CFA Institute®
CFA Program

# CORPORATE ISSUERS

CFA® Program Curriculum
**2025 • LEVEL 1 • VOLUME 3**

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# How to Use the CFA Program Curriculum

The CFA® Program exams measure your mastery of the core knowledge, skills, and abilities required to succeed as an investment professional. These core competencies are the basis for the Candidate Body of Knowledge (CBOK™). The CBOK consists of four components:

- A broad outline that lists the major CFA Program topic areas (www.cfainstitute.org/programs/cfa/curriculum/cbok/cbok)
- Topic area weights that indicate the relative exam weightings of the top-level topic areas (www.cfainstitute.org/en/programs/cfa/curriculum)
- Learning outcome statements (LOS) that advise candidates about the specific knowledge, skills, and abilities they should acquire from curriculum content covering a topic area: LOS are provided at the beginning of each block of related content and the specific lesson that covers them. We encourage you to review the information about the LOS on our website (www.cfainstitute.org/programs/cfa/curriculum/study-sessions), including the descriptions of LOS "command words" on the candidate resources page at www.cfainstitute.org/-/media/documents/support/programs/cfa-and-cipm-los-command-words.ashx.
- The CFA Program curriculum that candidates receive access to upon exam registration

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## DESIGNING YOUR PERSONAL STUDY PROGRAM

An orderly, systematic approach to exam preparation is critical. You should dedicate a consistent block of time every week to reading and studying. Review the LOS both before and after you study curriculum content to ensure you can demonstrate the

knowledge, skills, and abilities described by the LOS and the assigned reading. Use the LOS as a self-check to track your progress and highlight areas of weakness for later review.

Successful candidates report an average of more than 300 hours preparing for each exam. Your preparation time will vary based on your prior education and experience, and you will likely spend more time on some topics than on others.

## ERRATA

The curriculum development process is rigorous and involves multiple rounds of reviews by content experts. Despite our efforts to produce a curriculum that is free of errors, in some instances, we must make corrections. Curriculum errata are periodically updated and posted by exam level and test date on the Curriculum Errata webpage (www.cfainstitute.org/en/programs/submit-errata). If you believe you have found an error in the curriculum, you can submit your concerns through our curriculum errata reporting process found at the bottom of the Curriculum Errata webpage.

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# Corporate Issuers

LEARNING MODULE

# 1

# Organizational Forms, Corporate Issuer Features, and Ownership

## LEARNING OUTCOMES

| *Mastery* | *The candidate should be able to:* |
|---|---|
| ☐ | compare the organizational forms of businesses |
| ☐ | describe key features of corporate issuers |
| ☐ | compare publicly and privately owned corporate issuers |

## INTRODUCTION



This learning module introduces the Corporate Issuers topic area, which covers the fundamentals of how corporations are organized and governed and how they make operating, investing, and financing decisions. Financial analysts must have a strong understanding of corporate issuers because they are the largest type of issuer in financial markets globally; many analysts are focused entirely on analyzing and investing in their debt or equity instruments. In the first lesson of this module, we describe and compare the legal organizational forms of businesses, emphasizing their similarities and differences and important implications for investors. The second lesson focuses on the corporate organizational form and its key features, such as the separation of ownership and management, limited shareholder liability, access to financing, and tax issues. In the final lesson, we compare privately held and public corporate issuers, including the mechanisms of how corporate issuers go public and are taken private.

**LEARNING MODULE OVERVIEW**

- Businesses are legally organized as sole proprietorships, partnerships, or limited companies, which differ by several attributes, including legal identity, owner–manager relations, owner liability, taxation, and access to financing. In practice, organizational forms are jurisdiction specific; our focus is on common characteristics.
- The limited company form, often known as the corporation, offers advantages over the other two forms by improving the ability to raise capital, through limited shareholder liability, the separation of ownership and management, and fewer restrictions on the number of

owners and transferring ownership. In most jurisdictions, there are two types of limited companies: private limited companies and public limited companies.

- Private limited companies tend to have some restrictions on ownership but pass-through taxation like partnerships. Public limited companies have no ownership restrictions, but their income can be taxed at both the company and shareholder level. While public limited companies do not have to go public by selling their shares on an exchange, it is this form that is most suitable for becoming a publicly traded company.
- Corporate shareholders elect a board of directors that appoints executive management to operate the company. Shareholders effect change primarily through their ability to replace directors.
- Corporations that seek external financing in financial markets, known as corporate issuers, can utilize either public or private markets, and these choices have implications for the liquidity and price transparency of the company's securities, as well as its ability to raise future financing and the degree to which it must disclose information.
- Corporate issuers can change their status from privately held to publicly traded (or "listed") through a variety of mechanisms, including an initial public offering. Publicly traded issuers can be taken private through several mechanisms, including a leveraged buyout.
- Shareholders of corporate issuers include not only individuals and institutional investors, such as pension funds and mutual funds, but also governments, non-profits, and other corporations.

## LEARNING MODULE SELF-ASSESSMENT

These initial questions are intended to help you gauge your current level of understanding of this topic.

1. Fill in the two blanks below using the two of the following four possible terms:

   Sole proprietorship

   General partnership

   Limited partnership

   Public limited company (corporation)

   A _____ likely has the greatest access to financing, while a _____ likely has the least access to financing.

   **Solution:**

   A public limited company (corporation) likely has the greatest access to financing, while a sole proprietorship likely has the least access to financing. A primary difference across organizational forms is access to financing to fund investments. The sole proprietorship is limited to its individual owner's ability to invest her own money and borrowing capacity as an individual. At the other end of the spectrum, a public limited company can access a broad array of outside investors by issuing debt and/or equity securities.

2. Which of the following organizational forms provides for the *least* owner liability of business debts?

   **A.** General partnership

   **B.** Private limited company

   **C.** Sole proprietorship

   **Solution:**

   B is correct. In both the sole proprietorship and general partnership forms of organization, the owners are personally liable for all debts assumed by the company. In a private limited company, owner (shareholder) liability is limited to the value of their ownership stake.

3. Voting rights of a corporate issuer's shareholders generally refer to which of the following?

   **A.** The ability of the corporation to vote in political elections

   **B.** The direct ability to elect a chief executive officer of the company

   **C.** The ability to elect members of the company's board of directors

   **Solution:**

   C is correct. The voting rights of shareholders generally allow them to elect board members as well as vote on other matters outlined in the company's charter. The board of directors has the responsibility to hire (or retain) the company's chief executive officer (CEO); thus, voting rights do not give shareholders the *direct* ability to hire the CEO. Despite the status of a corporation as a distinct legal entity, this status does not provide voting rights in political elections.

4. Explain how the following situation reflects double taxation on the corporate organizational form: The corporation pays a 21% tax rate on pre-tax income of USD100 million. The corporation distributes USD10 million to its shareholders. Individuals pay a 20% tax on dividend income.

   **Solution:**

   The corporation pays USD21 million in income taxes at the corporate level and, collectively, the shareholders pay USD2 million in individual income taxes on dividends received. In total, USD23 million in income taxes were paid on the pre-tax income of USD100 million. Effectively, the USD10 million paid as dividends was taxed twice, first as business income and again as personal income.

5. True or false: The term "public" for a public corporate issuer means that the company is wholly or partially owned by a government.

   **A.** True

   **B.** False

   **Solution:**

   B is correct. The statement is false because while a public corporate issuer could be owned partly by a government, this condition is not necessary. The term "public" refers only to the fact that a company's equity securities are traded on an exchange and thus are available for investment by the public.

6. Fill in the blanks:

A public company's shares can be exchanged on a _____, while a private company's shares suffer from a lack of price _____.

**Solution:**

A public company's shares can be exchanged on a stock exchange, while a private company's shares suffer from a lack of price transparency.

# 2 ORGANIZATIONAL FORMS OF BUSINESSES

☐ compare the organizational forms of businesses

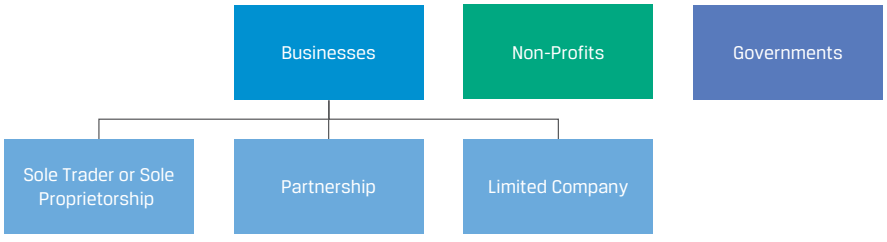
In most market economies, there are three general types of organization, each with distinct purposes, stakeholders, and governing legal frameworks: for-profit organizations, known as **businesses** or **companies**; not-for-profit non-governmental organizations, or simply non-profits; and governments.

The focus of this and subsequent modules are businesses, because financial analysts are important participants in the markets for their financial resources. However, non-profits and governments often are investors in businesses, which will be covered in later lessons. Governments as issuers of debt and other securities are covered in modules on fixed income.

## Organizational Forms of Businesses

Business owners choose a legal **organizational form** that defines how returns, risks, and ownership and operational responsibilities are distributed. There are three general forms common to most jurisdictions.

**Exhibit 1: Organizational Forms of Businesses**




The organizational forms of businesses differ by several attributes:

- *Legal identity:* Whether the business is legally considered a separate entity or person apart from its owners
- *Owner–manager relationship:* The relationship between the owner(s) of the business and those who manage the business

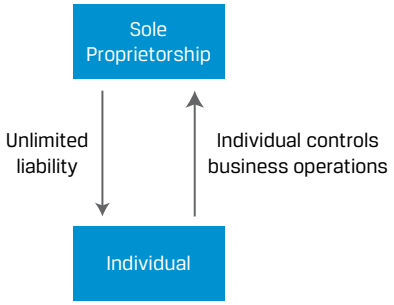
- *Owner liability:* The extent to which owners are personally legally liable for actions or debts undertaken by the business
- *Taxation:* The treatment of business profits or losses for tax purposes
- *Access to financing:* The ability to raise capital to fund expansion and distribute risks

Every jurisdiction has its own specific versions and variants of organizational forms, including different names for them. We are not attempting to provide an exhaustive treatment of jurisdictional specifics; rather, we provide the general and common attributes that analysts must know to ask the right questions in their own research on specific investment candidates and business cases.

## Sole Trader or Proprietorship

The simplest organizational form is the sole trader or proprietorship, shown in Exhibit 2. In a sole proprietorship, the owner provides the capital needed to start and operate the business and retains full control over management, while participating fully in the firm's financial returns and risks. In some jurisdictions, this form is the default form, requiring no formal legal registration, and is dissolved when the owner ceases business activity or dies.

**Exhibit 2: Sole Trader or Proprietorship**




An example of a sole proprietorship is a family-owned business. The individual owner usually uses savings or a personal loan to start the business and to run daily operations and retains full management control. The owner retains all return (profits), which is taxed as personal income, and is personally responsible for losses and obligations of the business, such as debts.

While sole proprietorships comprise the largest *number* of businesses in most market economies and are preferred by small business owners for their simplicity and flexibility, their growth is constrained by an owner's ability to access financing, assume risk, and serve as the sole owner.

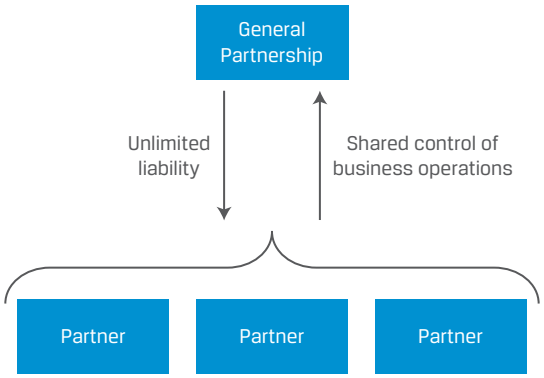
## Partnerships

Partnerships allow multiple owners to pool their resources and share business risk and return. There are three common types in most jurisdictions: general partnerships, limited partnerships, and limited liability partnerships.

A **general partnership**, shown in Exhibit 3, has two or more owners called partners or **general partners (GPs)**. General partnerships are like sole proprietorships, with the important distinction that they allow for additional resources to be brought into the

business by the additional owners, along with the sharing of business risk and return. Partnerships are often formed and governed by a written partnership agreement that outlines specific partner roles and responsibilities and the sharing of profits, losses, and obligations. However, a written agreement is not required; partnerships can be formed verbally or incidentally through actions.

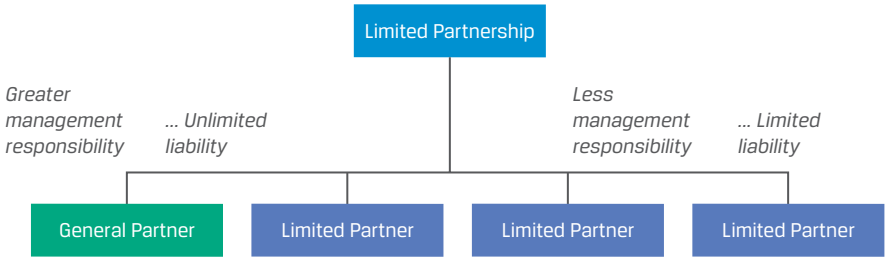
**Exhibit 3: General Partnership**




Examples of general partnerships include service businesses, such as builders or contractors, and joint ventures of multiple businesses. Such businesses have a small number of partners who usually contribute equal or similar amounts of capital. The partners bring complementary expertise, such as expertise in business development, financial acumen, operations, or legal/compliance, and they share responsibility in running the business. All profits, losses, and risks of the business are collectively assumed and shared by the partners. If one partner is unable to pay his share of the business's debts, the remaining partners are fully liable. As with a sole proprietorship, potential for growth is limited by the partners' ability to source financing and expertise and their collective risk tolerance because the partners are still personally liable for business losses and debt.

Exhibit 4 shows a type of partnership called a **limited partnership**, which addresses some of the shortcomings of general partnerships. In a limited partnership, there must be at least one general partner (GP) with unlimited liability that often manages the business. Remaining partners, however, called **limited partners (LPs)**, have limited liability, meaning their losses are limited to the size of their investment in the limited partnership, and may not have any management responsibilities. With limited liability, personal assets are considered separate and thus protected from the obligations of the business. All partners are entitled to a share of the profits and losses as specified in the partnership agreement, with GPs typically receiving a larger portion in exchange for their greater risk and personal liability. Partnership agreements are customized and negotiated by the partners and can be highly complex, with multiple partnership tiers that have varying profit and loss sharing arrangements.

**Exhibit 4: Limited Partnership**




In a limited partnership, while financial risk and reward are shared, such resources as capital and expertise are typically limited to what the partners can contribute, and limited partners usually grant managerial responsibilities to the GP, which entails risk. Partnership agreements are customized and often limit the transferability of ownership interest or expansion beyond a small group of partners. Like sole proprietorships, partnerships are typically **pass-through businesses** for tax purposes. Pass-through businesses are not taxed at the entity level, passing on all their profits or losses to the partners who are taxed personally. Business income from these entities is passed through and taxed regardless of whether income was actually distributed or retained in the partnership and reinvested.

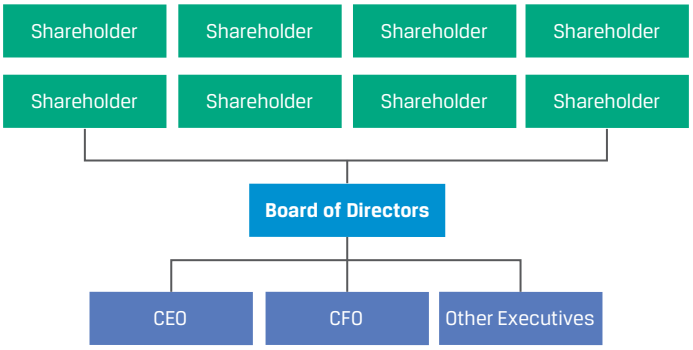
In some jurisdictions, there is a special form of limited partnership known as a **limited liability partnership (LLP)**, which does not require a general partner and is instead composed entirely of limited partners, thus resolving the risk of unlimited liability for the GP. Instead, all partners have limited liability, and the partners share in management responsibilities, typically appointing one or more partners as managing partners. In some jurisdictions, such as the United States, LLPs are permitted only for professional services firms, such as law, accounting, engineering, and architecture, and have limits on the number of partners and legal restrictions on equity investment.

## Limited Companies

Finally, a **limited company** has many similarities to limited partnerships but includes several more features that allow greater access to financing and expertise for growth. In many jurisdictions, there are two types of limited companies: private limited companies and public limited companies.

The **private limited company** is similar to a limited partnership. But the form includes limited liability for *all* owners, improved transferability of ownership interests by dividing ownership into units called **shares** that are more easily tradeable, and a distinction between owners and managers. Owners, known as **shareholders** or members, elect a **board of directors** to manage the company and authorize any distributions of profits to owners. Boards of directors typically appoint professional managers. Private limited companies are known by many names in different jurisdictions, including limited liability company (LLC) and S corporation in the United States, G.K. in Japan, SARL in France, GmbH in Germany, and company with limited liability in China.

**Exhibit 5: Organization of Limited Company**




In many jurisdictions, including the United States, private limited companies have legal limits on the number of owners and require votes for transferring ownership interest but are pass-through businesses (like LPs), meaning that taxes on business income are paid only at the shareholder, not company, level.

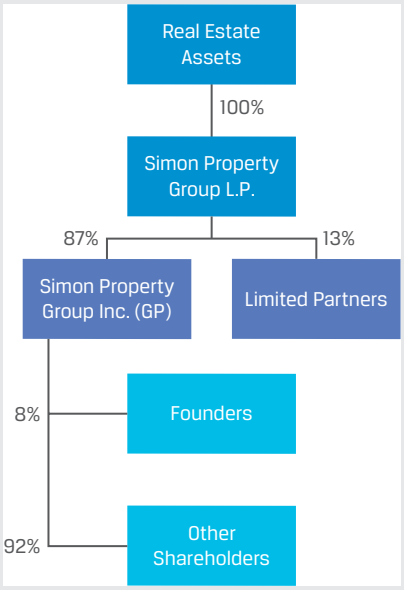
Finally, **public limited companies**, often called **corporations**, are similar to private limited companies but in most jurisdictions face no legal restrictions on the number of owners or ownership transferability, while still featuring limited liability and separation of ownership and management. For these reasons, public limited companies are the most suitable form for companies that seek to go public and are the dominant organizational form globally by revenues and asset values. However, public limited companies are disadvantaged in most jurisdictions compared to the other organizational forms in one respect: taxation. While other forms are taxed only on business income and loss at the owner (personal) level, public limited companies are taxed at the business level and *again* at the personal level if profits are distributed to shareholders. But if profits are retained and reinvested in the company, the shareholder level of tax does not apply, which makes this organizational form more suitable for companies intending to retain profits to fund investment.

Public limited companies are known by different names in different jurisdictions, including C-corporation in the United States, corporation in China, Société anonyme in France, AG in Germany, and K.K. or stock company in Japan. Examples are numerous, including most if not all well-known multinational companies.

**EXAMPLE 1**

## Simon Property Group

Simon Property Group ("Simon") is one of the largest owners of retail real estate in the world, with over $33 billion in assets. Its assets primarily include shopping centers in the United States and some retail properties in Europe and Asia. Simon is organized in two layers, each with a distinct organizational form.




The retail real estate assets are wholly owned by Simon Property Group L.P., a limited partnership. Its partners include Simon Property Group Inc., the general partner, and approximately 200 limited partners. The general partner has full managerial responsibilities and unlimited liability and has an ownership interest of 87% in the partnership.

Importantly, the general partner, Simon Property Group Inc., is itself a corporation. It is broadly owned by thousands of shareholders, including the founding family, which owns 8% of shares. Simon Property Group Inc. has a single asset: its partnership interest in Simon Property L.P.

Simon's structure allows co-investing with limited partners, full management control, and receiving most of the income from the assets, while benefiting from broad access to financing, because while the GP has unlimited liability, its *shareholders* have limited liability. Partnerships composed of entities with limited liability, such as corporations, are common because they shield the ultimate owners (in this case, shareholders of Simon Property Group Inc.) from business risk but allow for the sharing of profit and loss in the underlying business.

The key distinctions between sole proprietorships, partnerships, and public limited companies or corporations are outlined in Exhibit 6.

