</u>	<u>40%</u>
Noncurrent Liabilities:				
Notes Payable	40,000	20%	50,000	20%
Total Liabilities	<u>\$110,000</u>	<u>55%</u>	<u>\$150,000</u>	<u>60%</u>
Stockholder Equity				
Common Stock	75,000	38%	80,000	32%
Ending Retained Earnings	15,000	8%	20,000	8%
Total Stockholder Equity	<u>90,000</u>	<u>45%</u>	<u>100,000</u>	<u>40%</u>
Total Liabilities and Stockholder Equity	<u>\$200,000</u>	<u>100%</u>	<u>\$250,000</u>	<u>100%</u>

Figure 8.2.5: Common-Size Balance Sheet

Income Statement Analysis

Like balance sheet analysis, income statement analysis is also quite helpful in preparing for the forecasting process. The income statement is commonly broken down into a few sections. Cost of goods sold is deducted from net sales to arrive at gross margin. Gross margin refers to the profits earned solely on the sale of the product itself, without consideration for the expenses incurred to run the business. Next, operating expenses are deducted to reflect operating income. Operating income reflects the profits of the core business function. Finally, other items, such as interest expense, tax expense, and other gains and losses, are deducted to arrive at net income, a.k.a. the *bottom line*. Each segment of the income statement is helpful for assessing past performance and estimating future expenses for a forecast.

We use elements of the income statement to assess historical financial performance. Ratios based on the income statement can be useful for understanding relationships between net sales and expenses—how they relate in the past and then, in forecasting, how those relationships might change or remain the same. Examples of income statement ratios include gross margin, operating margin, and profit margin. Common ratios that incorporate items from both the balance sheet and the income statement include return on assets (ROA), return on equity (ROE), inventory turnover, accounts receivable turnover, and accounts payable turnover.

Link to Learning: Performance Trends

Review the most recent [annual report for Big 5 Sporting Goods](#). Review the company's sales and gross margins for the current and past two years. How is their performance? Are their sales trending up or down? Why might the contribution margin have increased or decreased?

To prepare a common-size analysis of the income statement, every item on the statement must be expressed as a percentage of net assets. Seeing each item as a percentage, in terms of its relationship to total sales, is also helpful for assessing historical statements and how those percentages or relationships can be used to predict future balances in the forecast. For example, in Figure 8.2.5, you can see that Clear Lake's cost of goods sold represented 50% of its net sales in both the current and prior years.

Clear Lake Sporting Goods Comparative Year-End Income Statements				
	Prior Year	Prior Year %*	Current Year	Current Year %*
Gross Sales	\$105,000		\$126,000	
Sales Returns & Allowances	5,000		6,000	
Net Sales	100,000	100%	120,000	100%
Cost of Goods Sold	50,000	50%	60,000	50%
Gross Profit	50,000	50%	60,000	50%
Rent Expense	5,000	5%	5,500	5%
Depreciation Expense	2,500	3%	3,600	3%
Salaries Expense	3,000	3%	5,400	5%
Utility Expense	1,500	2%	2,500	2%
Operating Income	38,000	38%	43,000	36%
Interest Expense	3,000	3%	2,000	2%
Income Tax Expense	5,000	5%	6,000	5%
Net Income	<u>\$ 30,000</u>	<u>30%</u>	<u>\$ 35,000</u>	<u>29%</u>
*Some figures are rounded to the nearest whole percent, which may alter the total percentage to plus or minus 100%.				

Figure 8.2.5: Common-Size Income Statement

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8.3: Forecasting Sales

Learning Objectives

By the end of this section, you will be able to:

- Explain how sales are the main driver for a financial forecast.
- Determine a past time period to formulate the basis for a financial forecast.
- Explain the advantages and disadvantages of using past data to forecast future financial performance.
- Calculate past sales growth averages.
- Justify adjusting relationships when forecasting future financial performance.

In this section, you will begin to explore the first step of creating a forecast: forecasting sales. We will discuss common time frames for sales forecasts and why we use historical data in our forecasts (but only with caution), and we will work through the process of forecasting future sales. We will be using the percent-of-sales method to forecast some expenses for Clear Lake Sporting Goods, the example used throughout the chapter. This method relies on sales data, further highlighting why accuracy in forecasting sales is crucial.

Sales as the Driver

A significant portion of a business's costs is driven by how much it sells. Thus, the sales forecast is the necessary first step in preparing a financial forecast. Common costs driven by sales include direct product costs, direct labor costs, and other key variable costs (i.e., costs that vary proportionately to sales), such as sales commissions.

Looking to the Past

Forecasting sales is not always an easy task, as no one knows the future. We can, however, use the information we do have to forecast future sales with the greatest accuracy possible. Most firms start by looking at the past. A firm may look at past sales from a variety of prior periods. It's common to look at the past 12 months to estimate the coming 12 months. Looking at 12 consecutive months helps identify seasonality of sales trends, what time of year sales tend to drop off and when they increase, possible sales spikes that might recur, and any other trends that tend to appear over a 12-month period. In Figure 8.3.1, we see Clear Lake's sales by month for the past 12 months.

Past data is often used in conjunction with probabilities and weighted average calculations derived from probabilities. Though used in several areas of forecasting, this approach is particularly common in drafting the sales forecast. Using multiple scenarios and the probability of each scenario occurring is a common approach to estimating future sales.

Clear Lake Sporting Goods Monthly Sales

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
\$	10,000	11,000	9,000	10,000	14,000	19,000	18,000	12,000	8,000	6,000	5,000	4,000

Figure 8.3.1: Historical Sales Data

We can see at first glance that sales remain fairly steady from January to April. Sales then go up significantly in April and May, seem to peak in June, taper off a bit in July, then decline steeply from August to the end of the year, with the lowest sales being in November and December. Though not exact, it's easy to quickly see that sales follow a seasonal pattern. We will focus on just one year of data here to keep things simple. However, it's important to note that when a firm has a seasonal sales pattern, it normally uses more than one year of data to detect and evaluate the pattern. It's not uncommon for firms to have a seasonal sales pattern that fluctuates based on an external factor such as weather patterns, patterns in business or demand, or other factors such as holidays. Common examples might include farm-based businesses that function on a weather pattern for harvesting and selling crops or a toy company that fluctuates around gift-giving holidays.

