Course Book

CORPORATE FINANCE AND INVESTMENT

DLBCFIE01

iu
INTERNATIONAL
UNIVERSITY OF
APPLIED SCIENCES

CORPORATE FINANCE AND INVESTMENT

MASTHEAD

Publisher:
IU Internationale Hochschule GmbH
IU International University of Applied Sciences
Juri-Gagarin-Ring 152
D-99084 Erfurt

Mailing address:
Albert-Proeller-Straße 15-19
D-86675 Buchdorf
media@iu.org
www.iu.de

DLBCFIE01
Version No.: 002-2023-0828
Steven Syrmopoulos

TABLE OF CONTENTS

CORPORATE FINANCE AND INVESTMENT

INTRODUCTION

WELCOME

SIGNPOSTS THROUGHOUT THE COURSE BOOK

This course book contains the core content for this course. Additional learning materials can be found on the learning platform, but this course book should form the basis for your learning.

The content of this course book is divided into units, which are divided further into sections. Each section contains only one new key concept to allow you to quickly and efficiently add new learning material to your existing knowledge.

At the end of each section of the digital course book, you will find self-check questions. These questions are designed to help you check whether you have understood the concepts in each section.

For all modules with a final exam, you must complete the knowledge tests on the learning platform. You will pass the knowledge test for each unit when you answer at least 80% of the questions correctly.

When you have passed the knowledge tests for all the units, the course is considered finished and you will be able to register for the final assessment. Please ensure that you complete the evaluation prior to registering for the assessment.

Good luck!

BASIC READING

Brigham, E. F., & Houston, J. F. (2019). *Fundamentals of financial management* (15th ed.). Southwestern-Cengage.

Zutter, C. J., & Smart, S. B. (2019). *Principles of managerial finance* (15th ed.). Pearson.

FURTHER READING

UNIT 1

Friedman, M. (1970). The social responsibility of business is to increase its profits. *The New York Times Magazine.* Available online

Martynova, M., & Renneboog, L. (2011). The performance of the European market for corporate control: Evidence from the fifth takeover wave. *European Financial Management*, *17*(2), 208—259.

UNIT 2

Deloitte. (2017). *Executive compensation: Plan, perform and pay*. Available online

Nordberg, D. (2011). *Corporate governance: Principles and issues*. Sage.

UNIT 3

Konchitchki, Y., & Patatoukas, P. N. (2014). Taking the pulse of the real economy using financial statement analysis: Implications for macro forecasting and stock valuation. *The Accounting Review*, *89*(2), 669—694.

Smart Consumer Group. (2020). *Time value of money*. Available online

UNIT 4

Bean, M. A. (2017). *Determinants of interest rates* [PDF]. Society of Actuaries. Available online

Chen, J. (2020, April 12). *Interest rate risk.* Investopedia. Available online

UNIT 5

Mulcahy, D. (2013). Six myths about venture capitalists. *Harvard Business Review*, *91*(5), 80—83.

UNIT 6

Lyngstadaas, H., & Berg, T. (2016). Cash flow and the consistency principle in working capital management calculations. *Journal of Applied Management Accounting Research*, *14*(2), 65—72.

UNIT 7

Hayne, R. M. (1999). Estimating uncertainty in cash flow projections [PDF]. *Casualty Actuarial Society Journal: Canadian Institute of Actuaries, and Society of Actuaries*, 69—132. Available online

UNIT 8

Brunzell, T., Liljeblom, E., & Vaihekoski, M. (2013). Determinants of capital budgeting methods and hurdle rates in Nordic firms. *Accounting & Finance*, *53*(1), 85—110.

LEARNING OBJECTIVES

Corporate Finance and Investment introduces students to the targets and scope of corporate finance and the role of financial markets. In this course, students will be introduced to fundamentals of theory and practice regarding principles of modern corporate finance. They will learn to read and analyze financial statements from a financing point of view and develop a detailed understanding of key financial concepts, such as the time value of money, interest rates, and the cost of capital.

The separation of ownership and control is an important feature of corporations that usually results in agency problems; this leads to the necessity to develop mechanisms to mitigate the costs of such agency relationships.

Equipped with this basic knowledge, students will then examine equity and debt financing. The financial leverage effect on rates of return will be explored, and leasing, as well as hybrid financial instruments as an alternative to pure equity and debt financing, will be presented. Students will also learn how corporations apply short-term measures of financing and how cash and working capital management is used to reduce short-term financing needs and costs.

This course will conclude with a discussion on the investment processes of corporations. Students will understand how to accommodate for risk in decision-making processes, and how to apply investment rules and methodologies.

UNIT 1

INTRODUCTION TO CORPORATE FINANCE

STUDY GOALS

On completion of this unit, you will have learned …

- which corporate targets are part of every successful firm's goals.
- what corporate financing options are available to a firm.
- what the role of a financial manager is in attaining a firm's objectives.
- what the decision-making process looks like for corporate financial undertakings.
- how financial markets impact on the corporate financial decision-making process.

1. INTRODUCTION TO CORPORATE FINANCE

Introduction

Corporate finance can be likened to a tree with many branches; the central trunk is composed of several fundamental roles and responsibilities which support (and are supported by) various functions that extend into more specialized areas of the firm and its financing. You could also visualize corporate finance as a map where the direction and movement of finance are indicated by the balance sheet and the income statement, important financial statements that will be presented in this unit.

The Balance Sheet

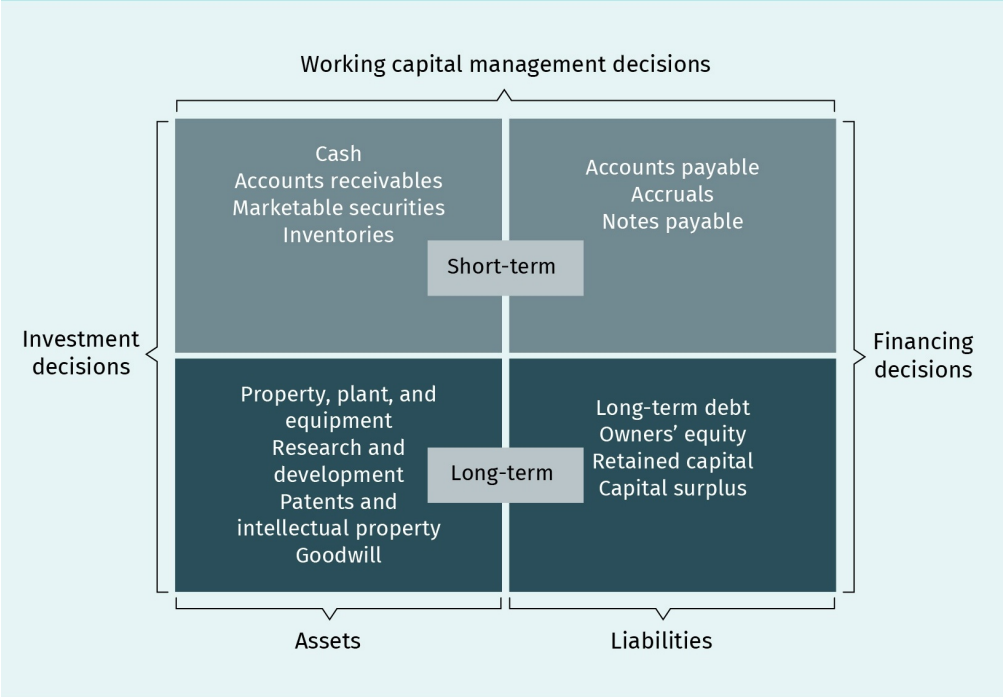
Balance sheet
The balance sheet is a static picture of a firm's financial position at a single point in time.

Let's start with the balance sheet. On the left side of the **balance sheet** are assets, which are the investments of a firm. It is here in the realm of assets that investment decisions are made. On the right side of the balance sheet are the liabilities and owners' equity. On this side of the balance sheet, financing decisions shows.

According to US-GAAP, the items at the top of the balance sheet show all the short-term commitments a business has made: cash, inventory, accounts receivable, and marketable securities on the asset side, and notes payable, accounts payable, accrued wages and taxes, and other short-term obligations on the liabilities side. Here, in the top tier of the balance sheet, the capital budgeting decisions are encountered. These types of decisions are typically made in the working capital management department of a corporation. It is in this department that the firm addresses mundane but important questions about which bills to pay first and who to collect money from next.

Longer-term financial decisions are shown on the bottom half of the balance sheet. On the left, there are assets such as property, plant, and equipment, which are the long-term investments of a firm. At the bottom-right, there are the long-term financial obligations: bonds, which represent money the firm has borrowed for 10, 20, or 30 years, and stock, which is the owners' equity, i.e., the money that the firm's owners have put up and hope to see increase over time. The different components of a balance sheet and the decisions associated with these components are shown in the following figure.

Figure 1: The Balance Sheet According to US-GAAP



Source: Hastenteufel, 2020.

Income Statement

Another important financial report is the **income statement**. In the top half of the income statement where profitability, margins, cost, capacity, depreciation, and other operational factors are considered, operating decisions are shown. In the bottom half of the income statement, the interest, tax, and dividend payments, are shown and additional financing decisions are made.

Income statement
The statement is a dynamic, moving picture of a firm's financial position over a period of time.

Figure 2: The Income Statement According to US-GAAP

Source: Hastenteufel, 2020.

1.1 The Targets and Scope of Corporate Finance

Milton Friedman (1970) stated that the financial managers' primary function is to maximize shareholders' wealth. However, this is a rather simplistic description when one considers that there are many moving parts in any business, especially in the financial realm. There are more targets a financial manager must strive to attain than simply meeting shareholder demands for maximizing profits.

Targets

Some of the targets that a corporation and its financial management are called upon to satisfy include minimizing expenses, increasing a company's growth rate and market share, and reducing collection times whilst simultaneously stretching payable time. Other

financial targets include budgeting for contingencies, minimizing risk to the firm, reducing the cash conversion cycle, minimizing the need for and thereby the cost of excess inventory, seeking an **optimal capital structure**, financial planning and forecasting, and creating budget projections. While this list is not comprehensive and doesn't include other important roles such as protecting corporate assets, determining dividends, and reporting to the board of directors, it provides a broader view of some of the targets of a corporation's finance department. Moreover, it lays the foundation for discussing the scope of corporate finance.

Optimal capital structure
The optimal capital structure is the combination of debt and equity financing that maximizes the value of a firm.

When these targets of corporate finance are achieved, they contribute to a corporation realizing the full value of its potential growth, thereby accomplishing the primary objective of maximizing shareholder wealth. Corporate targets provide a definitive map of the firm's most direct path to success. However, sometimes a company's management needs to make decisions that diverge from this path. It may be that operations cannot produce output at a specified level, or that the marketing and sales departments cannot reach their stated goals or conversely exceed them. For the finance department, this means that the business trajectory and expectations must be adjusted and subsequent accommodations made. These diversions may impact on the target cash balance, the target payout ratios, or even the target capital structure. Finance must therefore be flexible in its projections.

Scope

Finance is essentially 90% art and 5% science. As for the remaining 5%, this is something that students need to figure out in the course of their studies. That being said, there are definite boundaries and specific tasks which define the scope of corporate finance. The finance department of any firm has very specific tasks and boundaries within which they must operate.

The scope of corporate finance revolves around a number of basic areas.

1. It is necessary for a firm to raise money to continue to keep its doors open, its lights on, and to manifest increasing growth.
2. Any newly acquired money must be used to facilitate the selection of appropriate investment projects. Projects that result in greater recognition, risk reduction, and increased profits, which are all targets of the business, should be selected for the firm to undertake.
3. Corporate finance departments must be familiar with capital markets, operate within these markets, and understand debt and equity and how they apply to capital structure. A clear understanding of debt and equity results in ideal levels of each method of financing, and brings about the proper balance necessary for an optimal capital structure.
4. Corporate finance departments typically engage in risk management. Risk management can be summed up in three words: avoid, mitigate, and undertake. Some risks are worth undertaking because the resulting rewards will be worthwhile. Other risks will occur no matter what, and these are the risks that should be mitigated. However, risks where the degree of loss is simply far too great when balanced against the poten-

tial reward should simply be avoided altogether. It is the task of the corporate finance department and risk managers to know the risks and identify which projects and investments should be undertaken.

Corporate governance
This is the decision-making process that designs the structure of a business.

5. Finally, the last area defining the scope of corporate finance is **corporate governance**. Every corporate finance department must fully understand corporate governance as financial managers need to always act in the best interest of a firm. Thus, any decision made and any action taken needs to be on target, within scope, and support the best interests and value maximization of a firm.

1.2 The Role of a Financial Manager

Financial managers are expected to fulfill many roles and "wear many hats". Keep in mind that all of the financial management roles described in this section are closely aligned with the targets and scope described previously.

When entering the world of managerial corporate finance, the multitude of tasks one is called upon to perform may seem overwhelming at first but keep in mind that no one knows everything at the beginning or starts at the top. As almost 60% of the work in a firm's corporate finance department is in working capital management, that is where around 90% of entry-level positions are located. Such humble beginnings allow a future financial manager to start small, think big, and develop their skills gradually.

Corporate financial management and the attainment of corporate business objectives call for many of the same skillsets that a person would need to start their own enterprise, manage a family business, run a not-for-profit organization, or even run a household. While the functions are largely the same and the targets and tasks are predominately similar, the primary differences between such ventures and those in the field of corporate finance are the size of the organization and the scope of authority invested in a corporate financial manager (versus, for example, a parent running the family budget).

The more roles a financial manager masters, the higher in the organization he or she will eventually rise. Having mastered the majority of these roles, an individual has the potential to reach the pinnacle of the financial management industry as the Chief Financial Officer (CFO) of a Fortune 500 company.

The Roles

A financial manager is expected to fully understand what tools are available to solve business problems as they arise. Mastery of the available tools is essential to any financial manager's success. Conversely, non-mastery of such tools can prove disastrous for the firm. Knowledge of these tools and the ability to apply them or to at least understand their application and results when applied by someone else is critical to successful financial management.

Along with selecting and using the right financial tools, the financial manager is often required to interact with experts from a wide range of disciplines. This role is critical to keep issues in perspective and draw potential solutions from as many sources as possible. To fully benefit from such experts, the financial manager must have a good working knowledge of the many functional areas of a firm including marketing, operations, procurement, project management, sales, and information systems. Additionally, because no corporation operates in a vacuum, it is important that a financial manager has a well-developed understanding of the economics of a given market and can accurately predict the impact of market occurrences, movements, and preferences on the firm.

The financial manager is not only responsible for managing **macro-externalities**, but also developing potential avenues within the firm. A good understanding of and close relationship with corporate accounting staff and systems staff is essential for the creation of a well-functioning system which allows results to be replicated by anyone within the financial management team. Such systems are critical for two more of the financial managers' many roles: the development of a profitable pricing strategy and the management of cash flows.

Macro-externalities
These are economic factors that are outside of a financial manager's control.

Financial managers are also responsible for the procurement and accumulation of adequate amounts of capital to fund any projects which the firm decides to undertake. To succeed as a financial manager, one must be capable of negotiating licensing agreements as needed for a firm and maintaining relationships with authorities responsible for regulatory compliance. A financial manager must also be forward-looking, have the ability to assess the viability of future projects and investments, and successfully determine which research and development projects should be funded.

Finally, the role of a financial manager involves ensuring that business managers across a company understand that they should act only when the benefits of undertaking a project outweigh the costs to the firm. By carrying out such **cost/benefit analyses**, the financial manager ensures that the firm pursues solid investments and projects that support the maximization of value for the shareholder. Thus, a central role of the financial manager is providing sound, constructive advice to business managers and other professionals. By doing so, a financial manager assumes one of his/her most critical roles in the finance department.

Cost/benefit analysis
A cost/benefit analysis is a means of testing a course of action to determine whether the costs outweigh the benefits of a given decision.

In summary, the main roles of a financial manager are as follows:

- applying the tools of finance to real-world business issues
- interacting with experts across a variety of disciplines
- understanding market economics
- working with accounting and systems staff to develop effective and sustainable systems
- developing a profitable pricing strategy
- managing cash flow
- accumulating capital to undertake projects and investments
- negotiating licensing and other agreements for a firm
- monitoring and ensuring regulatory compliance
- working with other managers to ensure appropriate and timely actions
- serving as an advisor for other managers and professionals

1.3 The Financial Market Environment

The financial market environment is made up of financial markets and financial institutions. Financial markets are the point where suppliers and recipients of funds meet, and financial institutions are participants within the structure of these markets. The relationship between the two is symbiotic; they are interdependent functionaries without which the other might exist but in a much-diminished form. Financial markets are essentially the gathering place where those with a surplus meet with those with a need and business transactions are conducted.

There are many types of markets where sellers and buyers meet. The products sold and purchased in these markets include metals and precious metal products, food products, financial instruments, building materials, energy, and currencies. But each of these markets can be further divided and defined. If looking at asset type, we can divide markets into physical asset markets and financial asset markets. If looking at the timing of financial transactions, we can divide markets into **spot markets**, futures markets, and money markets as well as capital markets. We can also divide markets into primary markets, where items are created and initially sold, and secondary markets, where items are sold as after-market items, i.e., words, resold. Markets can also be divided according to whether they are international in nature or purely domestic. Finally, markets can be defined according to whether they are public, where all players are invited to participate, or private, where only select players are invited to be participants. Several of these types of markets will be discussed in more detail.

Spot market
The spot market is where financial instruments are traded for immediate delivery.

Physical Markets

Physical markets are those markets in which commodities such as metals and precious metals products, food products, and building materials, among others, are sold. Often alongside the sale of the actual goods themselves is a derivative market that provides support for both suppliers and demanders of these goods. When the price of a good such as oranges falls, the buyers of derivative contracts essentially back the orange grove owners (i.e., the seller of the derivative contracts) by assuring them of a price at which they can continue to do business. Conversely, when harvest numbers are low and the price of oranges spikes in the marketplace, these same derivative buyers profit, and grove owners will receive a fair market price. In this circumstance, in the spirit of the free market, other buyers such as juice producers seeking this type of good will scour the rest of the globe in search of reasonably-priced oranges to keep themselves in business and meet consumer demand at a reasonable price.

Spot, Futures, Money, and Capital Markets

The spot price is the current price in real time, i.e., the price demanded and paid by the buyer and seller “on the spot” which is only valid for the present moment in time. If a deal is not made in the spot market, it is made in the futures market. For example, a buyer in a futures market might rationalize the following: “I won’t need 10,000 pairs of Italian loafers for my boutique on Rodeo Drive in Hollywood for six months. That will give Gepetto, my

Italian shoemaker, enough time to cobble them, and me enough time to gather the money I need to pay for them." This is an example of a futures transaction; the agreed-upon price to be paid upon delivery is known as a futures price.

In this example, this type of agreement will likely require that whoever is changing currency, either the seller or buyer, makes arrangements to ensure the profitability of the transaction in the case that the dollar or euro moves against the other in an unfavorable direction. In this type of international transaction, the party who changes the currency assumes the risk. For example, if the buyer of Italian loafers makes the arrangement that he will pay in dollars, he doesn't mind what the dollar and the euro do in relation to one another. Gepetto the shoemaker will certainly care about this when he has to change dollars into euros and finds that he is not getting nearly as many euros as he thought he would six months earlier when the deal was made. By the same token, if the buyer agreed to pay in euros, and he does not take measures to secure the price at which he can buy euros, he may see his profits evaporate. In this case, he would be well-advised to buy a futures contract to lock in a price at which he can buy euros to pay Gepetto and thus lock in his profits. This example explains spot, futures, currency, and international markets in action.

Another market distinguished by the timing of financial transactions is the money market. In the money market, players arrive but do not remain long, staying no longer than a year. Transactions in **short-term marketable securities** take place in the money market. These include most transactions of less than one-year duration such as treasury bills, repurchase agreements, commercial papers, banker's acceptance, federal agency notes, and certificates of deposit. This market is very liquid and most of the instruments found in it are fully marketable with few exceptions. Liquidity means that these instruments can be turned into currency almost immediately. Marketability means that there is a marketplace where these instruments can be resold without difficulty.

Short-term marketable securities
These are financial instruments that mature in under one year.

Let's clarify these two concepts further. Treasury bills are liquid (i.e., they can be turned into cash immediately) and marketable (i.e., there are buyers ready to buy them). However, government saving bonds sold to a specific individual, though very liquid, are not at all marketable. The only place to get money for these bonds is at the bank; there are no other buyers, no secondary market, and no one else lined up to purchase bonds with someone else's name written on them. Therefore, government saving bonds can be said to be very liquid but not at all marketable. These are all features and instruments of the short-term market.

In contrast to money markets, there are capital markets. These are long-term financial markets in which the participants are usually corporations seeking to raise cash to use in their business projects or investments and financial intermediaries seeking to put their surplus cash to use and make some money in the process. In the capital markets, corporate, municipal, and government bonds are bought and sold. Also bought and sold in these markets are equity securities, also known as stocks. The investments in these markets can be long-term or short-term, but as a rule, bonds and stocks are purchased either for the cash they will generate, interest paid on bonds and dividends paid on stocks, or for the growth that will be realized over the length of the holding period. Thus, the capital market is a long-term market.

Private versus Public Markets

The financial market environment refers to both the external forces and the internal factors that directly affect a corporation's ability to maximize corporate value and conduct business profitably. Once a firm has used all of its internal financing sources, if it wishes to continue conducting business and growing, it must turn to external sources of funding. The firm must enter the financial markets and deal with whatever externalities are found in the financial market environment. A corporation requiring external funding has three primary options to obtain the necessary funds to continue investing in projects that have the potential to increase the value of a business. These three methods are (1) utilizing financial markets which are made up of short-term money markets and long-term capital markets, (2) utilizing private placement which involves the direct sale of a new security—either debt or equity—to a single investor or a group of investors, and (3) utilizing financial institutions such as banks, who are intermediaries that receive deposits from depositors with surplus funds and lend them to those in need of funds.