**Exhibit 6: Features of Sole Proprietorships, Partnerships, and Corporations**

| Feature | Sole Proprietor | General Partnership | Limited Partnership | Corporation |
|---|---|---|---|---|
| Legal Identity | No separate legal identity; extension of owner | No separate legal identity; extension of partner(s) | No separate legal identity; extension of partner(s) | Separate legal entity |
| Owner–Operator Relationship | Owner operated | Partners operated | GP operated | Board and management operated |
| Owner Liability | Sole unlimited liability | Shared unlimited liability | GP has unlimited liability; LPs have limited liability | Limited liability |

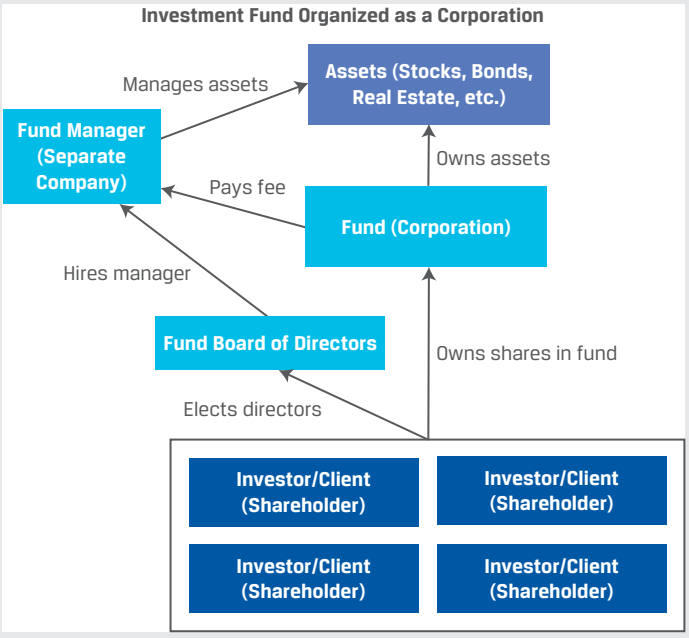
| Feature | Sole Proprietor | General Partnership | Limited Partnership | Corporation |
|---|---|---|---|---|
| Taxation | Pass-through: Profits taxed as personal income | Pass-through: Profits taxed as personal income | Pass-through: Profits taxed as personal income | Corporation income taxed; distributions (dividends) taxed as personal income |
| Access to Financing | Limited by owner access to capital | Limited by partner access to capital | Limited by GP/LP access to capital | Unbounded access to capital, unlimited business potential |

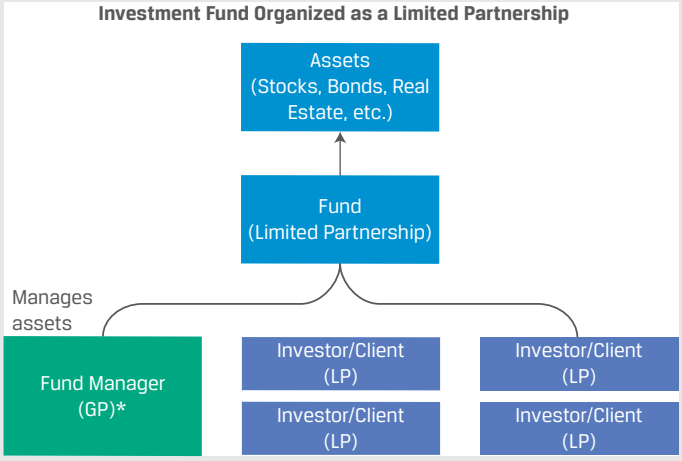
**EXAMPLE 2**

## How Are Investment Funds Organized?

Investment funds are pools of capital contributed by one or more investors for earning returns and managing risks. Investment funds are like other companies in a market economy: They hire professional management to invest capital, sometimes with additional borrowed money, in various assets to achieve return objectives subject to risk constraints. Major differences between funds and other companies include employing few people directly, primarily investing in financial instruments rather than operating assets, diversification of assets, and having specific rather than general objectives (e.g., exceed a benchmark rate of return).

Two common organizational forms for investment funds are corporations and limited partnerships, as illustrated in the following two diagrams. When organized as a corporation, fund investors hold shares that represent their proportionate interests in the pool of underlying assets. When organized as a limited partnership, fund investors hold partnership units that either represent their proportionate interests in the pool of underlying assets or varying interests of specific assets.




*In this structure, which will be discussed in greater detail later in the curriculum in lessons on alternative investment, fund managers typically create a wholly owned private limited company entity that serves as the GP to protect the fund manager from unlimited liability.

## QUESTION SET

1. Identify two features that distinguish a general partnership from a limited partnership.

   **Solution:**

   Owner–manager relationship: The management of a general partnership is typically shared by the general partners, while in a limited partnership, the general partner often exercises most managerial responsibilities.
   Owner liability of business debts and obligations: In a general partnership, the partners are personally legally liable for business debt and actions undertaken by the company. In a limited partnership, only the general partner faces personal liability; limited partners' liability is limited to their investment in the partnership.

2. Match the following business attributes with the most appropriate organizational form.

| Business Attribute | Organizational Form |
|---|---|
| A. Significant capital needs | 1. Limited liability partnership |
| B. Single owner, desires simplicity | 2. Corporation |
| C. Company provides professional services | 3. Sole proprietorship |

**Solution:**

A. 2. Corporation
B. 3. Sole proprietorship
C. 1. Limited liability partnership
A company with significant capital needs will want broad access to financing. In such a case, the corporate organizational form likely is most appropriate.
For the single owner who desires simplicity, a sole proprietorship is a suitable mechanism. In some jurisdictions, it is the "default" organizational form and does not require registration.
Professional service companies, such as a law firm, require the owners to have the skill sets to manage the company. A partnership structure is suitable, and a limited liability partnership structure allows for the partners to share managerial control without any partner assuming unlimited liability.

3. If a company owner expects to have a significant need for financing, which of the following organizational forms is the *least* appropriate choice?

**A.** Corporate
**B.** Partnership
**C.** Sole proprietorship

**Solution:**

C is correct. A sole proprietorship is limited in financing to the owner's funds and by the amount the owner can borrow personally. A partnership expands access to financing by adding owners, spreading risk, and adding borrowing capacity. The corporate form provides for the broadest access to financing because there are no limits to the number of shareholders and, with limited liability, shareholders are relatively more comfortable with the company borrowing.

4. Fill in the blanks in the following sentence:

_____ liability is a benefit to the corporate organizational form, but the form does face a possible disadvantage because of _____ taxation of distributed business income.

**Solution:**

Limited liability is a benefit to the corporate organizational form, but the form does face a possible disadvantage because of double taxation of distributed business income.

5. True or False: Partnerships are typically taxed at the entity level rather than at the individual partner level.

   **A.** True

   **B.** False

   **Solution:**

   B is correct. Partnerships are typically pass-through entities, meaning that business income earned by the partnership is passed through to the partners according to the terms of partnership agreement, and each partner is taxed at the personal level.

# KEY FEATURES OF CORPORATE ISSUERS

3

☐ describe key features of corporate issuers

The prior lesson addressed several advantages of the corporate organizational form over others, such as limited owner liability, owner–manager separation, and improved access to external financing. In this lesson, we explore the features of corporations in greater depth. Corporations that raise capital in the financial markets, known as **corporate issuers**, are essential for financial analysts to understand, because they raise more capital from investors than even governments worldwide.

## Legal Identity

A corporation is a legal entity separate and distinct from its owners formed through the filing of articles of incorporation with a regulatory authority. Corporations share many of the rights and responsibilities of an individual and may engage in similar activities. For example, a corporation can enter into contracts, hire employees, sue and be sued, borrow and lend money, make investments, and pay taxes.

Large corporations frequently have business operations in many different geographic regions and are subject to each regulatory jurisdiction where

- the company is incorporated,
- the business is conducted, and
- the company finances itself

and for such activities as

- registration,
- financial and non-financial reporting and disclosure, and
- capital market activities (issuance, trading, investment).

## Owner–Manager Separation

A key feature of most corporations is the separation between those who own the business (the shareholders) and those who operate it, as represented by the board of directors and management. In a corporation, shareholders are largely removed from the

day-to-day operations of the business. Instead, shareholders elect a board of directors that, in turn, appoints executive-level management, such as the chief executive officer, who is accountable for investing, financing, and operating decisions. Directors and managers have a primary responsibility to act in the best interest of shareholders and, indirectly, all stakeholders. The separation of ownership and management enables the corporation to obtain financing from a larger universe of potential investors who do not need (or want) to be involved in management.

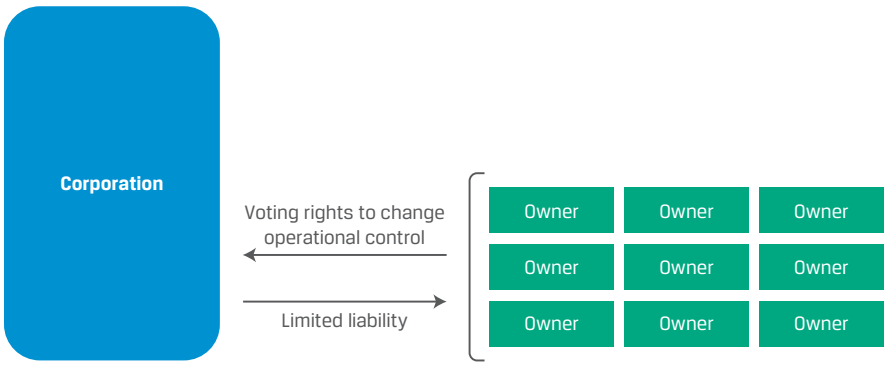
If a board or management does not act in shareholders' best interests, shareholders can enact change through exercising **voting rights** attached to their shares—for example, by voting to replace the board of directors—though this can take time. Influencing operations or changing management outright using engagement and voting rights is a strategy pursued by some investors and will be discussed in detail in later lessons.

## Owner/Shareholder Liability

Risk is shared among all shareholders, who face limited liability. That is, the maximum amount shareholders can lose is what they have invested in the company (i.e., the value of their shares can fall to zero but no further), and they are not responsible for the debts of the corporation unless they separately, specifically guarantee them.

Shareholders share in the risk and return of the company in proportion to their share ownership unless the corporate charter specifies differently. Unlike partnerships, ownership units are divided into shares of smaller unit size, allowing investors to more easily purchase or sell ownership interests as represented by their shares. For example, some issuers have more than 1 billion shares outstanding, meaning that ownership interests are divided into extremely small increments. Additionally, some corporations issue multiple types or classes of shares with different risk and return characteristics, which will be discussed in a later lesson. Exhibit 7 shows the relationship between owners and the corporation.

**Exhibit 7: Corporate Shareholder Liability**




## External Financing

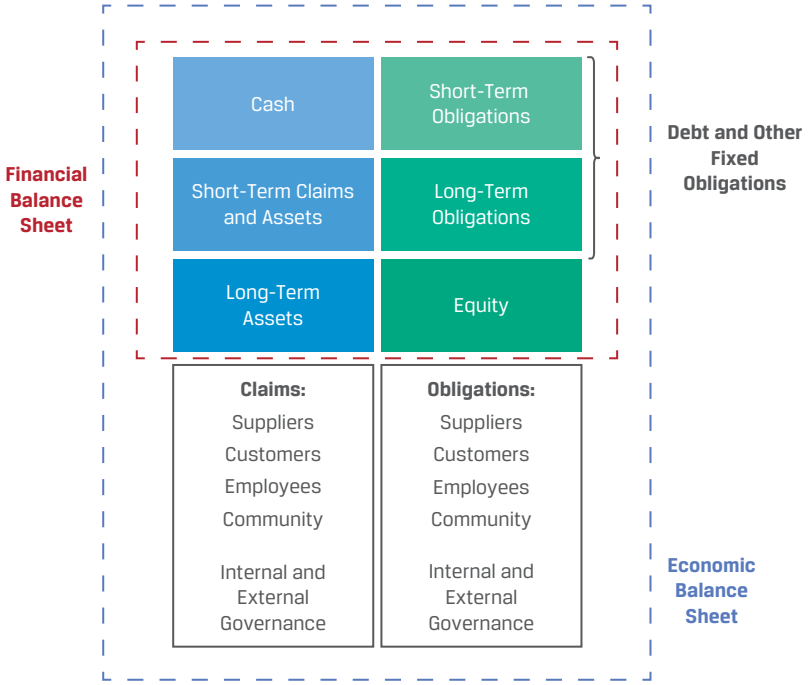
The separation between ownership and management allows corporations to access external financing more easily than other business structures because purchasing a share is the only requirement to become an owner. While more expensive to form and operate than other forms, the corporate form is typically preferred when capital needs

exceed what could be raised by an individual or small group of partners. Financing may be provided by individuals or by institutions, such as mutual funds, pension funds, banks, governments, non-profits, and other corporations.

Corporations are financed in two ways: with **equity**, by selling shares to investors or reinvesting profits, and with borrowings, or **debt**, in the form of loans, bonds, and leases. Equity investors (shareholders) have a right to receive any distributions of profits, known as **dividends**, while debt must be repaid on a pre-specified date in the future with interest. Equity or debt financing can be raised based on a private contractual agreement between an issuer and investors or in the form of a **security**, a standardized instrument that might be tradeable among investors on a public exchange, which will be covered in the next lesson.

Exhibit 8 shows the relationship between debt and equity on a corporation's balance sheet and how these are related to its assets.

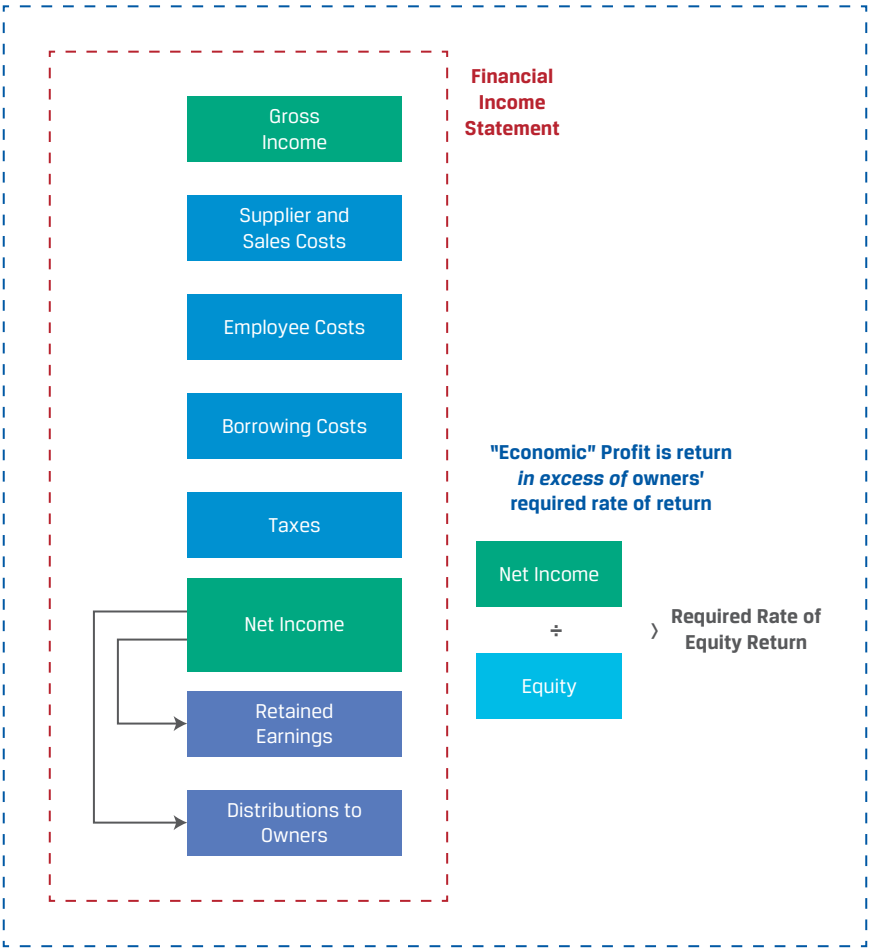
**Exhibit 8: Financial and "Economic" Balance Sheet**




While the "financial" balance sheet at the top of Exhibit 8 shows an issuer's assets (left-hand side) and its sources of financing (right-hand side) from short term to long term measured in financial terms, other intangible or hard-to-quantify assets or liabilities of a firm, such as the human capital associated with its employees and supplier and customer relationships, are included on what may be referred to as an issuer's broader "economic" balance sheet.

Similarly, Exhibit 9 shows an issuer's income statement and distinguishes between its financial income or net income once fixed obligations have been met and its "economic" profit, or return to a firm's owners in excess of what they could have earned elsewhere on different investments, known as their required rate of return on equity.

**Exhibit 9: Financial and "Economic" Income Statement**




## Taxation

While taxation for corporations can differ greatly from country to country, the corporation is ultimately subject to the tax authority and tax code governing the issuer's tax reporting, payment, and status. In most countries, corporations are taxed on their profits. Taxable profits are usually *not* the same as profits reported on financial statements, because tax codes and accounting standards differ.

In many countries, shareholders pay an additional tax on distributions (dividends) that are passed on to them. This is referred to as the **double taxation** of corporate profits. In some countries, shareholders do not pay a personal tax on dividends if the corporation has paid tax previously on the earnings distributed to shareholders or shareholders receive a personal tax credit for their proportional share of taxes paid by the corporation. In other countries, corporations pay no tax at all or may face different tax regimes within one country.

**EXAMPLE 3**

## Double Taxation of Corporate Profits

1. The French retail giant Auchan Holding generated pre-tax income of €838 million last year and paid corporate taxes of €264 million. Investors in France also pay a 30% tax on dividends received. If Auchan had fully distributed its after-tax income to investors as a dividend and all its investors are in France, what is the total tax rate as a percentage of Auchan's pre-tax income?

   **Solution:**

| | |
|---|---|
| Pre-Tax Income | €838 |
| Corporate Taxes (31.5%) | €264 |
| After-Tax Income | €838 – €264<br>= €574 |
| Distributed Dividend | €574 |
| Investor Dividend Tax (30%) | €574 × 0.30<br>= €172.2 |
| Total Tax Rate | (€264 + €172.2)/€838<br>= 52.1% |

   If the after-tax income of €574 million were paid to investors as a dividend, investors would pay €172.2 million in personal taxes on the dividends received. Total taxes paid would be €436.2 million (€264 million at the corporate level plus €172.2 million at the personal level), resulting in a total tax rate of 52.1%.

Despite the tax disadvantage illustrated in the prior example, the corporate form remains attractive for several reasons. While corporate shareholders are taxed on distributions, sole proprietors and partners are often taxed on all profits regardless of whether they are distributed as dividends (exceptions exist with allowances for profit reserves). This difference makes the corporate structure attractive to businesses that expect to reinvest undistributed profits in, for example, additional capacity for growth. Also, in jurisdictions where corporate tax rates are lower than personal income tax rates, it can be advantageous to "store" profits in the business.

**QUESTION SET**

1. Explain why the separation of ownership from management allows for corporate issuers to have greater access to capital.

   **Solution:**

   By separating ownership from management responsibilities, corporations can attract a broad range of owners, especially individuals and institutions, who do not want to be involved in management but would like to participate as investors.

2. Fill in the blanks in the following sentence:

   Limited liability of shareholders refers to the fact that the _____ amount shareholders may lose on their investment is the _____ paid to buy the shares.

   **Solution:**

   Limited liability of shareholders refers to the fact that the maximum amount shareholders may lose on their investment is the price paid to buy the shares.

3. In which of the following situations does the double taxation of the corporate organizational form matter the *least*?

   **A.** The company expects to pay all its after-tax income as a dividend to shareholders each year.

   **B.** The company's shareholders reside in a tax jurisdiction with a high tax rate on dividend income.

   **C.** The company is expecting to reinvest all its after-tax profits each year into growth of the business.

   **Solution:**

   C is correct. Reinvestment of all profits implies that the company pays no dividend to shareholders, and thus, no double taxation occurs.
   A is incorrect. Double taxation occurs because dividend income is taxed at both the corporate level and the shareholders' personal levels. If all after-tax profits are distributed, shareholders are taxed twice on the business's income.
   B is incorrect because a high tax rate on shareholders' dividend income received would be a strong impetus to retain profits, find alternative means of distributing profits, or change the organizational form.

4. Referring to the Auchan Holding example in this lesson, calculate the amount of the tax disadvantage (in euros) Auchan has in its corporate form compared to if it were organized as a limited partnership. Recall that Auchan's pre-tax profit was €838 million, the corporate tax rate was 31.5%, the personal income tax rate was 30%, and all after-tax profits were distributed.

   **Solution:**

   If Auchan were organized as a limited partnership, its pre-tax profit would be passed through to the owner(s) and taxes would only be paid at the personal level. Thus, total taxes paid would be €251.4 million (= €838 million × 0.30), or €184.8 million lower than total taxes paid under the corporate organizational form, and this tax of €251.4 million would be paid regardless of whether the partnership distributed the profit to partners.

5. Corporate issuers are characterized by all of the following *except*:

   **A.** Corporate income is taxed at both the corporate and personal levels.

   **B.** Owners do not need to be involved in management of the company.

   **C.** The owners of the corporation are not legally distinct from the corporation.

   **Solution:**

   C is correct. A corporation is a legally separate entity from its owners.

A is incorrect because corporate income is taxed at both the corporate and personal levels unless the company pays zero dividends.
B is incorrect because shareholders are not required to exercise management control over the company. While in some cases, a large shareholder may serve as senior management or be on the board of directors, most shareholders do not take on management responsibilities.

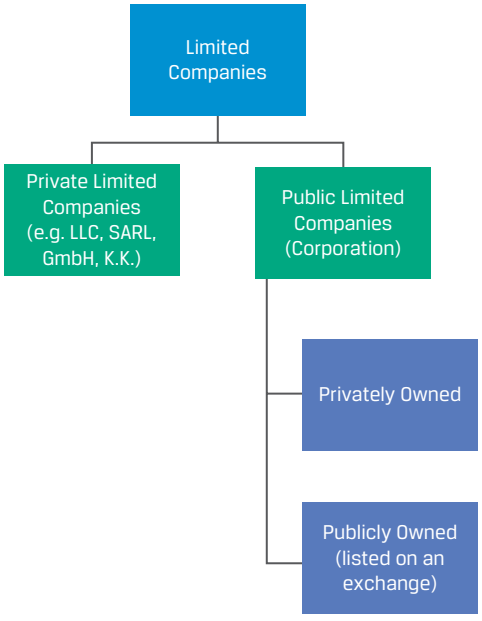
# PUBLICLY VS. PRIVATELY OWNED CORPORATE ISSUERS

4

☐ compare publicly and privately owned corporate issuers

For corporations, "public" and "private" (or "listed" and "unlisted") are often defined by whether the company's shares are listed and tradeable on an **exchange**. Somewhat confusingly, this is different from the discussion of private and public limited companies in an earlier lesson; most public or listed companies are public limited companies, but public limited companies are not obliged to list their shares on an exchange.

**Exhibit 10: Publicly vs. Privately Owned Limited Companies**




An exchange, which for equities is referred to as a **stock exchange**, is a rules-based, open access market venue where financial instruments are traded, with price and volume transparency accessible by issuers, investors, and their intermediaries. In addition to an exchange listing, primary features distinguishing public and private companies include

- the ability to transfer ownership between investors,

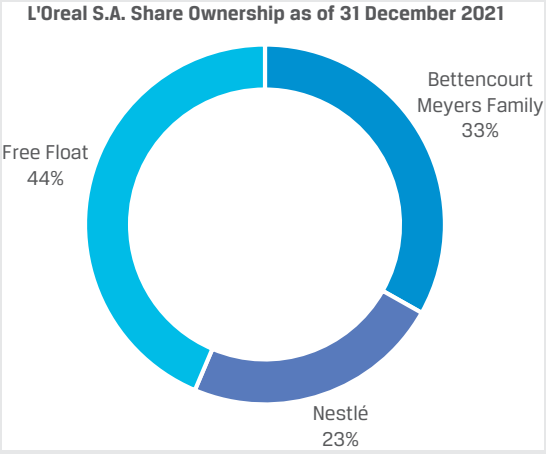
- the process of issuing new shares, and
- registration and disclosure requirements.