This knowledge is helpful when assembling a first pass at next year's sales forecast. Using common-size and horizontal (trend) analyses on sales is also helpful, as shown in Figure 8.3.2. We can see the exact percentages that sales went up or down each month:

- In January, the company had sales of \$9,000, which was 7.1% ($\$9,000/\$126,000$) of the total annual sales.
- In June, the company had \$19,000 sales, which was 15.1% ($\$19,000/\$126,000$) of the total annual sales and 211% ($\$19,000/\$9,000$) of January sales.

Clear Lake Sporting Goods Monthly Sales as Percentages

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
\$	11,000	9,000	10,000	14,000	19,000	18,000	12,000	8,000	6,000	5,000	4,000	3,000
%	8.7%	7.1%	7.9%	11.1%	15.1%	14.3%	9.5%	6.3%	4.8%	4.0%	3.2%	2.4%
%	122%	100%	111%	156%	211%	200%	133%	89%	67%	56%	44%	33%

Figure 8.3.2: Historical Sales Data as Percentages

Once a baseline in the 12-month period is assessed, it can also be helpful to look for trends in other ways. For example, the past several years might be assessed to see if there is a trend in total growth or decline for those years on a summary basis or by period. Clear Lake Sporting Goods had sales in the current year of \$126,000, in the prior year of \$105,000, and two years ago of \$89,000. This reflects a 20% increase and an 18% increase, respectively. It might be reasonable to expect a roughly 18 to 20% increase in total sales in the future with only this information in mind. Keep in mind that we will learn about many other factors to consider in the forecast, so the 18 to 20% increase is a good general guideline to consider along with other factors.

Clear Lake Sporting Goods Forecasted Monthly Income Statements										
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
\$	12,980	10,620	11,800	16,520	22,420	21,240	14,160	9,440	7,080	5,900
%	8.7%	7.1%	7.9%	11.1%	15.1%	14.3%	9.5%	6.3%	4.8%	4.0%
%	122%	100%	111%	156%	211%	200%	133%	89%	67%	56%

Figure 8.3.3: Forecasted Sales Data

Keep in mind that this is only a starting point. These estimates will be reviewed, assessed, and updated as more information and other factors are taken into consideration.

It can also be helpful to look at a shorter period, perhaps just the last few months, on a more detailed basis (by department, by customer, etc.) to see if there are any possible new trends beginning to develop that might be an indicator of performance in the coming year. For example, Clear Lake Sporting Goods might look at detailed sales records for October, November, and December and see that it had an old product line that was discontinued in early October, which contributed to a 2% reduction in monthly sales. This reduction in monthly sales will likely continue into the new year until the new line the company has signed on begins arriving in stores. Thus, the management team feels they should reduce their first quarter monthly estimates by 2%, as reflected in Figure 8.3.4. January is now \$10,408 ($\$10,620 \times 98\%$), for example.

Clear Lake Sporting Goods Forecasted Monthly Income Statement					
Apr	May	Jun	Jul	Aug	Sep
11,800	16,520	22,420	21,240	14,160	9,440

Figure 8.3.4: Adjusted Forecasted Sales Data

Changes for the Future

It's important to note that the past is not always a reliable predictor of the future. Circumstances can often change to make the future quite different from the past. The business itself may change, the economy can change, the customer base may undergo a shift in demographics or a change in buying habits, new competition may emerge, and so on. So while past performance is helpful, it is only one step in the process of forecasting sales.

Clear Lake Sporting Goods Forecasted Monthly Income Statement					
Apr	May	Jun	Jul	Aug	Sep
12,800	18,020	24,420	23,240	16,160	9,440

Figure 8.3.5: Forecasted Sales Data with New Brand

What we have discussed here are only some brief examples of the myriad factors that might impact a sales budget for the coming year. It's critical that all members of the team take the time and effort to research their customers and the factors that impact their business in order to effectively assess the impact of these factors on future sales. Though only two adjustments were made here, it's likely that a large firm would have to consider many, many factors that would ultimately impact monthly sales figures before arriving at a conclusion.

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8.4: Pro Forma Financials

Learning Objectives

By the end of this section, you will be able to:

- Define pro forma in the context of a financial forecast.
- Describe the factors that impact the length of a financial forecast.
- Explain the risks associated with a financial forecast.

In this section, we will move beyond the sales forecast and look at the general nature, length, and timeline of forecasts and the risks associated with using them. We'll look at why we use them, how long they generally are, what the key variables in a forecast are, and how we pair those variables with common-size analysis to develop the forecast.

Purpose of a Forecast

Forecasts serve different purposes depending on who is using them. Our focus here, however, is the world of finance. In this realm, the key purpose of **pro forma** (future-looking) financial statements is to manage a firm's cash flow and assess the overall value that the firm is generating through future sales growth. Growing just for the sake of growing doesn't always yield favorable income for the firm. A larger top-line sales figure that results in lower net income doesn't make sense in the grand scheme of things. The same is true of profitable sales that don't generate enough cash flows at the right time. The firm may make a profit, but if it doesn't manage the timing of its cash flows, it could be forced to shut down if it can't cover the costs of payroll or keep the lights on. Forecasting helps assess both cash flow and the profitability of future growth. Managers can forecast cash flow using data from forecasted financial statements; this allows them to identify potential gaps in cash and plan ahead in order to either alter collection and payment policies or obtain funding to cover the gap in the timing of cash flows.

Length of a Forecast

Forecasts can generally be for any length of time. The length generally depends on the user's needs. A one-year forecast, broken down by month, is quite typical. A firm will often go through a formal budgeting process near the end of its calendar or fiscal year to project financial plans and goals for the coming year. Once that is done, a rolling financial forecast is then done monthly to adjust as time moves on, more information becomes available, and circumstances change.

To be useful, the future forecast for financial planning purposes is almost always calculated as monthly increments rather than one total figure for the next 12 months. Breaking the data down by month allows finance managers to more clearly see fluctuations in cash flows in and out, identify potential gaps in cash flow, and plan ahead for their cash needs.

Forecasts can also be done for several years into the future. In fact, they commonly are. However, once the firm is looking out beyond 12 months, it gets difficult to forecast items with a great degree of accuracy. Often, forecasts beyond a year will be completed only to quarterly or even annual figures rather than monthly. Forecasts that far into the future are often strategic in nature, made more to communicate future plans for the firm than for more detailed decision-making and cash flow planning.