Private Placement

Private placement is a form of direct financing. Firms using private placement usually have a top-tier credit rating. They issue AAA-rated securities—investment-grade debt securities—to a small group of select investors. These investors are usually institutional investors, such as insurance companies, pension funds, mutual funds, and large banks. The reason for undertaking a private placement is to allow a firm to raise capital without going through all the rigorous and time-and-capital-consuming steps involved in a Securities and Exchange Commission (SEC) filing. Because private placements are only offered to a limited number of select investors, this transaction does not have to be registered with the Securities and Exchange Commission. As a result, detailed financial information is not disclosed nor is it available to anyone except the parties involved in the transaction. In a private placement, the investment is not sold by **prospectus**.

Prospectus
A prospectus is an information pamphlet for prospective investors that accompanies a security.

Financial Institutions

Financial institutions are settings where suppliers who have a surplus of funds, usually investors, seek to put those surpluses to work, while demanders of funds, usually those with a deficit of funds relative to their needs, whether it be for further investments or business-related projects, can obtain the funds they require to engage in business transactions.

Financial institutions are intermediaries. Examples of such intermediaries include stock markets, banks, pension funds, money market funds, mutual funds, and institutional investors. All these entities are global in nature, and they are always either taking in money from their depositors, investors, and other participants, or investing money by making it available to corporations, governments, and other business enterprises who need more money to undertake their next project. These intermediary participants in the market are performing intermediation services by transforming direct financial claims into indirect financial claims.

Just as it is said there is always a market open somewhere in the world, it can also be said that there is always a financial institution open somewhere in the world. Financial centers and the institutions that serve them can be found around the globe in Zurich, Frankfurt, London, Luxembourg, New York, Nassau, Tokyo, Hong Kong, Singapore, Bahrain, and many other cities.

Intermediation services take shape in five primary ways:

1. Financial institutions provide currency transformation whereby they buy financial claims denominated in one currency and simultaneously sell financial claims denominated in another currency, thereby allowing client businesses to expand into overseas markets.
2. Because of this international capability and involvement, these financial intermediary institutions are also able to provide denomination divisibility, which means that they are able to pool the funds of many depositors and engage in very large wholesale transactions.
3. Because financial institutions in the role of intermediaries purchase such a large number of securities, they are able to reduce the risk caused by currency fluctuations, which would otherwise result in portfolio principal value fluctuations, by spreading it around using credit risk diversification.
4. Because financial intermediaries have the ability to vary the duration of the securities they issue, they are able to match or stagger their claims, e.g., mortgages, with their liabilities such as certificates of deposit. This maturity flexibility provides a degree of protection which individual investors lack.
5. Again, because of the large accumulation of funds in one place, the financial institutions have a much greater degree of liquidity than any other investor.

Financial institutions, acting as intermediaries, have become experts at reducing transaction risk and economic risk to both their depositors and their borrowers. This has in turn set the tone for the global financial markets. However, there have been times during the past decade, when these institutions have overstepped their boundaries and as a result, the environment surrounding this financial world has become toxic. This was seen in many countries where banks and bankers were given far too much latitude and directly abused the trust that had been placed in them. This too is part of today's financial market environment, and clearly no person or institution in this day and age is too big to fail.

SUMMARY

In the first section of this unit, the targets with which every corporate finance division is charged, the scope of authority within which corporate finance departments are expected to operate ,and what they are expected to get done within those parameters were illustrated.

The second section of this unit more closely examined the specific role of the financial manager. The skillsets required to successfully navigate the requirements of financial management were briefly reviewed before the specific functions and activities expected of financial managers at different levels of responsibility within a firm were presented.

In the third section of this unit, the financial market environment was examined. In this context, the structure of various financial markets was defined by reviewing the functions of the different types of markets, and the participants in each type of market and what financial intermediaries can and cannot do in each of the markets in which they operate were considered.

UNIT 2

OWNERSHIP AND CORPORATE GOVERNANCE

STUDY GOALS

On completion of this unit, you will have learned …

- what the four legal types of firms are.
- what agency problems are and how they manifest.
- what types of incentives exist within the corporate structure.
- what institutional and market control mechanisms in operation are.

2. OWNERSHIP AND CORPORATE GOVERNANCE

Introduction

There was a young man in his late teens who lived in the hills of Colorado and who liked to gather herbs from which to make blended tea mixes. When first introduced, Mo Siegel's tea blends quickly became very popular among the local crowd in Boulder, Colorado, and many people encouraged him to sell his tea outside of Boulder. Mo initially hesitated because America was a coffee nation, and the teas that most Americans drank were generally black teas like Earl Grey or Darjeeling. But he did not hesitate for long, and soon the brand Celestial Seasons was born.

These teas were excellent but Mo soon realized that he could not be all things to all people and certainly could not do everything that was needed to be done in order to run a tea company by himself. He brought in a partner, John Hay, to help him run the business. As more and more people joined the budding operation, Mo adopted the philosophy of bringing in the very best people he could find and could afford to hire. These people were brought in to run packaging, sales, procurement, marketing, and finance. And each of these people, who helped Celestial Seasons become one of the most interesting and highest quality tea companies in the world, had an **agency relationship** with the company.

Agency relationship
An agency relationship occurs when a business has managers rather than owners running certain operations.

If you have ever had the pleasure of sitting down for a cup of Celestial Seasons tea and taken a moment to stop and read the tea box, you will see that Mo hired some exceptional staff responsible for packaging. At each turn where agency relationships were born, Mo hired the best, most like-minded people he could find, and eventually Celestial Seasonings became the standard by which all other herbal tea companies were measured. The firm has been through many iterations since its founding in 1969, but it has always seemed to remain true to its roots in terms of quality, both in terms of its teas and its agency relationships.

This case study provides us with an interesting perspective regarding the nature of ownership and the management of agency relationships in relation to corporate governance. In this unit, two questions related to this topic specifically will be answered.

- In any company, is it possible that agency relationships might not work to the benefit of the company?
- What did Mo Siegel do to ensure that his agency relationships were successful?

2.1 Legal Types of Firms

Let's start with the structure of a firm. There are four main legal types of firms:

1. Sole proprietorship
2. Partnership
3. Limited liability company
4. Corporation

In this section, we will study the structure behind each of these legal types of businesses; their formation and legal requirement will be examined.

Sole Proprietorship

A person who goes into business for themselves and has no partners is considered a sole proprietor. A **sole proprietorship** is any unincorporated business owned entirely by one person. This category typically includes individuals in professional practices, such as doctors, lawyers, accountants, and architects. There are no formal legalities required to become a sole proprietor. From a legal standpoint, a sole proprietor is personally liable for any debts that the business incurs. For example, if the sole proprietor borrows money and defaults on a loan, the lender can look not only to the business equipment and other business property but also to the sole proprietor's personal property.

Sole proprietorship
A sole proprietorship is an unincorporated business owned by a single person.

Since a sole proprietor is not required to have a separate business bank account, the owner can take cash out of the cash register or buy personal items using the business checking account without any problems. No other business entity is permitted to operate under such loose arrangements. Many individuals who operate sole proprietorships are not able to follow the requisite business protocols required of a corporate entity; thus, a sole proprietorship may be the only business format which they are comfortable and capable of managing.

Table 1: Advantages and Disadvantages of Sole Proprietorships

Advantages	Disadvantages
• minimal legal restrictions • easy to discontinue • no tax consequences on formation or liquidation	• unlimited liability • limited capital structure • income tax cannot be deferred by retaining profits • fewer employee benefits than other business forms

Source: Hastenteufel, 2020.

Partnerships

A **partnership** is the relationship between two or more persons who join together to carry out trade or business, with each expecting to share in the profits and losses of the business. Owners of a partnership are called partners. Each partner may contribute money, property, labor, or skill. Merely sharing expenses does not constitute a partnership. Take, for example, a group of business investment advisors who share the same office building. They pool their funds to pay for common expenses such as building rent, secretarial services, utilities, supplies, and building maintenance. They then separately bill their own cli-

Partnership
A partnership is a business owned by two or more persons.

ents. This arrangement of sharing expenses is not considered a partnership. However, if each advisor shared a percentage of their revenues with the other advisors, then the arrangement would be a partnership.

There are two types of partnerships: general partnerships and limited partnerships. In general partnerships, all the partners are personally liable for the debts of the business. Creditors of the business can take the personal assets of any and all of the partners to satisfy debts incurred by the partnership. General partners are "jointly and severally liable" for the debts of the business. This means that a creditor can go after any one partner for the full amount of the partnership debt. Then, that partner can seek to recoup a proportional share of the debt from the other partners. In limited partnerships, only the general partners are personally liable for the debts of the business; the limited partners in a limited partnership are liable only to the extent of their investments in the business plus their share of recourse debts and obligations to make future investments.

Partnerships can be informal agreements. However, they are more typically organized with formal partnership agreements. This often saves a great deal of difficulty when there are disagreements. These agreements detail how income, deductions, gains, losses, and credits are to be split as well as how special allocations are to be made, and what happens on the retirement, disability, or death of a partner and dissolution of the partnership. Limited partnerships must have an agreement complying with state law.

Table 2: Advantages and Disadvantages of Partnerships

Advantages	Disadvantages
• good way to combine the skills and financial abilities of several different people • double taxation of profits avoided • special allocations permit some tax items to flow through to partners	• general partners liable for actions of other partners • income recognition of debt relief • income recognition on services contributed for capital interest • taxable consequence as a result of contribution of appreciated securities

Source: Hastenteufel, 2020.

Limited Liability Company

Limited liability company
A limited liability company is an unincorporated business structured to limit the liability of its members.

Another form of organization that can be used by those joining together to conduct business is a **limited liability company** (LLC). This type of business organization is formed under state law and results in all owners being given limited liability. Owners of LLCs are called members. Limited liability company statutes permit limited liability partnerships (LLP), or LLPs–LLCs, for accountants, attorneys, doctors, and other professionals.

As the name suggests, the creditors of LLCs can look only to the assets of the company to satisfy debts; creditors cannot recover funds from the personal assets of members. For income tax purposes, an LLC is treated as a partnership unless the members elect to have their LLC taxed as a corporation.

Tax experts have yet to come up with any compelling reason for an LLC to choose corporate tax treatment. However, if it is desired, the businesses can elect to do so. For discussion purposes, it is assumed that the LLCs have not chosen corporate tax treatment and are therefore taxed in the same way as partnerships. In jurisdictions that permit one-member LLCs, the member is treated like a sole proprietor, reporting company income and expenses on a self-employment tax form.

Table 3: Advantages and Disadvantages of Limited Liability Companies

Advantages	Disadvantages
• limited liability protection for its members • members at risk only to the extent of their investment • same "pass-through" features of a general partnership and corporation, avoiding double taxation of profits • flexibility of a partnership without the restrictions imposed on a corporation, e.g., the number of members is not limited in the LLC as it is in a corporation • liquidation of an LLC generally not a taxable event • members' share of distribution may be disproportionate to their share of ownership	• members' earnings generally subject to self-employment tax • state/federal law potentially limits the life of the entity • LLC must have at least two members (although some states permit one-member LLCs) • lack of uniformity in LLC statutes between states/countries means that businesses operating in more than one state/country may receive inconsistent treatment, i.e., some states/countries do not tax partnerships but tax LLCs

Source: Hastenteufel, 2020.

Corporation

In the eyes of the law, a **corporation** is a legal entity that is separate and distinct from its owners but also has many of the same rights and responsibilities as a person. Corporations enjoy most of the rights and responsibilities that an individual possesses. It may buy, sell, and own property in the form of assets, enter into contracts, enter into leases, borrow and lend money, hire employees, and bring lawsuits or in turn be sued. A corporation, as a legal entity, pays taxes and is often referred to as a legal person. It can be prosecuted and punished, often with fines, if it violates the law. While the entity clearly cannot be jailed, if its actions are heinous enough, corporate principals may be incarcerated. The chief advantages of a corporation are that it can exist indefinitely, in **perpetuity**, beyond the lifetime of any one member, founder, or owner. The corporate entity also offers its owners the protection of limited personal liability.

Corporation
A corporation is a business able to act as a legal entity and is able to carry out many similar functions to a person.

Perpetuity
A perpetuity occurs when a business has life beyond that of its owners.

Table 4: Advantages and Disadvantages of Corporations

Advantages	Disadvantages
• limited liability • perpetual life • ability to raise capital through issuance of securities • ease of transfer of ownership • provides shareholder-employees with excludable fringe benefit	• double taxation of profits (depending on jurisdiction) • corporate charter restricts types of business activities • subject to various state and federal controls • lock-in of losses

Source: Hastenteufel, 2020.

Businesses often begin as sole proprietorships or partnerships. However, as growth occurs, there is value in incorporation that accrues to a firm; the ability to deduct certain expenses, taxation of the entity rather than inclusion of income as part of personal taxes, and a lessening of legal liability all become attractive as a firm grows. Such circumstances give rise to thoughts of **going public**, a process that provides a firm with the opportunity to raise money for the continued growth of a firm through the sale of an interest or shares in a company. Once this decision has been made, a firm will likely seek advice from financial experts, such as investment bankers, about the idea of an **initial public offering** (IPO).

Going public
This implies that the equity in a firm is to be sold to the public in the form of stock.

Initial public offering
An initial public offering is the very first time that a firm's equity is sold to the public, usually in the form of stock.

Once a step such as an IPO is taken, a whole new world opens up for a business. Funds are often more easily accessible, growth generally brings about more growth, and the business moves more easily into a potential expansion mode. There are, however, certain drawbacks. Ownership is now shared with others, some of whom may want to have a say in how the business is run or how things are done. This is the primary reason why many sole proprietorships and partnerships choose not to pursue this option. They may prefer the smaller, more intimate size of their business or prefer their own way of doing things and have no desire to share the decision-making process with a board of directors, outside management, active investors, a bunch of strangers, or anyone else for that matter.

Comparison of Business Organization Forms

Each type of business organization has both advantages and disadvantages. Choosing the best form for any given business should therefore be an informed decision. Often, the selection of a business organization is made after consulting with a business planner or advisor. For ease of startup, there is nothing simpler than the sole proprietorship. When beginning a business with a friend, where everyone brings something to the mix, a partnership may be just what is needed. Remember, every partnership should have a partnership agreement in place from the outset of conducting business. For those not quite ready to incorporate, but who need protection from liability, the LLC or LLP in the case of professional partnerships, makes perfect sense. This type of organizational structure limits any liability that may arise strictly to the business.

2.2 Agency Relations and Agency Problems in Corporations

In order to understand agency problems, it is first important that one understands how agency relationships come into being. As seen in the Celestial Seasons case study, when a business grows, it becomes virtually impossible for one person to do everything. Therefore, capable people are placed in roles to manage a variety of functions and an agency relationship is thus born.

Agency Relationships and Agency Authority

There are three distinct areas of authority that exist within an agency relationship where an agent may act on behalf of a principal. These actions are considered actions of the principal, and a firm is legally and fully liable for the actions of its agents or managers. This means that even if the agent acts fraudulently without the principal's (i.e., shareholders, owners) knowledge, a firm is still held accountable for the agent's actions.

The areas of authority include:

- express authority
- implied authority
- apparent authority

The express authority takes place between the agent and the company and is specifically granted to an agent. The agent's contract states what type of activity the agent may undertake, in what actions the agent may engage, and what types of decisions the company wishes to have the agent make.

The implied authority falls under the heading of the "doctrine of ostensible authority" and also exists between the agent and the corporation. It provides that the agent has the capacity to act in a manner the public may reasonably believe is within his or her normal duties. For instance, a finance manager acting as an agent fills out a loan application and answers questions regarding the equity value of a firm. Nowhere in a finance manager's contract does it explicit state that he or she has this type of authority, but it is reasonable to assume this question must be answered in the process of filling out the application for a loan.

The apparent authority takes place between the agent and a company but deals with what a third party is led to believe. This doctrine holds a company liable for the agent's actions. Take, for instance, an agent who is no longer with a company, but who still has business cards and all the company books. He writes a loan application as if he is still representing the company and takes the money. This ex-agent, though acting fraudulently, is still in effect binding the company to the obligations of the loan, based on the appearance that he has the authority to do so. The firm will likely be held liable for the actions of this ex-agent. However, keep in mind that not all acts carried out under apparent authority may be legally binding and a firm has the opportunity to take legal recourse against its former agent for any fraud that he/she has perpetrated.

Agency Problems

One of the financial managers' main functions is to maximize shareholder wealth. It is indeed the function of any manager within a business to act on behalf of the owners and other principals in every possible way. However, this expectation can be lost when managers act to maximize their own wealth first. Such behavior has emerged over and over again, as in the cases of Enron, AIG, Tyco, Southmark, WorldCom, Volkswagen, and Bernie Madoff, or the collapse of the housing market, where the managers of money, who were

supposed to be maximizing shareholder wealth, were, in fact, out to fill their own pockets to the detriment of shareholders. Students should familiarize themselves with these scandals and the associated issues with the agency relationships.

In any agency relationship, but especially in a formal business arrangement, the principal, in this case, the owner or owners of a business, have conferred upon the agent, a legal right to act on their behalf. This relationship is **fiduciary** in nature and thus obliges the agent to always act with the best interest of the principal in mind when making decisions. However, as the selected examples in the preceding paragraph demonstrate, this is not always the case and, in some instances, the agency relationship can go horribly wrong. Therefore, it is necessary to consider remedies that can be put in place to minimize agency problems.

Fiduciary
A fiduciary relationship implies that the agent will always place the interest of the principal before his or her own interests.

2.3 Institutional Investors, Incentives, and Market Control Mechanisms

Internal corporate governance structures can serve as an excellent way to mitigate agency problems. This can be done by establishing internal mechanisms that call for greater accountability of management's actions. These remedies attempt to ensure that management's decision-making and subsequent actions align with owners' and shareholder's desired outcomes. The two typical types of plans to combat agency problems are **incentive plans** and **performance plans** (Zutter & Smart, 2019).

Incentive plan
An incentive plan is when a firm decides to provide rewards above a normal salary for an agent to perform his/her duties.

Performance plans
These are reward plans for attaining certain company objectives.

But before these internal governance and control mechanisms are examined, we need to look at some of the external forces at play regarding the steps that institutional investors can take to reign in rogue management are presented. Institutional investors and activist investors can exert a great deal of influence on the decisions a management makes (Cornett et al., 2007). In determining how to proceed as an investor, shareholder, or principal, one should begin with fundamental economics and examine the principal-agent situation. Problems occur when the agent, acting as a manager of a company, acts in a way that benefits his/her own interest, at the expense of the principal (i.e., the firm's shareholders). Individual investors simply do not have the power, time, or capital to effectively monitor the managers of every prospective investment.

Institutional investors, however, are able to overcome this problem because they have more specialized knowledge and capabilities available to study an array of firms, select the right firms, and then monitor the managers of those investments. Recent studies have found that institutional investors are capable of preventing value-destroying activities when they actively monitor managers and that when institutional investors increase their holdings in a company's securities, it is in large part due to their confidence in the business' managers. In this way, institutional investors are able to address agency problems far more effectively than individual investors whilst at the same time signaling their preferences to individual investors.

Corporate Governance Incentives and Performance Plans

Incentive plans

Incentivizing corporate managers to meet business objectives is a serious consideration when designing the structure of executive compensation plans. An organization can select from several well-recognized methods to reward the performance of executives if their deliverables and results match the desired outcomes of the firm. Often such incentivization and performance plans accrue with very significant tax benefits to both the manager and the firm. By tying management compensation to a tangible item such as share price, it is expected that a management's decisions will be designed to make certain that share price rises. By tying management compensation directly to corporate performance, it has the effect of ensuring that the actions taken by the agents align with the desired outcomes of the principals.

One such plan utilizes the granting of stock options to management figures whose performance meets or exceeds expectations. These are generally qualified stock options, also known as **incentive stock options** (ISO). The options granted have a fixed exercise price that is above the current stock price. These ISO shares also have a required holding period, generally two years, after which they may be exercised at the fixed price that was assigned when granted. If management increases the price of stock during the required holding period, then they are able to buy the stock at the reduced grant price. This can represent a very significant increase in wealth for the manager, while all the time insuring that any actions taken are designed to increase the value of the share price, thereby maximizing shareholder wealth.

Incentive stock options
These contain the right to buy stock at a fixed price if prices have risen since the options were awarded.

Performance plans

When an agent's compensation is tied directly to the firm's results, a performance plan is in place. These types of plans tie management compensation directly to some metric such as earnings per share (EPS) (averaged over a period of time or at a specific point in the future), growth of earnings per share, total shareholder return, or overall financial performance. Compensation for performance under these types of plans can often take the shape of either **performance shares** or cash bonuses.

Performance shares
These shares are awarded to a manager if certain company objectives are met.

The key to an effective performance plan promising success for both managers and shareholders is the selection of performance metrics. The chosen metrics should establish a baseline of where the organization is before the changes are applied and measure the results using the same methodology at the end of a specific period. Some types of performance plans include both short-term performance tied to annual company goals and objectives and long-term compensation incentives tied to overall corporate valuation results. The complete management performance package constitutes market control mechanisms.

Organizational pay goals have several aims. They include motivating employees to perform, attracting and retaining the best talent affordable, ensuring the fair and equitable treatment of employees, and regulating labor costs. When looking at how pay for performance plans influence an organization's ability to meet listed goals and objectives, it is often

the case that organizations will face trade-offs when trying to meet their goals, particularly when it comes to implementing merit pay plans. That being said, results indicate that implementing pay for performance plans as opposed to not linking performance and pay more often leads to the desired result.

The following figure illustrates the different types of pay for performance plans available to firms considering this type of governance and control mechanism.

Table 5: Pay for Performance Plan Classes

Contribution to base salary	Level of performance		
		Individual	Group
	Added to base	Merit plans	Small group incentives
	Not added to base	Piece rates Commissions Bonuses	Profit sharing Gainsharing Bonuses

Source: Milkovich & Wigdor, 1991.