A **public (listed) company** has some or all of its shares listed and traded on an exchange. These shares may be widely held or involve a majority or controlling owner. Shareholders may include individuals, employees, institutions on behalf of individuals (e.g., pension funds), other corporations, governments, and non-profits. The shares that are traded actively—and thus are not held by insiders, strategic investors, or sponsors but are more freely available on exchanges—are known as an issuer's **free float**. Free float is often expressed as a percentage of total shares outstanding.

**EXAMPLE 4**

L'Oréal S.A., the world's largest beauty company, is a French société anonyme, or public limited company. It has been public since listing its shares on the Paris Stock Market (now Euronext) in 1963. As of 31 December 2021, L'Oréal had approximately 535 million shares outstanding.

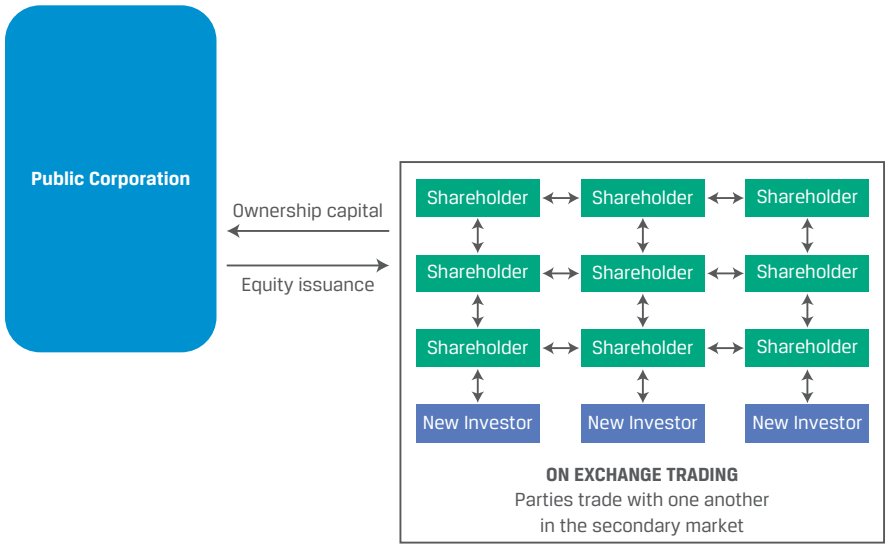
L'Oréal's shares are mostly owned by Francoise Bettencourt Meyers, her family, and Nestlé (a large, listed Swiss consumer goods company), and the remainder—the free float, approximately 44% of shares—is owned by institutional investors, individual investors, and L'Oréal employees.




## Exchange Listing, Liquidity, and Price Transparency

An exchange listing allows ownership to be more easily transferred because investors transact directly with one another in the secondary market on the exchange. An investor can become a shareholder in a public company by executing a buy order in a brokerage account or reduce an ownership position by executing a sell order. This can be done immediately for a relatively small number of shares in a liquid stock or take longer for many shares in a company whose shares trade infrequently. An exchange listing provides share price transparency, allowing investors to track how a company's value changes.

**Exhibit 11: Public Companies—Share Ownership Transfer**




In contrast, the shares of a **private company** are not listed (do not trade on an exchange), so no visible company valuation or share price transparency exists. This makes ownership transfer between investors far more difficult than for a public company. A private company shareholder seeking to sell shares must find a willing buyer, and the two parties must negotiate a price. Even then, the company may refuse the transfer of ownership. Private company shareholders must exercise patience. Their investment is usually locked up until the company is acquired for cash or shares by another company or it goes public.

Private companies do, however, provide benefits that may outweigh the downside of limited transferability of shares. Private companies typically have fewer shareholders, meaning that controlling owners and management are accountable to fewer stakeholders. Second, many early-stage companies are private. If successful, an investor in their equity could earn high returns. Finally, private companies have few disclosure requirements, which are costly to comply with, and there are few regulations and costs associated with raising financing in private transactions. While some claim that private status results in improved performance from greater focus on the long term, as opposed to focusing on quarterly earnings and other short-term measures associated with listed companies, the empirical evidence for short-termism among listed companies is thin at best.[1]

## Share Issuance

Corporate issuers may issue additional equity shares in the capital markets from time to time. For a public issuer, these shares can be traded in the secondary market once they're issued. In contrast, private companies finance smaller amounts in the primary market (private debt or equity) from fewer investors who typically have longer holding periods. Exhibit 12 and Exhibit 13 illustrate differences in public and private company share issuance and relative size of financing.

1 Mark J. Roe, "Stock Market Short-Termism's Impact," European Corporate Governance Institute (ECGI) Law Working Paper No. 426/2018, Harvard Public Law Working Paper No. 18-28 (22 October 2018).

**Exhibit 12: Public Companies: Share Issuance and Financing Access**

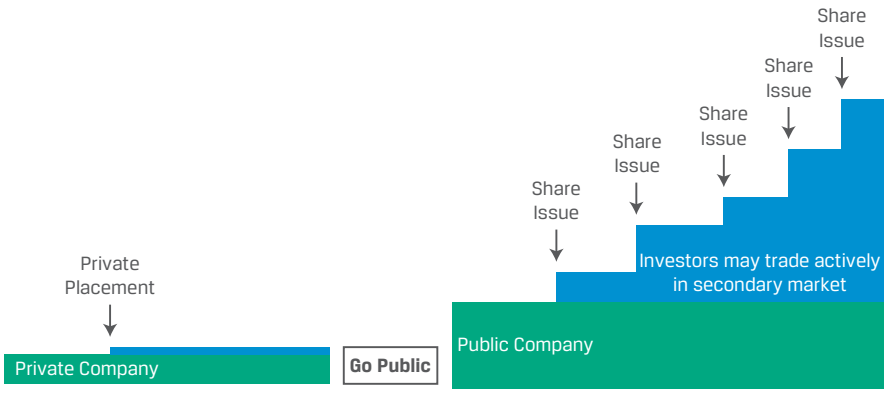
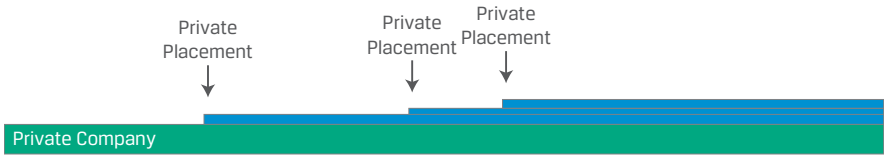



**Exhibit 13: Private Companies Share Issuance and Financing Access**




Private company investors are typically invited to purchase shares in the company through a **private placement** whose terms are outlined in a legal document (public companies can also conduct private placements, subject to regulatory constraints). Private company investors may be limited to qualified or so-called **accredited investors** or **sophisticated investors**, or those deemed to be able and willing by regulatory authorities to assume the greater risk of a non-public offering.

## Registration and Disclosure Requirements

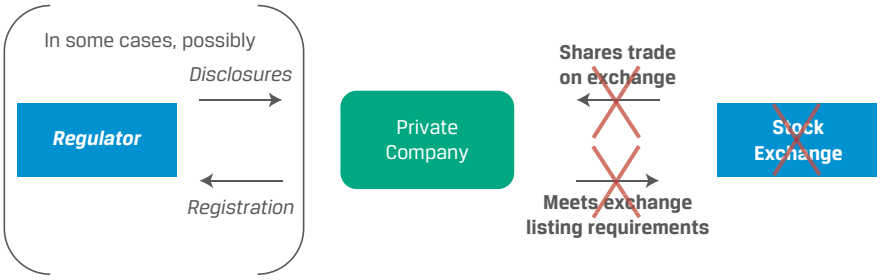
Perhaps the defining attribute of public companies is transparency and disclosure. Public companies must register with a regulatory authority and are subject to compliance and reporting requirements. For example, companies with securities listed on US exchanges (e.g., NYSE and NASDAQ) must file audited financial statements and other information on a quarterly basis with the Securities and Exchange Commission (SEC), which are then accessible to the public on the SEC's EDGAR (Electronic Data Gathering, Analysis, and Retrieval) system or on the company's website. In the European Union, financial statements must be reported in the EU's standardized ESEF (European Single Electronic Format) in the registry of domicile, at least semiannually. Public companies' annual reports regularly exceed 100 pages.

Besides qualitative information and financial reports, public companies must also disclose major changes in the holding of voting rights and other information that may affect security prices, such as management and director stock transactions. Significant share purchases and sales by management may contain information for investors, such as management's confidence in exceeding expectations or leading to questions about a company's business strategy.

Private companies are generally not subject to the same level of regulatory disclosures, although many rules pertain to both private and public companies (such as prohibitions against fraud and the obligation to file corporate tax returns). While not required, some private firms disclose pertinent information directly to owners as well as lenders, especially if they hope to be able to raise additional financing in the future. Exhibit 14 and Exhibit 15 compare typical entity relationships for public and private companies.

**Exhibit 14: Public Companies: Typical Entity Relationships**


**Exhibit 15: Private Companies: Typical Entity Relationships**




**KNOWLEDGE CHECK**

1. Match the applicable company characteristic in the left column with the category that best describes it (publicly held, privately held, both) on the right).

| | |
|---|---|
| Exchange listed | Publicly held/Privately held/Both |
| Owner/manager overlaps | Publicly held/Privately held/Both |
| Registered | Publicly held/Privately held/Both |
| Share liquidity | Publicly held/Privately held/Both |
| Non-financial disclosure required | Publicly held/Privately held/Both |
| Negotiated debt and equity sales | Publicly held/Privately held/Both |

**Solutions:**

| | |
|---|---|
| Exchange listed | Publicly held |
| Owner/manager overlaps | Privately held |
| Registered | Publicly held |
| Share liquidity | Publicly held |
| Non-financial disclosure required | Both |
| Negotiated debt and equity sales | Privately held |

Publicly held companies are most often listed on exchanges and required to register shares. Their shares are typically liquid with minor ownership overlap between management and shareholders. These companies must make both financial and non-financial disclosures, and both their debt and equity are typically traded on exchanges. Privately held companies are neither exchange listed nor usually subject to registration requirements. Share issuance is less widely distributed, creating a greater chance of ownership overlap between management and shareholders. Private company shares are illiquid. Generally, these companies are required to make only non-financial disclosures. The sale of their equity and debt is privately negotiated between company insiders and capital providers.

## Going from Private to Public

In the next example, we discuss a company's change from a private company to a public one.

**EXAMPLE 5**

### The Story of Tesla

In 1997, engineer Martin Eberhard and computer scientist Marc Tarpenning started a company called NuvoMedia to make an electronic book reader called the Rocket eBook, a precursor to Amazon's Kindle. Three years after it was founded, NuvoMedia was sold for $187 million.

Soon after, the two entrepreneurs formed a new company focused on making electric sports cars. They named the company Tesla Motors in honor of the inventor Nikola Tesla, forming a corporation in 2003. As a high-risk, capital-intensive endeavor, they used some of their new-found wealth and sought other cofounders with expertise in electric vehicles and fundraising capabilities. Elon Musk, an entrepreneur with a shared vision in the commercialization of electric sports cars, joined the team, as did Ian Wright and J. B. Straubel, the company's chief technical officer.

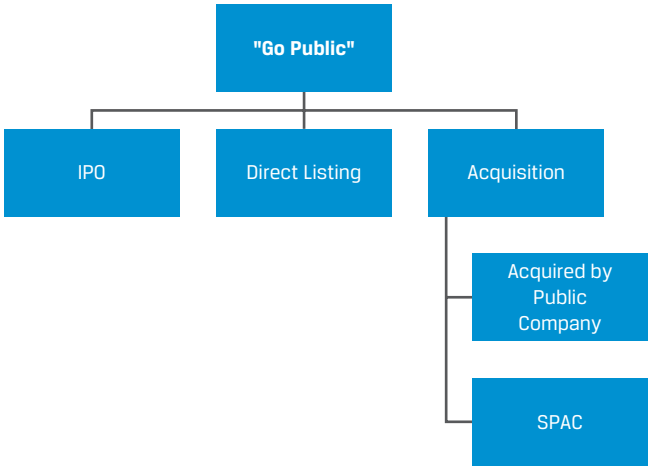
In addition to investing $6.3 million in Tesla in 2004, making him the largest shareholder, Musk helped raise money from venture capitalists. Musk became CEO in 2008, the year Tesla released its first vehicle, the Roadster. In 2010, Musk led Tesla's initial public offering, which raised $226 million. Over the next several years, Tesla shifted from sports cars to passenger vehicles, greatly expanding its vehicle production and product line, and in 2016, it also entered the photovoltaics market. In 2017, it changed its name from Tesla Motors to Tesla, Inc., to reflect its diversification into energy storage. The company continued global expansion

of automobile production, issuing several billion dollars in three secondary equity offerings in 2020. Tesla moved its headquarters from California to Texas and reached a $1 trillion market capitalization in 2021.

The evolution of Tesla, Inc., over less than 20 years of existence from a startup to a firm among those with the largest market capitalization globally was assisted by the flexibility of its organizational form as a corporation. Tesla was able to obtain significant financing from both debt and equity investors and retain key employees, including Musk, with equity-based compensation.

Private companies may become public companies ("go public") in three ways: IPO, direct listing, or acquisition.

**Exhibit 16: Three Ways Private Companies Go Public**




Tesla Motors became a public company using an **initial public offering (IPO)**. To complete an IPO, companies must meet specific exchange listing requirements and usually engage financial intermediaries known as investment banks to underwrite the sale of new shares. Proceeds from the sale of new shares go to the issuing corporation, and its shares begin trading on an exchange.

Private companies can also go public through a far less common method known as a **direct listing**, which differs from an IPO in two important ways. A direct listing does not involve an underwriter and no new shares are issued, so no capital is raised. Instead, the company simply lists existing shares on an exchange at a price determined by the market, and shares become available to the public as they are sold by existing shareholders. Although direct listings, compared with IPOs, may take place more quickly and at a lower cost, they are usually undertaken only by larger, more established companies with a recognized brand, as in the following example.

**EXAMPLE 6**

In early 2018, Sweden-based music streaming company Spotify Technology SA became the first foreign issuer to go public via direct listing on the New York Stock Exchange (NYSE). Founded in 2006, Spotify secured multiple rounds of venture capital equity financing and also raised debt prior to going public. Unlike other private companies seeking to go public, Spotify was a well-known brand and an established company, having entered the US market in 2011, with over

70 million global subscribers and over $5 billion in revenue during the prior year. When announcing its direct listing, Spotify said it chose this financing route because it could list without diluting existing shareholders, offer liquidity to existing shareholders, and provide equal access to buyers and sellers.

Alternatively, a private company may become public via an acquisition. This may occur indirectly if the company is acquired by another that is already public. In such cases, the acquiring company is usually larger, so an investor in the combined entity has minimal exposure to the private company that was acquired.

Another means of going public via acquisition is through a **special purpose acquisition company (SPAC)**, which is a transaction like the reverse merger that was popular in the 1990s and early 2000s. A SPAC is a shell company, often called a "blank check" company, that exists solely for the purpose of acquiring an unspecified private company sometime in the future. SPACs raise capital and go public through an IPO. Proceeds are placed in a trust account and can be disbursed only to complete an acquisition; otherwise, they must be returned to investors. SPACs are publicly listed, often specialize in a particular industry, and have a finite time period, such as 18 months, to acquire a private company before proceeds are returned to investors. While investors in a SPAC may not know which private company the SPAC will buy, they may have expectations based on the SPAC executives involved or comments these individuals have made in the media.

Once the SPAC completes the purchase of a private company, that company becomes public. SPACs are replacing the formerly used reverse merger process of going public, which typically used a dormant listed company with a previous business and trading history.

**KNOWLEDGE CHECK**

1. Match the method by which a private company can go public with the most closely related term.

   Going Public Method:

| | |
|---|---|
| IPO | "blank check," existing shareholder, underwriter |
| Direct listing | "blank check," existing shareholder, underwriter |
| SPAC | "blank check," existing shareholder, underwriter |

**Solution:**

| | |
|---|---|
| IPO | underwriter |
| Direct listing | existing shareholder |
| SPAC | "blank check" |

An IPO is facilitated by investment banks that underwrite, or guarantee, the offering. A direct listing does not involve an underwriter, and no new capital is raised. Instead, the company is simply listed on an exchange, and shares are sold by existing shareholders. A SPAC is a shell company often called a "blank check" company because it exists solely for the purpose of acquiring an unspecified private company sometime in the future.

2. True or false: Accredited investors are the capital providers qualified by regulators to invest in public companies. Justify your answer.

   **Solution:**

   The statement is false. Accredited investors are judged by regulators to have the sophistication for understanding and assuming the risks that come with investing in *private*, not public, companies.

## Going from Public to Private

Public companies may also decide to go private. A "take-private" or "go-private" process involves investors acquiring all of the company's publicly traded shares and delisting the company from the exchange. The investors must typically pay a premium above the current share price and often use debt to finance the acquisition. Go-private transactions are initiated by investors who believe that actions could be taken that would result in a higher valuation than that reflected in the current share price. Going private puts these investors in control and takes the company out of public view, which may be beneficial. These actions undertaken with greater private control might include management changes, selling assets, restructuring, or realizing cost savings that are expected to exceed the premium paid and financing costs. Once these actions are complete, investors may take the company public again several years later if they are able to achieve the desired valuation at that time.

Public versus private company trends can provide insight into market developments. For example, many emerging economies have a growing number of public companies, while the opposite is occurring in developed economies. Emerging economies are usually characterized by higher rates of growth, a transition to more open market structures, and foreign capital inflows. This is consistent with a growing number of listed companies on an emerging economy's domestic stock exchange.

A declining number of listed public companies in developed markets is a result of several factors. One cause is a higher number of mergers and acquisitions, which reduces the number of independent listed companies. Another is the growing number of private capital sources available, such as venture capital and private equity, allowing companies to access needed capital while avoiding the additional cost, regulatory burden, public scrutiny, and compliance costs associated with a public listing. Another factor is that many private companies simply choose to remain private because it preserves control by incumbent owners and management.

## The Varieties of Corporate Owners

Corporations offer a great deal of flexibility in ownership and objectives. As discussed earlier, shareholders include not only individual and institutional investors but also other corporations, governments, and non-profits, which may be controlling owners.

Governments sometimes create legally separate corporations while maintaining 100% or varying levels of ownership. For example, a sovereign government may establish a wholly owned corporation but create a board of directors and management structure, along with compliance and reporting requirements, such as the issuance of audited financial statements. This structure provides increased transparency to taxpayers and external investors (limited to debt investors in this case) as to whether the corporation achieves its objectives and generates a profit or a loss, which must be financed from the government's budget. This structure is used by the United States

Postal Service (USPS), while postal services in some countries, such as the Netherlands (KPN), the United Kingdom (Royal Mail), and Germany (Deutsche Post), are partly or fully investor owned.

Government-owned corporations exist in both developed and emerging economies, in some cases to supply public goods, such as infrastructure, which creates positive externalities, and in others to earn profits in a major domestic industry. For example, government-owned corporations are common in developed economies among postal systems, railways, and other infrastructure, such as airports. In emerging economies, state-owned or state-controlled enterprises often operate in a dominant domestic industry, such as basic commodities or energy. Financial intermediaries, such as banks, are also often first established as government institutions in these markets. As the economy seeks foreign and domestic capital from the private sector to expand and diversify, government companies are often gradually transferred to private sector ownership via an IPO, as in the following example.

**EXAMPLE 7**

## Saudi Aramco IPO

Nearly 50 years after oil was first discovered in Saudi Arabia, the government issued a decree creating the Saudi Arabian Oil Company (Saudi Aramco) to take control of and carry out petroleum and natural gas production in the country. To partially finance a plan to diversify the Saudi economy and reduce reliance on oil, the Saudi government announced its intention in 2016 to raise up to $100 billion on global exchanges by selling a 5% stake in the company, valuing Saudi Aramco at $2 trillion. Given IPO delays and a lower, $1.7 trillion valuation, in 2019, the Saudi government opted to scale down its plans, selling a 1.5% stake on the domestic Saudi stock exchange for $25.6 billion instead. Despite the smaller size, this transaction was the largest IPO to date and created the world's most valuable publicly traded corporation at the time.

In other instances, industry deregulation and/or technological change is the catalyst for a shift from government to private sector ownership. For example, the telecommunications industry shifted from government-owned monopolies across developed and less developed economies in the 1980s to many private sector corporations and varying degrees of government ownership today. This expanded access to capital has greatly enhanced the industry's ability to invest in rapidly evolving cellular technology. In the area of power generation, a similar shift from government to private sector has occurred, leading to greater diversification of energy production, as well as recently leading to investment in sustainable and renewable sources of energy, as in the case of Public Power Corporation S.A.

**EXAMPLE 8**

## Public Power Corporation S.A.

The largest electric power company in Greece, Public Power Corporation (PPC), was established as a state-owned and -managed corporation by the Greek government in 1950. Following Greece's entry into the EU, PPC lost its domestic power generation monopoly. In response to the European Electricity Directive separating power generation, transmission, and distribution, the company issued an IPO in 2001 for 34% of its shares and reduced government ownership further, to 51%, through subsequent share raises over the next few years. The company

is phasing out coal-fired power plants and shifting to renewable energy sources, and in 2021, it announced a further share capital increase of EUR750 million combined with a reduction in government ownership, from 51% to 34%.

Corporate shareholders also commonly include non-profits, such as foundations and endowments, some of which have grown to significant size. In addition to financial objectives, non-profits typically have societal and other non-financial responsibilities to their beneficiaries, as in the following example.

**EXAMPLE 9**

## Novo Nordisk Foundation and Novo Nordisk A/S

The Denmark-based Novo Nordisk Foundation is the largest private foundation in the world. It has a dual objective: to provide a stable basis for the commercial and research activities conducted by investee companies within and to support scientific and humanitarian purposes. Through its holding company, Novo Holdings A/S, the foundation is the largest and controlling shareholder of the for-profit, listed Danish biopharmaceutical company Novo Nordisk A/S.