Common-Size Financials

Common-size analysis involves using historical financial statements as a basis for future forecasts. Financial statements provide a great starting point for analysis, as we can see the relationships between sales and costs on the income statement and the relationships between total assets and line items on the balance sheet.

We saw that for the past two years, the cost of goods sold for Clear Lake Sporting Goods has been 50% of sales. Thus, in the first draft of a forecast for Clear Lake, it's likely that managers would estimate cost of goods sold at 50% of their forecasted sales. We can begin to see why forecasting sales first is crucial and why doing so as accurately as possible is also important.

Select Variables to Use

A simple way to begin a full financial statement forecast might be to simply use the common-size statements and forecast every item using historical percentages. It's a logical way to begin a very rough draft of the forecast. However, several variables should be taken into consideration. First, managers must address the cost of an account and determine if it's a variable or fixed item. Variable costs tend to vary directly and proportionally with production or sales volume. Common examples include direct labor and direct materials. Fixed costs, on the other hand, do not change when production or sales volume increases or decreases within the relevant range. Granted, if production were to increase or decrease by a large amount, fixed costs would indeed change. However, in normal month-to-month changes, fixed costs often remain the same. Common examples of fixed costs include rent and managerial salaries.

So, if we were to approach our common-size income statement, for example, we would likely use the percentage of sales as a starting point to forecast variable items such as cost of goods sold. However, fixed costs may not be accurately forecast as a percentage of sales because they won't actually change with sales. Thus, we would likely look at the history of the dollar values of fixed costs in order to forecast them.

Concepts In Practice: COVID-19 Makes Forecasting Difficult for Big 5 Sporting Goods

Big 5 Sporting Goods announced record earnings in the third quarter of 2020, attributing its huge success that quarter to the impact of people's reactions to the COVID-19 pandemic. With so many people in quarantine still wanting to make healthy lifestyle choices, sporting goods stores were making record sales. Record-breaking sales, however, are not certain in the future. The impacts of the pandemic are extremely difficult to predict, making it a challenge for Big 5 Sporting Goods and other companies to assemble pro forma financial statements.

(sources: [Globe Newswire](http://www.globenewswire.com) [www.globenewswire.com]; [Yahoo Finance](http://finance.yahoo.com) [finance.yahoo.com]; [CPA Practice Advisor](http://www.cpapracticeadvisor.com) [www.cpapracticeadvisor.com])

Determine Potential Changes in Variables

So far, we have focused on using historical common-size statements to create a draft (not a final version) of the forecast. This is because the past isn't always a perfect indicator of the future, and our finances don't always follow a linear pattern. We use the past as a good starting point; then, we must assess what else we know to fine-tune and make adjustments to the forecast.

Many items impact the forecast, and they will vary from one organization to another. The key is to do research, gather data, and look around at the market, the economy, the competition, and any other factors that have the potential to impact the future sales, costs, and financial health of the company. Though certainly not an exhaustive list, here are a few examples of items that may impact Clear Lake Sporting Goods.

- It has an old product line that was discontinued in early October, contributing to a 2% reduction in monthly sales that will likely continue into the new year until a new line begins arriving in stores.
- It will be adding a new brand to its collection of fishing supplies in March. The manufacturer plans to begin running commercials in late February. Managers anticipate that this will increase Clear Lake's monthly sales by about \$500 in March, \$1,000 in April, \$1,400 in May, and \$2,000 per month in June, July, and August.
- The company has just finished updating its employee compensation package. It goes into effect in January of the new year and will result in an overall 4% increase in the cost of labor.
- The landlord indicated that rent will increase by \$50 per month starting July 1.
- Some fixed assets will be fully depreciated by the end of March. Thus, depreciation expense will go down by \$25 per month beginning in April.
- There are rumors of new regulations that will impact the costs of importing some of the more difficult-to-obtain hunting supplies. Managers aren't entirely sure of the full impact of the new legislation at this time, but they anticipate that it could increase the cost of goods sold for the affected product line when the new legislation goes into effect in the last quarter. Their best estimate is that it could increase the overall cost of goods sold by up to 2%.

We will use all of this data later in the chapter when we are ready to compile a complete forecast for Clear Lake.

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8.5: Generating the Complete Forecast

Learning Objectives

By the end of this section, you will be able to:

- Generate a forecasted income statement that incorporates pertinent sales, functional, and policy variables.
- Generate a forecasted balance sheet.
- Connect the balance sheet and income statement forecasts with appropriate feedback linkages.

In this section of the chapter, we will tie together what we have learned so far about forecasting sales, common-size analysis, and using what we know about the company and its environment to create a full set of pro forma (forward-looking or forecasted) financial statements.

Forecast the Income Statement

To arrive at a fully forecasted income statement, we use historical income statements, common-size income statements, and any additional information we have about future sales and costs, such as the effects of the economy and competition. As we saw earlier in the chapter, we begin with forecasted sales because they are the basis for many of the forecasted costs.

Let's begin with the sales forecast for Clear Lake Sporting Goods that we saw earlier, and use it along with the prior year income statement by month. We will consider other data we have about the business to begin creating a full income statement (see Figure 8.5.1).

Clear Lake Sporting Goods Prior Year Monthly Income Statements														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Current Year	Current Year %
Gross Sales	9,000	11,000	9,000	10,000	14,000	19,000	18,000	12,000	8,000	6,000	5,000	5,000	\$126,000	
% of Annual Sales	7.1%	8.7%	7.1%	7.9%	11.1%	15.1%	14.3%	9.5%	6.3%	4.8%	4.0%	4.0%	100.0%	
% Change from January Baseline	100%	122%	100%	111%	156%	211%	200%	133%	89%	67%	56%	56%		
Sales Returns & Allowances	300	400	400	600	800	1,000	800	600	400	300	200	200	6,000	
Net Sales	8,700	10,600	8,600	9,400	13,200	18,000	17,200	11,400	7,600	5,700	4,800	4,800	120,000	100%
Cost of Goods Sold	4,785	5,830	4,730	4,700	5,940	8,100	7,740	5,700	3,800	2,915	2,880	2,880	60,000	50%
Gross Margin	3,915	4,770	3,870	4,700	7,260	9,900	9,460	5,700	3,800	2,785	1,920	1,920	60,000	50%
Rent Expense	458	458	458	458	458	458	458	458	458	458	458	458	5,500	5%
Depreciation Expense	300	300	300	300	300	300	300	300	300	300	300	300	3,600	3%
Salaries Expense	450	450	450	450	450	450	450	450	450	450	450	450	5,400	5%
Utility Expense	179	218	179	198	278	377	357	238	159	119	99	99	2,500	2%
Operating Income	2,528	3,343	2,483	3,293	5,774	8,315	7,895	4,254	2,433	1,458	612	612	43,000	36%
Interest Expense	167	167	167	167	167	167	167	167	167	167	167	167	2,000	2%
Income Tax Expense	353	467	346	460	806	1,160	1,102	594	339	203	85	85	6,000	5%
Net Income	2,009	2,710	1,970	2,667	4,802	6,988	6,626	3,493	1,927	1,088	360	360	\$ 35,000	29%