Market Control Mechanisms

It is often suggested that managers and executives are paid far too much for whatever it is that they do. However, both government regulations and market mechanisms address this issue and influence what is considered fair compensation.

Managerial compensation consists primarily of four main components:

1. The annual base salary (ca. 30 percent)
2. A bonus plan or annual incentives tied to short-term performance (ca. 20 percent)
3. Long-term incentives made up of any of the following: a mix of restricted stock, stock options, and a tie-in to total shareholder return or financial performance (ca. 40 percent)
4. A benefits plan (health, disability, etc.; ca. 10 percent)

Prior to the financial crisis, there was a great deal of attention in boardrooms everywhere being paid to improving the relationship between pay and performance. Corporate boards sought to achieve a parity regarding pay for performance. One result of this trend was to place more emphasis on performance-vested restricted stock for top managers and executives. An ever-increasing part of management compensation packages was being tied to what institutional investors focus on in the long-term, that is, the long-term company performance as measured either by total shareholder return or performance metrics that drive shareholder return. Thus, while compensation was high when share prices grew, shareholders were making money right alongside corporate managers, everyone seemed to be largely content, and market mechanisms appeared to be effective in achieving corporate objectives (Deloitte, 2017).

The financial crisis starting in 2008 created many challenges to the long-term incentive compensation models that were in use at the time. As stock prices fell around the world, the value of stock-based components (options, restricted stock, and performance shares) of the compensation packages for management, particularly top-level management, fell dramatically. For many managers, the stock price drop drove all stock options available in their pay for performance portfolio far beneath the price at which they were awarded, effectively making them worthless. Therefore, they argued over why they should buy the stock for a higher price than what it can be bought for in the open market. As a result, those firms that relied heavily on qualified stock options for long-term incentive compensation found the enhancement of management retention and motivation sought by the granting of these qualified options was significantly reduced.

In the past few years, some companies have repriced their awarded options, while others have held firm in not repricing them. Still other companies have converted or exchanged option incentive plans to restricted stock plans. The rebound in stock prices during recent years has restored some of the **underwater options** to again being "in the money", but these options appear relatively fragile given the rather lackluster world economy at present. Thus, market mechanics have played an important role in reigning in rampant, runaway executive compensation packages.

Underwater options
These occur when the market price of a stock has dropped below the exercise price of an awarded stock option.

SUMMARY

In the first section of this unit, the typical types of legal structures used in the formation of businesses were examined and their formation, the advantages and disadvantages of each business setup, the taxation structures for each type, and the differing access to funds to grow the business for each legal type were discussed.

The second section of this unit explored agency relationships, looking at how they are formed, what they are, and how they can be both advantageous and disadvantageous. Moreover, the problems that arise in agency relationships and methods for dealing with them were presented.

Finally, in the third section of this unit, managerial and executive compensation packages were examined. How management can be incentivized via pay structures and how institutional investors and market forces can play a role in reigning in runaway compensation packages were reviewed.

UNIT 3

UNDERSTANDING FINANCIAL STATEMENTS AND KEY PERFORMANCE INDICATORS

STUDY GOALS

On completion of this unit, you will have learned …

- the purpose and structure of a corporate balance sheet.
- the purpose and structure of a corporate income statement.
- the purpose and structure of a corporate cash flow statement.
- how to use key performance indicators to measure corporate financial performance.

3. UNDERSTANDING FINANCIAL STATEMENTS AND KEY PERFORMANCE INDICATORS

Introduction

Common-sizing
This reduces all figures on a financial statement to percentages for reference purposes.

Common-sizing of financial statements is a familiar practice in accounting and finance. It allows analysts to assess the financial health and well-being of a firm over time and provides a perspective on a firm's performance relative to its industry.

Below is a very simplified version of a common-sized balance sheet. What common-sizing does is take the total of an item and compares its parts as percentages of that total. Differences from period to period can reveal a great deal. An example company shows the following differences in quarterly periods of a given year.

Figure 3: Common-Sizing the Asset Side of the Balance Sheet

Period 1		Period 2		Period 3		Period 4	
Cash	5%	Cash	2.5%	Cash	5.5%	Cash	5%
A/R	10%	A/R	12%	A/R	17%	A/R	10%
M/S	10%	M/S	2.5%	M/S	4.5%	M/S	10%
Inventory	10%	Inventory	18%	Inventory	8%	Inventory	10%
PP&E	50%	PP&E	50%	PP&E	50%	PP&E	50%
R&D	5%	R&D	5%	R&D	5%	R&D	5%
Patents	5%	Patents	5%	Patents	5%	Patents	5%
Goodwill	5%	Goodwill	5%	Goodwill	5%	Goodwill	5%
Total assets	100%	Total assets	100%	Total assets	100%	Total assets	100%

A/R = Accounts receivables
M/S = Marketable securities
PP&E = Property, plant, and equipment
R&D = Research and development

Source: Hastenteufel, 2020.

The company may have assumed that the spike in inventory was the problem and that resolving this would ease the cash flow problems. However, approaching the problem from a broader perspective, it is easy to see that the spike in inventory was part of a natural progression in their yearly business, as was the dip in cash and marketable securities. In this example, Period 2 is the firm's busy period for stockpiling raw materials with which

to begin making the product. Then, by the end of Period 3, all finished products were out the door and in stores. There is clearly something else going on here that affects the company's cash flow.

In fact, the handling of accounts payables and accounts receivables has more to do with the company's cash flow issues than any amount of inventory that they do keep on hand. The firm has no collection policy in place, and they simply pay their bills as soon as they receive them. This meant that much more cash is flowing out of their accounts than is flowing in. Once this problem is identified, the firm is able to attack the right problem and begin enacting the necessary solutions.

All this can simply be concluded from common-sizing a balance sheet, an income statement, and a cash flow statement to discover a problem and undertake the necessary corrections. In this unit, each of these financial statements will be discussed in more detail.

It is of critical importance that both financial managers and accountants keep in mind that no financial statement ever stands alone. The conclusion of net income on the income statement sets the stage for the beginning amount that will appear on the cash flow statement. The conclusion on the cash flow statement will provide the financial manager with the amount of cash available as one period closes out and another begins on the balance sheet. Information from one financial statement ties directly into the information on the next financial statement. Together, these statements tell a story about the financial health of the firm to those who know how to read them.

3.1 Balance Sheets

The corporate balance sheet is, according to US-GAAP, a static picture, a snapshot of a firm's financial position at a given time. The left side of a balance sheet is where investment decisions are recorded as **assets**. The right side of the balance sheet is where financing decisions are made as **liabilities**. The top half of the balance sheet is where working capital information is derived.

Assets
These are investments of a firm.

Liabilities
These are methods of financing that a firm has used.

Components of the Balance Sheet

The assets side of the balance sheet begins with cash. Remember, cash generates no interest and no additional income. In fact, there are only four sensible reasons to hold cash (Brigham & Houston, 2019):

1. Transaction motive, to pay for goods and services used by a firm
2. Compensatory balances, to take advantage of free services offered when there is a certain level of cash in an account
3. Precautionary reserves, to protect against market downturns or see a firm through difficult economic periods
4. Speculation/investment motives, such a cash reserve is sometimes known as a "war chest" which allows a firm to take advantage of any opportunities that present themselves

Accounts receivable
These represent credit that the firm has extended to customers, displayed in current assets.

The next entry on the balance sheet is **accounts receivable**. In order to extend its market reach in business, a firm must be willing to carry out some of its transactions on credit, thus creating accounts receivable. A firm doing so extends credit to buyers who might otherwise go elsewhere to seek such terms. However, the willingness to extend credit means that while the credit is outstanding, the seller is financing the buyer. Therefore, a comprehensive credit policy should be in place and enforced to assure timely payments from all customers who use this credit option.

Marketable securities
These are short-term invested assets, displayed in current assets.

The next item listed on the balance sheet is **marketable securities**, where money is placed while a firm awaits opportunities or simply waits to pay bills based on its credit policy. Marketable securities, like cash, are designed to be short-term, but unlike cash, marketable securities will generate interest while awaiting use.

Inventory is the least liquid of all current assets, it is nevertheless an essential element designed to keep a firm's production in motion.

Fixed assets
These are the long-term investments that a firm has made.

All of the above mentioned assets are current assets. Additionally, there are **fixed assets**. This area of the balance sheet is where a firm accounts for property, plant, and equipment. Also found here are investments such as patents, trade names, and research and development, as well as goodwill, i.e., the money a firm pays in acquisition costs above the asset and liability value of an acquired company or value a firm has generated in the course of conducting its business.

Of course, there must be a structured method of paying for all of these assets. Firms always need to answer the question of how to pay for their investments. This takes the business analyst, financial manager, and accountant to the right side of the balance sheet, where **current liabilities**, the long-term debt, and the owners' equity are stated.

Current liabilities
These are obligations of a firm that must be satisfied within the next 12 months.

Current liabilities deal with short-term obligations and directly address a firm's solvency. These are the bills that must be paid to keep the lights on, air conditioning or heating running, employees paid, insurance and tax obligations met, and equipment operating. Current liabilities are obligations that must be met within the next 12 months.

Long-term debt
This refers to the obligations of a firm that extend anywhere from 10 to 30 years.

Long-term debt pays for long-term investments. The factory buildings, retail space, equipment on the factory floor, storage space for inventory, property that a firm owns, research costs, corporate expansion, and ongoing projects are all financed with long-term debt. These funds that support long-term investments are generally acquired either through bank borrowing or through bond issues. Another means of generating funds and meeting long-term capital acquisition needs is through **equity capital**. Businesses at their earliest stages, considered to be too green or too risky to be good candidates for bank borrowing or bond issuance, will fund their long-term needs via the more expensive owner's equity route. This is often a prelude to an initial public offering and the steps where a firm proves its viability to the marketplace. Once established and viewed as less risky by lenders, a firm may elect to use the less expensive route of issuing debt.

Equity capital
This refers to funds outstanding that have been contributed by the owners of a firm.

3.2 Income Statements

If the balance sheet is like a static snapshot, its counterpart, the **income statement** could be likened to a dynamic video, according to US-GAAP. It is a moving picture that captures information about how a firm has progressed over time from point A to point B. Other names for the income statement include statement of earnings, revenue statement, and profit and loss statement. The corporate income statement contains key information regarding operational performance in its upper section, from sales to the operating income, and additional financing information in its lower portion, from the operating income to the net income.

Income statement
The income statement is a dynamic moving picture of what fund flows look like over a period of time.

In their text on managerial finance, Zutter and Smart (2019) state that many larger corporations, rather than operating in accordance with the typical calendar year beginning January 1 and ending December 31, will instead use the fiscal year. This can be any 12-month period a firm chooses. This fiscal calendar is sometimes used to accommodate a firm's maximum income generating period and allow for maximum deductions. The fiscal year, rather than the calendar year, can coordinate with the completion of a firm's business cycle, thus allowing a firm to close out its annual reports on a strong note regarding its earnings and optimize the appearance of its financial position to investors.

In addition to annual income statements, there are also monthly income statements that allow management to remain constantly informed of the company's progress throughout the earnings cycle, and quarterly income statements that must be made available to investors.

Components of the Income Statement

Most income statements begin their report with sales. Sales indicate the amount of product that a firm was able to dispense for a price and, ideally, a profit. Some, however, use the broader category of revenues to document income generated by transactions rather than sales. For example, a bank or other financial institution might use the category of revenues rather than sales depending on the way that income is generated.

From sales, the cost of goods sold (COGS) must be subtracted. The difference provides the manager with the **gross profit**. In turn, gross profit provides the basis from which sales expenses, general expenses, administrative expenses, and depreciation are subtracted. These numbers provide the financial manager with an idea of what it costs a firm to conduct its operations and get the final product its consumers.

Gross profit
This occurs when the cost of goods is subtracted from sales.

When these components are subtracted from sales, the manager has access to the income from operations. All these figures used to calculate the income from operations are used to calculate the efficiency, effectiveness, and profitability of a firm's operations. A company's financial manager can learn a great deal about the operations of a firm by examining the operating leverage. A study of the degree of operating leverage can also supply a clearer picture of the impact of certain events, such as an increase or decrease in sales, on the income from operations and net income of a firm.

In the second part of the income statement, the focus returns to examining the financing activities of a firm. Here the financial manager can find information that reveals additional expenses. These expenses are not related to operations; they are of a financial nature. In this segment, the interest paid for funds borrowed to finance the assets that a firm has acquired to use in business is visible. Taxes are also assessed in this area of the income statement as well as discontinued operations and non-controlling interest (i.e., dividends).

Finally, after all costs have been subtracted from the initial revenues generated by a firm, what is left is known as the company's bottom line or the net income. This number is divided by the number of shares and provides the financial manager with the earnings per share (EPS). From this figure, the board of directors will determine if an amount is to be paid to the common shareholders as dividends per share and how much this distribution should be.

3.3 Cash Flow Statements

Cash flow statement
The cash flow statement is an assessment of cash activity over the course of a given business period.

The corporate **cash flow statement** begins where the income statement ends with net income. The purpose of this statement is to determine where a firm's cash inflows and outflows occurred. There are three main types of cash activity examined in the cash flow statement: (1) cash from operating activities, (2) cash from investment activities, and (3) cash from financing activities.

Source of cash
This identifies areas where cash amounts were increased.

Use of cash
This identifies areas where cash amounts were decreased.

Each transaction a firm makes results in either a **source of cash** or a **use of cash**. Sources in any of the three areas (operations, investments, and finance) result in an increase of cash to a firm. Initially, some of these transactions may seem counterintuitive. For example, withholding a bill payment is a source of cash while increasing accounts receivable is a use of cash. To determine whether a transaction is a source or use of cash, ask whether the transaction increases the amount of cash on hand or reduces it.

Components of the Cash Flow Statement

The cash flow statement begins with the net income from the income statement. Depreciation is then added back as a source of cash. Since depreciation and amortization are tax constructs and don't require any exchange of cash, these tax-based constructs (which were once taken away from the cash flow for tax purposes) are now added back and serve as a source of cash. Any increase in inventory is a use of cash, while any decrease in inventory is a source of cash, just as any increase in receivables is a use of cash, and any decrease in receivables is a source of cash. The opposite is true of payables. When a firm increases payables, it increases cash on hand; when it reduces payables, it uses cash and thus decreases cash on hand. Accrued wages and taxes round out a company's sources and uses of cash in the operating activities of the cash flow statement.

Investment activities are next on the cash flow statement. Simply put, an increase in property, plant, and equipment results in a reduction of cash and is therefore a use of cash. Sale of assets results in a source of cash. Finally, any increase in notes or bonds payable

are also a source of cash. In fact, increasing debt in any manner via notes, bonds, or borrowing is an increase of cash on hand and thus a source of cash. Payment and retiring of bonds or other debt as well as payment of dividends represent a reduction of available cash and are therefore uses of cash.

When completing a cash flow statement, operations, investments, and financing are all summed and netted. When these calculations are completed and the resulting three figures have been added together, either a net increase or decrease of cash will result over a certain period of time. This newly-calculated cash figure is now used to begin the next round of balance sheet figures for the coming fiscal year.

As previously mentioned, no financial statement stands alone. They are all interconnected and each in turn provides information for the next financial statement and data for financial decision-making. Learning to read financial statements is the foundation of every financial analysis. It provides one with the ability to estimate, with a reasonable degree of accuracy, the financial health of a firm. Such knowledge leads to sound decision-making and a better-run company. It is also from these statements that a financial manager is able to derive information regarding key performance indicators.

3.4 Measuring Financial Performance: Key Performance Indicators

Financial performance is one component of a business that is measured by using **key performance indicators (KPIs)**. These values demonstrate how effectively a firm and its management are achieving key business objectives. Companies use KPIs as measures of success in accomplishing specific goals. These key indicators may be applied to many areas of a firm's business including sales, marketing, finance, production, and operations, among others. A firm will generally build, install, and maintain KPIs in order to improve organizational strategic performance or operational performance in any area within the business where improvement is desired.

Key performance indicators (KPIs)
KPIs are measures that illustrate a firm's effectiveness in meeting its goals.

The development of KPIs and performance measurement involves the precise articulation of what it is that an organization is attempting to accomplish. It involves identifying the most meaningful and useful measures to be used as indicators of success. Simply selecting a set of standardized measures from a long list of possible measures is not effective; such an approach is akin to trying to assess a firm using a set of ratios that may or may not agree on what they indicate.

Performance measures or KPIs are a critical component of any strategic management system as they are used to assess the effectiveness of strategy implementation. KPIs can also be used to analyze the gap between the actual results and and the targeted performance. As such, they are an important measurement of organizational effectiveness and operational efficiency.

A general template for developing financial KPIs includes the following steps:

1. Describe the intended financial result(s).
2. Understand alternative financial measures.
3. Select the right measurement(s) for each financial goal or objective.
4. Define composite financial indicators as needed.
5. Set financial targets and thresholds.
6. Define and document selected financial performance measures.

Financial KPIs provide an early-warning system in an organization that helps to improve overall performance and final results. Meaningful and sensitive KPIs provide a deeper insight into whether strategies are functioning as they were intended. They also provide insight into whether financial projects are on schedule, on budget, and able to be delivered effectively. KPIs direct the managers' and employees' attention to the items that matter most for success and allow for deliverables and accomplishments to be directly measured.

Net profit
Also known as net income, net profit is revenue adjusted for the cost of doing business.

Profit margin
This is the amount by which revenue from sales exceeds costs in a business and is denoted as a percentage figure.

Some common financial KPIs focus on revenue and profit margins. The most straightforward and elementary profit-based metric is **net profit**. This is also known as a firm's bottom line. Net profit represents the total revenue that remains as a return for a given period after accounting for a firm's expenses, taxes, and interest payments during the same period. Because net profit is calculated as a monetary figure, it must be converted to a percentage of revenue for use as a KPI and comparative analysis. This figure is known as the **profit margin**. For example, if the standard net profit margin for an industry is 50%, a new business startup in that industry knows that it needs to work toward meeting or exceeding that figure to be competitive. The gross profit margin, which measures revenues after accounting only for those expenses directly connected with the production of goods for sale, is another commonly-used, profit-based KPI.

Current ratio
The current ratio measures the relationship between current assets and current liabilities.

A firm's **current ratio** is another common financial KPI. This figure is calculated by dividing a company's current assets by its current liabilities. A financially healthy business generally has more than enough current assets positioned as cash and cash equivalents to meet all its financial obligations for the upcoming twelve-month period. However, different industries require different amounts of debt financing. Therefore, comparisons with firms outside the company's own industry is only of little value. Comparing a firm's current ratio to other businesses within the same industry is an excellent way to establish whether a firm's cash flow lines up with industry standards. A firm's financial KPIs must be stated in its annual report.

Other important financial KPI metrics include the following: costs, alignment of actual revenue with projected revenue, cost of goods sold, and days sales outstanding. Additionally, a firm should keep a close eye on sales according to region and alignment of expenses versus budget.

In order to be effective, a KPI must satisfy all of the following criteria:

- it must be well-defined and quantifiable.
- it must be thoroughly communicated throughout the organization and department.
- it must be critical to achieving the firm's strategic objectives.
- it must be applicable to the financial department and aspect of the business.

Note that all of the mentioned KPIs are financial KPIs. In addition, firms are advised to calculate and focus on non-financial KPIs.

SUMMARY

In this unit, the major financial statements of a firm were examined, as well as how they can be used to assess a firm's performance. This section also explored other tools available for assessing performance.

In this context, the balance sheet and how it indicates how well a firm is performing at a given point in time were presented before the income statement, which is a dynamic appraisal of a firm's performance over a given period in time, was discussed. Moreover, the cash flow statement, which details information generated by the firm's sources and uses of cash were analyzed.

In the final section of this unit, key performance indicators (KPIs) and how they are formulated and used to ascertain whether the activities of a company are moving in the right direction in the most efficient manner possible were introduced.

UNIT 4

BASIC CONCEPTS OF FINANCIAL THEORY

STUDY GOALS

On completion of this unit, you will have learned …

- what the time value of money and assessment of cash flow streams are.
- what the impacts of interest rates on businesses are.
- what the determinants of interest rates are.
- how to estimate the cost of capital for budgetary considerations.

4. BASIC CONCEPTS OF FINANCIAL THEORY

Introduction

Eric and Edward were best friends throughout school and shared many similarities, although Edward was always more interested in partying, spending large, and "living the good life". They both went to work at the same company at the age of 18. Eric began saving for his retirement immediately. He put aside $2,400 per year in a retirement account that paid 5% interest. He was 33 when he stopped making these contributions (16 years total), but he maintained his account, which continued to grow at 5% each year.

While Eric continued this pattern of saving during his first 15 years of work, Edward continued with his partying and large spending habits. It was only around the time Eric stopped contributing to his retirement, that Edward decided that it was time he began preparing for the inevitable. He looked at what Eric was doing and started saving $2,400 per year and continued to do so until he retired at age 65 (which meant 32 years of contributing to his retirement savings in total). Edward placed his savings in the same type of account that Eric's retirement money was in, earning 5% interest.

When they both retired at age 65, who had the most money? Let's take a look at what the two accounts looked like side-by-side, assuming the contributions and the interest are paid at the end of each year.