**QUESTION SET**

1. A corporate issuer has the following attributes: It has no need for new equity financing, its debt needs are well satisfied through its existing credit facility with a bank, and it has a majority owner that exercises management control of the company. Is this corporate issuer more likely public or private?

   **A.** Public

   **B.** Private

   **Solution:**

   B is correct. The lack of need for new equity capital implies less reason to have exchange-listed stock, as does the ability to operate the business with the current debt capacity available under its existing credit facility. The majority owner exercising management control could possibly imply either public or private status, although combined with the first two attributes, it is doubtful that such a company would be public.

2. Which of the following does *not* reflect a primary difference between an initial public offering (IPO) and a direct listing?

   **A.** Whether or not employees own shares in the private company

   **B.** Whether or not new capital is raised

   **C.** Whether or not an underwriter is used

   **Solution:**

   A is correct. A company with employee shareholders can go public with either an IPO or a direct listing; employee shareownership does not differ by the choice of transaction.

   C is incorrect. An IPO uses an underwriter to manage the process and underwrite the purchase of new shares, while a direct listing does not.

B is incorrect. An IPO raises new capital for the listing company by issuing new shares to the public, while a direct listing does not; it lists only existing shares.

3. Describe two benefits of being a public company and two reasons that an issuer may instead prefer to be private company.

**Solution:**

Benefits of public status:

- Public listing allows the company to access capital from a broader range of investors, thus making larger capital raises more feasible.
- Public listing allows for price transparency for investors and ease of trading because of stock exchange listing. This may be especially beneficial if employees own significant stock, because listing creates a market for these shares.

Benefits of private status:

- Fewer disclosure requirements, thus reducing compliance costs and perhaps conferring competitive advantages because information can be kept private.
- Fewer stakeholders, thus allowing for improved access to communication channels.

4. Identify a major reason why a national government would be a 100% shareholder in a corporate issuer, and discuss two factors that may cause a national government to reduce its ownership in a state-owned company.

**Solution:**

A national government may choose to be the 100% owner of a company that provides public goods to the national economy, such as infrastructure and public safety, that would either not be provided by private means or be delivered inequitably or inefficiently. In some cases, a country may have natural resources, such as crude oil, and the national government may use a wholly owned corporation for production and to invest profits in ways that benefit its country.

Two possible reasons that a country may reduce its ownership in a state-owned company include (1) opportunities to bring in foreign capital and diversify the country's economy, such as the case highlighted by the Saudi Aramco example, and (2) a push for privatization and deregulation to potentially lower costs through competition and motivate innovation, as highlighted by the postal services examples.

5. A public company acquires a private company. Is the acquired company public or private after the acquisition? Explain the rationale for your choice.

**A.** Public

**B.** Private

**Solution:**

A is correct. Even though the acquired company will not have its own shares, the shareholders of the acquirer own the formerly private company, though the percentage of assets of the combined company attributable to

the acquired company may be small. The acquirer's board of directors and management now operate the newly acquired company.

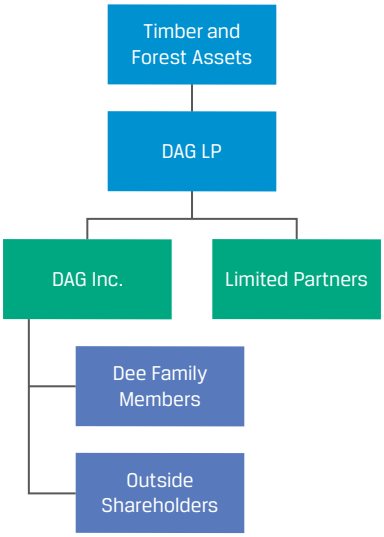
# PRACTICE PROBLEMS

## The following information relates to questions 1-5

Dee's Arbor Group Inc. (DAG Inc.) is a large international investor in timber and forest assets located on the North and South American continents. DAG Inc. is the general partner of DAG LP, a limited partnership that is the 100% owner of the timber and forest assets. DAG LP is controlled by DAG Inc. and its limited partners; the limited partners own a 20% stake in the partnership, while DAG Inc. holds the remaining majority stake.

DAG Inc.'s shares are listed on stock exchanges in the United States and Canada. DAG Inc. is organized as a special corporate form available in its jurisdiction in which it does not pay corporate income taxes so long as it distributes all of its net income as dividends to its shareholders and complies with other conditions. In the current and past fiscal years, DAG Inc. has complied with all of these conditions.

DAG Inc.'s shares are owned by various members of the Dee family, who hold several key senior management positions at DAG Inc. and DAG LP, and collectively they own 30% of the shares of DAG Inc. The remainder of DAG Inc.'s shares are owned by a variety of individual and institutional investors, none of whom own more than 5%. The following diagram shows the organizational structure of DAG Inc. and DAG LP.




1. What percentage of the timber and forest assets are effectively owned by the Dee family members in this scenario?

   **A.** 24%

   **B.** 30%

   **C.** 80%

2. Which of the following best describes the taxation of DAG Inc. and DAG LP?

   **A.** DAG LP pays tax based on its pre-tax income.

**B.** Shareholders of DAG Inc. pay tax based on dividend income.

**C.** DAG Inc. pays tax based on its pre-tax income.

3. Which of the following best describes DAG LP and DAG Inc.?

**A.** Neither DAG LP nor DAG Inc. is managed by a majority owner.

**B.** DAG Inc. has limits to its ability to raise new capital because of the dividend requirement on its corporate form.

**C.** DAG Inc. faces unlimited liability as the general partner, while DAG Inc.'s status as a corporation implies that its shareholders face limited liability.

4. What is a significant difference between the limited partners of DAG LP and the outside shareholders of DAG Inc.?

**A.** Managerial responsibilities

**B.** Taxation of income from the partnership

**C.** The ability to vote and replace members of the DAG Inc. board of directors

5. Which of the following rationales would be most consistent with the Dee family's choice to create this complex organizational structure instead of simply organizing as a limited partnership?

**A.** It provides management control without the need for majority ownership by the family, while maintaining limited liability.

**B.** The complex structure eliminates the potential for double taxation.

**C.** The complex structure avoids potential problems associated with outside investors exercising voting rights.

# SOLUTIONS

1. A is correct. The Dee family effectively owns 24% of the timber and forest assets. They own 30% of the shares of DAG (the publicly traded corporation), and they own 80% of the limited partnership (which owns the assets): 24% = 30% × 80%.

2. B is correct. DAG Inc. is organized as a special corporate form available in its jurisdiction in which it does not pay corporate income taxes. DAG LP, as a limited partnership, is a pass-through entity. DAG Inc. shareholders pay tax on dividend income.

   A is incorrect. DAG LP is a limited partnership. Partnership income is passed through to each partner, and the partners pay tax at the personal level.

   C is incorrect. DAG Inc. is organized as a special corporate form available in its jurisdiction in which it does not pay corporate income taxes.

3. C is correct. DAG Inc. is the general partner of DAG LP and thus has unlimited liability in the partnership. However, as a corporation, DAG Inc.'s shareholders have limited liability for its losses and obligations.

   A is incorrect. DAG LP is 80% owned by DAG Inc., the general partner that manages the partnership. DAG Inc. is 30% owned by the Dee family, who holds several key managerial positions.

   B is incorrect. As a public company, DAG Inc. can raise new equity by issuing shares on an exchange. The dividend requirement is not a binding limit on its ability to raise capital but, rather, might be an attractive feature to prospective investors.

4. C is correct. The limited partners of DAG LP are not shareholders of DAG Inc., so they do not have voting rights in the corporation. Additionally, because the limited partners own only 20% of the partnership, they also have little ability to remove DAG Inc. as the general partner. In contrast, outside shareholders own 70% of DAG Inc. and have voting rights. They could use their collective ownership to effect change in the management of DAG Inc.

   A is incorrect. Neither the DAG LP limited partners nor the outside shareholders of DAG Inc. have managerial responsibilities. The general partner has managerial responsibilities of the partnership, and the board of DAG Inc. has managerial responsibilities of the corporation.

   B is incorrect. Owing to the special corporate form of DAG Inc., both the corporation *and* the limited partnership are pass-through entities. Therefore, neither the partnership nor the corporation pays entity-level income taxes, but both the limited partners and shareholders are responsible for personal income taxes.

5. A is correct. The Dee family can effectively control management of the timber and forest assets with only a 24% effective ownership stake in the partnership. If the family had opted for a limited partnership as the organizational form, they likely would need a much higher ownership stake to assert management control and would have unlimited personal liability.

   B is incorrect. The double taxation problem is not an issue in the more complex structure, nor is it a problem in the partnership structure, because both are pass-throughs.

   C is incorrect. The complex structure potentially creates problems because of the existence of outside shareholders constituting a majority of votes.

LEARNING MODULE

# 2

# Investors and Other Stakeholders

## LEARNING OUTCOMES

| *Mastery* | *The candidate should be able to:* |
|---|---|
| ☐ | compare the financial claims and motivations of lenders and shareholders |
| ☐ | describe a company's stakeholder groups and compare their interests |
| ☐ | describe environmental, social, and governance factors of corporate issuers considered by investors |

## INTRODUCTION

1

Corporate issuers are financed with debt and equity. Debt and equity securities have different risk and return profiles for both issuers and investors. This learning module discusses these differences and their implications, while also considering the perspectives of a broader group of stakeholders beyond debtholders and shareholders. We introduce these groups and discuss potential conflicts of interest among them. Balancing stakeholder interests is important, as both issuers and investors have increasingly incorporated environmental, social, and governance factors into their decision-making processes. Analysts assess ESG factors to better evaluate issuers' expected future performance and risk profile.

**LEARNING MODULE OVERVIEW**

- Corporate issuers are financed with debt and equity. Debt is a financing source with a finite length, and interest and principal payments are promised on pre-specified future dates. Debtholders have a priority claim over shareholders to an issuer's cash flows and assets.
- Equity is a source of permanent financing, and no promises of repayments or distributions to shareholders are made. Equity is a residual claim on an issuer's cash flows and assets.
- From the perspective of an issuer, debt is riskier than equity. From the perspective of an investor, equity is riskier than debt. The proportion of debt in a firm's capital structure affects both the potential return and the risk of cash flows.

- Conflicts of interest may exist between debtholders and shareholders. Debtholders' payoff is limited to promised interest and principal payments, while shareholders' payoff is theoretically unlimited as increases in firm value over the value of debt accrue to shareholders.
- Besides debt and equity investors, corporate stakeholders include the board of directors, managers, employees, customers, suppliers, governments, society in general, and the environment. The stakeholder theory of corporate governance broadens the focus of corporate decision-making beyond that of the shareholder theory.
- Environmental, social, and governance (ESG) considerations are becoming more important to both investors and analysts. ESG factors affect firms' values and can present both risks and opportunities.

## LEARNING MODULE SELF-ASSESSMENT

These initial questions are intended to help you gauge your current level of understanding of this learning module.

Complete each statement by selecting the most appropriate term in parentheses.

1. _____ make permanent capital available to issuers. (debtholders, shareholders)

   **Solution:**

   Shareholders make permanent capital available to issuers.
   Debtholders is incorrect. Debt has a finite maturity, though it can be far in the future.

2. _____ have a residual claim against a firm's cash flows. (debtholders, shareholders)

   **Solution:**

   Shareholders have a residual claim against a firm's cash flows.
   Debtholders is incorrect. Debtholders have a *priority* claim over shareholders to a firm's cash flows and assets.

3. The shareholder theory of corporate governance is _____ than the stakeholder theory. (narrower, broader)

   **Solution:**

   The shareholder theory of corporate governance is narrower than the stakeholder theory.
   Stakeholders are groups and individuals with a vested interest in a firm's success and include, but are not limited to, shareholders.

4. ESG considerations are an explicit objective in the _____ theory of corporate governance. (shareholder, stakeholder)

   **Solution:**

   ESG considerations are an explicit objective in the stakeholder theory of corporate governance.
   The stakeholder theory seeks to balance the interests of shareholders with the interests of a broader group that relate to ESG considerations.

5. The estimated impact of ESG factors on corporate issuers' financial and share price performance has _____ over time. (decreased, remained the same, increased)

   **Solution:**

   The estimated impact of ESG factors on corporate issuers' financial and share price performance has increased over time. This impact is the result of changing consumer and investor preferences, increased regulations and taxes related to ESG factors, and the rising threat of climate change.

6. ESG factors are increasingly recognized as _____ by analysts. (quantifiable, qualitative)

   **Solution:**

   ESG factors are increasingly recognized as quantifiable by analysts. Historically, ESG factors were considered negative externalities with no direct effect on firms' financial statements. Increasingly, analysts are quantifying the effects of ESG factors and including them in firm valuation and investment decision-making.

# FINANCIAL CLAIMS OF LENDERS AND SHAREHOLDERS

# 2

☐ compare the financial claims and motivations of lenders and shareholders

## Debt Versus Equity

The prior module established that corporations finance their assets with debt and equity. We now turn our attention to the nature of these claims, their relative risk versus return for both issuers and investors, and potential conflicts of interest that may arise between lenders and shareholders.

### *Debt and Equity Claims*

Exhibit 1 shows the relationship between a corporation's assets and the claims of its debt and equity investors that finance them. Exhibit 2 shows that assets are used to generate income to pay interest to debtholders, while remaining profits are either reinvested or distributed to shareholders.

**Exhibit 1: Balance Sheet: Assets, Debt, and Equity**

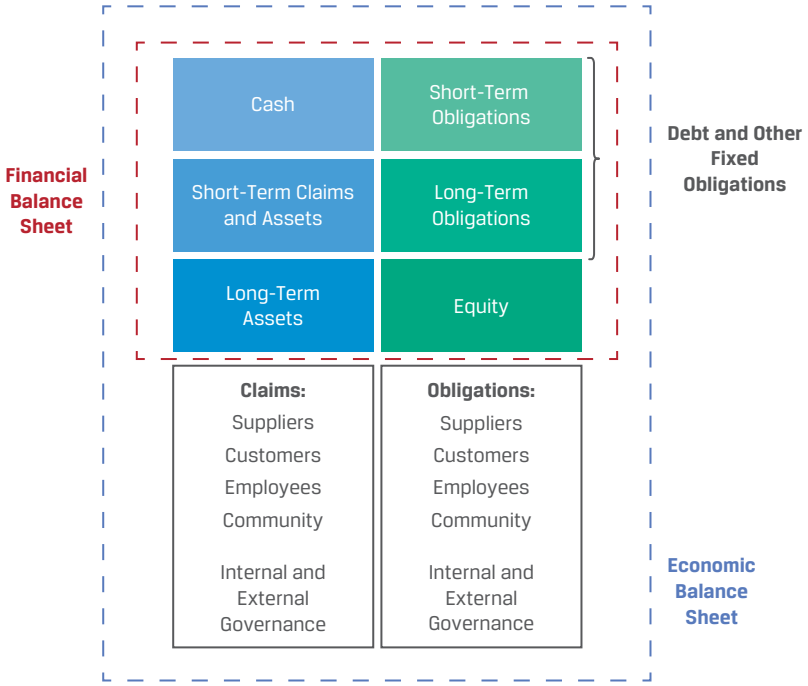
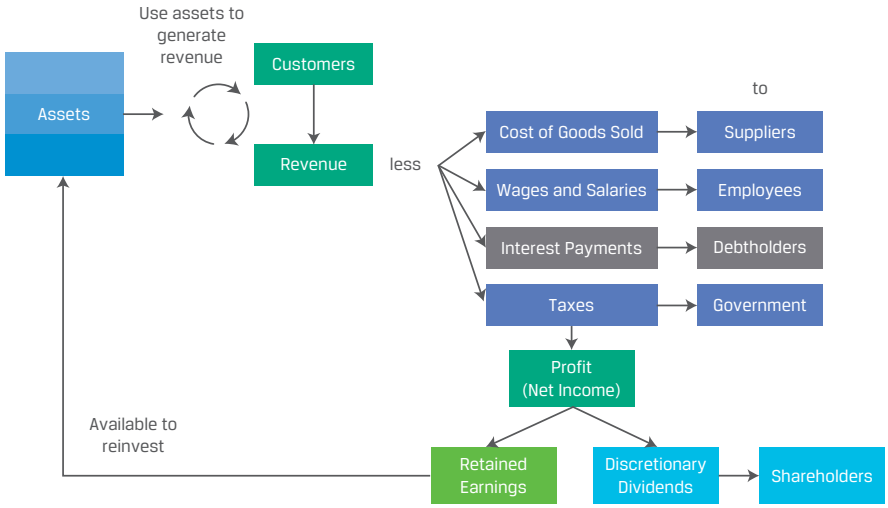



**Exhibit 2: Payments to Debt and Equity Investors**




Debtholders, or lenders, provide capital with a *finite* maturity. Issuers agree to make promised interest payments and to repay principal on pre-specified dates. Lenders have no decision-making power within the corporation, but debt contracts can be structured to protect lenders by imposing financial requirements and/or legal claims on certain assets of the corporation if the debt is not repaid as agreed. As shown in Exhibit 2, interest payments are paid before any distributions to equity investors and are a priority claim against a company's assets and cash flows.

Equity investors make *permanent* capital available to issuers; issuers generally do not commit to future dividends or repayments to shareholders. Rather, equity is a *residual* claim against company cash flows—whatever is left after expenses, investments, and debt payments. Cash distributions to equity investors are at the discretion of the board of directors. In contrast to lenders, equity investors have voting rights on important company matters such as choosing the board of directors, which appoints and oversees management.

In addition to interest payments to debtholders, other claims that must be satisfied before any shareholder distributions are made include payments to suppliers, employees, and governments (in the form of taxes). If a firm is dissolved and its assets are liquidated, these priority claims must be met before equity investors receive anything.

Because debt is a priority, fixed, and finite claim on assets and cash flows, it is a less costly form of financing for issuers: it is lower risk for investors than equity (though, as will be discussed, increasing debt increases risk for a company's equity investors). Another difference between debt and equity is that debtholder interest payments are usually treated as a tax-deductible expense, reducing taxable income, while dividends paid to shareholders are not.

**KNOWLEDGE CHECK**

1. Identify whether the attribute on the left is a feature of debt or equity.

| | |
|---|---|
| Legal repayment obligation | Debt, Equity |
| Residual asset claim | Debt, Equity |
| Discretionary payments | Debt, Equity |
| Tax-deductible expense | Debt, Equity |
| Finite term | Debt, Equity |
| Voting rights | Debt, Equity |

**Solution:**

| | |
|---|---|
| Legal repayment obligation | Debt |
| Residual asset claim | Equity |
| Discretionary payments | Equity |
| Tax-deductible expense | Debt |
| Finite term | Debt |
| Voting rights | Equity |

Whether offered in the form of a loan or a bond, debt involves a contractual obligation with priority interest and principal claims. Equity investors receive discretionary distributions and have a residual claim to assets. Equity dividend payments are not tax deductible. Debt requires contractual interest and principal payments, with interest expense being tax deductible for the issuer. Debt has a finite term and confers no decision-making power, while equity has an unlimited term and includes voting rights.

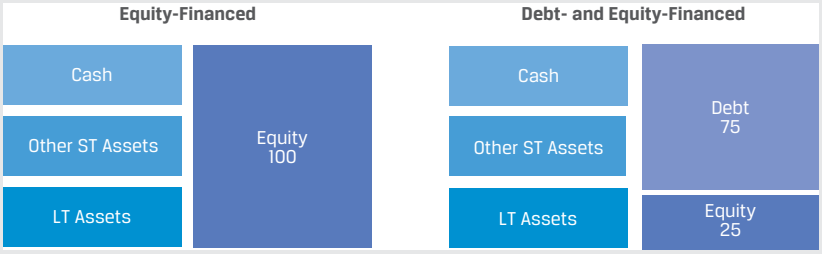
## Debt Versus Equity: Risk and Return

As established earlier, debtholder claims are fixed and finite, while equity owners have ongoing claims to a firm's current and future profits. While firms usually start with equity financing, those with more predictable cash flows may choose to borrow rather than sell additional ownership stakes to finance assets. The trade-offs between debt and equity financing for both issuers and investors are best shown by the following example.

**EXAMPLE 1**

### Equity- versus Debt-Based Balance Sheet Financing

Consider a firm with assets 100% fully financed by equity and an identical firm financed with 75% debt and 25% equity.




Assume that both firms have revenue, over a period, of 100 and operating expenses of 70. Ignore income taxes.

1. If we assume interest expense of 15 for the period, calculate net income for each firm and compare their returns on equity (ROE) for the period. Explain why ROE is higher when debt financing is used.

   **Solution:**

   Solve for net income by subtracting expenses from revenue, and divide net income by total equity to solve for the one-period return on equity:

| **Equity-Financed** | | **Debt- and Equity-Financed** | |
|---|---|---|---|
| Revenue | 100 | Revenue | 100 |
| Less: Operating Expenses | –70 | Less: Operating Expenses | –70 |
| | | Less: Interest Expense | –15 |
| Net Income | 30 | Net Income | 15 |
| Total Equity | 100 | Total Equity | 25 |
| **Return on Equity** | **30%** | **Return on Equity** | **60%** |

   Return on equity is higher when debt is used, because the interest cost of debt is lower than the firm's return on assets. Interest rate on debt = 15/75 = 20% versus return on assets = 30/100 = 30%.

2. Calculate returns on equity for the period if the firms experience a 20% increase and a 20% decrease in revenue (from Question 1), assuming expenses remain unchanged.

   **Solution:**

   Solve for net income and return on equity given the increase and decrease in revenue as follows:

**20% *Increase* in Revenue**

| Equity-Financed | | Debt- and Equity-Financed | |
|---|---|---|---|
| Revenue | 120 | Revenue | 120 |
| Less: Operating Expenses | –70 | Less: Operating Expenses | –70 |
| | | Less: Interest Expense | –15 |
| Net Income | 50 | Net Income | 35 |
| Total Equity | 100 | Total Equity | 25 |
| **Return on Equity** | **50%** | **Return on Equity** | **140%** |

**20% *Decrease* in Revenue**

| Equity-Financed | | Debt- and Equity-Financed | |
|---|---|---|---|
| Revenue | 80 | Revenue | 80 |
| Less: Operating Expenses | –70 | Less: Operating Expenses | –70 |
| | | Less: Interest Expense | –15 |
| Net Income | 10 | Net Income | **(5)** |
| Total Equity | 100 | Total Equity | 25 |
| **Return on Equity** | **10%** | **Return on Equity** | **(20%)** |

This example demonstrates the greater potential shareholder return when debt financing is used—but also the greater risk. In particular, the net loss in the downside case for the issuer financed with debt and equity raises the possibility that it may be unable to meet future debt payments. The variation in ROE for the company financed with debt and equity is significantly higher than the ROE variation for the all-equity-financed company.