Figure 8.5.1: Prior Year Monthly Income Statement by Month

The first two key points regarding product lines have already been built into the sales forecast. Notice that the cost of goods sold was 50% in the prior year. However, based on possible future legislation, to be conservative, we should increase the cost of goods sold by 2% in the last quarter of the year. Thus, we will forecast cost of goods sold at 50% of sales in the first nine months and increase it to 52% in the last three months of the year.

Rent is a fixed cost that historically amounts to \$458 per month. However, we know that the landlord is increasing rent by \$50 starting on July 1. Thus, we will forecast rent at the same fixed cost of \$458 per month for the first six months and increase it to \$508 per month for the second half of the year.

Depreciation, also a fixed cost, was historically \$300 per month. However, we know that depreciation expense will go down by \$25 beginning in April. Thus, we forecast depreciation at \$300 for the first three months and at \$275 for the last 9 months.

Salaries expense has historically been \$450 per month. However, we know that the company is implementing a new compensation program on January 1 that will increase salary expenses by 4% (\$18). Thus, we will forecast salaries for the whole year at \$468.

Utilities expense seems to vary somewhat by sales from month to month, as shops are open longer hours during their busy season. However, the total utilities expense is not expected to change for the coming year. Thus, the forecast for utilities expense remains at \$2,500, broken down by month as a percentage of sales.

Interest expense is a fixed cost and isn't anticipated to change. Thus, the same \$167 interest expense per month is forecast for the coming year.

Finally, income tax expense is forecasted as a percentage of operating income because tax liability is incurred as a direct result of operating income. Figure [Extra close brace or missing open brace](#) shows the next 12 months' forecast for Clear Lake Sporting Goods using all of this data.

Clear Lake Sporting Goods Forecasted Monthly Income Statements													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gross Sales	\$10,408	\$12,720	\$10,908	\$12,800	\$18,020	\$24,420	\$23,240	\$16,160	\$9,440	\$7,080	\$5,900	\$5,900	\$156,996
% of Annual Sales	7.1%	8.7%	7.1%	7.9%	11.1%	15.1%	14.3%	9.5%	6.3%	4.8%	4.0%	4.0%	100%
% Change from January Baseline	100%	122%	105%	123%	173%	235%	223%	155%	91%	68%	57%	57%	
Sales Returns & Allowances	300	400	400	600	800	1,000	800	600	400	300	200	200	6,000
Net Sales	10,108	12,320	10,508	12,200	17,220	23,420	22,440	15,560	9,040	6,780	5,700	5,700	150,996
Cost of Goods Sold	5,054	6,160	5,254	6,100	8,610	11,710	11,220	7,780	4,520	3,526	2,964	2,964	75,861
Gross Margin	5,054	6,160	5,254	6,100	8,610	11,710	11,220	7,780	4,520	3,254	2,736	2,736	75,134
Rent Expense	458	458	458	458	458	458	508	508	508	508	508	508	5,798
Depreciation Expense	300	300	300	275	275	275	275	275	275	275	275	275	3,375
Salaries Expense	468	468	468	468	468	468	468	468	468	468	468	468	5,616
Utility Expense	175	214	183	215	303	411	391	272	159	119	99	99	2,640
Operating Income	3,652	4,720	3,844	4,683	7,106	10,098	9,578	6,257	3,110	1,884	1,386	1,386	57,705
Interest Expense	167	167	167	167	167	167	167	167	167	167	167	167	2,000
Income Tax Expense	510	659	536	654	991	1,409	1,336	873	434	263	193	193	8,052
Net Income	\$ 2,976	\$ 3,895	\$ 3,141	\$ 3,863	\$ 5,948	\$ 8,522	\$ 8,075	\$ 5,218	\$2,510	\$1,455	\$1,026	\$1,026	\$ 47,653

Figure 8.5.2: Forecasted Income Statement

Forecast the Balance Sheet

Now that we have a reasonable income statement forecast, we can move on to the balance sheet. The balance sheet, however, is entirely different from the income statement. It requires a bit more research and additional assumptions. Just like the income statement, it's often a work in progress. A first draft is a good starting point, but adjustments must be made once it is created, and all the interrelationships between the statements, cash flow in particular, are taken into consideration.

The balance sheet is a bit more difficult to forecast because the statement reflects balances at just a given point in time. Account balances change daily, so forecasting just one snapshot in time for each month can be a challenge. A good starting point is to assess general company financial policies or rules of thumb. For example, assume that Clear Lake pays most of its vendors on net 30-day terms. A good way to forecast accounts payable on the balance sheet might be to add up the cost of goods sold from the forecasted income statement for the prior month. For example, in Figure 18.14, we see that Clear Lake has forecasted its accounts payable for March as the cost of goods sold in March from its forecasted income statement.

For accounts receivable, Clear Lake generally receives payment from customers within net 90-day terms. Thus, it uses the sum of the current and prior two months' forecasted sales to estimate its accounts receivable balance.

Inventory will vary throughout the year. For the first six months, the company tries to build inventory for four months of sales. Once the busy season hits, inventory goes down to three months' worth of future sales, then finally drops to only two months of sales in

December. Thus, managers use their sales forecast by month to estimate their inventory ending balance each month.

The equipment balance is forecasted by reducing the prior month's balance by the forecasted depreciation expense on the forecasted income statement.

Unearned revenue is historically around 50% of the current month's sales. Thus, Clear Lake estimates its unearned revenue balance each month by taking the current month's net sales from the forecasted income statement and multiplying it by 50%.