Table 6: The Time Value of Money and the Magic of Compounding

Edward's Account			
1	**2**	**3**	**4**
Age	Contribution	Interest (1+i)	Total (2·3)
18	$ -	1.06	$ -
19	$ -	1.06	$ -
20	$ -	1.06	$ -
21	$ -	1.06	$ -
22	$ -	1.06	$ -
23	$ -	1.06	$ -
24	$ -	1.06	$ -
25	$ -	1.06	$ -
26	$ -	1.06	$ -

Edward's Account

1	2	3	4
27	$ -	1.06	$ -
28	$ -	1.06	$ -
29	$ -	1.06	$ -
30	$ -	1.06	$ -
31	$ -	1.06	$ -
32	$ -	1.06	$ -
33	$2,400.00	1.06	$2,544.00
34	$2,400.00	1.06	$5,240.64
35	$2,400.00	1.06	$8,099.08
36	$2,400.00	1.06	$11,129.02
37	$2,400.00	1.06	$14,340.76
38	$2,400.00	1.06	$17,745.21
39	$2,400.00	1.06	$21,353.92
40	$2,400.00	1.06	$25,179.16
45	$2,400.00	1.06	$48,036.16
50	$2,400.00	1.06	$78,623.98
55	$2,400.00	1.06	$119,557.39
60	$2,400.00	1.06	$174,335.52
65	$2,400.00	1.06	**$247,641.01**

Source: Hastenteufel, 2020.

Table 7: Eric's Account

1	2	3	4
Age	**Contribution**	**Interest (1+i)**	**Total (2·3)**
18	$2,400.00	1.06	$2,544.00
19	$2,400.00	1.06	$5,240.64
20	$2,400.00	1.06	$8,099.08
21	$2,400.00	1.06	$11,129.02

1	2	3	4
Age	**Contribution**	**Interest (1+i)**	**Total (2·3)**
22	$2,400.00	1.06	$14,340.76
23	$2,400.00	1.06	$17,745.21
24	$2,400.00	1.06	$21,353.92
25	$2,400.00	1.06	$25,179.16
26	$2,400.00	1.06	$29,233.91
27	$2,400.00	1.06	$33,531.94
28	$2,400.00	1.06	$38,087.86
29	$2,400.00	1.06	$42,917.13
30	$2,400.00	1.06	$48,036.16
31	$2,400.00	1.06	$53,462.33
32	$2,400.00	1.06	$59,214.07
33	$2,400.00	1.06	$65,310.91
34	$ -	1.06	$69,229.57
35	$ -	1.06	$73,383.34
36	$ -	1.06	$77,786.34
37	$ -	1.06	$82,453.52
38	$ -	1.06	$87,400.73
39	$ -	1.06	$92,644.78
40	$ -	1.06	$98,203.46
45	$ -	1.06	$131,418.39
50	$ -	1.06	$175,867.44
55	$ -	1.06	$235,350.31
60	$ -	1.06	$314,951.81
65	$ -	1.06	**$421,476.57**

Source: Created on behalf of IU (2020).

At age 65 when both men retired, Eric had greater funds than Edward in his retirement account even though Eric only saved for 16 years while Edward put away savings for 32 years. This discrepancy is due to the time value of money and the magic of compounding.

So, the moral to this story is that one should save early, often, and regularly. Someday your older self who wants to retire comfortably with ample savings will thank your younger and thriftier self.

4.1 Time Value of Money and Cash Flow Streams

The time value of money (TVM) is one of the primary principles of finance. It states essentially that a dollar today is worth more than a dollar tomorrow because a dollar today can be invested to begin earning interest immediately. This principle provides the foundation for all subsequent TVM calculations. The previous example demonstrates how the value of money changes over time due to interest and compounding. The application of the TVM concept in finance allows for the comparison of monetary amounts which are available at different points in time, which in turn helps investors to make the most appropriate money management decisions.

Time Value of Money

There are five primary components that constitute the time value of money:

1. FV (future value)
2. PV (present value)
3. PMT (payments)
4. I/YR (interest per year)
5. N (number of periods)

The easiest time value concept to understand is the **future value** of a single sum. Single sum refers to a lump-sum payment received at one point in time in the future. The future value of that sum is the future amount of an initial deposit made today that has been compounded for a given number of periods at a given interest rate.

Future value
This is the sum that will be available in the future given an investment today.

Exponential Calculation of Future Value

Imagine an investor has $1,000 available to invest. If the investment earns interest at the rate of 10% per year, there will be $1,100 at the end of one year.

$$\$\,1,000 + (\,\$\,1,000 \cdot 0\,.10) = \,\$\,1,100$$

After one year, our investor has the original $1,000 principal amount, plus $100 interest earned. Since our investor will not have the $1,100 until one year in the future, this amount is referred to as the future value. The $1,000 amount that is invested today is referred to as the present value.

This calculation can be rewritten as follows:

$$(\$\,1,000 \cdot 1) + (\$\,1,000 \cdot 0\,.\,10) = \$\,1,100$$

The same equation can be rewritten by factoring $1,000 from the left side of equation:

$$\$\,1,000 \cdot (1 + \,.010) = \$\,1,100$$

If one chooses to allow the same investment to continue on at the end of the first year, the resulting investment would yield $1,210 by the end of the second year:

$$\$\,1,100 \cdot (1 + 0\,.\,10) = \$\,1,210$$

Notice that during the second year, interest is earned on both the original principal as well as the interest earned during the first year. The process of earning interest on previously-earned interest is known as compounding. That is why the total interest earned during the second year is $110 versus only $100 the first year. Interest is earned on increasing amounts over time. In the case of simple interest, interest is paid only on the original principal regardless of how long the investment remains in place.

Returning to our original example, the formula can be generalized for any one-year investment as follows:

$$\mathrm{FV} = \mathrm{PV} \cdot (1 + \mathrm{i})$$

where

FV	=	future value of a single sum
PV	=	present value of a single sum (initial deposit)
i	=	annual interest rate

Recall that in the two-year example, interest was earned on both the principal and interest from the first year. Thus, the first year FV became the second year PV. Algebraically, the second year FV is as follows:

$$\mathrm{FV}_2 = \mathrm{FV}_1 \cdot (1 + \mathrm{i})$$

Substituting $\mathrm{PV}\ (1 + \mathrm{i})$ for FV_1 and simplifying the formula results in the following equation:

$$\mathrm{FV}_2 = \mathrm{PV} \cdot (1 + \mathrm{i}) \cdot (1 + \mathrm{i}) = \mathrm{PV} \cdot (1 + \mathrm{i})^2$$

The exponent on the right side of the equation is the same as the subscript on the left side of the future value equation. In general, the exponent will be equal to the number of periods (measured in years, months, etc.) being calculated to find the future value. The equation thus appears as follows:

$$\mathrm{FNN} = \mathrm{PV} \cdot (1 + \mathrm{i})^{\mathrm{N}}$$

where

FV	=	future value
i	=	interest rate per compounding period
N	=	number of compounding periods
PV	=	present value

Exponential Calculation of Present Value

Present value concepts are vital when comparing the value of a dollar today that is received at some future point in time. The present value of a single sum is the current value of a lump sum of money received in the future. Present value is calculated through a process of discounting, which is a reversal of the compounding process. The resulting value represents the initial investment required to accumulate a given amount at a given point in the future. This calculation can be utilized to answer a question such as "How much would have to be placed in an account at 10% interest today to have $100 in three years?" In other words, the present value and future value are inverse functions.

Present value
This is the amount that must be deposited or invested today to arrive at a desired amount in the future.

The interest rate used to calculate the present value is often referred to as the **discount rate**. It is referred to as the opportunity cost because it represents the rate of return foregone by not receiving (investing) dollars today. For example, if an investor can earn 10% compounded annually on a specific investment, the investor's opportunity cost of investing dollars today is 10%.

Discount rate
The discount rate is the amount that one must realize to make any investment viable.

The present value can be calculated using the same equation as for future value.

$$\mathrm{FV}_{\mathrm{N}} = \mathrm{PV} \cdot (1 + \mathrm{i})^{\mathrm{N}} \rightarrow$$

$$\mathrm{PV} = \frac{\mathrm{FV}_{\mathrm{N}}}{(1 + \mathrm{i})^{\mathrm{N}}}$$

The three known variables used to compute the present value of a single sum are the future value, the discount rate, and the number of discounting periods. The terms i and N can accommodate interest being compounded more frequently than annually. The annual interest rate is divided by the number of compounding periods per year to determine interest rate per period (i), and the number of years is multiplied by the number of compounding periods per year to determine the total number of compounding periods (N).

To illustrate the use of this equation, let's answer the question "What initial investment is required so that you will accumulate $1,210 after two years if you earn an interest rate of 10% per year?" The equation is solved for the present value as the future value is already known. Substituting known variables in equation, one sees that the answer is $1,000:

$$\mathrm{PV} = \frac{\$\,1,210}{(1.10)^2} = \$\,1,000$$

Combining our future value and present value example, one can see that these two equations are inverse functions of one another.

Annuities/Cash Flow Streams

Thus far, the future and present values of single cash flows have been considered. However, these concepts can be expanded for use with more complex cash flows, including annuities. Annuities are a series of equal, periodic payments or receipts occurring at uniform intervals.

Ordinary annuity
An ordinary annuity is when payments are made at the end of a period.

Annuity due
An annuity due is when payments are made at the beginning of a period.

Annuities can be classified according to the timing of the payments or receipts. The payments for an **ordinary annuity** are made or received at the end of the period. Mortgage note payments, auto note payments, quarterly dividends, and semiannual interest payments are examples of ordinary annuities. Insurance policy premiums and lease payments are examples of an **annuity due**, where the payments are made or received in advance, at the beginning of a period.

Future value of an ordinary annuity

When solving for the future value of an ordinary annuity, one calculates how much money will accumulate as the result of a series of periodic payments. This concept is usually applied in an investment decision, answering the question: "How much money will be earned after making equal, periodic investments over a period of time?" This question asks how much will be accumulated with payments made at the end of each period.

Future value of an annuity due

Future value of an annuity due addresses the question of final value. It calculates the final value of a regularly-timed series of equal contributions. The contributions of an annuity due are added to an investment at the beginning of each period. This configuration allows for additional time for compounding over the life of the investment and thus results in a greater amount of accumulation.

Present value of an ordinary annuity

Anyone who has contemplated the payment alternatives for lottery winnings has posed a question that relies of this very type of analysis. By calculating the present value of the payments promised to the lottery winner, one can see whether a lump sum payment is worth more than receiving equal payments over time.

Present value of an annuity due

The present value of an annuity due (PVAD) is the current value of an expected and regularly-timed series of steady, equal payments from an investment at the beginning of each period. Perhaps the best example of PVAD is retirement funding. Once employment pay

checks stop as a result of retirement, it is best to begin receiving retirement funds right away at the beginning of the retirement period on a regular, equal, and steady basis. This is an annuity due. To determine the size of each payment, one must first know the present value of the amount that has been (or will be) accumulated. This configuration addresses a question such as "How much do I need to have accumulated in my retirement fund on the day I retire in order to receive $10,000 per month?"

4.2 Interest Rates: Determinants and Quotes

Interest rates are the rent paid to use someone else's money. Bean (2017) states that from an economic perspective, interest should be seen as either compensation received for putting off consumption, i.e., placing money in a savings instrument rather than spending it, or as the cost of consuming when adequate resources are not available, i.e., using a credit or debt vehicle to make a purchase instead of saving the money before the purchase. But how are interest rates established and what are the **determinants of interest rates**?

Determinants of interest rates
These are premiums that add to the cost of borrowing.

The CFA Institute, a global association of investment professionals, requires that candidates seeking to be accredited as a Chartered Financial Analyst have a clear understanding of the workings of interest rates from an economic rather than a quantitative perspective. When considering the concept of interest rates, think of the total interest rate that a borrower is charged by a lender as the sum of five smaller components. Each component or premium is then impacted, and subsequently determined, by its own particular and specific set of factors.

1. Real risk-free rate: The **risk-free rate** assumes that there is no risk or uncertainty involved for the borrower or lender. This rate simply reflects differences in timing related to the preference to spend or consume now and pay back later versus the preference to lend now and collect later.
2. Inflation premium: The market expects cumulative prices to rise and any currency's purchasing power to be reduced as a result. This reduction occurs at a rate known as the inflation rate. Inflation makes real currency less valuable in the future and is one of the factors used in calculating the nominal or stated interest rate. From a purely economics perspective, the equation, nominal rate equals real rate plus inflation rate, is true.
3. Default risk premium: What is the chance that the borrower won't make good on the amount borrowed? Perhaps they won't pay on time or they will be unable to pay the amount that is owed and **default**? This factor may be high or low, depending on the creditworthiness of the individual or business involved.
4. Liquidity premium: Some investments are not very liquid, meaning that the investment may not easily be sold or that a certain loss may be expected if the investment is an item that trades infrequently. Other securities are highly liquid, meaning they may

Risk-free rate
This is the rate of interest that is available when there is no risk present.

Default
This occurs when borrowers are unable to meet the terms of the loan agreement.

be easily exchanged for cash, e.g., credit default swaps (CDS), US Treasury debt, money market instruments. Holding all other factors equal, the less liquid a security is, the more the holder must be compensated with a higher interest rate.

5. Maturity premium: All other factors being equal, any investment obligation, particularly fixed income or debt obligations, will be more sensitive to interest rate fluctuations the longer the time to **maturity**.

Maturity
This is reached when the term of the loan is completed and the initial borrowed principle is paid back.

Thus, interest rate determinants appear as follows:

$$\mathrm{r} = \mathrm{Rf} + \mathrm{Ip} + \mathrm{Dp} + \mathrm{Lp} + \mathrm{Mp}$$

where

r	=	the nominal rate (that one charges to lend or borrow)
Rf	=	the real risk-free rate
Ip	=	inflation premium
Dp	=	default premium
Lp	=	liquidity premium
Mp	=	maturity premium

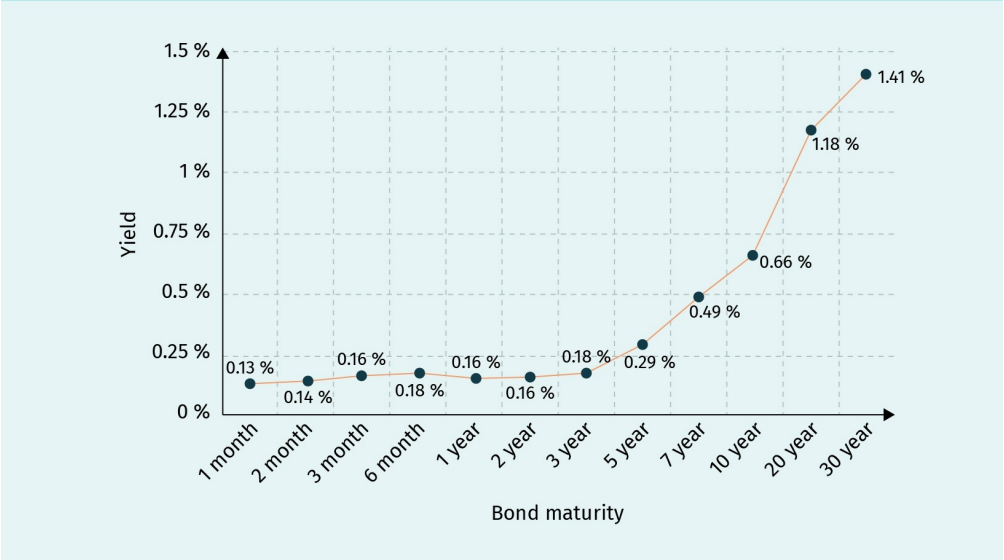
Interest Rate Quotes

Short-term interest rates are heavily influenced by a nation's central bank, monetary policies in place under a given regime, and the influence of interactions with other nations. Long-term rates, on the other hand, are generally representative of market forces rather than governmental influences. The interrelationship between long-term and short-term interest rates can be seen as represented by the **yield curve** in the following figure.

Yield curve
The yield curve is a graphic illustration of the relationship between interest rates and length of time to maturity.

Term Structure of Interest Rates and the Yield Curve

Figure 4: Yield Curve of the United States (June 2020)



Source: Statista, 2020.

The yield curve shows the **term structure of interest rates** and what returns can be expected on treasury issues of varying maturities. Using the yield curve, one can see that an investor with a one-year security can expect 0.13% return while an investor willing to invest for a 30-year period can expect a return of more than ten times that, with a yield of 1.41%.

Term structure of interest rates
This is the theory as to why interest rates behave as they do.

The yield curve is a chart that shows yields on bonds of varying maturities, usually from one month to 30 years. A typical yield curve will be upward sloping, indicating that the longer one is willing to invest, the greater the return to that investor. This configuration is known as a standard yield curve, or a **positive yield curve**. In contrast, when short-term rates are higher than long-term rates of interest, we see what is known as an inverse yield curve, also known as a downward-sloping or **negative yield curve**. The latter occurs infrequently, but it does occur when inflation is high and continues to rise rapidly.

Positive yield curve
A positive yield curve occurs when long-term interest rates are higher than short-term interest rates.

Negative yield curve
A negative yield curve occurs when short-term interest rates are higher than long-term interest rates.

Fixed Income Interest Rate Risks

There are three primary risks that occur when one is dealing with fixed-interest or fixed-income debt securities. These are as follows:

1. Purchasing power risk: If one is holding a previously-issued debt instrument and interest rates in the market rise, the individual holding the debt instrument receives the same money as was being received before, but it is now less than what is received by buyers of newly-issued debt instruments. This means that this individual has lost purchasing power. This risk is also known as inflation rate risk.
2. Interest rate risk: This risk also occurs when interest rates rise. An increase in rates makes the older, lower rate issue that an individual is already holding less valuable. For example, if one purchased a newly-issued bond for $1,000 when rates were at 6%, then they will receive $60 annually for this bond. Now, assume that two years later, rates have risen to 10% on new issue bonds, which means that new bonds will be paying $100 per year. Which would you rather have: $60 annually or $100 annually? As a result of the rise in interest rates, the owner of the 6% bond will have to sell it at a discount if cash is needed. Interest rate risk can be avoided by holding the bond to maturity, but unfortunately then purchasing power risk will take its toll.
3. Reinvestment rate risk: Finally, it looks bad if rates rise, but what if they fall? Unfortunately, falling rates have their own downside. In 1990, when 12% interest payments were being made on 30-year US Treasury bonds purchased in 1980, the $120 annuity per bond had to be reinvested at 8.5% or $85 per year because at that time, $85 was the best you could get on US 30-year Treasury bonds.

Interest Rate Futures

Interest rate risk functions like a seesaw. Interest rates (on one side) and price (on the other side) are determined at the issue of the underlying security. However, unless rates in the market remain utterly static throughout the entire life of the security (which is highly unlikely), then rate changes (up or down) will have an impact on the value of the underlying instrument. When rates in the market fall, the debt instrument one is holding becomes more valuable because new issues are coming to market with lower and lower rates. This is good news for the bond holder as the price of their asset rises. But if rates rise after issue, then the market value of the debt instrument must fall, which is obviously an undesirable result for one holding a previously-issued debt security. In the context of this seesaw phenomenon of interest rates and bond price, we find the hedge: the interest rate futures contract.

Interest rate futures
These are a financial derivative contract which serve as a hedge against rate fluctuations.

Interest rate futures are a financial derivative. They are a futures contract, with an interest-bearing instrument as the underlying asset, i.e., the asset from which the new security is derived and upon which it is based. An interest rate futures contract is a particular type of interest rate derivative. Examples might include treasury-bill or treasury-bond futures and Eurodollar futures. Because interest rate risk does exist for these instruments, as it does for any interest-bearing asset, those who want to hedge their investments against the fluctuation of value that occurs as a result of interest rate risk, are able to do so with the sale or purchase of an interest rate futures contract.

Buying an interest rate futures contract affords the buyer of the contract the opportunity to lock in a future investment rate, not a borrowing rate. Interest rate futures are based on an underlying security, i.e., debt obligation, and move in value as interest rates fluctuate up or down. When interest rates climb higher, the buyer of the futures contract pays the seller an amount equal to that of the benefit received by investing at a higher rate versus

at the rate specified in the futures contract. Conversely, when interest rates move lower, the seller of the futures contract will compensate the buyer for the lower interest rate at the time of expiration. Effectively, the interest rate futures contract is a hedge; it is insurance against the inevitability of rate movements to insure affordability to individuals and profitability to businesses.

4.3 Estimating the Cost of Capital

It should be the objective of a financial manager, operating on behalf of a firm and its stockholders, to ensure that the projects they choose to undertake create greater value for the firm than the company's cost of capital. By doing so, shareholder value is increased and the financial manager's primary directive is satisfied. Thus, the financial manager needs to estimate, approximate, and calculate the revenue generated by a given project and its cost, as well as the firm's overall cost of capital. This is where the weighted average cost of capital and its respective components become important.

Weighted Average Cost of Capital (WACC)

WACC is made up of components that are cost centers for a firm. One can turn to the capital structure on the balance sheet to see where costs are generated. Long-term debt, common equity, and preferred equity are the three methods a firm has available to raise capital to finance its business undertakings. These are the means of financing investments on the asset side of the balance sheet, which are where costs of capital are created.

The cost of capital must be calculated separately for each of these distinct and individual components. Common stockholder equity is the most expensive to the firm because common equity is the riskiest undertaking for investors; naturally enough, those undertaking the greatest risk expect to be compensated the most for their willingness to undertake such risk. Debt has the unique feature of providing a firm with a tax shield in the form of deductions for interest paid on debt securities. Neither common equity nor preferred equity offer such a tax shield. Finally, preferred equity offers more security in terms of its standing than common equity, but less security than long-term debt.

The formula used to make this calculation is as follows:

$$\mathrm{WACC} = (\mathrm{w_d} \cdot \mathrm{r_d} \cdot (1 - \mathrm{T_c})) + (\mathrm{w_e} \cdot \mathrm{r_e}) + \left(\mathrm{w_p} \cdot \mathrm{r_p}\right)$$

where

WACC	=	weighted average cost of capital
$\mathrm{w_d}$	=	weight of debt (% of debt financing)
$\mathrm{r_d}$	=	interest rate being paid on debt financing
$\mathrm{T_c}$	=	corporate tax rate

w_e	=	weight of equity (% of equity financing)
r_e	=	required rate of return on equity (cost to the firm)
w_p	=	weight of preferred equity (% of preferred financing)
r_p	=	required rate of return on preferred (cost to the firm)

Example

A company uses 30% debt financing, receives 10% of its funding from preferred stock, and 60% of its capital structure is from common equity. The firm's corporate tax rate is 28%. The marginal cost of debt to the firm is 8%, equity funding costs 15%, and it pays preferred interest of 10%.