From an issuer's perspective, debt financing is less costly but involves greater risks than equity financing, because it commits the issuer not only to interest and principal payments but also to any restrictions that lenders impose in the debt contract. The greater use of debt for a given amount of equity financing, known as **financial leverage**, increases the likelihood that the firm may be unable to meet its promised obligations to lenders, resulting in bankruptcy and potential liquidation. The firm faces no such risk in the case of equity financing, as shareholders are not promised any distributions or repayments.

From an investor's perspective, stocks are riskier than bonds because shareholders hold residual rather than fixed claims against the firm. As shown in Example 1, the profits available for distribution to shareholders can vary greatly, depending on the performance of the firm as well as financial leverage. If a corporation is successful, there is theoretically no limit to how much equity owners could earn on their investment. But if the firm performs poorly, owners can lose their entire investment if the firm is liquidated and debtholders take control of the assets. Due to their limited liability, however, shareholders cannot lose more than their initial investment.

While debt financing adds risk, equity holders often prefer it to an issuer raising additional equity to fund growth, because additional share issuance reduces the fractional firm ownership of existing shareholders, known as **dilution**. The downside of dilution may be offset by an expectation that the firm will generate enough incremental profit to compensate.

**EXAMPLE 2**

## Financing an Investment with Debt, Equity, or Cash on Hand

Consider the same equity-financed firm as in Example 1 and its choices for financing a new investment in long-term assets of 20. The pertinent details in the firm's initial balance sheet are shown below. Revenue before the investment is 100, expenses are 70 and are expected to remain unchanged, interest on new debt financing is 20%, and the return on the new investment is 30%. Ignore income taxes.

| Initial Balance Sheet | | | |
|---|---|---|---|
| Cash | 30 | | |
| Other assets | 20 | | |
| LT assets | 50 | Equity | 100 |

1. Compare the firm's returns on equity if it finances the investment with debt, shares, or cash on hand. Discuss the results of the comparison.

**Solution:**

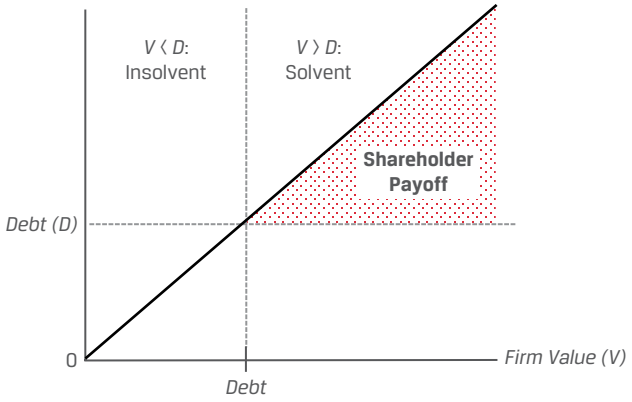
| Issue Shares | | Borrow | | Cash on Hand | |
|---|---|---|---|---|---|
| Cash 30 | | Cash 30 | | Cash 10 | |
| Other 20 | | Other 20 | Debt 20 | Other 20 | |
| LT assets 70 | Equity 120 | LT assets 70 | Equity 100 | LT assets 70 | Equity 100 |

| | Issue Shares | Borrow | Cash on Hand |
|---|---|---|---|
| Revenue | 106 | 106 | 106 |
| Less: Operating Expenses | 70 | 70 | 70 |
| Less: Interest | | 4 | |
| Net Income | 36 | 32 | 36 |
| Equity | 120 | 100 | 100 |
| ROE | 30% | 32% | 36% |

Financing the investment by issuing shares produces the lowest ROE due to the dilution from additional equity. Because the investment produces a return equal to the beginning ROE, there is no change in ROE. Financing with debt produces a higher ROE, because the interest rate on debt is lower than the return on the new investment and no new shares are issued, so equity does not increase. The highest ROE is produced by using cash on hand, which avoids both the increase in equity and the interest cost of new debt.

Exhibit 3 shows this shareholder payoff asymmetry over time as a function of firm value.

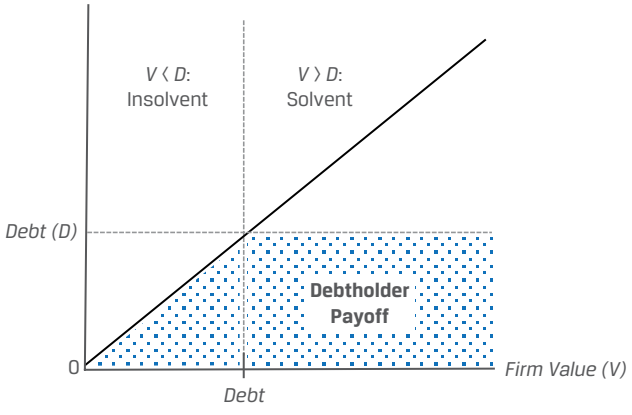
**Exhibit 3: Firm Value and Shareholder Payoff**




If the firm is solvent—that is, its value ($V$) exceeds the value of its debt ($D$)—then the value to shareholders is the positive difference between the firm's value and the value of its debt. Potential upside gains to shareholders are limited only by the future value of the firm. If a firm becomes insolvent, with a debt value greater than that of its assets ($V < D$), shareholders lose their entire investment and debtholders take control of the firm.

Exhibit 4 shows this asymmetry from the perspective of debtholders.

**Exhibit 4: Firm Value and Debtholder Payoff**




Lender returns are limited to promised interest and principal payments so long as the firm is solvent, regardless of firm performance and financial leverage. In contrast, if firm value falls below that of debt, the firm is declared insolvent and debtholders seek to recover their capital from remaining firm assets. Note that if we add the shaded areas for the shareholder payoff and the debtholder payoff, we get the diagonal line showing the total value of the firm as debtholders are owed promised payments and equity holders get the residual.

While equity owners seek to maximize firm value (to increase their payoff), bondholders seek to ensure the timely repayment of principal and interest, with the company maximizing its ability to meet its debt obligations. These perspectives are summarized in Exhibit 5.

**Exhibit 5: Investor Perspectives: Equity versus Debt**

| Attribute | Equity | Debt |
|---|---|---|
| Tenor | Indefinite | Term (e.g., 3 months, 10 years) |
| Return potential | Unlimited | Capped |
| Maximum loss | Initial investment | Initial investment |
| Investment risk | Higher | Lower |
| Desired outcome | Maximize firm value | Timely repayment |

**KNOWLEDGE CHECK**

1. Corporate equity and debt holders share the same investor perspective with respect to:

   **A.** maximum loss.

   **B.** investment risk.

   **C.** return potential.

   **Solution:**

   A is correct. For both equity and debt holders, their initial investment represents their maximum possible loss. The return potential is theoretically unlimited for equity holders, while it is capped for debtholders. Equity holders are exposed to a higher level of investment risk, as they hold a residual claim on the firm's cash flows that is lower in priority to the debtholders' claim.

2. **True or False:** Debtholders, unlike equity holders, have symmetric potential downside losses and upside gains.

   **A.** True.

   **B.** False.

   **Solution:**

   B is correct; the statement is false. Both debtholders and equity holders have asymmetric potential payoffs. For debtholders, potential upside gains are limited to interest and principal repayments, regardless of how high the value of the firm rises. In contrast, if the value of the firm falls below the value of its debt, debtholders can lose up to their initial investment.
   For equity holders, equity value is determined as the value of the firm less the value of its debt. Potential upside gains to shareholders are limited only by the future value of the firm, while shareholder losses, like those of debtholders, are limited to their initial investment.

## Conflicts of Interest among Lenders and Shareholders

While both lenders and owners are compensated from the same firm cash flows, the differing risk and return profiles of debtholders and shareholders create potential conflicts of interest.

Shareholders seek to maximize residual cash flows, or firm profits, once other obligations are met. Since these investors lose their entire investment in the case of insolvency but have unlimited upside return potential, they prefer that management pursue projects with greater calculated risks and higher potential returns while maximizing the use of debt financing. Additionally, shareholders can demand higher cash dividends, which can increase leverage, thereby increasing risk for debt investors. Example 1 illustrated the greater potential equity return associated with the use of leverage.

Bondholders seek to maximize the likelihood that they will receive timely interest and principal payments; they derive no benefit from greater leverage used to pursue projects with higher risks given limited upside. As a result, bondholders generally prefer that management invest in less risky projects that increase cash flow certainty. Since they have no voting rights over management decisions, bondholders seek to impose contractual restrictions such as requiring cash flow coverage for debt payments and/or limiting a firm's financial leverage. These restrictions prevent a firm from taking actions that may benefit shareholders but reduce the firm's likelihood of debt repayment in the future.

**QUESTION SET**

1. Which of the following groups has a residual claim on an issuer's cash flows?

   **A.** Employees

   **B.** Debtholders

   **C.** Shareholders

   **Solution:**

   C is correct. Shareholders are residual claimants to a firm's cash flows and receive discretionary distributions after priority claims (e.g., employee compensation, supplier payments, interest expenses, and taxes) are met.

2. Which is more sensitive to changes in firm value: debt or equity? Explain your answer.

   **Solution:**

   Equity is more sensitive to changes in firm value, because debtholders have fixed, priority claims while equity holders have residual claims whose value is contingent on future firm profits. On the one hand, if firm value increases, residual value accrues to shareholders while debtholder payments do not change. On the other hand, reductions in firm value fall first on equity holders. If firm value falls below debt value and the firm is declared insolvent, equity holders typically receive nothing and debtholders take control of the firm and often seek to liquidate its assets.

3. Interest payments to debtholders are:

   **A.** residual payments.

   **B.** at the discretion of the board.

**C.** deductible for corporate income tax purposes.

**Solution:**

C is correct. Interest payments on debt are tax deductible for the firm.
A is incorrect. Debtholders have priority claims on the cash flows of the firm over shareholders.
B is incorrect. Interest payments are contractual, not discretionary like shareholder dividends.

4. All of the following are characteristics of debt *except*:

**A.** limited liability.

**B.** unlimited return.

**C.** priority in payment.

**Solution:**

B is correct. Shareholders, not debtholders, have the potential for unlimited return.
A is incorrect. Debtholders and shareholders both have limited liability.
C is incorrect. Debtholders have a priority claim over shareholders to a firm's cash flows.

5. All else being equal, a jurisdiction increasing its corporate income tax rate would most likely lead to _____ (lower/higher/the same) use of debt financing by issuers.

**Solution:**

Higher. An increase in the corporate income tax rate would likely result in a higher mix of debt. Interest payments on debt are tax deductible, so an increase in the tax rate would reduce the after-tax cost of debt financing, all else being equal, thus making debt financing relatively more attractive than equity financing.

# 3 CORPORATE STAKEHOLDERS AND GOVERNANCE

☐ describe a company's stakeholder groups and compare their interests

The prior lesson addressed the claims, relative risks and returns, and potential conflicts among debtholders and shareholders. Corporations operate in a complex ecosystem where the interested parties are a much broader group than shareholders alone. These parties depend on the company—and the company depends on them—for economic success, though their short- and long-term goals may be in conflict. A corporation's ability to maximize shareholder return and meet debt and other obligations may be either compromised or enhanced by the actions of these parties, known as **stakeholders**. A stakeholder is any individual or group with a vested interest in a company. Financial analysts must understand and incorporate these groups and their actions into their assessment of a firm's expected performance and risk profile.

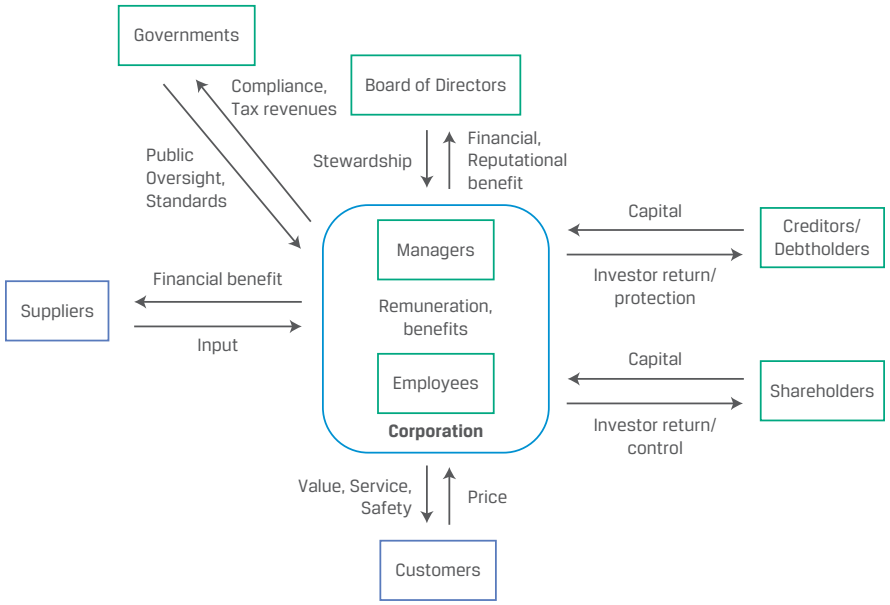
Primary stakeholder groups and their roles in a corporation include:

- debt and equity investors;
- a board of directors that supervises the corporation's activities;

- managers who execute the board's strategy and run operations;
- employees who provide human capital for the firm's operations;
- customers who demand the company's products and services;
- suppliers who provide the raw materials and goods and services not generated internally, including functions that are outsourced;
- governments that establish rules and regulations, collect taxes, and provide a variety of public goods and services; and
- other individuals and the non-human environment affected by the company's products and processes.

Exhibit 6 illustrates the primary stakeholder groups and describes their involvement with the corporation.

**Exhibit 6: Key Stakeholder Groups**




## Shareholders versus Stakeholders

In a typical corporation, shareholders elect the board of directors, which hires managers to serve the interests of shareholders. The interests of other parties—such as creditors, employees, customers, and even society—are considered only to the extent that they affect shareholder value. This concept is referred to as the **shareholder theory of corporate governance**.

In contrast, the **stakeholder theory of corporate governance** suggests that corporate governance should consider *all* stakeholder interests, not just those of shareholders. For example, it is often suggested that environmental, social, and governance (ESG) considerations be an explicit objective of the board of directors and management. This approach gives rise to several challenges, including:

- complexity of balancing multiple objectives;
- defining, measuring, and balancing non-shareholder objectives;

- competing globally if competitors do not face similar constraints; and
- direct costs of adhering to higher ESG standards.

**SHAREHOLDER VERSUS STAKEHOLDER THEORIES OF CORPORATE GOVERNANCE**

The shareholder and stakeholder theories of corporate governance are not necessarily at odds with each other. In a famous 1970 essay espousing the shareholder theory, "The Social Responsibility of Business Is to Increase Its Profits," economist Milton Friedman noted as much, particularly if management is taking a long-term perspective:

> "It may well be in the long-run interest of a corporation that is a major employer in a small community to devote resources to providing amenities to that community or to improving its government. That may make it easier to attract desirable employees, it may reduce the wage bill or lessen losses from pilferage and sabotage or have other worthwhile effects. Or it may be that, given the laws about the [tax] deductibility of corporate charitable contributions, the stockholders can contribute more to charities they favor by having the corporation make the gift than by doing it themselves, since they can in that way contribute an amount that would otherwise have been paid as corporate taxes."[1]

We turn our attention next to describing a corporation's primary stakeholder groups.

## Investors

The prior lesson distinguished between shareholders' residual claims to corporate cash flows and debtholders' finite, fixed claims, which are senior to those of shareholders.

Shares typically entitle their owners to certain rights, including the exclusive right to vote on such important matters as the composition of the board of directors, mergers, and the liquidation of assets. While all debtholders usually establish issuer requirements and lender rights at the inception of a debt contract, **private debtholders** and public debtholders (**bondholders**) differ in several ways.

Private debtholders, such as banks and other institutions that offer loans, credit facilities, and leases, often hold a debt investment to maturity. They typically have direct access to company management and non-public information, which lowers information asymmetry. Since an individual bank or private lender can be a critical source of financing, particularly for a small or mid-sized company, they may have great influence over the company. The relaxation of debt restrictions and extension of further credit—or refusal to do so—by a single private lender can be far more impactful for companies with limited access to capital markets than for those with broad debt market access.

Private lenders may also have a wider variation in their risk appetite, approach, behavior, and relationships with borrowers. For example, a commercial real estate lessor may primarily care about receiving lease payments, the upkeep of the real estate, and whether it can renew or re-lease the asset at attractive rates. In other cases, a lender

1 Friedman, Milton. "A Friedman Doctrine—The Social Responsibility of Business Is to Increase Its Profits," *The New York Times*, 13 September 1970, https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html?smid=url-share.

may hold *both* debt and equity in a company or take a more equity-like approach to evaluating the business. Finally, some private lenders specialize in lending to businesses as they either approach, or are in, bankruptcy.

Bondholders, which are often institutional investors and asset managers, rely on public information such as financial statements to make investment decisions. These investors usually have little to no influence over an issuer's operations, relying instead on the terms of the debt contract negotiated at inception. While it is relatively more difficult to gain the consent of bondholders versus private lenders to change the terms of an existing agreement, bondholders can sometimes exercise significant influence if a firm in financial distress must restructure outstanding public debt.

## Board of Directors

A company's board of directors is elected by shareholders to advance shareholders' interests. The board is responsible for hiring the CEO and monitoring company and management performance. Boards often include both **inside directors** (including founders and current and former managers) and **independent directors** (no material relationship with the company, including employment, family ties, and so on), who may better represent the interests of minority shareholders. Major stock exchanges maintain corporate governance standards with which listed companies must comply, and these standards often include director independence requirements. For example, the London Stock Exchange requires at least half of the directors of listed companies to be independent, and the Singapore Exchange listing rules state that "there should be a strong and independent element on the board" with a majority of non-executive directors. Besides independence, corporate governance standards also typically require boards to include a diversity of backgrounds, expertise, and competencies. Director duties are mandated by laws that vary by jurisdiction, but directors are usually required to display a high standard of prudence, care, and loyalty to the company.

While the single-tier board structure is prevalent in the USA and the UK, a two-tier corporate governance structure is common in Continental Europe and is legally mandated in some countries (e.g., Germany). Under the two-tier model, a separate **supervisory board** is elected to oversee the activities of the board of directors. The supervisory board consists solely of independent directors from among corporate stakeholders, including shareholders, employees, labor unions, the public at large, and, in some cases, government representatives for firms with state ownership. While the board of directors remains responsible for strategy and management oversight in the two-tier system, the supervisory board may appoint or dismiss board members and must approve selected board decisions, among other duties.

Although most boards hold simultaneous elections for specific terms (e.g., all board members elected annually or bi-annually), some companies have **staggered boards**, with directors divided into groups elected separately in consecutive years. It takes several years to replace a full staggered board, which limits the ability of shareholders to effect a major change of control at the company. However, staggered board elections allow for continuity without constant reassessment of strategy and oversight by new board members, which may introduce short-termism into company strategy. Staggered boards are common in Australia and several European countries.

## Managers

Led by the chief executive officer (CEO), managers are responsible for determining and implementing the strategy of the corporation, under the oversight of the board of directors, as well as day-to-day operations. Senior executives and other high-level managers are usually compensated via a base salary in cash and an annual bonus that

often involves cash and stock, as well as a multi-year, stock-based incentive plan and other benefits. In addition to preventing manager attrition, compensation structures are designed to align manager interests with those of shareholders and other stakeholders.

## Employees

A corporation relies on the labor and skills, or **human capital**, of its employees to provide its goods and services. In return, employees typically seek competitive compensation and benefits, development opportunities, job security, and a safe and healthy work environment. In some industries and/or countries, workers join labor unions to collectively negotiate compensation, benefits, working conditions, and other matters with management. Employees may have an equity investment in their employer through equity-based participation plans (such as profit sharing, share purchases, or stock options) beyond their financial interests as employees. For most employees, equity ownership is a minor component of total compensation but can be significant in some cases.

## Customers

Customers expect a company's products or services to satisfy their needs at a reasonable price while meeting applicable quality and safety standards. Depending on the product or service and their relationship with the company, customers may seek ongoing support, product guarantees, and after-sale service. While major corporate customers may exercise significant influence over a company, the loyalty and satisfaction of retail customers are also often correlated with revenue and profit growth. The environmental or social impact of products is of growing importance to customers. For example, brand boycotts and shareholder actions in response to negative environmental and social effects, as well as product-related controversies, may adversely affect sales and profits.

## Suppliers

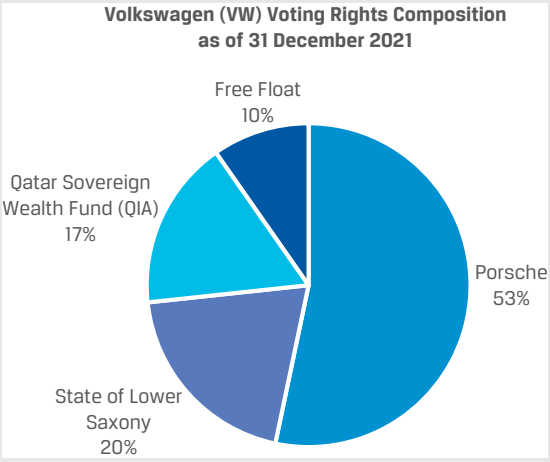
A company's suppliers include suppliers of raw materials and intermediate goods as well as software and outsourced services like call centers and payroll. Suppliers are often also short-term creditors with a primary interest in being paid in a timely manner for products or services delivered.

When a company is in financial distress, the financial position of its suppliers may be affected as well as their willingness to extend additional credit to the company. However, suppliers also have long-term interests in companies, as they seek to build and maintain mutually beneficial relationships. Supplier interest in a company's long-term stability is important when products are specialized and one or both parties have invested in the relationship through product design, training, or customization.