Short-term investments, notes payable, and common stock are not anticipated to change, so the current balance is forecasted to remain the same for the next 12 months.

To forecast the ending balance for retained earnings for each month, managers add the monthly net income from the forecasted balance sheet to the prior balance and subtract a quarterly \$10,000 dividend.

Once all of these accounts are completed, the balance sheet is out of balance. Given that all of these events are somewhat related but are not tied together dollar for dollar, it's not surprising when the forecasted balance sheet is finished and does not balance. To complete the first draft (see Figure 8.5.3), the cash account is used as a variable and plugged in to make the balance sheet balance. Notice that by the end of the year, the company has \$59,905 in cash. However, look at what happens midyear—the cash account falls to only \$8,782. In the next section, we will generate a cash flow forecast, which will allow Clear Lake to update its balance sheet forecast once it estimates what it will do to cover the cash flow gaps.

Clear Lake Sporting Goods Forecasted Monthly Balance Sheets												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Assets												
Current Assets:												
Cash	\$42,581	\$38,259	\$19,083	\$11,150	\$12,345	\$8,782	\$16,175	\$20,842	\$21,733	\$40,099	\$60,834	\$59,905
Accounts Receivable	25,408	32,028	37,736	45,136	52,248	63,348	75,280	78,640	70,460	53,820	37,080	27,220
Inventory	22,568	26,124	31,674	37,640	39,320	35,230	23,520	15,826	11,010	9,454	5,928	8,018
Short-Term Investments	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Total Current Assets	110,557	116,411	108,493	113,925	123,913	127,360	134,975	135,308	123,202	123,373	123,842	115,142
Noncurrent Assets:												
Equipment	50,000	49,700	49,400	49,100	48,825	48,550	48,275	48,000	47,725	47,450	47,175	46,900
Total Assets	160,557	166,111	157,893	163,025	172,738	175,910	183,250	183,308	170,927	170,823	171,017	162,042
Liabilities												
Current Liabilities:												
Accounts Payable	5,054	6,160	5,254	6,100	8,610	11,710	11,220	7,780	4,520	3,526	2,964	2,964
Unearned Revenue	2,527	3,080	2,627	3,050	4,305	5,855	5,610	3,890	2,260	1,695	1,425	1,425
Total Current Liabilities	7,581	9,240	7,881	9,150	12,915	17,565	16,830	11,670	6,780	5,221	4,389	4,389
Noncurrent Liabilities:												
Notes Payable	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Total Liabilities	57,581	59,240	57,881	59,150	62,915	67,565	66,830	61,670	56,780	55,221	54,389	54,389
Stockholder Equity												
Common Stock	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000	80,000
Ending Retained Earnings	22,976	26,871	20,012	23,875	29,823	28,345	36,420	41,638	34,147	35,602	36,628	27,653
Total Stockholder Equity	102,976	106,871	100,012	103,875	109,823	108,345	116,420	121,638	114,147	115,602	116,628	107,653
Total Liabilities and Stockholder Equity	\$160,557	\$166,111	\$157,893	\$163,025	\$172,738	\$175,910	\$183,250	\$183,308	\$170,927	\$170,823	\$171,017	\$162,042

Figure 8.5.3: Forecasted Balance Sheet Draft

Linkages Between the Forecasted Balance Sheet and the Income Statement

Notice that in the discussion in the prior section on the balance sheet forecast, a lot of the information in the forecasted income statement was used to generate the forecasted balance sheet. The balance sheet accounts generally depend on activity reported in the income statement. For example, for many firms, the balance in their accounts receivable account is tied to their sales. Looking at historical balances in the accounts receivable account and how those relate to historical sales will help determine how to use the forecasted future sales to estimate the future balance of accounts receivable.

The same is true of accounts payable. Looking at past balances, past expenses (normally cost of goods sold), and the firm's payment terms for its vendors allows managers to use forecasted cost of goods sold or other expenses to estimate the balance in the accounts payable account.

Net income flows into retained earnings. Thus, the net income from the forecasted income statement can be used to help estimate the ending balance in retained earnings. If the firm intends to issue any dividends in the coming year, managers should also estimate that reduction in their forecast.

It's also common to find other general policies or procedures that help drive performance and aid in forecasting balances. For example, if the company has a goal of maintaining a certain level of inventory or a minimum balance in its cash account, that information can be used to guide the estimate for those accounts.

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8.6: Forecasting Cash Flow and Assessing the Value of Growth

Learning Objectives

By the end of this section, you will be able to:

- Generate a cash flow forecast.
- Assess a cash flow forecast to determine future cash funding needs.
- Use pro forma financial statements and cash flow forecasts to assess the value of growth to the firm.

In this section of the chapter, we will use the forecasted income statement, forecasted balance sheet, and other information we know about the firm's policies and goals for the coming year to generate and assess a cash flow forecast.

Create a Cash Flow Forecast

A cash flow forecast isn't overly complex, yet it is not easy to assemble because it requires making many assumptions about the future. A **cash forecast** begins with the beginning cash balance, adds anticipated cash inflows, and deducts anticipated cash outflows. This identifies cash surpluses and shortages.

For Clear Lake Sporting Goods, for example, we see in Figure 8.6.1 that the company begins with cash of \$42,581,000 in January of the new year. Next, it lists the cash inflows, or cash received from customers. Given the assumption that customers pay in 90-day terms, the cash flow is filled in by plugging in the sales forecast for the three prior months. For example, the cash flow from customers of \$10,508 for June is the same as the net sales forecast for March.

Clear Lake Sporting Goods Cash Forecast								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
\$42,581	\$44,394	\$43,039	\$35,038	\$35,782	\$40,861	\$35,030	\$35,133	\$35,766
5,700	4,800	4,800	10,108	12,320	10,508	12,200	17,220	23,420
\$ 5,700	\$ 4,800	\$ 4,800	\$10,108	\$12,320	\$10,508	\$12,200	\$17,220	\$23,420

Figure 8.6.1: Forecasted Cash Inflows

Next, Clear Lake identifies cash outflows, which include accounts payable, salaries, rent, utilities, dividends, and interest payments. Accounts payable are normally paid within 30 days, so the forecast for cost of goods sold for the prior month is used as an estimate of the amount paid for payables. For example, in Figure 18.16, we see that the accounts payable settled in June of \$8,610 is the cost of goods sold for May from the forecasted income statement.