Based on this information the WACC can be calculated as follows:

$$\begin{aligned}
&\mathrm{WACC} = \left(w_d \cdot r_d \cdot (1 - T_c)\right) + \left(w_e \cdot r_e\right) + \left(w_p \cdot r_p\right) \\
&= 0.3 \cdot .08 \cdot (1 - 0.28) + 0.60 \cdot 0.15 + 0.10 \cdot 0.10 \\
&= 0.1173 = 11.73\,\%
\end{aligned}$$

For the firm to accept a project, it must provide a return (measured as the required rate of return or internal rate of return) greater than the WACC, or the firm will lose money. Thus, the firm would accept a project generating a 12% return, but would reject a project generating only a 10% return. As the return earned on a firm's assets depends on the riskiness of those assets; the cost of capital provides an indication of how the market views the risk of a company's assets. Knowing the cost of capital helps a financial manager to determine the required return for capital budgeting projects.

Cost of Debt

In calculating the cost of debt for the WACC calculation, the focus is usually on the cost of long-term debt or bonds. The cost of debt is the required return on our company's debt. Publicly held firms can use the yield to maturity (YTM) of outstanding debt for the cost of debt (rd), as the coupon rates of a firm's outstanding debt can often be too numerous, and therefore become irrelevant when calculating the cost of debt. By the same token, a firm without publicly traded debt may use YTM on similarly rated bonds.

Cost of Equity

The cost of a firm's equity can be calculated in two ways, either using the capital asset pricing model (CAPM) or the expected rate of return formula. One should carefully examine the information that has been provided to work with and decide from there how to best proceed. If **beta** and market return are given, along with a risk-free rate, then one has

sufficient information to use the CAPM, but if stock price, dividend data, and growth rate information are provided, then one should use the expected rate of return formula to provide a figure for the cost of equity (r_e) for the WACC calculation.

Beta
This measure is used to determine the systematic or non-diversifiable risk of a given investment.

Cost of Preferred Equity

Preferred stock pays a dividend in perpetuity, i.e., the same dollar amount based on a percentage calculation of the par value of the stock. In other words, if the par value of a share of preferred stock is $100 and this share pays a 10% dividend, it will always pay a $10 dividend. If the price of the preferred share rises to $120, the $10 dividend will remain the same, but at the price of $120, the percentage return has dropped from 10% to 8.33%. If the price has dropped since issue and the original buyer decides to sell at $80, then the $10 dividend represents a 12.5% return.

There are other methods to calculate the estimated cost of capital that are not considered in this course book.

SUMMARY

In this unit, some of the basic concepts of financial theory including the time value of money principles and calculations, interest rates and rate determinants, and cost of capital calculations were discussed.

In the first section, the exponential and manual calculation methods to arrive at a better understanding of TVM calculations were presented. The text also examined present value, future value, and annuity cash flows.

In the second section, interest rates, the formulation of rates, the determinants of rates, the risks involved with interest rates, and the steps that can be taken to hedge some of the interest rate risks using derivative securities were explored.

In the final section of this unit, the cost of capital, what it is, how it works, necessary components, and tools for calculation of the cost of capital to aid in the financial decision-making process were considered.

UNIT 5

LONG-TERM FINANCING DECISIONS

STUDY GOALS

On completion of this unit, you will have learned …

- how a firm goes about securing equity capital.
- what the role of the financial manager is in securing debt financing.
- how a corporate organization can go about using leasing and hybrid financial instruments to its advantage.
- what role financial leverage plays in a firm's capital structure.

5. LONG-TERM FINANCING DECISIONS

Introduction

Venture capitalists
These are individuals or firms that provide startup capital for new untested business ventures.

Entrepreneurs and their ventures are celebrated for their successes. **Venture capitalists** (VC) who initially backed these start-up are praised. Well-known corporations such as the FANGs (Facebook, Amazon/Apple, Netflix, and Google) owe their rise from humble beginnings to their involvement with venture capital firms. Many of the successful VC firms have cultivated a mystique regarding their ability to find and finance successful young entrepreneurs and their startup ventures. Forbes credits top VCs on its Midas List with having a magic touch for investing. The venture capital story appears to provide a chronicle of bold investments and excess returns promising wealth to those on the path.

However, reality is an entirely different story. The FANGs are few and far between, but they are so recognizable that many people assume that their story must be the norm and every startup could be the next Apple. This story has its roots back in the 1960s, when every basement and garage band thought for certain that they were going to be the next Beatles or Rolling Stones. Unfortunately, most simply faded into inglorious anonymity, as do most of the business startups: 50% fail within their first five years and over two-thirds never see their tenth year of business (Pryor, 2016).

The actual numbers describing the performance of venture capital firms indicate quite a different story than one might expect given their somewhat mystical status. Many more venture capital-backed startups fail to launch, let alone succeed, compared to the number of startups which are resoundingly successful. In fact, many venture capitalists themselves have not fared much better than the businesses they have financed when it comes to generating returns. For more than a decade, the stock markets have outperformed most venture capital firms, and for almost the last two decades, VC funds on average have barely managed to break even.

The venture capital business would not exist were it not for entrepreneurs. Yet, these very same entrepreneurs often feel as though they are losing control of their startup when it comes to dealing with venture capitalists. For anyone starting a company, the allure and the myth of venture capital can be powerful. But the age of venture capital as a sole source of funding for startups has passed. **Angel investors**, coming in at a much earlier stage of the business and offering slightly less funding but demanding so much less control, offer a more benign route to funding for entrepreneurs seeking to advance their startup with less interference and a minimal loss of control. As if this weren't enough, today **crowdfunding** is becoming increasingly popular for startup funding, proving that there are many paths to launching a venture (Mulcahy, 2013).

Angel investors
These are private investors who inject capital into startups in exchange for ownership equity.

Crowdfunding
This is a means of raising capital for a project from a large number of people.

5.1 Equity Capital

Any business enterprise requires capital to begin. Often, the very first capital for any undertaking comes from the entrepreneur's own pocket. This is what it is known as owner's equity. It is an established fact that equity costs a firm more than debt because of the risks involved in equity financing. This prompts the question: "If debt is so much cheaper than equity, then why aren't more firms financed with 100 % debt financing?" The obvious answer is who would loan a startup money when the chances of failure are so overwhelmingly against business success? Thus equity capital is required.

Equity capital is a perpetuity, which means that it has no maturity date. While debt must eventually be paid off, equity remains invested with the firm indefinitely. There are two main sources of equity capital: preferred stock and common stock. In calculating a firm's weighted average cost of capital, an assumption was that each firm has a **target capital structure**, i.e., an optimized amount of debt and equity used by a firm to finance its investment assets.

Target capital structures
These are the selected mix of debt and equity that a firm strives to maintain.

Equity capital is obtained in equity capital markets. They provide a means for business enterprises to raise initial capital as well as additional capital (depending on where a firm is in its **business life cycle**) through the issuance of stock. Major participants in equity capital markets are financial institutions responsible for underwriting both seasoned equity offerings (SEOs) and initial public offerings (IPOs) when a company wishes to either raise more capital (SEO) or go public for the first time (IPO). The underwriting financial institution receives compensation through the fees paid by a firm, and by way of underwriting spread.

Business life cycle
This is a measure of the stages of a business from inception to growth and through its entire existence.

These equity capital markets are just one component, among many, of the stock market. The main investment banking firmsfunction as part of what is known as the primary market. In the primary market, the most common participants are companies seeking either debt or equity capital. Equity capital markets do not provide any services to individuals; their sole purpose is the acquisition of new capital for companies requesting services.

Optimal Capital Structure

One of the many objectives of a financial manager is to find the correct combination of debt and equity financing that provides the **optimal capital structure** for a firm. Of course, an optimal capital structure is not easily found, as it is the exact combination of debt and equity financing that serves to maximize the value of a firm. It may be true that there is an optimal capital structure or rather a range of structures for every firm, however, financial theory is simply not strong enough to identify a firm's optimal capital structure with any degree of precision. What financial theory can do, however, is help to locate and identify key factors which directly impact upon the value maximization of a firm. Some of these key factors are listed as follows:

Optimal capital structure
This is the ideal mix of debt and equity that maximizes the value of a firm.

- Debt/leveraging has a valuation impact.
- In equilibrium, there is a net tax advantage to corporate debt financing.
- A decrease in investment tax shields leads to an increase in debt financing.
- A decrease in marginal bankruptcy costs leads to an increase in debt financing.

- As corporate tax rates rise, firms substitute equity with greater debt financing.

5.2 Debt Financing

Debt financing occurs when a firm raises money for capital expenditures by selling bonds to individuals or institutional investors. In its simplest form, debt financing is the use of somebody else's money to finance one's own operations. Debt financing is also known as **leverage**. While it is less expensive to use someone else's money (debt versus equity), the use of leverage is not without risk. Whilst it has the potential to magnify gains, it also has the potential to magnify losses. An aggressive or highly-leveraged firm has high fixed costs, and thus, often a high break-even point, while a conservative or non-leveraged firm has low fixed costs, resulting in a relatively low break-even point. Leverage in business finance terminology is defined as the utilization of outside capital, i.e., other people's money, to provide increased earning capacity to one's own investment.

Leverage
This is the use of debt as part of the capital structure of a firm.

Example

The following scenario provides an example of how leveraging can work on the return on investment (**ROI**). The decision to undertake an investment priced at $100,000 today and forecast to be worth $120,000 in one year can be financed via one of two methods: (1) without leverage, i.e., paying for the investment entirely with cash, and (2) with leverage, i.e., making a $10,000 payment and borrowing the rest of the funds.

ROI
This is measured by the amount invested and the income derived from it.

Table 8: Return on Investment (ROI) Magnification with Leverage

	Without leverage	With leverage
Invest return	$120,000	$120,000
– Loan repayment	$0	$90,000*
– Cash investment	$100,000	$10,000
= Gross profit	$20,000	$20,000
$\text{ROI} = \frac{\text{Gross Profit}}{\text{Cash Investment}}$	$\frac{\$\ 20,000}{\$\ 100,000} = 20\,\%$	$\frac{\$\ 20,000}{\$\ 10,000} = 200\,\%$

*To clearly illustrate this scenario, a no interest loan has been used, i.e., no interest has been included in the final calculation of ROI for this one-year period.

Source: Hastenteufel, 2020.

The use of other sources of capital can strengthen one's own investment position. Imagine putting $10,000 down on each of 10 houses which are projected to be worth $120,000 in one year instead of putting $100,000 into a single house. One could turn $100,000 into $200,000 in one year, making a 200% profit rather than a 20% profit. Of course, there is risk associated with the use of debt. Imagine at the end of one year, an investor is unable to

sell any of the houses purchased for the anticipated $120,000. A loss may occur (especially in the case of interest-bearing debt), and that loss will be magnified for each house that does not realize the projected result.

Bond Issues

Another common form of debt financing takes place through the issuance of bonds. The primary participants in the debt finance market are the federal governments in the form of both domestic and sovereign debt issues, state and municipal governments, and corporations. Government debt is the most common form of debt; nations issue debt to receive funds in order to meet obligations until tax revenues are collected and the funds to operate are available. Both government debt and corporate debt are also issued on international markets.

Sovereign Debt

In the international arena, government debt is known as **sovereign debt**. Sovereign debt, often called external debt, is guaranteed by a particular government. In order to raise funds, governments issue bonds in a currency that is not that government's own currency, and these bonds are sold to foreign investors. It is this sale to international investors rather than domestic investors that makes this debt external. The currency selected for sovereign debt is usually a strong currency, and its value is generally higher than that of other currencies.

Sovereign debt
This is government debt issued in an international currency.

Bonds are instruments of debt. They must be paid back at some point in the future—this can be as far as thirty years into the future or as near as one year into the future—with repayment including the original investment plus interest all at once (in the case of shorter issues) or along the way (in the case of the longer issues). These bonds are called sovereign bonds and the money collected via the sale of these bonds can be used in any manner the issuing government chooses. Funds can be used to spur job growth brought about by spending on infrastructure projects or the funds could be given to private companies or banks for reinvestment purposes and economic growth.

Sovereign debt has gone horribly awry in several cases involving nations such as Iceland, Greece, and Ireland, but let's not forget that US national debt is now approaching $22.8 trillion—a debt, the likes of which, has never been seen before. In fact, if corporations ran their debt the way many nations run their debt financing, they would have been driven into bankruptcy by their creditors many years ago.

Corporate Debt Financing

Many bond issues exist in the corporate bond market and are used for corporate debt financing. Utilities, for example, dominate the US corporate bond market. Other important segments of the corporate bond market include industrials, transportation, and financial issues. Most corporate bonds sell with **par values** of $1,000, €1,000, or ¥100,000. Most have a single maturity date with maturities ranging from 10—40 years. Utility bonds often have longer terms such as 40 years, and most industrials usually mature in 25—30 years. The majority pay interest on a semiannual basis.

Par value
This is the return of the initial investment at maturity.

Average yields on the industrial sectors tend to be the lowest, followed by utilities, with transportation issues having the highest average yields. The large supply of utility bonds is what drives the yields up; in order to attract investors over their competitors, yields must be higher to create the necessary demand.

Corporate bond indenture
This is the contract specifying the terms of a bond agreement.

In terms of the structure of bond agreements, a **corporate bond indenture** is the legal agreement specifying the terms of the contract between the lender and borrower. The indenture is also the document in which bond retirement arrangements are delineated, such as the establishment of a sinking fund, where periodic payments are made to retire the debt. Corporate bonds fall under two major categories: debts that are secured and those that are unsecured. Secured debt means that there is some form of collateral or asset against which a lender may stake a claim if all is lost, while the unsecured creditor has no such recourse and will only have the option to take whatever is available during an insolvency resolution.

Secured corporate bonds
These bonds are issued with specific item purchases in mind.

Collateral trust bonds
These bonds are secured by pledged financial assets.

Some **secured corporate bonds** include mortgage bonds, which are issued for investing in specific fixed assets, property, or plants. The very same assets are pledged as security against that debt. These are the bonds that many utilities issue for the building of power plants. **Collateral trust bonds** pledge financial assets (e.g., notes, stocks, paper) owned by a firm as collateral against the debt. They are also known as equipment trust certificates when they are issued for investment in fixed assets, specifically the purchase of equipment. Usually in this case, the equipment has substantial resale value and is used to secure the debt obligation.

Subordinated debentures
These are unsecured corporate bonds.

Unsecured corporate bond issues such as debentures are known as "unsecured" debt obligations of a company, however, in the event of financial reversals, the holders have the claim of a general creditor against the assets of a firm. Other types of unsecured corporate debt financing include **subordinated debentures**. These are bonds that place their holders in a subordinate position relative to a firm's other creditors. Interest and principal on these bonds can only be paid after satisfying the issuer's senior debt obligations.

Income bonds
These bonds pay interest only if a firm has sufficient income.

One of the riskiest debt issues offered by corporations are **income bonds**. Interest is paid on income bonds only if there is sufficient income. These bonds are usually issued as part of a restructuring during periods of financial distress, and though no interest is paid until it is earned, the claims of these bondholders on cash distributions is senior to that of common stockholders and subordinated debt holders.

Variable interest rate bonds
In these bonds, the interest rate can fluctuate based on economic conditions.

Finally, **variable interest rate bonds** came into being in response to high inflation driving interest rates up and bond prices down. The market price of these bonds fluctuates less because of the variable feature. As a result of this feature, much of the interest rate risk faced by bondholders is mitigated.

5.3 Leasing

A lease is defined as a contractual agreement or relationship between the owner of an asset, equipment, or property **(lessor)** and the person or firm who is granted use of that asset, equipment, or property **(lessee)** for a specified period of time at an agreed-upon price. Generally, a lease is for a long period, whereas a rental is generally a shorter-term agreement. The lessee must make periodic payments to the lessor for use of the property, with the principal benefit of long-term leasing as a tax reduction to the lessee. This arrangement facilitates the transfer of tax benefits from those needing equipment (lessee) but unable to take full advantage of tax benefits associated with ownership to the party who can utilize these benefits (lessor) through tax depreciation of the asset.

Lessor
The lessor is the owner of the property.

Lessee
The lessee is the party leasing the property.

This type of transaction might lead to a "sales-and-leaseback" arrangement, whereby Party A, who owns the equipment, has depreciated the asset fully but still needs to use this equipment. So, Party A sells the equipment to Party B and realizes a cash gain. Party A can then take advantage of the opportunity to deduct any lease payments made while the equipment is still in use, and Party B can realize ownership of the equipment and benefit from a significant depreciation write-off.

If a firm borrows funds to buy a state of the art piece of equipment that promises to do everything the company needs, this transaction will reduce cash and add to the company's fixed assets, but also increase a firm's debt. At the same time, another firm could lease the same piece of equipment, and it would not show up on its balance sheet either as a debt or as an asset.

The GAAP and IFRS accounting standards introduced rules that state when a firm enters into a financial or **capital lease**, that firm's balance sheet must (1) report leased assets as fixed assets, and (2) show the present value of future lease payments as a liability. This process is known as "capitalizing the lease". It brings the balance sheets of BuyCo and LeaseCo onto a level playing field for investor or creditor assessments.

Capital lease
A capital lease is a lease in which the lessor only finances the leased asset.

Leasing is one financing alternative. It should be considered a form of financing along with other finance methods only after economic investment analysis has revealed the project's overall acceptability to the firm. Leases offered in the market place today generally take one of two common forms: the operating lease or the financial lease.

Operating leases are more difficult to define in today's lease markets due to the many variations that have evolved over time, but they are generally short-term in nature and require footnote comments on the balance sheet rather than full entry as an asset and liability. Operating leases came to be known by this name as a result of a practice years ago where an operator was sent along with the equipment being leased from a company. Today, however, these types of leases are generally identified by other specific characteristics and are more commonly known as service leases.

Operating lease
An operating lease is commonly used to secure equipment on a short-term basis.

Financial leases can be considered the opposite of operating leases. Financial leases are also known as capital leases or net leases, and are generally long-term in nature. Financial/capital leases are known as such because they must be identified and capitalized on a

Financial lease
A financial lease is used to secure equipment on a long-term basis.

firm's balance sheet, with the asset showing up as a fixed asset (if applicable), and the obligation to make all lease payments showing up as the discounted present value of all required future lease payments.

Hybrid Financial Instruments

Fiat currency
This is any currency not backed by real assets.

Hybrid financial instruments
These are securities that take on traits of various other instruments.

As long as there is finance and as long as there is **fiat currency**, there will be **hybrid financial instruments**. There are many hybrid financial instruments. Among them are stock rights, warrants, and convertible bonds, which will be examined in this section of the unit.

Stock Rights

Stock rights are instruments which give shareholders what is known as a preemptive right. This is the right to purchase additional shares of stock directly from the company, generally at a discount to the market price. Stock rights are usually attached to stocks, and are instruments issued by companies to provide current shareholders the opportunity to preserve their fraction of corporate ownership. For example, if an individual owns $100,000 of a company's total $1,000,000 value, which is equivalent to 10% of the outstanding value, and the company decides to offer another $500,000 of stock for sale, to avoid reducing our 10% shareholder's value, the firm would offer this investor stock rights of $50,000. That would mean that our investor would then have $150,000 worth of ownership of the $1,500,000 of company value, which once again equals 10%. In this way, the shareholder can avoid dilution of their equity.

A single stock right is issued for each share of stock that an investor owns, and each right can purchase a fraction of a new share. Generally, a number of rights are required to purchase a single share. The underlying stock, after the right is issued, trades with the right attached. This initial trading status is referred to as **rights on**. Then, after a period, the right will detach from the stock and trade separately. This status is referred to as trading **rights off** and remains as such until the rights expire. During the rights off period, rights may be sold separately. Rights are issued as short-term instruments that expire very quickly, usually within 30—60 days of issuance. The exercise price of rights is always set below the current market price, and no commission is charged for redemption.

Rights on
These are shares of stocks trading with rights attached.

Rights off
These are shares of stocks trading when rights have been stripped.

Warrants

Derivative
A derivative is a security that derives its value from an underlying asset.

A warrant, much like a right, is a **derivative** that gives the holder the right, but does not obligate them, to buy or sell the underlying equity security at a stated price prior to its expiration. This price, known as the exercise price or strike price, is the price at which the underlying security can be bought or sold. While rights typically expire within 30—60 days, warrants can have a life up to two years or more. Further, while rights are attached to stock or equity securities, it is more common to find warrants attached to debt securities or bonds.

American warrants can be sold or exercised at any time before their expiration. They differ from European warrants which can be bought or sold at any time up to their expiration but can only be exercised on their date of expiration. Warrants that give the holder the right to buy a security are known as call warrants while those that provide the holder with the right to sell are known as put warrants.

Warrants are similar to options in a number of ways, but with a few very significant differences that distinguish them:

- Warrants are generally issued by the company itself, not by a third party as options are.
- Warrants are traded **over-the-counter** more often than on an exchange, and investors cannot go to a clearinghouse and write warrants as they can options.
- Warrants, unlike options, are **dilutive** in nature. Thus, when an investor exercises a warrant, he/she receives newly-issued stock, rather than previously-issued, outstanding stock.

Over-the-counter
This trading occurs in a context other than on a formal exchange, i.e., through dealer networks.

Dilution
This is the effect that additional shares added have on an original holder's value.

Warrants do not pay dividends, nor do they come with voting rights attached. Investors are attracted to warrants because they provide a means of leveraging their positions regarding a security. Warrants also provide a hedge against downside risk, and an opportunity to exploit possible opportunities for arbitrage. Interestingly, warrants are not as common in the US as they once were, but investors can find them frequently traded in Hong Kong and Germany, among others.