## Governments

Governments seek to advance the interests of their constituencies and ensure the well-being of the economies over which they preside. Because corporations have a significant effect on economic output, capital flows, employment, social welfare, and the environment, among other factors, regulators have an interest in ensuring that corporations comply with applicable laws. Moreover, corporations and their employees are a major source of tax revenue.

## EVOLUTION OF STAKEHOLDERS AND CORPORATE GOVERNANCE AT VOLKSWAGEN AG




*Source:* Volkswagen AG 2021 Annual Report

Volkswagen AG (VW) was fully government owned from 1937 until it issued public shares in 1960. The German state of Lower Saxony, where VW is the largest private employer, retained a 20% share of voting rights. A German law (the "Volkswagen law") was enacted when VW went public, requiring *over* 80% of votes for major matters to pass, effectively giving the state veto power.

German auto rival Porsche AG (wholly owned by the Porsche family) sought to take over Volkswagen in 2007. Instead, the two companies merged in an equity deal that left the Porsche family as VW's largest shareholder.

While the Porsche family's majority voting rights give it power over the board of directors, the supervisory board is equally divided between labor and shareholder representatives. Given its 20% voting stake and the Volkswagen law, the government of Lower Saxony partners with labor representatives to promote the retention of local employees by vetoing domestic plant closures, cost reductions, and other measures that adversely affect union employees.

## KNOWLEDGE CHECK

1. Which stakeholders would *most likely* realize the greatest benefit from a significant increase in the market value of the company?

   **A.** Creditors

   **B.** Customers

   **C.** Shareholders

   **Solution:**

   C is correct. Shareholders have residual claims on the company, and their wealth is directly related to the market value of the company. A is incorrect because creditors are usually not entitled to any additional cash flows (beyond interest and debt repayment) if the company's value increases. B is incorrect because, though customers may have an interest in the company's stability and long-term viability, they do not benefit directly from a higher company value.

**QUESTION SET**

1. Briefly discuss how the shareholder and stakeholder theories of corporate governance may in fact be aligned with each other.

   **Solution:**

   The stakeholder theory considers balancing the objectives of shareholders, debtholders, and the broader set of stakeholders that have a vested interest in the success of the firm. It may be in the shareholders' best interests in the long run to make decisions within this broader framework. For example, high wages and good working conditions can lead to productive employees and low employee turnover, which boosts profits.

2. Applying the stakeholder theory of corporate governance requires:

   **A.** balancing multiple objectives only.

   **B.** measuring non-shareholder objectives only.

   **C.** both balancing multiple objectives and measuring non-shareholder objectives.

   **Solution:**

   C is correct. To implement the stakeholder theory of corporate governance, it is necessary to both measure non-shareholder objectives and balance the objectives of shareholders and non-shareholders.

3. Identify and explain a method of aligning the interests of shareholders, managers, and employees.

   **Solution:**

   Aligning manager and employee interests with those of shareholders can be accomplished with performance- and/or share-based compensation. Shareholders seek an increase in profits and firm value, and performance-based compensation—such as bonuses based on profit or shareholder return measures, or profit sharing with employees—would align manager and employee interests with shareholder interests. Awarding shares or stock options to employees and managers increases alignment, as employees and managers become shareholders themselves.

4. Compared with public debtholders (e.g., bondholders), private debtholders (e.g., banks, lessors):

   **A.** have less influence over company management.

   **B.** have access to non-public information about the company.

   **C.** are less likely to consent to changes in the debt contract.

   **Solution:**

   B is correct. Private debtholders, including banks and other direct lenders, typically have direct access to management and non-public information, which lowers information asymmetry.
   A is incorrect. Private debtholders typically have more influence over company management than bondholders do.
   C is incorrect. Private debtholders have closer and more bespoke relationships with borrowers than bondholders do and thus are more likely to allow changes in the debt contract, such as changing covenants.

5. Which of the following board structures would most limit shareholders' ability to effect a major change in the management of a firm?

   **A.** Majority inside, staggered

   **B.** Majority independent, staggered

   **C.** Majority independent, non-staggered

   **Solution:**

   A is correct. A board with a majority of inside directors could more easily resist outside change than one with a majority of directors who were independent of management. Also, a staggered board would allow only a portion of the directors to be voted out each year, so it would take several years to replace a majority of directors.

# CORPORATE ESG CONSIDERATIONS

# 4

☐ describe environmental, social, and governance factors of corporate issuers considered by investors

Debt and equity investors are increasingly taking a *stakeholder* rather than a purely *shareholder* perspective by prioritizing environmental, social, and governance (ESG) factors in making investment decisions. Corporate issuers include these factors when setting strategic objectives as well as in their operating, investing, and financing decisions.

Exhibit 7 summarizes key ESG factors of importance to investors.

**Exhibit 7: Environmental, Social, and Governance (ESG) Factors**

| Environmental | Social | Governance |
|---|---|---|
| **Conservation of the natural world** | **Consideration of people and relationships** | **Standards for running a company** |
| ▪ Climate change<br>▪ Air and water pollution<br>▪ Biodiversity<br>▪ Deforestation<br>▪ Energy efficiency<br>▪ Waste management<br>▪ Water scarcity | ▪ Customer satisfaction<br>▪ Data protection and privacy<br>▪ Gender and diversity<br>▪ Employee engagement<br>▪ Community relations<br>▪ Human rights<br>▪ Labor standards | ▪ Board composition<br>▪ Audit committee structure<br>▪ Bribery and corruption<br>▪ Executive compensation<br>▪ Lobbying<br>▪ Political contributions<br>▪ Whistleblower schemes |

*Source:* CFA Institute

Governance factors such as shareholder voting rights, board composition, and compensation practices are widely available and quantifiable, making it relatively straightforward for a financial analyst to evaluate the soundness of a firm's governance. Consequences of poor corporate governance have long been understood by analysts and shareholders. In contrast, incorporating *environmental* and *social* factors into

investment decision-making has evolved more slowly. While many environmental and social issues exist, identifying which of these factors are most likely to affect company performance, and how and when they will do so, is often less clear.

ESG considerations are of increasing importance for three reasons:

1. The material financial impact of ESG factors on corporate issuers has risen. Both shareholders and debtholders have suffered substantial losses due to environmental disasters, social controversies, and governance deficiencies.
2. Interest in the environmental and social impacts of investments has grown, particularly among younger clients, who increasingly demand that newly acquired or inherited wealth, as well as pension contributions, be managed with ESG considerations in mind.
3. As government stakeholders continue to prioritize climate change and social policies, revised regulations are forcing corporate issuers to adapt their business practices to meet more stringent ESG criteria.

Environmental and social issues, such as climate change, air pollution, and societal impacts of company products and services, have historically been treated as **negative externalities**, or costs not borne by the company and its investors. But increased stakeholder awareness and stronger regulations are forcing companies to internalize environmental and societal costs in their income statements, either explicitly or implicitly, for responsible investors.

While ESG factors were once regarded as intangible or qualitative information, improved identification and analysis, as well as enhanced corporate disclosures, have resulted in increasingly quantifiable information.

**KNOWLEDGE CHECK**

1. ESG considerations are increasingly relevant for which of the following reasons (select up to three options)?

   **A.** Many in the new generation of investors are demanding that investment strategies incorporate ESG factors.

   **B.** ESG issues are having more material impacts on companies' valuations.

   **C.** Environmental and social issues are being treated as negative externalities.

   **Solution:** A and B are correct.

   A is correct. A growing number among the new generation of investors increasingly demand that their inherited wealth or pension contributions be managed using investment strategies that systematically consider material ESG risks, as well as negative environmental and societal impacts, of their portfolio investments.

   B is correct. ESG issues are having more material impacts on companies' valuations. Many investors have suffered substantial losses due to corporate mismanagement of ESG issues, resulting in environmental disasters, social controversies, and governance deficiencies.

   C is incorrect. Environmental and social issues are less frequently treated as negative externalities than in the past. Increased stakeholder awareness and stronger regulations are forcing companies to internalize environmental and societal costs in their income statements, either explicitly or implicitly, for responsible investors.

## Environmental Factors

The materiality of environmental factors can vary significantly across industries. An ESG factor is **material** when that factor is believed to have a significant impact on a company's results or business model. For firms in natural-resource-intensive industries, environmental factors often have a *direct* material effect on operations, while in other cases the impact may be material but *indirect* in nature. Environmental factors generally considered material by investors include climate change, pollution and waste, resource and land use, ecological footprint, and biodiversity.

Climate change considerations are often framed as either **physical risks** or **transition risks**. Physical risks include damage to or destruction of assets by severe weather, which is expected to significantly increase in frequency as the climate changes. Physical risks can often be insured against or diversified. Transition risks are losses related to the transition to a lower-carbon economy, which may result from regulations or shifting consumer demand. For example, a coal producer's revenues may decline materially if its electric utility customers switch to lower-emission fuel sources and renewables. A specific instance of transition risk for energy companies and their investors is **stranded assets**, or emission-intensive reserve assets at risk of becoming unviable, thereby reducing their value (e.g., even if an oil well were to produce oil from 2029 to 2059, production might have to cease early due to regulations or uneconomical prices). Analysts may find it difficult to assess this risk for energy companies, given uncertainties of regulations and break-even prices.

Adverse material environmental effects can arise from decisions based on inadequate governance or errors in judgment. For example, oil spills, industrial waste contamination, and local resource depletion can result from poor environmental standards, breaches of safety standards, or unsustainable business models. Such events can be costly in terms of regulatory fines, litigation, clean-up expenses, and reputational risk.

### EMISSIONS AND WASTE AS AN ENVIRONMENTAL RISK

Environmental issues such as emissions and waste have historically been treated as externalities and have thus not been fully addressed in companies' financial reporting. However, with growing awareness among stakeholders, including regulators, companies may face financial liabilities for pollution, contamination, and the emission of toxic or carcinogenic substances and therefore must manage these risks. Gross mismanagement of these risks may result in a company not only incurring severe financial penalties but also losing permanently its license to operate.

In 2019, the collapse of Dam I of the Córrego do Feijão Mine in Brumadinho, Brazil, resulted in the spillage of millions of tons of mud; 270 lives were lost, and the nearby Paraopeba River was contaminated. The mine was owned and operated by Vale, a multi-national Brazilian mining corporation. Vale has since been accused of hiding information about the dam's instability for years to avoid damaging its reputation. Several company employees, including its ex-CEO, and its auditor, TÜV SÜD, were charged with murder and environmental crimes. Vale was fined millions of dollars by the Brazilian government and reached an agreement in 2021 to repair all environmental damage and pay USD7 billion to the families of victims killed in the disaster.

## Social Factors

Social factors typically pertain to a firm's practices concerning, and their impacts on, its employees and human capital, customers, and communities in which it operates. Compensation, turnover, worker health, training and safety, employee morale, employee diversity, customer data privacy, and community relations can all affect a company's ability to sustain its performance over the long run. Minimizing social risk can lower a company's costs through higher employee productivity, lower employee turnover, reduced litigation potential, and reduced reputational risk.

### DATA PRIVACY AND SECURITY AS A SOCIAL RISK

Data privacy and security addresses how companies gather, use, and secure personally identifiable information and other meta-data collected from individuals. In some industries, such as internet software and services, this issue includes managing the risks associated with government requests that may result in violations of consumers' civil and political rights.

As more services are offered online, consumers often unknowingly leave a large digital footprint using such services. Some information may be personally identifiable in nature, leaving users vulnerable to theft or misuse of data. As reported in the *2019 Cost of a Data Breach Report* released by IBM and Ponemon Institute, the average cost of a data breach is USD3.9 million.

Mismanagement of data and privacy and security breaches can have materially significant consequences for both a company's business model and its financial performance. For example, lax cybersecurity measures at Equifax, a US-based consumer credit reporting agency, led to a data breach and the theft of identity and financial data of over 140 million US citizens in 2017. Equifax has incurred hundreds of millions of dollars in expenses arising from the breach and has faced numerous lawsuits and investigations.

In a separate case, Facebook, a leading US-based social media platform, shared the personal data of over 80 million users with a third-party consultancy without users' consent. The consultancy gathered psychological profiles of users and accessed their contacts to influence voters in US elections, leading to one of the largest US government fines (USD5 billion) imposed in the technology sector to date—and to a significant decline in user trust. Facebook's subsequent renaming as Meta Platforms in late 2021 was considered by some analysts a means of distancing itself from the corporation's privacy and other social issues.

## Governance Factors

As outlined in an earlier lesson, corporate governance and stakeholder management address issues that include:

- company ownership and voting structure;
- relevance of board skills and experience to current and future company needs;
- alignment of management compensation with company results;
- strength of company shareholder rights versus peers; and
- company effectiveness in managing long-term risks and sustainability.

Analyses of these areas and questions—typically found in issuers' proxy statements, annual reports, and sustainability reports—can provide important insights about the quality of management and sources of risk. Corporate governance will be discussed in greater depth in the next learning module.

**SIEMENS AG BRIBERY SCANDAL AND CORPORATE GOVERNANCE CHANGES**

In 2006, German police raided the headquarters of Siemens AG, the largest industrial manufacturing firm in Europe, as officials uncovered one of the largest corporate corruption cases in history. German and US investigators subsequently discovered that the payment of bribes to foreign government officials by Siemens employees to secure sales and contracts was standard operating procedure for decades, with total bribery payments exceeding EUR1 billion (dating back to 2001). While hundreds of Siemens employees were dismissed and the firm faced over EUR3 billion in fines, the disgorgement of profits, and other costs, the failure of leadership led to substantial upheaval at the board and senior management level as well as the establishment of new governance policies.

Both the supervisory board and the managing board chairmen resigned, and for the first time in its 160-year history, Siemens hired a CEO from outside the company and most senior managers were dismissed. As the prior boards were found to lack sufficient understanding of, or engagement with, the business, both the new supervisory board and the new managing board included members with insight into operational activities and active decision-making. The new managing board was composed of the CEO, CFO, head of HR, and representatives from key operational units as well as the areas of supply chain management and sustainability, legal, and compliance. The firm increased its scrutiny and oversight of many regional businesses, whose prior autonomy had resulted in significant violations. Finally, to rebuild trust with internal and external stakeholders, Siemens instituted a firmwide anti-corruption policy designed to prevent, detect, and respond to compliance breaches.

## Evaluating ESG-Related Risks and Opportunities

Recall from an earlier lesson that debt and equity investors have different claims to the same cash flows of a corporation. The process of identifying and evaluating ESG-related factors that affect these cash flows is therefore similar for both equity and corporate credit analyses.

The question of *how* and *when* ESG factors affect corporate cash flows rests on differences in their effect on the value of debt and equity claims.

- Once identified, the material effects of ESG factors must first be quantified in financial terms—that is, how are the firm's discounted future cash flows positively or negatively affected by these factors?
- In the case of significant long-term adverse ESG-related events, equity claims are usually immediately and disproportionately affected, as they represent residual claims to future company cash flows. For example, in the Vale dam disaster, the Equifax data breach, and the Siemens bribery scandal cited earlier, all three firms experienced a sharp share price decline in the wake of the event.
- While adverse ESG-related events also affect the value of debtholder claims, these finite, fixed obligations are usually less affected than equities by such events unless the firm's ability to make interest and principal payments is adversely affected. In the Vale, Equifax, and Siemens examples, all three

saw their respective issuer-specific cost of debt rise, and each experienced a credit rating downgrade shortly after the adverse event. Vale saw its debt rating briefly reduced to speculative grade following the dam collapse. In more extreme cases, debtholders may force a company into bankruptcy and experience significant losses in liquidation.

- In general, the effects of adverse ESG-related events often differ depending on maturity. For example, an analyst may believe a coal company has long-term risk from potential asset write-downs—that is, stranded assets due to regulatory changes or shifts in demand—which would likely have a greater negative effect on debt maturing in ten years versus short-term debt maturing in twelve months.

Analysts evaluate potential positive and/or negative effects of material ESG-related factors, whose financial impact is reflected in a company's projected financial statements and ratios—with future expected cash flows discounted at an appropriate rate and sensitivity and/or a scenario analysis used to weigh different outcomes for debt and equity holders.

For example, an analyst might increase her forecast of a hotel company's operating costs because of the impact of excessive employee turnover—lost productivity, reduced customer satisfaction, and increased expenses for employee searches, temporary workers, and training programs. As another example, an analyst might choose to lower the discount rate for a food company that is expected to gain a competitive advantage by transitioning to a sustainable source of a key ingredient in its products.

**QUESTION SET**

1. Historically, analysts have best been able to evaluate a company's:

   **A.** social practices.

   **B.** governance practices.

   **C.** environmental practices.

   **Solution:**

   B is correct. Corporate governance factors are well understood and quantifiable by analysts, including the consequences of poor corporate governance. In contrast, the inclusion of environmental and social factors in investment decision-making has evolved more slowly. The results of evaluating the effects of environmental and social factors on firm performance are often less clear.

2. Historically, environmental and social issues have been treated as _____. However, they are increasingly being recognized as _____. (negative externalities, internalized costs).

   **Solution:**

   Historically, environmental and social issues have been treated as negative externalities. However, they are increasingly being recognized as internalized costs.

   It was previously assumed that the negative consequences of poor firm decisions did not fall on the firm's capital suppliers but, rather, on society. Now, analysts consider these increasingly internalized company costs by estimating their effects on firm financial performance, by incorporating them into discount rates and risk assessments, and by screening or adjusting position sizes of companies that have poor ESG practices.

3. Stranded assets best represent _____. (physical risk, transition risk)

**Solution:**

Stranded assets best represent transition risk.
Transition risks are losses related to the transition to a lower-carbon economy. An oil well may become a stranded asset due to government regulations or changes in consumer preferences that affect the price of oil or otherwise impair an issuer's ability to fully realize the asset value. Physical risks include damage to property stemming from extreme weather, which is expected to increase in both frequency and severity due to climate change.

4. Explain the importance of materiality of ESG factors for a financial analyst.

**Solution:**

An ESG factor is considered material when it has a significant impact on a company's results or business model. An analyst attempts to evaluate potential positive or negative effects of material ESG-related factors—for example, by incorporating them into a company's projected cash flows and/or discount rates or through an investment candidate screening process. While an issuer may have many ESG factors to consider, analysts prioritize those that are material given the opportunity cost of analysts' time.

5. A company's effectiveness in managing long-term risks and sustainability is best classified as a:

**A.** social factor.

**B.** governance factor.

**C.** environmental factor.

**Solution:**

B is correct. Corporate governance and stakeholder management address issues that include a company's effectiveness in managing long-term risks and sustainability. Management effectiveness can be assessed through an evaluation of the company's financial and non-financial performance over the long run, along with a comparison against industry peers to isolate controllable variables.

# PRACTICE PROBLEMS

## The following information relates to questions 1-3

Consider a firm with assets of 200 fully financed by equity and an identical firm financed with 80% debt and 20% equity. Assume both firms have revenue over a period of 200 and non-debt operating expenses of 140.

1. If we assume an interest rate of 20% for the period, calculate net income for each firm and compare their returns on equity for the period, ignoring income taxes.

2. Calculate the return on equity for the period if the firms experience a 20% increase and decrease in revenue (from Question 1), assuming operating expenses remain unchanged.

3. Consider the same all-equity-financed firm as in Question 1 and its choices for financing a new investment in LT assets of 40. The pertinent details in the firm's initial balance sheet are shown below. Revenue before the investment is 200, operating expenses are 140 and are expected to remain unchanged, interest on new debt financing is 20%, and the return on the new investment is 30%.

   Calculate the ROE for the firm if it finances the investment with debt, the issuance of new shares, or cash on hand and compare the results. Discuss the results of the comparison.

| Initial Balance Sheet | | | |
|---|---|---|---|
| Cash | 60 | | |
| Other assets | 40 | | |
| LT assets | 100 | Equity | 200 |

| Share Issuance | | Debt Issuance | | Cash on Hand | |
|---|---|---|---|---|---|
| Cash 60 | | Cash 60 | | Cash 20 | |
| Other 40 | | Other 40 | Debt 40 | Other 40 | |
| LT assets 140 | Equity 240 | LT assets 140 | Equity 200 | LT assets 140 | Equity 200 |
| Revenue | 212 | | 212 | | 212 |
| Less: Operating Expenses | 140 | | 140 | | 140 |
| Less: Interest | | | 8 | | |
| Net Income | 72 | | 64 | | 72 |
| Total Equity | 240 | | 200 | | 200 |
| ROE | 30% | | 32% | | 36% |

4. A company has developed a long-term relationship with its major supplier. The supplier has developed complex systems that integrate with those of the compa-

ny and has an agreement to receive payment within 30 days for goods delivered. Discuss the supplier's stakeholder relationship with the firm. Why would high financial leverage be inconsistent with the supplier's interests?

5. Explain why a company's management might not act in the best interests of shareholders.

# SOLUTIONS

1. Solve for net income by subtracting expenses from revenue, and divide net income by total equity to solve for the one-period return on equity:

| Equity-Financed | | Debt- and Equity-Financed | |
|---|---|---|---|
| Revenue | 200 | Revenue | 200 |
| Less: Operating Expenses | –140 | Less: Operating Expenses | –140 |
| | | Less: Interest Expense* | –32 |
| Net Income | 60 | Net Income | 28 |
| | | | |
| Total Equity | 200 | Total Equity | 40 |
| **Return on Equity** | **30%** | **Return on Equity** | **70%** |

*Interest expense with 80% debt financing = 160 × 0.20 = 32.

2.

**20% *Increase* in Revenue**

| Equity-Financed | | Debt- and Equity-Financed | |
|---|---|---|---|
| Revenue | 240 | Revenue | 240 |
| Less: Operating Expenses | –140 | Less: Operating Expenses | –140 |
| | | Less: Interest Expense | –32 |
| Net Income | 100 | Net Income | 68 |
| | | | |
| Total Equity | 200 | Total Equity | 40 |
| **Return on Equity** | **50%** | **Return on Equity** | **170%** |

**20% *Decrease* in Revenue**

| Equity-Financed | | Debt- and Equity-Financed | |
|---|---|---|---|
| Revenue | 160 | Revenue | 160 |
| Less: Operating Expenses | –140 | Less: Operating Expenses | –140 |
| | | Less: Interest Expense | –32 |
| Net Income | 20 | Net Income | **(12)** |
| | | | |
| Total Equity | 200 | Total Equity | 40 |
| **Return on Equity** | **10%** | **Return on Equity** | **(30%)** |

Like the example in the lesson, the use of debt increases the variance in return on equity.