Salaries are paid monthly and thus represent the same recurring monthly cash outflow as does rent. Utilities, like accounts payable, are assumed to be paid within 30 days. Thus, the cash outflow for utilities is the utilities expense for the prior month.

from the forecasted income statement.

Management intends to pay a quarterly dividend of \$10,000. Thus, in Figure 8.6.2, we see \$10,000 cash outflows forecasted for March, June, September, and December. Interest on the long-term liability is paid quarterly. Thus, the \$500 cash outflows in March, June, September, and December are simply the monthly interest expense of \$167 from the income statement, summed for each quarter.

Clear Lake Sporting Goods Cash Forecast												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beginning Cash Balance	\$42,581	\$44,394	\$43,039	\$35,038	\$35,782	\$40,861	\$35,030	\$35,133	\$35,766	\$36,658	\$53,444	\$64,383
Cash Inflows:												
Accounts Receivable Collected	5,700	4,800	4,800	10,108	12,320	10,508	12,200	17,220	23,420	22,440	15,560	9,040
Total Cash Inflows:	5,700	4,800	4,800	10,108	12,320	10,508	12,200	17,220	23,420	22,440	15,560	9,040
Cash Outflows:												
Accounts Payable Paid	2,880	5,054	6,160	5,254	6,100	8,610	11,710	11,220	7,780	4,520	3,526	2,964
Salaries	450	468	468	468	468	468	468	468	468	468	468	468
Rent	458	458	458	458	458	458	508	508	508	508	508	508
Utilities	99	175	214	183	215	303	411	391	272	159	119	99
Dividends	0	0	10,000	0	0	10,000	0	0	10,000	0	0	10,000
Interest Payments	0	0	500	0	0	500	0	0	500	0	0	500
Total Cash Outflows:	\$ 3,888	\$ 6,155	\$17,800	\$ 6,364	\$ 7,242	\$20,339	\$13,097	\$12,587	\$19,528	\$ 5,655	\$ 4,621	\$14,539

Figure 8.6.2: Forecasted Cash Inflows and Outflows

Using a Cash Forecast to Determine Additional Funds Needed

Finally, at the end of the cash flow forecast, cash outflows are subtracted from the cash inflows. This identifies whether a **cash surplus** (extra) or **cash deficit** (not enough) exists for each month. For example, in Figure 8.6.3, we see that in March, Clear Lake is forecasting \$4,800 of cash inflows and \$17,800 of total cash outflows, which results in a cash deficit of \$13,000.

Clear Lake has a general policy not to let its cash balance fall below \$35,000. Thus, managers need to assess their monthly balances and potential deficits and identify months when financing is necessary. For example, the deficit of \$13,000 in March is enough to push the cash balance lower than \$35,000. Thus, it's estimated that the company will need \$5,000 in short-term financing in March. It has an estimated surplus in April, so \$3,000 of the borrowing is returned.

Clear Lake Sporting Goods Cash Forecast												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Beginning Cash Balance	\$42,581	\$44,394	\$43,039	\$35,038	\$35,782	\$40,861	\$35,030	\$35,133	\$35,766	\$36,658	\$53,444	\$64,383
Cash Inflows:												
Accounts Receivable Collected	5,700	4,800	4,800	10,108	12,320	10,508	12,200	17,220	23,420	22,440	15,560	9,040
Total Cash Inflows:	5,700	4,800	4,800	10,108	12,320	10,508	12,200	17,220	23,420	22,440	15,560	9,040
Cash Outflows:												
Accounts Payable Paid	2,880	5,054	6,160	5,254	6,100	8,610	11,710	11,220	7,780	4,520	3,526	2,964
Salaries	450	468	468	468	468	468	468	468	468	468	468	468
Rent	458	458	458	458	458	458	508	508	508	508	508	508
Utilities	99	175	214	183	215	303	411	391	272	159	119	99
Dividends	0	0	10,000	0	0	10,000	0	0	10,000	0	0	10,000
Interest Payments	0	0	500	0	0	500	0	0	500	0	0	500
Total Cash Outflows:	3,888	6,155	17,800	6,364	7,242	20,339	13,097	12,587	19,528	5,655	4,621	14,539
Cash Surplus or Deficit	1,812	(1,355)	(13,000)	3,744	5,079	(9,832)	(897)	4,633	3,892	16,785	10,939	(5,499)
Short-Term Financing Borrowed (Repaid)	0	0	5,000	(3,000)	0	4,000	1,000	(4,000)	(3,000)	0	0	0
Ending Cash Balance	\$44,394	\$43,039	\$35,038	\$35,782	\$40,861	\$35,030	\$35,133	\$35,766	\$36,658	\$53,444	\$64,383	\$58,884

Figure 8.6.3: Forecasted Cash Surplus or Deficit

Assessing the Value of Growth

It's a fairly common assumption that most, if not all, businesses want to grow. While it certainly can be good for a firm to grow in size, growth just for the sake of growth isn't necessarily a good goal. A firm can grow in size based on customers, employees, locations, or simply sales. However, that doesn't mean that the growth will increase profits. Growth may increase profits, but this is not a safe assumption. Scaling up operations takes careful planning, which includes monitoring the profitability of the sales and, of course, the cash flow it would require. Growing a business can require more inventory, more locations, more equipment, and more manpower, all of which cost money. Even if the forecasted growth is profitable, it may pose problems from a cash flow perspective. It's important that the firm review not only its forecasted income statement and balance sheet but also its cash forecast, as this can reveal some serious gaps in funding depending on the extent, timing, and nature of the planned growth.

For example, assume that Clear Lake Sporting Goods intends to run a large-scale ad campaign to boost sales in its busy season. Historically, the store relied primarily on its prime location for high volumes of retail foot traffic. Managers felt, however, that given the increase in competition, they could boost sales significantly by running the ad campaign in the first quarter. The campaign would cost \$30,000. Forecasts already reflect a cash deficit at the end of the first quarter of \$13,000, so the additional \$30,000 ad campaign, which would require payment up front, would create a much larger need for funding. It's also important that managers look at the increased cost of doing business along with the increased cost in advertising to ensure that the move would be profitable. Fortunately, Excel or other forecasting software can be used to create a forecast with formulas that tie together, making scenario analysis such as this a much easier process.