As mentioned, warrants are longer-term instruments that allow stockholders the chance to purchase additional shares at a discounted price. As a general rule, warrants are issued with an exercise price that is above the current market price. Often there is a waiting period of six months to a year to exercise a warrant. This typically gives the price of the underlying stock time to rise adequately to exceed the assigned exercise price and provide the warrant with some intrinsic value.

Warrants often act as a sweetener or inducement to buy the debt instruments to which they are attached. Unlike rights, where a number of them must be bundled together to purchase a share of stock, a single warrant can usually purchase a single share of stock. Warrants can be used on occasion to purchase preferred offerings or bonds, although this occurs only less frequently. Unlike rights, once detached from the bond, warrants must be purchased from a broker for a commission and will qualify as securities able to be transacted **on margin**.

On margin
This is buying securities with money borrowed from a brokerage firm.

Convertible Bonds

The final hybrid security we shall examine is the **convertible bond**. These bonds are purchased as unsecured debt and pay regular interest during the lifetime of the bond. At certain times in the bond's life, the bondholder has the option to convert their bonds into common stock of the issuing company, which may or may not be advantageous to investors at various times throughout the life of the bond. This option can be exercised and the shares then either kept or sold on the market for a profit.

Convertible bonds
These are debt that can be converted to equity.

The convertibility feature issued with a convertible bond is considered a sweetener. This feature is used to attract investors and allows a firm to keep interest rates at a lower level than nonconvertible bonds. Investors in convertible bonds trade quality and interest for potential future capital gains in equity.

Convertibles, as a rule, pay interest semiannually, and can be issued as a callable security. They are usually subordinate to other debt but still have priority over common stock. As the underlying stock price rises, the market value of the convertible bond increases, and it takes on the capital growth and appreciation characteristics of a stock. Conversely, as stock prices fall, the convertible is held for its value as a bond. To calculate the value of a convertible bond, a prospective investor must calculate the **conversion ratio** (CR) of that bond.

Conversion ratio
The conversion ratio is the number of shares of stock that a convertible issue can secure.

Example

An investor purchases a convertible bond at issue at a par value of $1,000, with an option to convert the bond to shares of common equity of the firm for $20 per share. The conversion ratio is the par value of the bond divided by the price per share available to investors. In this case, the conversion ratio is as follows:

$$\mathrm{CR} = \frac{\$\ 1,000}{\$\ 20} = 50\ \text{shares}$$

Conversion value
The conversion value is the conversion ratio times the current common stock share price.

The next calculation determines the bond **conversion value** (Cv). The conversion ratio (CR) is multiplied by the market price per share (Ps) of the stock. Assume that the current market price is $18 per share:

$$\begin{aligned}\mathrm{Cv} &= \mathrm{CR} \cdot \mathrm{Ps} \\ &= 50 \cdot\ \$\ 18 \\ &=\ \$\ 900\end{aligned}$$

Seldom, if ever, will there be a bond selling for less than its conversion value. This is because these bonds sell at a premium above their conversion value. If such a situation were to occur, arbitrageurs would buy these types of bonds so fast that equilibrium would quickly be restored.

In addition to a conversion value, convertible bonds also have an investment value. Investment value is the value of the convertible in the open market. Investment value is the present value computation of the convertible bond. The difference between conversion value and investment value is the value of the bond as a convertible (hybrid) security.

5.4 Financial Leverage and Capital Structure

Financial leverage is a measure of the extent to which a firm uses fixed-income instruments as debt securities or preferred equity. The more debt financing a business utilizes, the higher its financial leverage will be. A high degree of financial leverage results in the following: (1) high interest payments, (2) a high long-term debt to equity ratio, (3) high beta on equity levered, (4) a higher required rate of return paid on equity levered, (5) a high financial break-even point, (6) high financial risk, and (7) a high standard deviation on earnings per share. Put together, this means that a too high degree of financial leverage can negatively affect a company's bottom-line.

Financial leverage
This is the use of borrowed money to finance the purchase of assets expecting the gain from the assets exceeds the cost of capital.

As already explained, debt is less costly to a firm than equity. Thus, the opposite side of the previous argument, in favor of higher debt loads for a corporation, is that debt interest is tax deductible. There is relief from the burdens of taxation when debt is used effectively. However, for firms utilizing capital structure tools such as **depreciation tax shields** and **loss carryforwards**, debt does lose some of its attractiveness. But according to most valuation models, the firm that uses debt has greater value due to reduced costs than a firm that does not use debt.

Depreciation tax shields
These are deductions for a calculated loss of equipment value due to usage.

Loss carryforwards
The losses exceed the tax loss limit and are to be used in future years.

Loss carryforwards
The losses exceed the tax loss limit and are to be used in future years.

Loss carryforwards
The losses exceed the tax loss limit and are to be used in future years.

Degrees of Leverage

There are three measures of degrees of leverage:

1. Degree of operating leverage (DOL)
2. Degree of financial leverage (DFL)
3. Degree of total leverage (DTL)

Having already examined the consequences of a high degree of financial leverage, let's explore what results from a high degree of **operating leverage**. If a high percentage of a firm's total costs are fixed, the firm is said to have a high DOL. This can be easily identified by looking at the left-hand side of the balance sheet. There will be a high percentage of property, plant, and equipment (PPE) as compared to total assets—in fact, it could be as high as 70—80 %. There will be high depreciation expenses, because most of a firm's assets are fixed assets. A firm will generally have a high operating break-even point, a high required rate of return on assets, a high beta, and a high asset risk. Finally, as this firm also has a high deviation on its operating income, if hard times fall upon the firm, the industry, or the economy, losses will occur. Deviation is another measure of risk, like beta, but deviation measures total risk, systematic and non-systematic. Deviation tells an investor who expected a specific return just how much their actual return deviated from their expectations.

Operating leverage
This is the degree to which a firm incurs a combination of fixed and variable costs.

Operating leverage measures the relationship between sales and net operating income. A high degree of operating leverage means that small changes in sales can create big changes in operating income. For example, if a firm's fixed costs are high, small declines in sales can mean large declines in operating profits. Thus, incremental changes in sales can

have large impacts on earnings where there is a high operating leverage. Where high operating leverage exists, large reductions in EBIT would also occur in the case of a sales decline. The formula for calculating the degree of operating leverage is as follows:

$$\text{DOL} = \frac{\%\ \Delta\,\text{EBIT}}{\%\ \Delta\,\text{Sales}}$$

Financial leverage is the extent to which a firm relies on fixed debt securities as part of its capital structure. The formula for calculating the degree of financial leverage is as follows:

$$\text{DFL} = \frac{\%\ \Delta\,\text{EPS}}{\%\ \Delta\,\text{EBIT}}$$

The degree of financial leverage explains the relationship between EPS and EBIT, that is, the percent change in earnings per share (EPS) between one year and the next, divided by the percent change in earnings before interest and taxes (EBIT) between one year and the next.

Finally, total leverage measures the relationship between sales and a firm's bottom line, EPS, or net income. The formula for calculating the degree of total leverage is as follows:

$$\text{DTL} = \text{DOL} \cdot \text{DFL}$$

Armed with this knowledge of leverage and degrees of leverage, one can provide a close approximation of how changes in sales will impact a firm's ability to operate, buy new equipment, and pay dividends to shareholders. Of course, such information relies on the availability of an accurate sales forecast. That said, if the sales forecast is good and the future performance reasonably mirrors the past, then a financial manager should be able to develop a reasonably good idea about what the near future will look like.

Capital Structure

Capital structure refers to the method by which a firm chooses to finance its operations and growth. A firm does so by selecting different sources of funds. A firm can issue bonds or long-term notes payable and generate debt. The use of short-term debt to satisfy working capital necessities is also considered part of a firm's capital structure. A firm may also choose to use equity in the form of either common stock, preferred stock, or **retained earnings** to finance its operations and growth.

Retained earnings
These are the percentage of net earnings not paid out as dividends.

A company's capital structure is generally a mix of short-term debt, long-term debt, common equity, and preferred equity. When analyzing a firm's capital structure, the firm's percentage of debt and equity is looked at, such that when referring to capital structure, one is most likely referring to a firm's debt-to-equity (D/E) ratio. This ratio provides a degree of insight into how risky a company may be for investment or lending purposes. Usually, a firm that is financed heavily using debt poses a higher level of risk to investors. However, it should also be kept in mind that taking this risk may be the primary source of a firm's growth.

Issuing debt is one of two primary ways that businesses can raise funds in capital markets, the other being issuing equity. In general, debt issues are less expensive and interest payments are tax-deductible and as a result are often favored by companies. Debt also allows a firm to avoid ownership dilution, which is one of the obvious downsides of issuing equity. Another significant downside of equity is that it is more expensive than debt. While equity, unlike debt, does not need to be paid back if a firm experiences a decline in earnings, it does represent a claim on a company's future earnings. More hidden costs can also occur with the issuance of equity; both time and human capital must be allocated to fulfilling the responsibilities associated with having shareholders. This can be especially costly when the CEO and CFO have to dedicate large portions of their time to managing shareholder relations. Considering all of these downsides, when interest rates are low, debt is the logical choice for a firm trying to raise capital.

All things considered, most firms will have a mix of debt and equity on their balance sheet. Firms using more equity to finance their projects acquisitions, and undertakings are said to employ a **conservative approach**, albeit, a somewhat more expensive approach. However, using this approach means that there is a much lower chance that a downturn will precipitate a bankruptcy. A firm that uses more debt in its capital structure is said to employ a riskier and more **aggressive approach**. That said, if this strategy works, a firm is more likely to have a higher, more robust growth rate. It is the goal of any company's financial management to identify a firm's optimal capital structure. Although capital structure theory is not strong enough to pinpoint a firm's optimal capital structure, it can find a range within which a firm can operate.

Conservative approach
A conservative approach to capital structure uses less debt.

Aggressive approach
An aggressive approach to capital structure uses more debt.

SUMMARY

In this unit, the origin and nature of equity capital and the role it plays in financing a firm's ventures were examined. The sources and the uses of debt financing before considering the cost of the various forms of financing, along with ways to best structure financing needs were considered.

In the next section, leasing as a method of financing was presented. The basics of leases, different types of leases, their structures, and their uses in business were introduced. Moreover, other forms of hybrid financial instruments were examined.

In the final section, the strategic use of financial leverage and what constitutes degrees of operational, financial, and total leverage were analyzed before the capital structure and its practical and theoretical foundations as well as its impact on businesses were discussed.

UNIT 6

SHORT-TERM FINANCING DECISIONS

STUDY GOALS

On completion of this unit, you will have learned …

- what a cash budget is, why it is used, and how to structure one.
- what goes into the process of short-term financial planning.
- how to view treasury issues and strategically manage a firm's cash.
- what specific considerations surround working capital management.

6. SHORT-TERM FINANCING DECISIONS

Introduction

As the year started, Mr. Pendergast, owner of the Pendergast Pencil Company was on top of the world. Pendergast produced pencils for $0.75 each and sold them for $1.00. In any given month, the company produced enough pencils to satisfy the following month's expected sales; Pendergast never wanted to "stock out" of pencils and risk making his customers unhappy. To take advantage of purchase discounts, he paid his raw materials suppliers during the month of production. Similarly, he paid his employees during the month they worked. Thus, Pendergast never had any accounts or wages payable. To match his competition, Pendergast billed his customers at the end of each month and gave them 30 days to pay; they in turn paid right on time. Sales estimates had been very accurate. Sales forecasts were optimistic and Pendergast Pencils was expecting to sell 500 more pencils than the previous month for each month of the year. Mr. Pendergast predicted this would be his best year yet. He could finally take some time off and enjoy the fruits of his labor. The year proceeded as follows. (Note: The product quantities and monetary figures are very small for the purpose of illustrating this example.)

January 1	Cash	$1,375
	Inventory	$750
	Receivables	$1,000
	Equity	$3,125

Pendergast sold $1,000 worth of pencils in January. He shipped them for $750 and collected on his December sales and paid for his materials and labor expenses. For the month, he made a tidy $250 profit.

February 1	Cash	$1,250
	Inventory	$750
	Receivables	$1,000
	Equity	$3,000

Sales in February were right on target: $1,500. With a step-up in production to maintain a 30-day inventory, he made 2,000 units at a cost of $1,500. All January receivables were collected by the end of February. Profits thus so far: $625. Pendergast was very pleased.

March 1	Cash	$750
	Inventory	$1,125
	Receivables	$1,500
	Equity	$3,375

March sales were just as expected: $2,000. April was expected to be even better with predicted sales of $2,500. Collections were once again on time and operating profits for the month, $500, made a total of $1,125 profit for the year.

April 1	Cash	$375
	Inventory	$1,500
	Receivables	$2,000
	Equity	$3,875

May was expected to set new sales records of 3,000 pencils equaling $3,000. Pendergast gave his sales manager a pat on the back. His customers were paying right on time. Production in April was adjusted to May's expected demand of 3,000 pencils. The month showed an EBT of $625, making profits to date of $1,750. Mr. Pendergast took off for a holiday in the Bahamas feeling very good, but neglected to review his accountant's report before leaving.

May 1	Cash	$125
	Inventory	$1,875
	Receivables	$2,500
	Equity	$4,500

May sales were right on estimate. Production was upped to meet June's expected sales of 3,500 pencils. The operating profit for the past five months totaled $2,500. Given these results, Pendergast was surprised to answer his phone to hear his treasurer screaming, "Help! Come home! We need money!"

June 1	Cash	$0
	Inventory	$2,250
	Receivables	$3,000
	Equity	$5,250

Pendergast caught the next plane home and demanded to see his treasurer, his accountant, and his banker. He looked through his balance sheets, income statements, and cash flow statements and identified the issues with his cash flow.

	Feb	Mar	Apr	May	Jun	Total
Sources						
Profits	$250	$375	$500	$625	$750	$2,500
Uses						
Receivables	$0	$500	$500	$500	$500	$2,000
Inventories	$0	$375	$375	$375	$375	$1,500
Total	$0	$875	$875	$875	$875	$3,500
Increases/decreases in cash	$250	($500)	($375)	($250)	($125)	($1,000)
Cash balance	$1,250	$750	$375	$125	$0	

This case study demonstrates the relationship between accounting profits, cash flows, and economic profits. Clearly, accounting profits alone do not provide an adequate foundation upon which to base financial decision-making. There must always be consideration given to economic costs in terms of cash inflows and outflows. The message to take from the plight of Pendergast and his Pendergast Pencil Company is very clear: profits are wonderful, but liquidity is critical (Gallinger & Healey, 1991).

6.1 Cash Budgets and Short-Term Financial Plans

For any firm to run efficiently, it must make projections or forecasts of what it expects for the upcoming periods, and then budget funds in accordance with what those forecasts indicate. Staff in financial planning roles should always keep in mind that no financial statement ever stands alone. Though profits are a good measure of a firm's success, profits alone mean nothing without taking other important components into account. Without budgets and without financial plans that take into account cash flows, a firm can very quickly lose more ground than it gains in any given period.

In the opening case study, cash outflows exceeded cash inflows. Cash is needed to fund growth. The case of Pendergast Pencil Company illustrates the essential relationship between asset accounts, specifically cash, accounts receivable, and inventory. It also demonstrates the necessity of **financial planning**. A good sales forecast is simply not enough; a firm must be able to use the forecast to develop and implement a plan of action and the plan must be integrated into the rest of a business.

Financial planning
Corporate financial planning consists of creating both long-term and short-term strategies for ensuring a firm's future success.

The plan must examine and understand the various parts of a firm's operations, including production (**capital expenditures** and inventory), and marketing (sales and credit policy), as well as the possible necessity of external financing arrangements. These aspects are all interrelated and must be taken into consideration when financial plans are made. The financial plan must recognize and reflect cash flows into and out of the business.

Capital expenditures
These are large, fixed asset items that must be accounted for in annual spending plans.

Cash Budgets

Cash budgets present a firm's cash inflow and outflow during a specific period; this could be for a month, for a quarter, or for an annual period. The primary purpose of a cash budget is to identify the status of a firm's cash position at any point in that period. An awareness of a company's cash position assists it to make significant decisions such as whether to expand its cash reserves to address projected fund shortages and how to use excess funds wisely. The cash budget also helps to prioritize the order in which payments are made during a specific period. Cash budgeting also helps in the process of analyzing budget-versus-actual variances in cash inflows and outflows, showing how historical **(ex-post)** results fared versus budgeted future **(ex-ante)** plans.

Cash budgets
These show a firm's cash inflows and cash outflows.

Ex-post
These are historical, past results.

Ex-ante
These are future results upon which plans are based.

Short-term cash budgets are created to address cash requirements on a monthly or sometimes even weekly basis. Such cash budgets help to forecast payments that need immediate funding allocations, and also serve to identify sources that can be used to offset these obligations. Additionally, short-term budgets help to determine when and how to make direct short-term investments, i.e., marketable securities that can earn interest on available funds while they are not being used. If surplus income is available for a short period, it may be invested in short-term deposits such as repurchase agreements, banker's acceptance, or even in commercial paper, which will earn interest income for the firm during the interim period.

Corporate cash budgets are typically developed by departments based on historical input and departmental results, and supplemented with somewhat of a departmental "wish list". These "requests" differ from one department to the next. Operations will deliver their wish list in the form of new equipment required. Shipping may need more packaging and perhaps a new clerk or two. Finance would like to tell the board of directors that they can raise dividends if they want. Marketing will likely need the latest gadgets that are guaranteed to make a sale, and IT will be looking for the latest security programs to keep hackers out and secure corporate information. But where will all this money come from?

This is where the finance department takes all the information available, and provides a breakdown of which department receives what based on what a firm can afford, in the form of a cash budget. A cash budget is an estimation of a firm's cash inflows and cash outflows over a specific period, usually a quarter or financial year. This budget is then used to assess whether a business has adequate cash to operate for that period and determine which departmental wishes are to be filled. Company finance departments use sales forecasts in combination with **production forecasts**, along with assumptions about necessary spending and accounts receivable to create cash budgets. If a firm does not have enough liquidity to operate, it must seek it internally via cash, retained earnings, asset sales, and marketable securities, or externally via stock issues or debt in the form of bonds.

Production forecasts
These are the means by which a firm analyzes what its production will be for an upcoming period.

A firm's cash budget will be prepared after the operating budgets and the capital expenditures budget have been prepared. The cash budget will start with the beginning cash balance. Cash inflows are then added to this balance to ascertain the amount of available cash. Cash outflows for the period are subsequently subtracted, and a firm's cash balance is left. This is used as the basis for the financing budget and is determined before any financing activity takes place. If this cash balance is less than a firm's required balance, then the financing section will show the AFN (additional funds needed). The financing section also includes any debt repayments, including any interest payments due. The cash balance prior to any financing activity taking place is then adjusted in accordance with these financing transactions to calculate the ending cash balance. This ending cash balance is the cash balance found at the end of one cash budget and the beginning of the next.

Short-Term Financial Plans

Long-term financial planning considers areas of concern to a firm such as capital budgeting, financial structure, and dividend policy, whereas short-term financial planning primarily concerns itself with decisions that impact current assets and current liabilities. The main difference between long-term and short-term financial planning is the timing of the cash flows. Short-term financial decisions are concerned with inflows and outflows that occur within a year or less. Short-term financial planning typically provides answers to the following questions:

1. How much cash should a firm keep immediately available?
2. How much should a firm borrow on a short-term basis?
3. How much and how should a firm extend credit to its customers?

The following table provides a list of managers whose duties relate to short-term financial planning, and specifies what those duties are and how a firm's assets and liabilities are impacted by these duties.

Table 9: Managers of Short-Term Financial Areas

Manager title	Short-term duties	Areas impacted
Cash Manager	• collection • disbursement • bank relations • short-term investments and borrowing	• cash • marketable securities • short-term loans
Chief Accounting Officer	• accounting of cash flows • payables reconciliation • payments of receivables	• accounts receivable • accounts payable
Credit Manager	• accounts receivable • credit policy decisions	• accounts receivables
Marketing Manager	• credit policy decisions	• accounts receivables

Manager title	Short-term duties	Areas impacted
Payables Manager	• decisions regarding payment policies • discount policy decisions	• accounts payable
Purchasing Manager	• purchases • suppliers • terms of payment	• inventory • accounts payables
Production Manager	• production schedules • material requirements	• inventory • accounts payables

Source: Hastenteufel, 2020.

In short-term financial planning, as with other areas of financial planning and management, both **aggressive policies** and **conservative policies** can be applied to a firm's short-term financial policies. A more conservative approach would call for keeping larger amounts of a firm's resources more liquid and accessible, in the form of cash and marketable securities. A more aggressive approach in this area would be to reduce a firm's liquidity, keeping only that which is deemed absolutely necessary on hand.

Aggressive policies
These policies use short-term cash for intermediate to longer-term projects.

Conservative policies
These policies use long-term cash for shorter-term financing needs.

In terms of inventory management, a conservative approach would be to always keep slightly larger amounts of inventory on hand to prevent a stock out from occurring. A more aggressive approach would be to utilize **just-in-time (JIT)** inventory management and keep far less inventory on hand, perhaps just what is absolutely necessary to keep production moving. While this does free up capital for use elsewhere in the business, it does have some drawbacks. For example, the vehicle manufacturer VW was exposed in 2016 when one of its suppliers responded to a contract dispute by not making shipments as expected, leading to the temporary closure of six production plants.

Just-in-time
The just-in-time (JIT) approach is an inventory management technique.

With regard to credit policy, the more expansive and liberal the approach, the more conservative the policy is said to be. A conservative policy extends credit to far more customers and has far more receivables than the aggressive approach. While this may seem counterintuitive, the conservative approach to credit is to not offend or lose any customers and thus offer them more generous conditions. A conservative approach results in far more receivables while an aggressive approach pursues a credit policy regardless of the interests of the customer and isn't concerned by the potential of putting off customers with this restrictive policy. The flexible, more conservative approach carries very low levels of short-term liabilities, whereas the aggressive approach is to try to finance almost everything using short-term debt.