3. Financing the investment with new shares produces the lowest ROE among the three financing options. However, since the investment produced a return equal

to the beginning ROE, there was no change in ROE from the initial case. Financing with debt produced a higher ROE, because the interest rate on debt was lower than the return on the new investment and no new shares were issued, avoiding dilution. The highest ROE was produced by using excess cash on hand, which avoids both dilution and the interest cost of debt.

4. The supplier has a clear vested interest in the success and survival of the company, so it is considered a stakeholder. The supplier extends short-term credit to the company and has a long-term interest in the success of the company because it has invested in integrated complex systems. High financial leverage would not be in the best interest of the supplier, because it presents both short-term risk that the company may be unable to make payments for goods delivered and long-term risk for the investment made to integrate the supplier's complex systems with those of the company.

5. Managers are in a principal-agent relationship with a company's shareholders. Managers, overseen by the board of directors, serve as agents who should act in the best interests of the company's shareholders. However, in some cases, managers may put their own interests ahead of shareholders' interests. Examples include insufficient effort, excessive perquisite consumption (e.g., corporate jets, elaborate offices), and failure to take appropriate risks or make investments in an effort to safeguard their jobs. Oversight by a majority independent board and compensation to align managers' interests with shareholders', such as performance-based and equity-based compensation schemes, are mechanisms to mitigate these conflicts of interest.

LEARNING MODULE

# 3

# Corporate Governance: Conflicts, Mechanisms, Risks, and Benefits

## LEARNING OUTCOMES

| *Mastery* | *The candidate should be able to:* |
|---|---|
| ☐ | describe the principal-agent relationship and conflicts that may arise between stakeholder groups |
| ☐ | describe corporate governance and mechanisms to manage stakeholder relationships and mitigate associated risks |
| ☐ | describe potential risks of poor corporate governance and stakeholder management and benefits of effective corporate governance and stakeholder management |

## INTRODUCTION

1

Corporations are complex structures with stakeholders beyond owners, lenders, and managers. Corporate governance involves the creation and maintenance of a system of checks, balances, and incentives that addresses conflicting interests among these stakeholders. In this Learning Module, we first identify key aspects of the relationships between these parties and the potential conflicts that may arise. In the second lesson, we turn to the various mechanisms established to manage these conflicts, settle disputes, and mitigate risk. Finally, we highlight the benefits of strong corporate governance and stakeholder management policies as well as the risks of weak policies and their potential impact on corporate performance.

**LEARNING MODULE OVERVIEW**

- A principal-agent relationship is created when one party (a principal) hires another party (an agent) to perform a task or service. The relationship can exist with or without a contract. The agent is expected to act in the principal's best interest.
- In many cases, the agent possesses more information than the principal, and conflicts arise where the interests of the principal and the agent diverge. In a corporation, shareholders are a principal and elect directors (an agent), who appoint managers (another agent), who are charged with maximizing shareholder value.

- Given the complex ecosystem of stakeholders in a corporation, the rights, responsibilities, and powers of each stakeholder must be considered when establishing an appropriate governance structure by striking a balance among the interests of these groups while meeting corporate objectives.
- A sound governance structure consists of mechanisms to ensure adherence to rules and regulations imposed by external authorities as well as to meet the unique requirements of internal stakeholders. These mechanisms include financial reporting, general and extraordinary meetings, compensation, debt covenants, and more.
- Weak corporate governance, unmanaged conflicts of interest, or inadequate stakeholder management can place firms at a competitive disadvantage. Strong governance practices and a proper balance among stakeholders' interests are often reflected in increased competitiveness and operational efficiency, better control processes, and improved performance.

## LEARNING MODULE SELF-ASSESSMENT

These initial questions are intended to help you gauge your current level of understanding of this learning module.

1. The following statements relate to the ecosystem of stakeholders in a corporation. Complete each statement by selecting one of the following: agent, principal, contractual, principal-agent, employer-employee

   In a corporation, the board of directors is elected to act as a(n _____.

   In a corporation, shareholders are a(n) _____.

   Customers have a(n) _____ relationship with a corporate issuer.

   **Solution:**

   In a corporation, the board of directors is elected to act as an agent.
   In a corporation, shareholders are a principal.
   Customers have a contractual relationship with a corporate issuer.

2. Conflicts arise where the interests of a principal and an agent diverge, resulting in agency costs. Identify and explain an example of an agency cost for a corporate issuer.<QuestionType>essay</QuestionType>

   **Solution**:

   An example of an agency cost for public companies is the cost of hiring an external independent auditor for the financial statements and internal controls. Audit fees are paid by the issuer, a cost borne by the shareholders, to mitigate the risk that financial reports are materially misstated or deviate from generally accepted accounting principles.

3. Match the mechanism to manage relationships or settle disputes with the applicable stakeholder

| | |
|---|---|
| 1. Shareholders | A. Ad hoc committee |
| 2. Creditors | B. Proxy contest |
| 3. Management | C. – Stock-based compensation |

**Solution:**

1. B is correct. Proxy contests are one mechanism for shareholders to pursue changes in corporate control.
2. A is correct. When a company is struggling to meet its debt obligations, an ad hoc committee may be formed by a group of bondholders to approach the company with potential options to restructure their bonds.
3. C is correct. Stock-based compensation seeks to align the interests of management and shareholders.

4. A(n) _____ may be called when requested by a specific minimum number of calling shareholders, as detailed in the company's bylaws or charter.

**Solution**:

An extraordinary general meeting (EGM) may be called when requested by a specific minimum number of calling shareholders, as detailed in the company's bylaws or charter.

5. Studies have shown that improvements in corporate governance practices _____ (increase/decrease) the likelihood of a credit rating _____ (upgrade/downgrade), which tends to _____ (increase/decrease) the cost of debt.

**Solution**:

Studies have shown that improvements in corporate governance practices increase the likelihood of a credit rating upgrade, which tends to decrease the cost of debt.

6. What types of questions should analysts consider about a company's corporate governance and stakeholder management?<QuestionType>essay</QuestionType>

**Solution:**

Key questions analysts should consider about a company's corporate governance and stakeholder management include the following:

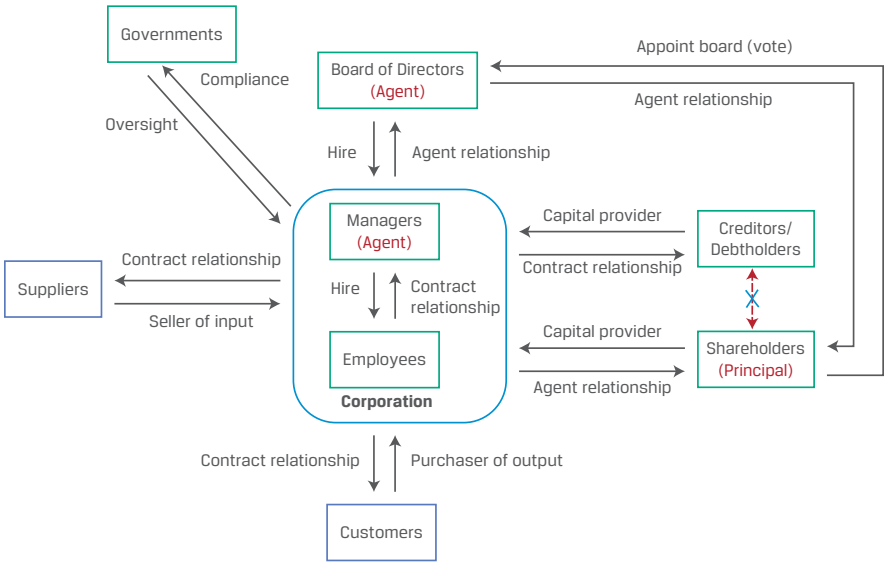
- What is the company's ownership and voting structure?
- How well do board members' skills and experience match the current and future needs of the company?
- How closely does the management team's compensation and incentive structure align with factors expected to drive overall company results?
- Who are the significant investors in the company?
- How strong are company shareholder rights versus its peers?
- How effective has management been in taking a long-term perspective on risks and sustainability?

# 2 STAKEHOLDER CONFLICTS AND MANAGEMENT

☐ describe the principal-agent relationship and conflicts that may arise between stakeholder groups

A corporation is a legal entity with a complex ecosystem of stakeholders. Corporate stakeholder relationships include contractual, principal-agent, and other relationships as illustrated in Exhibit 1.

**Exhibit 1: Principal-Agent and Other Relationships**




A **principal-agent relationship** (or agency relationship) is created when one party (a principal) hires another party (an agent) to perform a task or service and can be present with or without a contract governing the relationship. An agent is expected to act in the principal's best interest, and the relationship involves trust and expectations of loyalty and diligence. In many cases, the agent possesses more information than the principal, which means that the principal is often unable to directly verify that the agent is acting in the principal's best interest. Conflicts arise where the interests of the principal and agent diverge, resulting in **agency costs**, which can be direct, such as the costs of hiring monitoring agents (e.g., a board of directors hiring an auditor), or indirect, like the forgone profits and economic benefits of lost opportunities.

In a corporation, shareholders are a principal and elect directors (an agent), who are expected to pursue shareholders' interests by hiring managers (another agent) to maximize shareholder value. Shareholders and lenders demand higher returns and risk premiums when faced with greater information asymmetry due to the greater potential for conflicts of interest. Principal-agent relationships and potential conflicts arise in several areas within corporations.

## Shareholder, Board Director, and Manager Relationships

Directors and managers have more information about a company's performance, risks, and investment opportunities than outsiders such as shareholders and lenders. This information asymmetry lowers shareholders' ability to assess the performance of directors and managers, weakening their capacity to identify and dismiss poor performers. While all companies have some degree of asymmetric information, it is more pronounced for companies competing in many markets and geographies, those that sell complex products, and companies with lower levels of institutional ownership and free float.

In practice, compensation is the principal tool used to align the interests of management and shareholders. While management compensation seeks to motivate managers to maximize shareholder value, manager and shareholder interests may diverge in the following common ways:

- Insufficient effort. Managers may be unable or unwilling to make investments, manage costs appropriately, or make hard decisions like shutting down unprofitable business lines. They may conduct too little monitoring of employees or assert too little control, leading to unintentional risks and litigation. Finally, managers may allocate too little time to their role because they are committed to political or charitable activities, personal investments, or serving as directors or managers of other companies.
- Inappropriate risk appetite. Compensation dominated by stock grants and options can motivate excessive management risk-taking, as option holders participate only in upside share price moves. Similarly, little or no use of stock grants and options in compensation plans can lead to unduly risk-averse corporate decision-making and the inability to attract talent. This misalignment may be at odds with the company's value creation objective or shareholders' desire for higher-risk, higher-reward endeavors. Since investors can hold diversified portfolios, they may have a higher risk tolerance than managers, whose reputation and time are concentrated in a single company.
- Empire building. Management compensation and status are typically tied to business size (e.g., total revenues, number of employees), which can incentivize managers to seek "growth for growth's sake," such as acquisitions that do not increase shareholder value.
- Entrenchment. Directors and managers want to retain their jobs. Tactics to do so include copying competitors and peers, avoiding risks, and pursuing complicated transactions and restructurings that they are uniquely suited to manage. Directors may avoid speaking out against management, even if speaking out is in the interest of shareholders or other stakeholders.
- Self-dealing. Managers may exploit firm resources to maximize personal benefits, such as excessive perquisites (private airplanes, club memberships, personal security), or defraud investors by misappropriating assets. The smaller a manager's stake in the company, the less they bear these costs themselves, reducing their desire to maximize firm value.

**KNOWLEDGE CHECK: SHAREHOLDER AND MANAGER/DIRECTOR RELATIONSHIPS**

1. A construction firm has the opportunity to invest in a high-risk, high-reward capital infrastructure project. Which of the following could be a reason why the company decides not to pursue the project?

   **A.** The compensation of managers is closely tied to the size of the company's business.

   **B.** Management receives excessive all-cash compensation.

   **C.** Management has recently received a generous options reward in the company's shares.

   **Solution:**

   B is correct. When compensation—particularly if it is excessive—is entirely in cash, the risk tolerance of managers may be too low, as they are inclined to protect their cash compensation. Additionally, there may be little upside for them if the project performs well.
   A is incorrect, as it describes the "empire building" phenomenon that would likely result in the decision to grow the company at any cost in an attempt to secure higher compensation.
   C is incorrect, as it would likely lead to an alignment of managers' interests with those of shareholders.

## Controlling and Minority Shareholder Relationships

Corporate ownership is generally classified as dispersed or concentrated. Dispersed ownership involves many shareholders, none of whom can exercise control over the corporation. In contrast, concentrated ownership reflects an individual shareholder or a group (known as **controlling shareholders**), who can exercise control over the corporation. The group may involve a family, another company (or companies), or government.

While we have been discussing shareholders as a homogeneous group with shared interests, in fact shareholders are often a heterogeneous group with different interests, such as a founding family with a large percentage of their wealth held in company stock who thus desire management to diversify the company to achieve stability. This desire would be at odds with that of **minority shareholders** who hold diversified portfolios and would prefer that management focus on maximizing shareholder value, as they can diversify cheaply on their own. Conversely, a controlling shareholder may also be a long-term shareholder with a multi-year or multi-decade perspective, while some minority shareholders may seek quick gains from cost cutting, selling assets, or share repurchases. Shareholders can communicate with one another and form voting blocs to advocate for their interests more effectively.

Share ownership percentages alone may not necessarily reflect whether company control is dispersed or concentrated. Differences in shareholder voting schemes, as well as a **share class** with different voting rights, give rise to varying degrees of control among shareholders. In contrast to a simple structure of one vote per shareholder, a **dual-class structure** involves one share class (e.g., Class A) that carries one vote per share and is publicly held and traded and another share class (e.g., Class B) that carries several votes per share and is held exclusively by company insiders or founders. A dual-class structure allows certain stakeholders to effectively control the company even if they do not hold most of the shares outstanding. These stakeholders—who

can avoid voting-power dilution if new shares are issued—control board elections, strategic decisions, and all other significant matters. CFA Institute has long advocated against dual-class structures, because they permit one group of shareholders to have disproportionate power and potentially override the will of the majority for their own personal interest. In cases where dual-class structures are legal, CFA Institute advises issuers to clearly disclose such arrangements and their implications for investors. For more on CFA Institute's advocacy on this and other corporate governance topics, visit www.cfainstitute.org/advocacy.

Magna International Inc., a Canadian auto parts company, started off with two classes of shares. Class A shares had one vote per share, and Class B shares had 500 votes per share. The founder, Frank Stronach, and his family were able to control 75% of the voting rights while owning only 3% of the total shares by holding Class B shares. Investors were frustrated that the founder and members of his family secured millions in consulting fees, salaries, bonuses, and stock options despite weakness in the stock price. Shareholders voted for a single-class share structure in an extraordinary general meeting, creating an agreement that Stronach would leave the company after paying out CAD870 million over five years.

**KNOWLEDGE CHECK: DUAL-CLASS SHARE STRUCTURE**

1. Which of the following *best* describes dual-class share structures?

   **A.** Dual-class share structures can be easily changed over time.

   **B.** Company founders can maintain significant power over the organization.

   **C.** Conflicts of interest between management and stakeholder groups are less likely than with single-class share structures.

   **Solution:**

   B is correct. Under dual-class share systems, company founders may control board elections, strategic decisions, and other significant matters. A is incorrect, because dual-class share systems are difficult to dismantle once adopted as the voting control within dual-class systems is held exclusively by company insiders or founders. C is incorrect, because conflicts of interest between management and stakeholders are *more* likely than with single-class share structures owing to the potential control element in dual-class systems.

## Shareholder versus Creditor Interests

Despite their financial claims to the same cash flows of a corporation, the difference in debt versus equity claims gives rise to potential conflicts of interest, as outlined in the previous module. For example, debtholders with a fixed claim tend to be risk averse and prefer that the corporation take actions to ensure sufficient cash flow to meet its debt obligations. For this reason, debtholders tend to prefer that a company raise more equity and limit shareholder distributions. Shareholders, however, tend to prefer greater leverage and shareholder distributions rather than dilutive equity issuance.

This potential conflict is greater for long-term debt, as the passage of time exposes debtholders to changes in business conditions, strategy, and management behavior. As a result, long-term creditors are more likely to impose contractual limits on leverage and shareholder distributions.

**KNOWLEDGE CHECK: STAKEHOLDER RELATIONSHIPS**

1. A controlling shareholder of Stillcreek Corporation owns 55% of Stillcreek's shares, and the remaining shares are spread among a large group of shareholders. In this situation, conflicts of interest are *most likely* to arise between:

   **A.** shareholders and bondholders.

   **B.** the controlling shareholder and managers.

   **C.** the controlling shareholder and minority shareholders.

   **Solution:**

   C is correct. In this ownership structure, the controlling shareholder's power is likely more influential than that of minority shareholders. Thus, the controlling shareholder may be able to exploit its position to the detriment of the interests of the remaining shareholders. A and B are incorrect, because the ownership structure in and of itself is unlikely to create material conflicts between shareholders and bondholders or shareholders and managers.

**EXAMPLE 1**

## Leverage and Other Stakeholders: KLD Marine Ltd.

KLD Marine Ltd. (KLD) is a small, debt-free manufacturer of welded metal boats with domestic and international sales in a highly competitive and cyclical market. KLD is the primary employer in a small, remote town. Sales are through a network of dealers, who typically sell three or four different boat brands. Of the company's 50 employees, about half are specialized aluminum welders, with most others in sales and management. The primary purchased input for KLD's boat production is sheet aluminum. KLD's sole aluminum supplier is a large, multi-national company with many clients. KLD has never paid dividends but has substantial retained earnings that finance the company's assets. KLD has recently decided to borrow heavily so it can pay a large, one-time dividend to shareholders.

1. Which of the following stakeholder groups will be most negatively affected by the increase in leverage?

   **A.** The welders employed by the company

   **B.** The company's dealers

   **C.** The supplier of aluminum to the business

   **Solution:**

   A is correct. As employees, the welders could face loss of employment if the company were to become financially distressed with the increase in leverage. And since their skills are very specialized, they would probably have difficulty finding another job locally. In a small and remote town, employment opportunities are likely to be limited for specialized workers.
   B is incorrect. The dealers might suffer lost sales if KLD were to fail, but they could likely replace KLD with a competing brand.
   C is incorrect. The aluminum supplier would probably suffer the least impact, since it is large and KLD is likely not a sizable proportion of its sales.

2. Is it likely that any of these groups would be affected positively?

**Solution:**

In all cases, impacts are negative. Note that for modest borrowing, these effects would be minor.

**QUESTION SET**

1. Which of the following stakeholders are *most likely* to demand higher returns and risk premiums when faced with greater information asymmetry due to the greater potential conflicts of interest?

   **A.** Directors and managers

   **B.** Suppliers and customers

   **C.** Shareholders and lenders

   **Solution:**

   C is correct. Greater information asymmetry increases risk for shareholders and lenders, who will seek to be compensated for taking that risk with a lower share price or multiple and a higher yield on debt investments.
   A is incorrect, because directors and managers have more information about a company's performance, risks, and investment opportunities than outsiders, such as shareholders and lenders.
   B is incorrect, because while suppliers and customers are outsiders with information asymmetry, their relationship is contractual and not based on investment return.

2. An analyst is examining the governance of several companies in her coverage area and learns that one of the CEOs is highly involved in political and charitable activities. These activities may result in which one of the following misalignments of interests between management and shareholders?

   **A.** Self-dealing

   **B.** Entrenchment

   **C.** Insufficient effort

   **Solution:**

   C is correct. The CEO's outside activities could result in insufficient effort. Managers may allocate too little time to their role because they are committed to political or charitable activities, personal investments, or serving as directors or managers of other companies.
   A and B are incorrect, because while they are both examples of misalignments between management and shareholders, they are not the primary concern about management involvement in charitable and political activities, which tend to distract management rather than cause a direct conflict of interest or transaction that is not in shareholders' interests.

3. A _____ corporate ownership structure involves many shareholders, none of whom can exercise control over the corporation.

   **Solution:**

   A dispersed corporate ownership structure involves many shareholders, none of whom can exercise control over the corporation.

4. A company's management team, whose compensation includes significant stock grants and options, is pursuing a large debt-financed acquisition. The management team discusses how this acquisition may not align with the interests of all stakeholders, and it is proposed that they increase equity financing for the acquisition. Increasing equity financing for the transaction would increase support by which stakeholder?

   **A.** Debtholders

   **B.** Management

   **C.** Shareholders

   **Solution:**

   A is correct. Debtholders with a fixed claim tend to be risk averse and prefer that the corporation take actions to ensure sufficient cash flow to meet its debt obligations. For this reason, debtholders tend to prefer that a company raise more equity as opposed to increasing debt to a level that may increase default risk.
   B and C are incorrect, because management is aligned with shareholders through stock grants and options, and shareholders tend to prefer greater leverage rather than dilutive equity issuance.

5. Discuss the potential conflicts between controlling shareholders and minority shareholders in a dual-class structure.

   **Solution:**

   A dual-class structure allows stakeholders to effectively control the company by virtue of their ownership of a share class with superior voting rights. While it is possible for minority shareholders to change voting rights in their favor, it can be difficult and expensive to do so, as illustrated by the Magna International example.

# 3 CORPORATE GOVERNANCE MECHANISMS

☐ describe corporate governance and mechanisms to manage stakeholder relationships and mitigate associated risks

Given the complex ecosystem of stakeholders in a corporation, the rights, responsibilities, and powers of each must be taken into consideration when establishing an appropriate governance structure by striking a balance among the interests of these groups while meeting corporate objectives. A sound governance structure seeks to ensure that a corporation has mechanisms in place that not only facilitate adherence to rules and regulations imposed by external authorities but also meet the unique requirements of internal stakeholders.

## Corporate Reporting and Transparency

Corporate reporting and transparency are foundational to governance. Without them, external stakeholders would be unaware of the company's performance and position, and thus their ability to advocate for their interests would be severely weakened. Given its importance, reporting is mandated and regulated through legal, regulatory, and quasi-regulatory means (e.g., exchange listing requirements).