Scenarios in Forecasting

Forecasting is almost never a linear process. In other words, we don't do one forecast and call it good. The first draft is completed using historical data, and then changes are made a bit at a time as all potential variables are assessed for their impact on the forecast. It's quite common to then use the work-in-progress forecast to complete scenario analysis. This is particularly true when the forecast is completed in Excel or other budgeting or forecasting software. Elements of the forecast can be changed to see what the overall impact would be to the firm. Assuming the forecast is set up using formulas in Excel or other software, a change to one figure or one variable would then "ripple" through the forecast to reflect the overall impact.

Often, a firm may complete an initial forecast (scenario) under the assumption that the economy is in a "normal state." The firm can then alter the initial forecast for different scenarios, such as the economy in a recession or the economy in a state of expansion. This helps the firm understand different possible future states and highlights how changes in the economy, such as inflation, may cause revenue and expenses to increase.

Assume that Clear Lake's initial forecast is created under the assumption that the economy will remain average. Management also wants to know the worst-case scenario. What will their financial results look like if the economy were in a recession, for example?

If management assumes their sales would drop to only 60% of the prior year's sales in a recessionary economy, they could alter the formula in Excel, driving their sales and variable costs, resulting in a new pro forma income statement. In Figure 8.6.4, we can see that net income would drop to \$16,391 under this assumption, compared to the net income of \$47,653 forecasted under average economy assumptions.

Clear Lake Sporting Goods Forecasted Monthly Income Statements: Worst-Case Scenario													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gross Sales	\$5,292	\$6,468	\$5,792	\$7,000	\$9,900	\$13,400	\$12,800	\$9,200	\$4,800	\$3,600	\$3,000	\$3,000	\$84,252
% of Annual Sales	7.1%	8.7%	7.1%	7.9%	11.1%	15.1%	14.3%	9.5%	6.3%	4.8%	4.0%	4.0%	100%
% Change from January Baseline	100%	122%	109%	132%	187%	253%	242%	174%	91%	68%	57%	57%	
Sales Returns & Allowances	300	400	400	600	800	1,000	800	600	400	300	200	200	6,000
Net Sales	4,992	6,068	5,392	6,400	9,100	12,400	12,000	8,600	4,400	3,300	2,800	2,800	78,252
Cost of Goods Sold	2,496	3,034	2,696	3,200	4,550	6,200	6,000	4,300	2,200	1,716	1,456	1,456	39,304
Gross Margin	2,496	3,034	2,696	3,200	4,550	6,200	6,000	4,300	2,200	1,584	1,344	1,344	38,948
Rent Expense	458	458	458	458	458	458	508	508	508	508	508	508	5,798
Depreciation Expense	300	300	300	275	275	275	275	275	275	275	275	275	3,375
Salaries Expense	468	468	468	468	468	468	468	468	468	468	468	468	5,616
Utility Expense	175	214	192	231	327	443	423	304	159	119	99	99	2,786
Operating Income	1,095	1,594	1,278	1,767	3,021	4,556	4,326	2,745	790	214	(6)	(6)	21,373
Interest Expense	167	167	167	167	167	167	167	167	167	167	167	167	2,000
Income Tax Expense	153	222	178	247	422	636	604	383	110	30	(1)	(1)	2,982
Net Income	\$ 775	\$1,205	\$ 933	\$1,354	\$2,433	\$ 3,753	\$ 3,555	\$2,195	\$ 513	\$ 17	\$(172)	\$(172)	\$16,391

Figure 8.6.4: Forecasted Cash Surplus or Deficit

Though creating a full forecast in Excel can be a bit complex, it is a powerful tool that is useful for analysis. Elements can be used to vary just about anything, from something small such as a 1% increase in the cost of a product to a company-wide increase in salaries, the introduction of an entire new product line, or the purchase of a new production machine, among other possibilities.

For example, assume that Clear Lake has completed a first pass at its forecast and is reviewing the forecasted profit for the next 12 months. Managers feel the profit is currently low, as they always want to target a certain percentage. They might tinker with variables in the forecast file to see the impact on profits of potential changes they are considering. They may reduce the new salary package by a percentage point to see if it gets them closer to their goal. They may adjust the cost of goods sold by a certain percentage if they feel they can negotiate with vendors to work down their costs. They may adjust rent and see if they can find a better retail location to either reduce costs or increase sales due to increased foot traffic in a new location. They may save an entirely new version of the forecast and change it drastically to see what investing in opening a second retail location would do.

As you can see, the list of possibilities is endless. Though the main goal of financial managers may be cash planning, the power of a well-developed forecast is tremendous. It can help assess potential growth, new opportunities, and even small changes in the business as well.

Sensitivity Analysis in Forecasting

Sensitivity analysis will often look at the change in just one variable rather than the entire scenario. It examines how sensitive a particular output (commonly net income) will be to a change in a particular underlying input (sales or costs, for example). What if sales are 10% more or less than forecasted? What if the prices the firm can charge its customers are 10% more or less? What if the cost of goods sold increases by 10%? The purpose is to see which variables are crucial to “get right.” It isn’t worth spending a lot of research dollars to make sure you are accurately predicting a variable if that variable won’t notably change the outcome. However, a slight change in other variables may have a significant impact.

Using pro forma financial statements created in Excel allows management to quickly generate new pro forma financials and see the impact that each possible variable might have on the overall financial results.

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8.7: Summary

The Importance of Forecasting

Forecasting financial statements is important to different users for different reasons. In finance, it's most important for assessing the value of future growth plans and planning for future cash flow needs.

Forecasting Sales

The sales forecast is the foundation on which much of the rest of the forecast is built. Thus, the sales forecast is completed first. Historical sales data and any other information on the firm, its products, the economy, its customers, and its competitors are all used to create the most accurate sales forecast possible.

Pro Forma Financials

Pro forma financial statements are forward-looking in nature. They use the sales forecast, historical data, financial statement analyses, relationships between accounts and statements, and any other information known about the firm, the environment, and the future to create the most accurate financial statement forecast possible.

Generating the Complete Forecast

Interrelationships among historical data, the forecasted income statement, and the forecasted balance sheet are all used to estimate each line item in the financial statements.