Finally, the conservative approach to short-term financial planning is to maintain a high level of liquidity, while the more aggressive and restrictive approach is to maintain low levels of liquidity.

There are two means of securing cash necessitated by short-term financial plans: **unsecured loans** and **secured loans**. One of the unsecured means of accessing cash includes establishing a line of credit, which generally takes the form of a prearranged agreement with a bank that allows a firm to borrow up to a certain amount of cash on a short-term

Unsecured loans
These are monies loaned without collateral.

Secured loans
These are monies loaned with collateral.

basis. Another means involves a committed arrangement which takes the shape of a formal legal arrangement and may require a commitment fee. The committed arrangement generally uses a floating interest rate. Another means is the non-committed arrangement, which is an informal agreement with a bank that is similar to credit card debt for individuals. A final unsecured method of accessing cash involves a revolving credit arrangement, which is a non-committed agreement with longer time periods between evaluations.

Some of the secured means of obtaining short-term funding utilize receivables or inventory or both as security. For example, there is accounts receivable financing, secured by assigning receivables where the lender has accounts receivables as security, but the borrower is still responsible for the collection of the receivables. There is also factoring of receivables. This is where accounts receivables are discounted and sold at a discount to a factor; collection of the receivables then becomes the factor's problem. Some other forms of secured short-term financial lending includes inventory loans, such as a blanket inventory lien where the lender has lien against all inventories. Another method of secured financing includes a trust receipt where the borrower holds specific inventory in "trust" for the lender, e.g., auto dealer. Finally, field warehouse financing is where a public warehouse acts as control agent to supervise inventory for a lender. These are some of the many secured funding methods for short-term financial planning.

6.2 Treasury and Cash Management

All topics discussed thus far in this unit relate to short-term activities: short-term funding, short-term lending and borrowing, short-term budgeting, and short-term planning. Thus, the discussion regarding treasury management and cash management continues along those lines; as a general rule, both treasury management and cash management relate to a period equal to or less than one year.

Treasury Management

Treasury management
This is the maintenance of a firm's liquidity.

Treasury management, also frequently referred to as treasury operations, involves the management of a business' holdings, with the objectives of (1) maintaining and managing a firm's liquidity and (2) minimizing its operational, financial, and public image risk.

Treasury management within a corporate context involves the creation of policies and procedures regarding governance, designed to ensure that a firm manages its financial risks successfully. As one of the primary functions of treasury management is to set and maintain the levels of cash or cash equivalents available to a firm, treasury management is sometimes simply referred to as cash management. However, this is misleading as the scope of treasury management is much broader than cash management.

Financial risk managers
These managers have the job of assessing and protecting a firm against financial risks.

In running treasury operations, corporate treasurers serve as **financial risk managers**. One of their primary functions is to protect a firm's value from the financial risks that result from its business activities. Such risks can arise from a multitude of sources; the role of corporate treasurer thus calls for a clear understanding of multiple areas of the business and a well-developed ability to communicate with a wide variety of financial profes-

sionals. Treasury management was once an offshoot of the accounting department, but today it has largely evolved into its own department within most firms. The treasurers who manage these departments manage several key areas of risk including liquidity risk, credit risk, currency risk, interest rate risk, and operational risk. All businesses face some or all of these risks to a varying degree.

The treasury department's management practices, its actions, and its level of compliance with stated treasury policies must be evaluated independently and regularly by a firm's **internal audit department**, as well as by a treasury committee comprised of senior management and corporate treasurers. This committee will also regularly review and discuss financial risks that impact upon a firm's assets and liabilities. The committee is responsible for recommending further investigations or appropriate actions to manage or transfer identified risks. The treasury committee will generally delegate the task of undertaking necessary actions to the treasurer and the treasury department.

Internal audit department
The internal audit department has oversite over the actions of a firm's treasury department.

Cash Management

As previously stated, corporate treasurers are frequently tasked with the responsibility of cash management. As one of the primary responsibilities of a treasury is to help a firm to remain solvent, it is frequently the case that the function of cash management is bundled into treasury management. Cash management is thus an integral part of overall treasury management. As already mentioned in this unit, cash management is the corporate process of collecting and managing a firm's cash, as well as using it for short-term investments in the form of marketable securities. Put simply, cash management is the key to safeguarding a company's financial stability and ensuring its ongoing solvency.

For cash management to be carried out successfully, corporate treasurers need to focus on not just avoiding insolvency but also reducing the length of time account receivables remain outstanding, increasing a firm's overall collection rates, selecting appropriate short-term investment vehicles, and increasing cash on hand sufficiently enough to improve a company's cash position but not so much so that the firm becomes an attractive takeover target.

Successful cash management is a vital skill for those operating small businesses. This is because smaller businesses generally have less access to affordable credit but have substantial upfront costs to finance while waiting for receivables to be paid. The ability to manage cash successfully enables a business to meet unexpected expenses as they arise and handle regularly occurring events such as paying employees and maintaining utilities such as electricity and heating.

Cash management is responsible for achieving optimal efficiency in two key areas: accounts receivables and accounts payables. Interestingly, most of the receivables and payables management functions can be automated using highly-evolved, computerized business banking solutions. Advances in technology and digital transactions have created opportunities for small and medium-sized enterprises (SMEs) to access the same large-scale cash management technology that has previously only been available to larger companies. In most cases, the cost savings generated by more efficient cash management

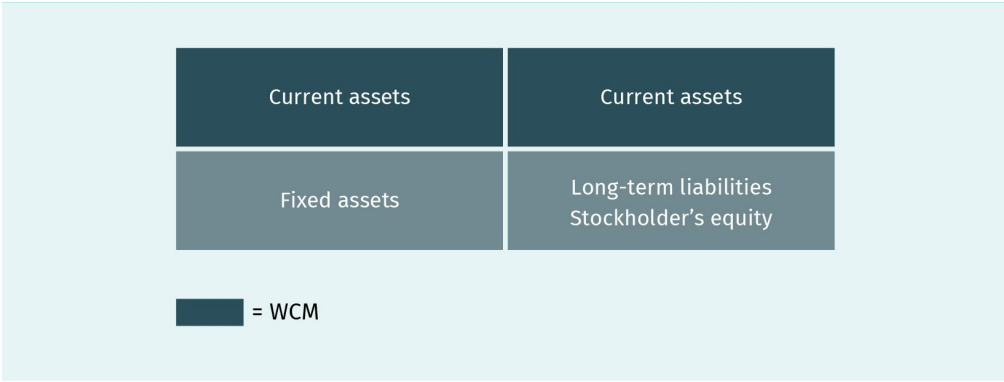
techniques have most certainly offset any increases in costs associated with implementing such technologies. Importantly, such cost savings allow SMEs to reallocate valuable resources to growing a company and extending its capabilities.

By improving receivables collections and the payables process, a firm can decrease its costs and retain more cash for use in the business. Receivables can be improved by reducing payment float, using an automated billing service, using electronic payment processing through a bank collection system, and staying on top of collections with the use of an aging receivables report. Payables management solutions including electronic payment processing, direct payroll deposit, and controlled disbursement can streamline and automate the payables functions. When a business is able to accelerate its receivables and control its payables, it has far better control over its cash flow. This is critical to success in business as proper and effective cash management simply places a firm in a more advantageous business position.

6.3 Working Capital Management

If we divide a typical balance sheet in half, working capital management (WCM) can be defined as the top components of the balance sheet.

Figure 5: Working Capital Management and the Balance Sheet



Source: Hastenteufel, 2020.

All companies and individuals working in corporate finance need a solid foundation in working capital management. Why is this the case? It has been estimated that 50% of typical industrial or retail assets are held as working capital (Brigham & Houston, 2019). Importantly, about 60% of corporate finance jobs are in working capital, and almost 90% of entry level jobs in corporate finance are in areas of short-term working capital. Furthermore, given the impact and importance of WCM on corporate finance, one must take the time to understand what WCM actually is.

Working capital management is concerned with a firm's managerial accounting procedures and strategies specific to the two components of working capital: current assets and current liabilities. The objective is to ensure that a firm is operating on the most financially

efficient basis possible. The primary objective of working capital management is to make sure a firm always maintains **adequate cash flow** to meet its short-term debt obligations and operating costs.

Adequate cash flow
This is sufficient cash to meet all obligations of a firm and maintain solvency.

Working capital management involves carefully tracking cash flows, in the form of assets and liabilities, through various ratio analyses of key elements of a company's operating expenses. Some of the items monitored in a working capital management arena include the working capital ratio, the inventory turnover ratio, and the collection ratio. Truly effective working capital management assists a firm by insuring smooth financial operation. It can also improve a company's earnings and profitability. Other management areas of working capital include inventory management and the management of accounts receivable and accounts payable.

Working Capital Ratio

The working capital ratio, also known as the current ratio, is calculated as current assets divided by current liabilities. This is considered a vital indicator of a company's fundamental financial position, as it shows a company's ability to meet its short-term financial obligations. Though numbers will vary from one industry to another, a working capital ratio below 1.0 is usually indicative of a firm that is having trouble in meeting its short-term obligations, generally due to inadequate cash flow. Thus, working capital ratios greater than 1.0 are considered favorable. However, a working capital ratio higher than 2.0 may be an indication that a company is not using its assets effectively to increase its revenues.

Inventory Turnover Ratio

Another critical component of working capital management is **inventory management**. To capitalize on efficiency and preserve an adequate level of working capital for a firm, a finance manager working in this area must have appropriate amounts of inventory supply on hand to meet customer need whilst at the same time avoiding overstocking inventory, as too much inventory unnecessarily removes working capital until it is converted into cash, as illustrated in the cash conversion cycle. Most firms measure how the balance between too much and too little inventory is being maintained by tracking the inventory turnover (ITO) ratio. The ITO ratio is calculated by dividing revenues by inventory cost. This reveals how rapidly a company's inventory is being sold out and restocked. A relatively low ratio compared to industry peers indicates that inventory levels are too high, while a relatively high ratio relative to peers indicates that the efficiency of ordering inventory can be improved. The key is to carry only as much inventory as is needed to minimize ordering costs, but only as much inventory is needed in order to minimize carrying costs. In this context, the **economic order quantity** (EOQ) or Baumol model is important.

Inventory management
This is the balance of inventory levels to facilitate production, but not to hold excess.

Economic order quantity
The economic order quantity (EOQ) minimizes both carrying costs and transaction costs.

When discussing the Economic Order Quantity, a categorization is necessary. Inventory can be divided into three categories: (1) raw materials, (2) work in progress (WIP) or unfinished goods, and (3) finished goods. There are two basic costs associated with inventory: carrying and ordering.

In the inventory management process, a working capital manager must closely monitor production. There are two specific types of production that must be monitored: (1) level production and (2) seasonal production. Level production is when a firm produces the same amount each month. The result of level production is that inventory costs are higher and operating costs are lower. Seasonal production is when a firm produces different amounts each month (based on seasonal needs) and as a result, inventory costs are lower but operating costs are higher. Each method has its strengths and its weaknesses. It falls to the working capital manager to work closely with the production manager to determine the best possible solution, in terms of both production efficiency and financial profitability, for a given firm.

In 1952, William Baumol pioneered an inventory management model that is still in use today. The model is known as the economic order quantity (EOQ) model. Baumol's goal was to minimize both carrying costs and transaction costs. He found that the lowest point at which these two intersected was the perfect economic order quantity. Because Baumol's model was so effective with material inventory, it has been adapted for use with cash. Today, the EOQ (Baumol) model can be used for calculating optimal levels of inventory as well as calculating cash needs in the form of inventory. In the case of cash calculations, the formula for this calculation is as follows:

$$\mathrm{EOQ} = \mathrm{C}^* = \sqrt{\frac{2\mathrm{FT}}{\mathrm{i}}}$$

where

EOQ	=	economic order quantity
C^*	=	cash EOQ
F	=	fixed transaction costs
T	=	total project cost
i	=	annual interest cost

The following assumptions are used in the Baumol model, whether for material inventory or cash management.

- The EOQ is the optimal amount for a firm to order each time. This always occurs at the lowest point on the total cost curve
- The order size takes place where total carrying costs equal total ordering costs, and always at the same time (assuming no safety stock).
- Safety stock is factored in as "extra" inventory that a firm keeps in stock, just in case of unforeseen problems. Safety stock is **exogenous** to the model.
- All values to be calculated are known with certainty and are constant over time, i.e., inventory or cash use (depending on the type of calculation) is uniform over time.
- Carrying costs change proportionally with changes in inventory levels.
- All ordering costs are fixed and do not change over the life of the project.

Exogenous
It is outside of the model and must be added separately.

Because these assumptions are used to level the playing field and simplify the calculation, they do not necessarily hold true in the "real world". As a result, an experienced financial manager knows to always hold some safety stock on hand.

Example

Let's assume that a company has a project that costs one million dollars to complete over the next year. How much cash should the firm keep on hand for this project? Currently, it receives 10% interest on the million dollars allocated, meaning that if it takes all its cash out of marketable securities and put it in its safe in preparation for easy access, it will cost the company, at most, $100,000 (opportunity cost, assuming simple interest = carrying cost). Another option is having money wired to the firm from its marketable securities; however, this option incurs transaction costs. Every time the company has money wired from its marketable securities for use, the transaction cost is $150. If the firm wanted to, it could send someone to the bank to get the money needed each day for the 250 working days in the year; at the transaction rate of $150, that would bring its costs down to $37,500.

But surely there is a better way to go about ensuring adequate cash is available without incurring excessive transaction costs or opportunity costs. What if there was a way to make periodic withdrawals, instead of every day or all at once? If the firm could regularly withdraw an optimal amount, it could minimize transaction costs and at the same time minimizing carrying costs. At this point, the company can use the Baumol EOQ model to understand how much cash it needs and how often this amount is needed.

$$\begin{aligned}
\mathrm{C}^{*} &= \sqrt{\frac{2\mathrm{FT}}{\mathrm{i}}} \\
&= \sqrt{\frac{2 \cdot 150 \cdot 1,000,000}{0.10}} \\
&= \sqrt{\frac{3,000,000}{0.10}} \\
&= \sqrt{3,000,000,000} = 57,772.26
\end{aligned}$$

This is the amount that the firm will need to replenish. But how often does the company have to replenish the money? This can be calculated by dividing the total project cost by the EOQ: $1,000,000 divided by $54,772 equals 18.26 times throughout the year-long project, or approximately every 20 days. The $150 fee for 18 cash transfers is now only approximately $2,700. What about the carrying costs? If the firm starts with $0 and replenishes its cash balance to $54,772.26, then its average cash balance (ACB) is calculated as $54,772.26 divided by two, which equals $27,386.13. This ACB will cost the company 10% through the year, which means its carrying cost will be $2,738,61. As a result, the firm has minimized its total costs to just over $5,400 for this project. So, the firm can now consider its options in full.

Collection Ratio

Collection ratio
This measures how effectively a firm manages its accounts receivable collections.

Another area in which a working capital manager is deeply involved is calculating the **collection ratio**. This ratio is also known as the average collection period. It is the principal measure of how efficiently a firm manages its accounts receivables. The collection ratio is calculated by multiplying the number of days in an accounting period by the average amount of outstanding accounts receivable. The quotient total is then divided by the amount of net credit sales during the accounting period. The collection ratio indicates the average number of days it takes a company to receive payment, i.e., to convert sales into cash; the lower a firm's collection ratio, the more efficient its cash flow.

Cash Conversion Cycle

How long does it take a company from the time it pays out cash to meet an order that it has received (accounts payable) to when it receives cash back for the goods sold (accounts receivable)? In most cases, payment is not immediate upon receipt of raw materials; there will be a period between the outlay and receipt of cash. In the hands of a capable working capital manager, this period will be minimized with accounts payable being paid as late as possible and accounts receivables being collected as soon as possible.

This cash-out-to-cash-back cycle is known as the cash conversion cycle (CCC). It is a metric that indicates the length of time, measured in days, that it takes for a company to convert its resource inputs (cash out) back into usable cash inflows. The cash conversion cycle essentially measures the time that each dollar of a firm is tied up in production and sales before it is converted back into cash through sales to customers.

The cash conversion cycle is expressed as follows:

$$\mathrm{CCC} = \mathrm{ICP} + \mathrm{RCP} - \mathrm{PDP}$$

where

ICP (inventory conversion period)	=	$\frac{\text{Inventory}}{\text{COGS/Day}}$
RCP (receivable collection period)	=	$\frac{\text{Receivables}}{\text{Sales/Day}}$
PDP (payable deferral period)	=	$\frac{\text{Payables}}{\text{COGS/Day}}$
COGS = cost of goods sold		

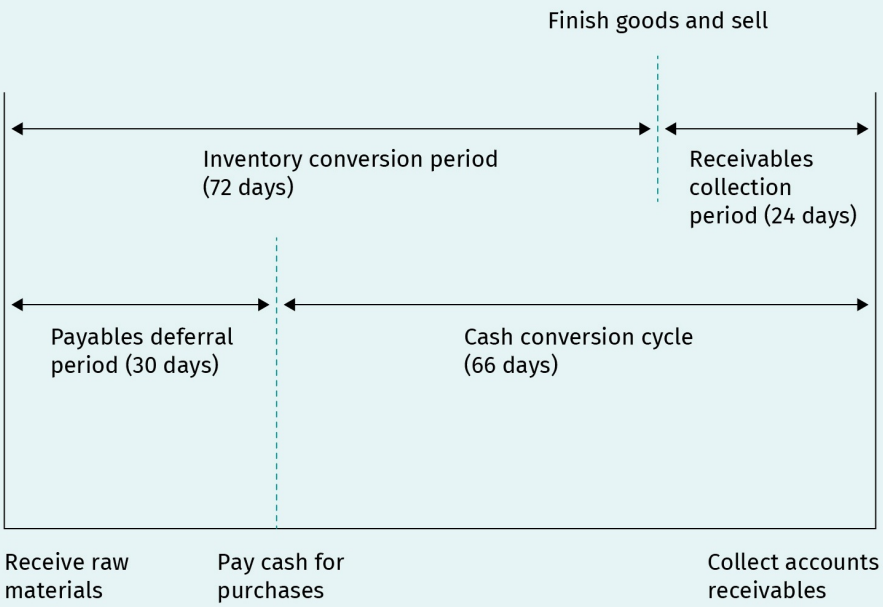
Note: It is assumed that one year is always 365 days.

Example

A firm has the following periods:

- average collection period = 24 days
- average age of inventory = 72 days
- average accounts payables = 30 days

Figure 6: Cash Conversion Cycle



Source: Hastenteufel, 2020.

SUMMARY

In this unit, short-term financing decisions, how they are made, and who is responsible for making them were explained. Moreover, the management of a firm at the critical level of transactions was considered.

In the first section of this unit, cash budgets, specifically how they are constructed and how they are used were presented. The the construction of short-term financial plans and the efforts of the management team to ascertain the liquidity of the company were also examined.

In the second section of this unit, the duties of a corporate treasury department and a corporate treasurer were discussed, and the process of cash management was explained.

In the final section of this unit, working capital management and its far-reaching influence over all areas of a firm were explored. Additionally, some of the tools at the disposal of a working capital manager and how these tools are used in day-to-day financial operations were reviewed.

UNIT 7

CAPITAL BUDGETING AND FINANCIAL MODELING

STUDY GOALS

On completion of this unit, you will have learned …

- how a firm chooses and makes investments.
- what goes into the process of capital budgeting.
- how risk factors are incorporated into capital budgeting decision-making.
- how to calculate the net present value and the internal rate of return.

7. CAPITAL BUDGETING AND FINANCIAL MODELING

Introduction

Large corporations review and assess hundreds of projects over the course of a given year. From this multitude of projects, they are charged with selecting those that will best address their prime directive, i.e., maximize shareholder wealth. But how do managers know which projects will actually do this?

The perfect example of a capital budgeting decision that almost didn't get made and began from a mistake is the story of the ubiquitous Post-It Note from 3M. In 1968, Dr. Spencer Silver, a chemist at 3M, was working on a high-tack, super-strong adhesive, but instead came up with a very low-tack, pressure-sensitive, reusable substance. From this "mistake", the idea for the Post-It Note was born. The 3M company had to decide: invest in this new product or let it go. Ultimately, this was a relatively simple capital budgeting decision, but took years for this decision to be made. Dr. Silver called his creation a "solution without a problem" and worked to promote the idea to 3M. The firm was initially not interested in expending the capital to produce a product that didn't actually stick. It was not until 1974 that one of Dr. Silver's colleagues began using the low-tack adhesive squares as bookmarks in his hymn book that anyone even took notice of the product. But even after that, it took free samples given to the public for the product to gain traction and acceptance to grow among the general buying public. Finally, the product was successfully rolled out in 1979, more than 10 years following its original conception. This is a good example of a well-known, highly-regarded product that almost got lost in the review, analysis, and decision-making phase of the capital budgeting process.

Because project analysis is not without costs, firms generally follow a process for categorizing and subsequently analyzing projects. The categories in order are as follows:

1. Expenditure to replace equipment to continue current operations
2. Replacement expenditure to replace obsolete equipment and realize savings
3. Expansion of existing markets or products
4. New market or product expansion (think Post-It Notes)
5. Government compliance projects regarding safety or the environment

With this order of priorities in mind, one can see how far down the list of priorities Dr. Silver's new product may have been and why his "solution without a problem" may have had some difficulty gaining traction and finding support.

7.1 Capital Budgeting and Investments

Capital budgeting is the process by which a business examines various capital investment projects, analyzes them, and then determines their favorability based on the expenses involved as compared to the value and revenue that will be generated by the investment if the project were undertaken. These expenditures and investments include projects such as buying new equipment, building a new production facility, or investing in some other long-term venture. Often, at this point in the process, a prospective project's lifetime cash inflows and outflows are assessed to determine whether the forecast returns meet a target benchmark known as **investment appraisal**.

Investment appraisal
This is the process of ascertaining whether a project is acceptable to a firm.