Forecasting Cash Flow and Assessing the Value of Growth

Once the income statement and balance sheet forecasts are complete, data from those statements, information on company policies, and account relationships are used to generate a cash forecast. The cash forecast is important for identifying any gaps in cash flow so that financial managers can plan for cash needs. It's also important to review not only the cash forecast but also all forecasted financial statements to assess the overall impact and value of proposed firm growth.

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8.8: Key Terms

balance sheet

a financial statement that reflects a firm's asset, liability, and equity account balances at a given point in time

cash deficit

an excess of cash outflows over cash inflows for a given period

cash forecast

a financial statement that estimates a firm's future cash inflows and outflows

cash surplus

an excess of cash inflows over cash outflows for a given period

common-size

describes a financial statement in which each element is expressed as a percentage of a base amount

financing activities

cash business transactions reported on the statement of cash flows that reflect the use of financed funds

forecast

an estimate of future performance based on historical performance and other contextual information

income statement

a financial statement that measures a firm's financial performance over a given period of time

investing activities

cash business transactions reported on the statement of cash flows that reflect the acquisition or disposal of long-term assets

operating activities

cash business transactions reported on the statement of cash flows that relate to ongoing day-to-day operations

pro forma

in the context of financial statements, forward-looking

scenario analysis

analysis of how various situations and circumstances would impact the financial forecast

sensitivity analysis

analysis of the sensitivity of an output variable to a change in an input variable

statement of cash flows

a financial statement that lists a firm's cash inflows and outflows over a given period of time

statement of stockholders' equity

a financial statement that reports the difference between the beginning and ending balances of each of the stockholders' equity accounts during a given period

8.9: Review Questions

1. Javier's firm has created a forecasted income statement that shows the firm with a net profit of \$25,000 for the coming year. What can we assume about Javier's cash flows?
2. Lulu's firm's sales grew by 9%, 11%, and 10% over the past three years, respectively. Lulu wants to take her first pass at forecasting sales for next year. What percent sales growth would you recommend she use, and why?
3. Aria wants to create a set of pro forma financial statements. Her goal is to plan for future cash flows and operations as well as help envision her long-term strategy. What time frames should Aria consider for her operations and cash flows versus her long-term strategy?
4. What information might you use to calculate the ending balance for retained earnings on a forecasted balance sheet?
5. Damon estimates his beginning cash balance for June to be \$10,000, with cash inflows of \$4,000 and cash outflows of \$6,000 for the month. What is Damon's forecasted ending balance for June?

8.10: Problems

1. ABC Company has the following data for its monthly sales. Complete the % of Annual Sales row.

ABC Company Monthly Income Statements													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gross Sales	\$40,000	\$42,000	\$47,000	\$56,000	\$60,000	\$71,000	\$53,000	\$53,000	\$46,000	\$37,000	\$39,000	\$31,000	\$575,000
% of Annual Sales													

Figure 8.10.1: Example Monthly Income Statement

2. Using the same data as in Problem 1, assume that ABC Company expects a 10% increase in sales in the coming year (10% more than the \$575,000 it had in the past year). Prepare its sales forecast, assuming the company breaks its sales down by month using the same percentages as the actual sales from the past year, which you calculated in the first problem.

ABC Company Monthly Income Statements													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gross Sales													
% of Annual Sales													

Figure 8.10.2: Blank Example Monthly Income Statement

3. ABC Company anticipates its sales being a bit lower than normal in January and February of the coming year due to major road construction on the street where it is located, which will draw away foot traffic from the store. The company anticipates that this will reduce its sales in these two months by 5%. Use the information from Problems 1-2 to update the sales forecast.
4. ABC Company's cost of goods sold last year was 60%. It anticipates that this will be the same in the coming year. Its sales returns and allowances are small, normally 1% of sales. Use the information from Problems 1-3 to estimate the company's sales returns and allowances, net sales, and cost of goods sold and calculate its gross margin.

ABC Company Monthly Income Statements													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gross Sales	\$41,800	\$43,890	\$51,700	\$61,600	\$66,000	\$78,100	\$58,300	\$58,300	\$50,600	\$40,700	\$42,900	\$34,100	\$627,990
% of Annual Sales	7.0%	7.3%	8.2%	9.7%	10.4%	12.3%	9.2%	9.2%	8.0%	6.4%	6.8%	5.4%	100.0%
Sales Returns & Allowances													
Net Sales													
Cost of Goods Sold													
Gross Margin													

Figure 8.10.3: Estimation Example

5. Use the partial income statement generated in Problem 4 along with the following additional information to complete ABC Company's forecasted income statement in Excel.
 1. Rent expense is \$1,000 per month. However, the landlord has indicated that rent will go up to \$1,250 in the fourth quarter.

2. Depreciation expense is \$2,250 per month and does not change throughout the year.
3. Salaries expense is \$1,500 per month and is expected to go up by 10% in the second half of the year, when a new compensation plan will be implemented.
4. Utilities expense is \$5,000 for the entire year and should be allocated to each month based on that month's percentage of annual sales.
5. Interest expense is \$500 per month.
6. Income tax is 25% of operating income less interest expense.

ABC Company Monthly Income Statements													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Gross Sales	\$41,800	\$43,890	\$51,700	\$61,600	\$66,000	\$78,100	\$58,300	\$58,300	\$50,600	\$40,700	\$42,900	\$34,100	\$627,990
% of Annual Sales	7.0%	7.3%	8.2%	9.7%	10.4%	12.3%	9.2%	9.2%	8.0%	6.4%	6.8%	5.4%	100.0%
Sales Returns & Allowances	\$ 418	\$ 439	\$ 517	\$ 616	\$ 660	\$ 781	\$ 583	\$ 583	\$ 506	\$ 407	\$ 429	\$ 341	\$ 6,280
Net Sales	41,382	43,451	51,183	60,984	65,340	77,319	57,717	57,717	50,094	40,293	42,471	33,759	621,710
Cost of Goods Sold	24,829	26,071	30,710	36,590	39,204	46,391	34,630	34,630	30,056	24,176	25,483	20,255	373,026
Gross Margin	16,553	17,380	20,473	24,394	26,136	30,928	23,087	23,087	20,038	16,117	16,988	13,504	248,684
Rent Expense													
Depreciation Expense													
Salaries Expense													
Utility Expense													
Operating Income													
Interest Expense													
Income Tax Expense													
Net Income													

Figure 8.10.4: Expense rows

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