Capital budgeting is ultimately investment appraisal. It is the planning process used to determine (1) whether the long-term investments that an organization is considering are worth funding through a firm's capitalization structure, and which projects, equipment, and ideas should receive priority, and (2) what capital expenditures are actually required. Management typically requires some advanced notice of future investment outlays. Capital budgeting provides this in the form of the annual capital budget, which lists investment projects for the coming year.

Preparation of the capital budget is not a static or necessarily linear exercise; there is a great deal of negotiation involved in the process. To start with, departmental managers consult with plant managers, and plant managers confer with senior managers before a finely-tuned list of projects is arrived at. From there, the capital budget is prepared, considering a firm's overall **strategic plan**. Capital budgeting involves both bottom-up and top-down planning. This means that plans presented for consideration are drawn from ideas and concerns that emerge from the front line of a business, but also receive input and guidance from the upper echelons of company management. Such a method hopefully allows for the best ideas to become the best and most profitable projects.

Strategic plan
This is an organization's process of defining its direction.

There are five discrete steps undertaken in the capital budgeting process. The process often involves assessing very large investment undertakings that absorb a considerable amount of capital expenditure. Clearly, decisions regarding such projects are never taken lightly, as the firm will most likely be adding more property, additional plants, or more equipment, and thus any decision must be examined and studied in close detail. Zutter and Smart (2019) divide the process of capital budgeting into five distinct but interrelated steps:

1. Proposal generation: The process begins with an idea, a proposal, and an appropriation request for each proposal.
2. Review and analysis: A firm's financial managers examine and analyze each idea with a level of scrutiny that typically depends on the estimated costs (i.e., larger cost projects = more scrutiny).
3. Decision-making: A decision is made commensurate with the allotted funds and priorities of a business, with some high cost projects even requiring board approval.
4. Implementation: Dependent upon approval, implementation begins.
5. Follow-up: Results are monitored, cost/benefits are analyzed, and adjustments are made as required.

Though each step in the process is important, the greatest amount of time is spent on the second and third steps as these are the most critical for a firm. Here is where potential project proposals recommended for consideration are reviewed and analyzed. This exacting analysis culminates in several final decisions about which projects are accepted, which are rejected, and which are put on hold until the next capital budgeting cycle.

Because these decisions are critical to a firm's very existence, these decisions are not taken lightly. At the proposal stage, many of the numbers used to substantiate the proposal are unknown; proposals are often based on estimates, and in some cases, educated guesses. That is why **decision-making tools** are commonly used in the capital budgeting process. Using these tools, a financial manager will be able to accumulate additional information and decide in favor of projects that provide the highest confidence rating as indicated by these tools.

Decision-making tools
These tools include NPV, IRR, and the profitability index.

There are two standard methods applied to capital budgeting decisions: the accept/reject method and the ranking method. The accept/reject approach to investment determination takes each proposal and determines whether that particular investment project meets a firm's minimum standards. Once this has been determined, other criteria used by a firm to evaluate a proposal is then applied. According to the **ranking approach**, an investment is considered alongside other investments based on its projected return to a firm. Projects are ranked from the project that delivers the greatest return to the project that delivers the least. Projects can then be selected for implementation from this list as long as the budget permits.

Ranking approach
The ranking approach is a way to select capital budgeting projects.

In summary, the capital budgeting process is the primary tool by which a financial manager, acting on behalf of a business, manages a firm's investment opportunities. Such investments typically take the form of additional fixed assets of one type or another, and by evaluating the cash inflows and outflows of these potential investments, informed decisions about such opportunities can be made. Once investment opportunities have been recognized, financial management is then assigned the task of evaluating whether the investment is acceptable to the firm. Companies will usually have their own unique criteria for evaluating an investment, depending on factors such as the size and type of business, the competitive environment, and industry forces at work. As previously noted, it's important to remember that the capital budgeting process involves two discreet sets of decisions: investment decisions and financial decisions. Given the unique business and market circumstances that exist at any given time, an investment decision may not be seen as worthwhile initially, but if the financial analysis process is carefully completed and the investment or project is entered into with full awareness, the decision may yet prove to be worthwhile to a firm's shareholders in the long run.

7.2 Incorporating Risk into Capital Budgeting Decisions

In order to be comprehensive, useful, and wide-ranging, dynamic financial analysis models must deal with both the amount and timing of future loss, and loss adjustment expense payments, even more than asset cash inflows (Hayne, 1999).

In reviewing the capital budgeting process, we see that **free cash flow** is a scarce resource, and no matter how great a business may be, there will never be enough money to fund all the proposals received. Traditional capital budgeting rates proposals and places them in order from top to bottom, according to greatest potential return, as measured, for example, by the highest **net present value** (NPV) or **internal rate of return** (IRR). Next, project cash requirements and estimated cash inflows are listed for a reasonably foreseeable time frame, e.g., five to ten years. Then an adequate discount rate, reflecting a firm's opportunity cost of capital, is applied to reduce all cash inflows and cash outlays to present value dollars. Alternatively, if IRR was used, all cash inflows and cash outlays are converted into a percentage rate that can be effectively compared to the cost of capital. All things being equal, the project with the highest NPV (or IRR) is the first capital budget item to be funded, followed by the next, until the budgeted investment funds are exhausted.

Free cash flow
This is operating cash flow minus capital expenditures.

Net present value
The net present value is the discounted present value of a sum of future cash flows minus the project's initial outlay.

Internal rate of return
The internal rate of return is the calculation of a break-even interest rate.

In the discussion of capital budgeting thus far, the critical element of risk in the evaluation of potential investment projects has not yet been considered. In the face of ever-increasing volatility in global markets, many investors have sought out "safer" investments and pursued investment vehicles that offer some sort of shielding from general market volatility. However, businesses making long-term, capital budgeting investment selections know that, given the restricted range of investments available to them that offer desirable or even just adequate returns, risk is inevitable. Some of the risks faced by these businesses that we will discuss here include (1) the risk of failing to meet cash flow obligations (inflows or outflows), (2) the risk that management selects high-risk projects, or (3) the risk of an acquisition imploding entirely. By incorporating risk parameters into the capital budgeting process, investors can mitigate some of the risk and minimize some of the potential losses.

When estimating cash flows for projects during the process of capital budgeting, finance managers will first try to mitigate risk by simply avoiding riskier projects. However, when these projects turn out to be the most profitable projects under consideration, it becomes more difficult to avoid them. It is here that firms might encounter a risk premium. Vendors often try to entice firms into undertaking their project by "sweetening the pot" with a risk premium that they are willing to pay to attract prospective buyers. A risk premium might also be added by a firm itself; when considering a risky project, a firm can add a risk premium to the normal discount rate. This added premium is designed to offset the riskier project's rate of return, and serves to factor in the additional risk that the project may represent. With this added risk premium, investments are then appraised using the applicable discount rate and investment projects that offer better returns can be chosen.

There are several methods for evaluating riskier projects and incorporating risk calculations into capital budgeting decisions:

- As just discussed, one technique involves increasing the discount rate by an appropriate discount premium to offset the element of additional risk.
- Another method is to reduce future cash flows by an approximated loss percentage. This adjustment should be used if the financial manager believes there is some risk of future payments or cash inflows not being received. This can be accomplished by multiplying each future cash flow by 80 to 90 percent if it appears that a firm may not receive 10 to 20 percent of the future payments on the investment. Once this is done, the projected results are again reviewed for acceptability.
- Yet another technique involves delaying all cash inflows used in the capital budgeting calculation process by a one-year period. This adjustment may be used to offset the possible risk of delays in undertaking the project, which would in turn delay the expected cash inflows. Using this method, the overall value of the project is reduced to a more realistic figure that incorporates risk by adding a higher level of discount to the future cash inflows.
- Finally, as a financial manager, if there is a belief that the project may entail higher startup costs than originally estimated, these cost over-runs may be subtracted from the investment's calculated net present value.

Certainty-equivalent coefficient
A certainty-equivalent coefficient is a factor that more accurately assesses risky capital investment projects.

Though some risk may be inevitable, uncertainty can be reduced to an acceptable level using a **certainty-equivalent coefficient** (Adams, 2017). Future cash flows of a given investment project are generally forecasted utilizing probability measures. However, there is an element of uncertainty associated with these forecasts. To minimize uncertainty, projected cash flows are multiplied by a predetermined base factor, known as the certainty-equivalent coefficient, which determines the risk associated with these certain future cash flows. Riskier investment projects receive a lower certainty equivalent rating, and as a result, these investments are more often avoided. This procedure is far more effective because the likelihood of attaining the initially-estimated cash flows is often too optimistic and highly unlikely, making the results of the certainty-equivalent coefficient method a far more realistic and accurate probability.

Though capital budgeting and risk assessment may seem an arduous task, it is rewarding beyond measure when the accepted project yields the expected results in the context of the expected risk.

7.3 Investment Rules and Decision-Making Methods

There are many ways to arrive at a capital budgeting decision, but not all of them are equal; some are better than others, and in this section, some of them are discussed. Some of the decision-making tools in use today include net present value (NPV) and internal rate of return (IRR).

The NPV and IRR methods all use **time value of money** (TVM) concepts as their foundation. There are several other methods of capital budget decision-making, including the modified internal rate of return, sensitivity analysis, the Monte Carlo simulation, and the discounted payback method. These methods are beyond the scope of this course and are thus not discussed here.

Time value of money
The time value of money works on the premise that a dollar received tomorrow will be worth less than it is today.

Academics have long agreed that NPV is the gold standard of financial decision-making, but business has largely preferred to utilize IRR. Many observers have wondered why this is the case. However, anyone who has had the opportunity to participate in presentations about multimillion dollar projects can easily see why IRR is preferred. Let's imagine you are concluding a brilliant pitch for a project that will require an initial outlay of $1 million. Would you rather tell senior staff that this project has an NPV of $78,882 or tell them that the project has a 10% cost of capital and a 14.49% rate of return? In this context, percentages sound much better and are much more compelling. Thus, while academics continue to favor the use of NPV, many in business tend to use IRR despite its numerous weaknesses.

So, which decision-making tools are financial managers using today? Several sources seem to indicate the same result. While IRR and NPV have been vying neck and neck for the most preferred method for several years, recent research seems to indicate that the Fortune 1000 community of chief financial officers (CFOs) has arrived at a consensus within their ranks that NPV is the preferred method of capital budget decision-making.

Ryan and Ryan (2002) state that capital budgeting is one of the most important decisions that a financial manager faces, and this remains as true today as it has been for many years. Studies conducted over the past forty years clearly indicate that financial managers have preferred methods such as IRR, non-discounted payback models, or accounting rate of return over net present value, although as previously stated, NPV is largely regarded by academics as a superior model for use in the capital budgeting process. It is clear that in more recent years, financial managers are utilizing multiple tools in the capital budgeting process. While NPV may be the first choice of many, decision makers are still cautious and are wise to check and recheck their results using different models, just to be as certain as possible about the calculations that form the foundation of their decision-making (Agarwal, 2013).

Net Present Value

Net present value, as a valuation methodology, seems to date back to at least the middle part of the 19th century when Karl Marx is said to have referred to it as fictitious capital. In present day economics, the theory of NPV use was formalized in the writings of Irving Fisher (1907) in his seminal work, "The Rate of Interest". By the 1950s, about the time Harry Markowitz was introducing his modern portfolio theory, NPV began to gain wider acceptance and began to be included in finance textbooks. Still in 1959, only 19% of firms surveyed used either NPV or IRR, while 68% preferred to use payback period or accounting rate of return, neither of which use the time value of money as their basis (Ross et al., 2019).

Net present value
Net present value is a DCF method for making capital budgeting decisions.

The NPV of an investment is the difference between the total of its discounted cash flows and its initial and overall cost. Operating under the premise of TVM, it assumes that a dollar or a euro received tomorrow rather than today will be worth a little less and buy even less in a year, two years, or five years.

If we are examining a potential project using the NPV method, we begin with the opportunity cost of capital. For example, let's assume that the money to be used for this prospective project is currently tied up in a firm's marketable securities, returning 10% annually. If this money is removed from securities for use in a project, then 10% becomes the return that is foregoing; it is the opportunity cost of capital that then becomes the discount rate. Alternatively, the weighted average cost of capital (WACC) method can be used to determine the opportunity cost of capital.

Next, the project's duration is calculated and one works towards gathering all the related investment cash flows. The process requires that each cash flow is discounted to the present, summed up, and netted against the initial outlay to arrive at the project's net present value.

The formula for calculating NPV is as follows:

$$\mathrm{NPV} = \mathrm{I}_0 + \frac{\mathrm{CF}_1}{(1+\mathrm{r})^1} + \frac{\mathrm{CF}_2}{(1+\mathrm{r})^2} + \ldots + \frac{\mathrm{CF}_\mathrm{n}}{(1+\mathrm{r})^\mathrm{n}}$$

where

CF	=	cash flow
r	=	discount rate
n	=	year
I_0	=	initial CF in year 0

Suppose that our company's finance committee is considering a proposed investment project that has the following cash flows:

- $\mathrm{I}_0 = (\$1{,}000{,}000)$
- $\mathrm{CF}_1 = \$500{,}000$
- $\mathrm{CF}_2 = \$400{,}000$
- $\mathrm{CF}_3 = \$300{,}000$
- $\mathrm{CF}_4 = \$100{,}000$

The firm uses a discount rate of 10%. The NPV can be calculated as follows:

$$\text{NPV} = (\ \$\ 1,000,000) + \frac{\$\ 500,000}{(1+0.10)^1} + \frac{\$\ 400,000}{(1+0.10)^2} + \frac{\$\ 300,000}{(1+0.10)^3} + \frac{\$\ 100,000}{(1+0.)^4}$$

$$= \ \$\ 78,819$$

$$.75$$

There are a few rules to keep in mind when using the NPV method:

- The initial outlay (I_0) is always negative.
- Projects with different costs of capital cannot be effectively compared.
- The discount rate used is a firm's opportunity cost of capital.
- A positive NPV increases a shareholder's wealth.

NPV uses zero as its benchmark decision criterion; accepting or rejecting a project is based on NPV and its relationship to zero:

- $\text{NPV} > 0 = \text{YES}$: An NPV greater than zero gives a financial green light to the project. However, bear in mind, there are usually other considerations to review prior to accepting a project. In general, if multiple projects have a NPV greater than 0, the project with the highest NPV should be selected.
- $\text{NPV} < 0 = \text{NO}$: An NPV less than zero means the project should be rejected without further consideration or discussion. An NPV less than zero reduces a shareholder's wealth.
- $\text{NPV} = 0 = \text{YES or NO}$: If the NPV equals zero, and the project is linked to another project with a fantastic NPV, then perhaps it should be considered. If the project with an NPV of zero serves the greater good of the community or the company and the firm doesn't lose any money, again the project may be worthy of consideration. However, if the NPV is zero and there are no additional gains associated with this project, this project is rejected.

Internal Rate of Return

Internal rate of return
The internal rate of return is a capital budget decision-making tool that uses DCF analysis.

The **internal rate of return** method is interesting to consider as it is very closely related to the NPV. The IRR is essentially the discount rate at which the NPV equals zero. One could say that the IRR is effectively the breakeven interest rate. Let's return for a moment to the formula for calculating NPV:

$$\text{NPV} = \text{I}_0 + \frac{\text{CF}_1}{(1+\text{r})^1} + \frac{\text{CF}_2}{(1+\text{r})^2} + ... + \frac{\text{CF}_\text{n}}{(1+\text{r})^\text{n}}$$

Now, imagine if you knew everything about this model except the value of r and you also knew that the NPV had to be zero at the interest rate you plug into the equation. This can be documented as

$$\text{NPV} = 0 = \text{I}_0 + \frac{\text{CF}_1}{(1+?)^1} + \frac{\text{CF}_2}{(1+?)^2} + \frac{\text{CF}_3}{(1+?)^3} + \frac{\text{CF}_4}{(1+?)^4}$$

Can you imagine trying to fill in all the question marks? It would be a rather time-consuming process as you would need to repeat the calculation multiple times, trying to land on an interest rate that is not too high or too low, repeating this process until eventually the inflows equal the outflow, the NPV is zero, and you have arrived at the correct IRR. Therefore, when completing IRR calculations, either a financial calculator or using an Excel-like program is necessary to make the process practical, rapid, and worthwhile.

Considering the example from the previous section, the IRR can be calculated as follows:

$$\mathrm{NPV}_{10\,\%} = \$\,78,819.75$$

$$\mathrm{NPV}_{20\,\%} = (\$\,1,000,000) + \$\,500,000 \cdot 1.2^{-1} + \$\,400,000 \cdot 1.2^{-2}$$

$$+ \$\,300,000 \cdot 1.2^{-3} + \$\,100,000 \cdot 1.2^{-4} = \left(\$\,83,719.14\right)$$

$$\mathrm{IRR} = \mathrm{r}_1 - \mathrm{NVP}_1 \cdot \frac{\mathrm{r}_2 - \mathrm{r}_1}{\mathrm{NVP}_2 - \mathrm{NVP}_1} = 0.10 - \$\,78,819.75$$

$$\cdot \frac{0.20 - 0.10}{(\$\,83,719.14) - \$\,78,819.75} = 14.85\,\%$$

The IRR would be 14.85% as compared to the 10% cost of capital. These results indicate that this would be an excellent project to undertake.

The IRR method does have some drawbacks. If a person is using a financial calculator and the cash flow changes direction more than twice, i.e., from cash inflow to cash outflow then back to cash inflow, the calculator will get very confused and provide either no answer at all or two answers. Also, once your calculator calculates the IRR for your project, it will assume that reinvestment continues indefinitely at the same rate as IRR. While this may occur on occasion, this is not always the case.

When using the IRR method for capital budgeting, the decision rule is simple: select projects where the IRR is higher than the cost of financing. In other words, if your cost of capital is 10%, don't accept projects unless the IRR is greater than 10%. The greater the difference between a firm's financing cost and the IRR, the more attractive a project becomes. The IRR decision rule is very clear and straightforward when independent projects are involved. However, in the case of mutually exclusive projects, the IRR decision rule can be somewhat less clear. In some cases, two mutually exclusive projects can have conflicting IRRs and NPVs, meaning that one project has a higher IRR but a lower NPV than another project. When such issues arise, the cross-over rate calculation, also known as the Fisher intersection, can be called upon to resolve this conflict. Despite these issues, IRR is still a useful and frequently-utilized tool because businesses intuitively feel that percentages sound more effective and impactful as measures of investment success.

Capital budgeting decision formulas, like any other business technique, are certainly not exact measures, but they do serve as a barometer whereby the investment decision-making process becomes less like a coin toss and more like an exercise in informed calculation.

SUMMARY

In the first section of this unit, capital budgets, specifically how they are constructed and how they are used for decision-making, was discussed. The construction of a firm's investment portfolio of projects and how these projects are selected for inclusion were considered.

In the second section of this unit, the incorporation of risk into the decision-making process, focusing on what risks are involved and how a financial manager goes about mitigating and minimizing these risks were reviewed.

In the third section of this unit, the NVP and the IRR were explained and illustrated.

BACKMATTER

LIST OF REFERENCES

Adams, D. (2017). *The best ways to incorporate risk into capital budgeting.* Chron.com. http://smallbusiness.chron.com/ways-incorporate-risk-capital-budgeting-15317.html

Agarwal, Y. (2013). *Capital structure decisions: Evaluating risk and uncertainty.* Wiley.

Bean, M. A. (2017). *Determinants of interest rates.* Society of Actuaries. https://www.soa.org/Files/Edu/2017/fm-determinants-interest-rates.pdf

Brigham, E. F. & Houston, J. F. (2019). *Fundamentals of financial management* (13th ed.). Southwestern-Cengage.

Cornett, M. M., Marcus, A. J., Saunders, A., & Tehranian, H. (2007). The impact of institutional ownership on corporate operating performance. *Journal of Banking and Finance*, *31*(6), 1771—1794.

Deloitte. (2017). *Executive compensation: Plan, perform and pay.* https://www2.deloitte.com/us/en/pages/financial-services/articles/executive-compensation-plan-perform-pay.html

Friedman, M. (1970, September 13). The social responsibility of business is to increase its profits. *The New York Times Magazine.*

Gallinger, G. W. & Healey, P. B. (1991). *Liquidity analysis and management* (2nd ed.). Addison Wesley.

Hayne, R. M. (1999). Estimating uncertainty in cash flow projections.*Casualty Actuarial Society Journal, Canadian Institute of Actuaries, and Society of Actuaries*, 69—132.

Milkovich, G. T. & Wigdor, A. K. (1991). *Pay for performance: Evaluating performance appraisal and merit pay.* Committee on Performance Appraisal for Merit Pay, National Research Council. https://www.nap.edu/read/1751/chapter/1

Mulcahy, D. (2013). Six myths about venture capitalists. *Harvard Business Review*, *91*(5), 80—83.

Pryor, K. (2016, January 12). *Here are the startup failure rates by industry.* Tech.co. https://tech.co/news/startup-failure-rates-industry-2016-01

Ross, S. A., Westerfield, R. W., Jaffe, J., & Jordan, B. D. (2019). *Corporate finance* (12th ed.). McGraw Hill.

Ryan, P. A. & Ryan, G. P. (2002). Capital budgeting practices of the Fortune 1000: How have things changed? *Journal of Business & Management, 8*(4), 355—364.

Statista. (2020). Treasury Yield Curve in the United States as of June 2020. https://www.statista.com/statistics/1058454/yield-curve-usa/

Zutter, C. J. & Smart, S.B. (2019). *Principles of managerial finance* (15th ed.). Pearson.

LIST OF TABLES AND FIGURES

IU Internationale Hochschule GmbH
IU International University of Applied Sciences
Juri-Gagarin-Ring 152
D-99084 Erfurt

Mailing Address
Albert-Proeller-Straße 15-19
D-86675 Buchdorf

media@iu.org
www.iu.org

Help & Contacts (FAQ)
On myCampus you can always find answers to questions concerning your studies.