Investors have access to a public company's financial and non-financial information through annual reports, proxy statements, company disclosures, investor relations resources, and other sources. This reporting includes information on a company's operations, strategic objectives, audited financial statements, governance structure, ownership structure, remuneration policies, related-party transactions, and risk factors. Most jurisdictions and stock exchanges require that listed companies' annual financial statements be audited—and interim financial statements reviewed—by third-party independent auditors.

Private companies disclose information to the public only to the extent required by regulations or voluntarily. However, they will disclose information confidentially to their investors, but the content and form of that information are subject to negotiation between stakeholders rather than standardized like the reporting by public companies. Most jurisdictions do *not* require that private companies' disclosures be audited, though private companies are free to obtain an audit, which may improve their terms with investors.

Investors rely on corporate reports and information to:

- assess company performance and that of its directors and managers;
- make valuation and investment decisions;
- vote on key corporate matters or changes; and
- ensure compliance with legal commitments in debt contracts. As it is impractical for individual bondholders to track these bond requirements, a financial intermediary known as a trustee is hired to report on and manage payment administration for bondholders.

## Shareholder Mechanisms

As residual owners of the company, shareholders seek to protect their ownership claims through a variety of control mechanisms over the company. While no standard set of shareholder rights exists, global investors usually rely on common rights and mechanisms outlined in the following sections. These mechanisms are often enshrined in securities laws and enforced by regulators.

### *Shareholder Meetings*

General meetings—or an **annual general meeting (AGM)**, typically held once a year—enable shareholders to participate in discussions and vote on matters and transactions that are not delegated to the board of directors. Common matters presented for a shareholder vote at AGMs include the following:

- Board member elections
- Appointment of independent auditor
- Approval of annual financial statements, dividends, and director and auditor compensation
- Approval of equity-based compensation plans
- "Say on pay" non-binding votes on compensation plans

**Extraordinary general meetings (EGMs)** may be called when other resolutions requiring shareholder approval are proposed, or when requested by a specified minimum number of calling shareholders (or proportion of stock outstanding). Matters presented for a shareholder vote at EGMs are idiosyncratic but commonly include the following:

- Special elections of board members, usually proposed by shareholders
- Amendments to bylaws or articles of association
- Mergers and acquisitions, takeovers, and asset sales
- Capital increases
- Voluntary firm liquidation

Shareholders unable to attend a meeting in person usually authorize another party to vote on their behalf in a **proxy voting** process, typically by submitting a ballot electronically or by mail. Proxy voting is the most common form of investor participation in general meetings.

**KNOWLEDGE CHECK**

1. Which of the following statements about extraordinary general meetings (EGMs) of shareholders is true?

   **A.** The appointment of external auditors occurs during an EGM.

   **B.** A corporation provides an overview of corporate performance at an EGM.

   **C.** An amendment to a corporation's bylaws typically occurs during an EGM.

   **Solution:**

   C is correct. An amendment to corporate bylaws would normally take place during an EGM, which concerns significant changes to a company, such as bylaw amendments. A and B are incorrect, because the appointment of external auditors and a corporate performance overview would typically take place during the AGM.

### *Shareholder Activism*

**Shareholder activism** involves investor strategies to compel a company to act in a desired manner. The primary motivation of shareholder activists is to increase shareholder value relatively quickly, although some activism involves social, political, or environmental considerations. Shareholder activists often pressure management to act using tactics such as initiating proxy fights, proposing shareholder resolutions, and publicizing issues of contention.

Hedge funds are among the predominant shareholder activists. Unlike most institutional investors, hedge funds base the majority of their fees on returns, granting them a significant stake in the financial success of an activist campaign. Also, hedge funds face fewer investment restrictions and are therefore able to take on large share positions using borrowed funds. Regulated investment entities such as mutual funds, however, are subject to investment restrictions (e.g., limitations on maximum position size, leverage, and ownership of distressed or illiquid securities) that limit these activities, although some large funds use their influence to encourage positive corporate action.

**KNOWLEDGE CHECK**

1. Which of the following *best* describes shareholder activists? Shareholder activists:

   **A.** help stabilize a company's strategic direction.

   **B.** have little effect on the company's long-term investors.

   **C.** are unlikely to alter the composition of a company's shareholder base.

   **Solution:**

   A is correct. Shareholder activists often narrow a company's strategic direction to focus on the few things that the company has historically done well, often shedding assets and closing divisions in the process.
   B is incorrect, because long-term investors in a company need to consider how shareholder activists affect the company, especially if the company is restructured and management is replaced.
   C is incorrect, because an activist *is* likely to change the investment thesis for a company toward restructuring, which may prompt a change in the shareholder base.

### *Shareholder Litigation*

Shareholder activists may pursue additional tactics, such as litigation or lawsuits. One prominent type is **shareholder derivative lawsuits** (unrelated to financial derivative contracts), which are legal proceedings initiated against the board of directors, management, and/or controlling shareholders by a shareholder deemed to be acting on behalf of the company in place of its directors and officers, who have failed to adequately act for the benefit of the company. In many countries, laws restrict shareholders from pursuing legal action by either imposing minimum shareholder interest thresholds for such lawsuits or prohibiting them altogether.

### *Corporate Takeovers*

Changes in corporate control via a takeover by shareholders or an acquirer may be pursued in several ways. One mechanism is the **proxy contest** (or proxy fight). In a proxy contest, a group seeking a controlling position on a company's board of directors attempts to persuade shareholders to vote for the group. Managerial teams can also be displaced through **tender offers** and **hostile takeovers**, which seek to take over a company through control of the board and thus management. A tender offer involves an invitation to shareholders to sell their interests directly to a group seeking to gain control. A contest for corporate control may attract arbitrageurs and takeover specialists, who facilitate transfers of control by purchasing shares from existing shareholders in the target company and later selling shares to the highest bidder. A hostile takeover is an attempt to acquire a company without the consent of the company's management.

Preservation of employment serves as an incentive for board members and managers to focus on shareholder wealth maximization. The threat of removal, however, can also have negative implications for a company's corporate governance practices if the company adopts anti-takeover measures, such as staggered board elections or a shareholder rights plan (commonly known as a **poison pill**), to reduce the likelihood of an unwanted takeover. Staggered board elections can dilute shareholder voting rights by preventing shareholders from replacing the entire board at any given election. A

shareholder rights plan enables shareholders to buy additional shares at a discount if another shareholder purchases a certain percentage of the company's shares. Such plans increase takeover costs to any potential bidder.

## Creditor Mechanisms

Creditors, including private lenders like banks as well as public bondholders, have several mechanisms available to protect their interests. The rights of creditors are established by laws and according to contracts executed with the company. Laws vary by jurisdiction but commonly contain provisions to protect creditors' interests and provide legal recourse.

### *Bond Indenture*

The rights of bondholders are established through contracts executed with the company. A **bond indenture** is a legal contract that describes the structure of a bond, the obligations of the company, and the rights of the bondholders. The terms and conditions of lending agreements either require the company to perform certain actions (or meet certain requirements) or prohibit certain actions. Bondholders may also require that certain assets be pledged by an issuer to secure its promise to repay its obligations.

### *Creditor Committees*

In some countries, official creditor committees, particularly for unsecured bondholders, are established once a company files for bankruptcy. Such committees are expected to represent bondholders during bankruptcy proceedings and to protect bondholder interests in restructuring or liquidation.

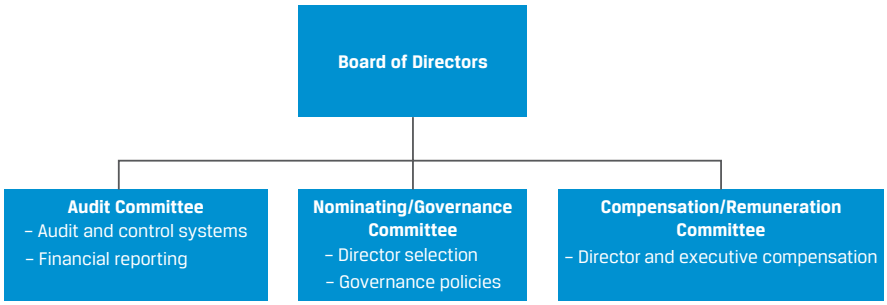
When a company is struggling to meet its obligations under an indenture, an **ad hoc committee** may be formed by a group of bondholders to approach the company with potential options to restructure their bonds. While members of an ad hoc committee do not officially represent all bondholders, their interests are often aligned with those of the broader bondholder group.

## Board and Management Mechanisms

While the board of directors is central to a company's governance structure, boards routinely delegate specific functions to committees composed of a subset of their members. Board committees thoroughly consider, review, monitor, and follow up on matters that fall within their mandates, which may require specific expertise or independence.

Exhibit 2 outlines the three most common board committees (sometimes referred to as "core committees"), recommended by most corporate governance codes and required by some stock exchanges.

**Exhibit 2: Core Board Committees and Key Oversight Functions**




These committees provide recommendations and reports to the board on a regular basis. When establishing committees, boards do not delegate their ultimate responsibility nor are they discharged of their duties. The board is required to review, challenge, and assure the content of any reports raised to it by the committees and to make the proper decisions.

### *Audit Committee*

The audit committee is the most widely required and established board committee, which, according to best practices, should be composed solely of independent board members and include at least one director with accounting or financial management expertise. The audit committee monitors the issuer's financial reporting process, including the proper selection and implementation of accounting policies according to accounting standards and regulations in order to ensure the integrity of the financial statements. It supervises the internal audit function and ensures its independence and competence. The audit committee is also responsible for recommending the appointment of an independent external auditor and proposing its remuneration. It interacts and holds meetings with the external auditor. It receives reports from the internal and external auditors, proposes remedial actions for highlighted issues or matters, and follows up on them. In some cases, the audit committee may also oversee information technology security.

### *Nominating/Governance Committee*

The nominating, or governance, committee is also typically composed of independent members, in accordance with best practices. This committee appraises director and manager candidates and oversees the board election process. It sets nomination procedures and policies, including board directorship criteria, the search for and identification of qualified candidates for board directorships, and the election process by shareholders. In designing its policies and in nominating candidates to the board, the committee ensures that the structure of the board is balanced and in alignment with governance principles and applicable codes.

The committee also oversees the establishment and enforcement of corporate policies, including:

- a corporate governance code;
- the charter of the board and its committees;
- a code of ethics; and
- a policy on conflicts of interest, among others.

It reviews these policies periodically to incorporate any necessary changes or developments. Most importantly, it ensures implementation of governance policies, compliance with applicable laws and regulations, and the pursuit of appropriate action if any issues or violations are identified. For example, policies on conflicts of interest and related-party transactions require directors and managers to disclose any actual or potential conflict of interest related to the company, as well as any material interests in a transaction that may affect the company.

#### *Compensation/Remuneration Committee*

The compensation, or remuneration, committee develops and proposes remuneration policies for the directors and key executives, which often includes setting performance criteria and evaluating manager performance. Executive compensation attracts significant investor attention, with a focus on aligning manager and shareholder interests. The laws in most jurisdictions, as well as best practices, require all compensation committee members to be independent directors because management should not assess its own performance.

Compensation plans often include a variable component—typically profit sharing, stock, or stock options—contingent on corporate or stock price performance. However, stock-based remuneration does not serve its purpose if managers can improve their personal gains at the expense of the company while limiting their exposure to weak stock performance. As a result, companies are increasingly designing incentive plans that discourage "short-termism" or excessive risk-taking by managers. Some incentive plans include granting shares, rather than options, to managers and restricting their vesting or sale for several years or until retirement. A long-term incentive plan delays compensation, either in part or in total, until a company's strategic objectives (typically performance targets) are met.

As a result of laws such as the Dodd-Frank Act in the USA or by choice, issuers are increasingly seeking shareholder views on executive compensation by conducting non-binding "say on pay" votes at the AGM. By allowing shareholders to express their views on remuneration-related matters, companies can limit the discretion of directors in granting excessive or inadequate remuneration.

#### *Additional Committees*

Companies can have multiple other board committees, which are often industry specific. Risk committees—common (in some jurisdictions, required) in the financial services industry—determine the risk profile and appetite of the company and ensure that the company has an enterprise risk management system in place whereby risks are identified, assessed, mitigated, and managed appropriately. Accordingly, risk committees oversee the setting of the risk policy and risk management annual plans and monitor their implementation. Insurance companies often have investment committees that ensure the company has adopted and adheres to rational and prudent investment and capital management policies.

## Employee Mechanisms

By managing employee relationships, companies seek to respect employees' rights and avoid legal or reputational risks associated with employment matters. Employee relationship management (sometimes called human capital management) helps firms attract and retain talent and ensure that employees fulfill their responsibilities and are motivated to act in the company's best interest.

Employee rights are primarily protected through jurisdiction-specific labor laws, which define the standards for employees' rights and responsibilities and cover such matters as work hours, post-employment, health care and other benefit coverage, and paid leave. In most countries, employees have the right to form unions. Unions

advocate on behalf of members to influence certain matters affecting employees, such as compensation and working conditions. Although not a common practice in many parts of the world, in some countries employees are represented on the board of directors—or supervisory board—of companies meeting certain size or ownership criteria (e.g., in Germany, Austria, and Luxembourg).

At the individual level, employment contracts specify the various rights and responsibilities of the employer and employee. Some companies have an **employee stock ownership plan (ESOP)** to help retain employees and further align their interests with those of the company. As part of an ESOP, a company establishes a fund consisting of shares and/or cash, which are granted to employees based on service or performance criteria and often include vesting periods.

## Customer and Supplier Mechanisms

Both customers and suppliers enter into contractual agreements with a company that specify the products and services underlying the relationship, the prices or fees and the payment terms, the rights and responsibilities of each party, the after-sale relationship, and any guarantees. Contracts also specify actions to be taken and recourse available if either party breaches the terms of the contract.

Customers, owners, and other stakeholders increasingly use social media to voice or protect their interests or to enhance their influence on corporate matters. For example, negative media attention can adversely affect the reputation or public perception of a company or its managers and directors. Through social media, these stakeholders can instantly broadcast information with little cost or effort and are thus better able to compete with company management in influencing public sentiment.

## Government Mechanisms

### *Laws and Regulations*

Governments and regulatory authorities develop laws that companies must follow and monitor companies' compliance with those laws. Such laws protect and enforce property and contract rights, in addition to protecting the rights of a specific group such as consumers or the environment. Industries whose services, products, or operations are more likely to affect the public or stakeholder interests are typically subject to greater regulation. Examples include financial services, health care, and agriculture and food, as well as industries deemed to be in the national interest (e.g., defense).

### *Corporate Governance Codes*

Many regulatory authorities have adopted corporate governance codes that consist of guiding principles for publicly traded companies. These codes require companies to disclose their adoption of recommended corporate governance practices or explain why they have not done so, known as a "comply or explain" approach. In Japan, for example, companies with no outside directors must justify why appointing outside directors is not appropriate. Some jurisdictions do not have national corporate governance codes but do make use of national corporate laws or regulations (e.g., Chile) or stock exchange listing requirements (e.g., India) to achieve similar objectives.

The USA does not have a national corporate governance code or law but does have national securities laws (e.g., the Securities Act and the Sarbanes-Oxley Act) that are enforced by a national regulator (the Securities and Exchange Commission). US stock exchanges have listing requirements that include numerous governance provisions,

such as the requirement for majority independent boards. Additionally, most US companies are incorporated in a single state, Delaware, which does have state corporate laws that, in effect, serve the same purpose as a national corporate governance code.

**QUESTION SET**

1. Which of the following is typically used to represent creditors' interests?

   **A.** Ad hoc committee

   **B.** Poison pill

   **C.** Tender offer

   **Solution:**

   A is correct. An ad hoc committee is a group of creditors who approach an issuer in financial distress with options for debt restructuring.
   B is incorrect. A poison pill is used to protect shareholders, management, and the board from takeovers that could potentially undervalue the company or are otherwise unwanted.
   C is incorrect. A tender offer involves an invitation to shareholders to sell their interests directly to a group seeking to gain control.

2. A primary responsibility of a board's audit committee does not include:

   **A.** oversight of accounting policies.

   **B.** adoption of proper corporate governance.

   **C.** recommending remuneration for the external auditor.

   **Solution:**

   B is correct. The adoption of proper corporate governance is the responsibility of a corporation's governance committee.
   A and C are incorrect, because oversight of accounting policies and recommending remuneration for the external auditor are responsibilities of the audit committee.

3. Which of the following is true of shareholder activism?

   **A.** Shareholder activists rarely include hedge funds.

   **B.** Regulators play a prominent role in shareholder activism.

   **C.** A primary goal of shareholder activism is to increase shareholder value.

   **Solution:**

   C is correct. Although shareholder activism may involve social and political issues, shareholder activists' primary motivation is to increase shareholder value.
   A is incorrect, because hedge funds commonly serve as shareholder activists.
   B is incorrect, because regulators play a prominent role in standard setting, not shareholder activism.

4. True or False: Investors receive information similar in content and form, including audited disclosures, from both private and public companies.

   **A.** True

**B.** False

**Solution:**

False. Private companies disclose information confidentially to their investors, but the content and form of that information are subject to negotiation rather than standardized and regulated like the reporting by public companies. Most jurisdictions do not require that private companies' disclosures be audited, though they are free to obtain an audit.

5. Explain why staggered board elections weaken corporate governance.

**Solution:**

Staggered board elections can dilute shareholder voting rights by preventing shareholders from replacing the entire board at any given election. For example, if only 25% of the board is elected per year, it can take an activist three years to replace a majority of the board.

6. A company's compensation committee seeking to discourage excessive risk-taking by managers is *most likely* to design an incentive compensation plan that:

**A.** allows directors and managers to have greater discretion over their remuneration.

**B.** includes a variable component comprising stock options contingent on near-term stock performance.

**C.** grants shares, rather than options, that vest over several years and are subject to minimum holding requirements.

**Solution:**

C is correct. Granting shares, rather than options, that vest over several years and must be held discourages "short-termism" or excessive risk-taking by managers.

A is incorrect. By allowing *shareholders* to express their views on remuneration matters, companies can limit the discretion of directors and managers in granting themselves excessive (or inadequate) remuneration, thus not allowing managers to have greater discretion over their own pay.

B is incorrect, because a variable component comprising stock options contingent on near-term stock performance may encourage excessive risk-taking by managers. Stock-based remuneration does not serve its purpose if managers can improve their personal gains at the expense of the company while limiting their exposure to weak stock performance.

# CORPORATE GOVERNANCE RISKS AND BENEFITS

# 4

☐ describe potential risks of poor corporate governance and stakeholder management and benefits of effective corporate governance and stakeholder management

Corporate governance and stakeholder management play a critical role in the success or failure of corporations. Weak corporate governance, unmanaged conflicts of interest, and/or inadequate stakeholder management mechanisms can place firms

at a competitive disadvantage to industry peers. In contrast, strong governance practices and a proper balance among stakeholders' interests are often reflected in increased competitiveness and operational efficiency, better control processes, and improved performance. The role of corporate governance and related mechanisms in mitigating risk extends beyond operations to include legal, regulatory, reputational, and financial risks.

## Operational Risks and Benefits

Corporations with weak control systems, ineffective decision-making, or inefficient monitoring often face adverse results with respect to their operations, performance, and value. In the absence of adequate controls, one stakeholder group may benefit at the expense of others. For example, when the information available to managers is superior to that received by the board or shareholders, audit procedures are poor, or oversight is lacking, managers can make decisions solely for their own benefit. The following example demonstrates the level of fraud and mismanagement that can occur when corporate governance is inadequate.

### THE RISE AND FALL OF THERANOS INC.

Founded in 2003, Theranos raised over USD700 million from venture capital and private investors and was valued at USD10 billion in 2014. The company and its founder and CEO, Elizabeth Holmes, sought to revolutionize health care with breakthrough technology to inexpensively and rapidly identify numerous medical conditions using a test based on a single drop of blood. Its board featured a variety of famous and influential directors over its history, including former US Secretaries of State and directors of the US Centers for Disease Control and Prevention.

In 2015, questions began to surface publicly around the company's blood-testing technology. Whistleblowers came forward to voice concerns about questionable practices, and it became clear that the technology was flawed and that blood test results had been falsified. In 2018, the company, CEO Holmes, and COO Ramesh Balwani were charged with "massive fraud" by the US SEC and the company ceased operations, resulting in a total loss to its shareholders as well as losses to other stakeholders. Holmes was found guilty of four counts of fraud in 2022.

Subsequent investigations uncovered many corporate governance failures at Theranos related to inadequate board composition and oversight, including the following:

- While the board was composed of highly accomplished and well-known individuals, most had little to no knowledge of medical technology.
- Given its lack of medical technology expertise, the board should have hired an independent expert to validate Theranos's innovative technology, which it failed to do. An expert would also have informed the board of the lack of peer-reviewed publications by Theranos, which is highly irregular in the industry.
- The board failed to raise concerns about not only the conflict of interest regarding Holmes's romantic relationship with Balwani but also his leadership role despite a lack of relevant industry experience.

- The board dismissed fraud allegations raised by whistleblowers and remained silent even after the whistleblowers were fired soon after making their allegations.
- Finally, Theranos operated without filling key management roles such as CFO and global compliance officer, among others.

Strong governance practices involve proper scrutiny and control at all corporate levels. These mechanisms allow for the mitigation of risk factors such as fraud, or at least their identification and control at early stages. Controls are enhanced when overseen by an effective independent audit committee. By having procedures for monitoring compliance with internal and external policies and regulations and for reporting any violations, a firm can mitigate the risks of being exposed to regulator questioning or legal proceedings and their associated costs.

In addition, formal procedures for dealing with conflicts of interest and related-party transactions ensure fair dealing and avoid hidden costs associated with preferential or unfair treatment in favor of a related party.

Effective governance also clarifies the delegation of authority and the reporting lines across a company, ensuring that employees have a clear understanding of their respective responsibilities. In addition, the governance, risk, and compliance (GRC) functions in the organization work in partnership to align interests. These arrangements improve decision-making processes and provide managers with flexibility to respond to opportunities and challenges in a constantly changing environment.

Internal auditors and other internal control mechanisms like compliance and legal departments are an equally important pillar of organizational and governance structures, as they aim to ensure that decisions and activities are properly monitored and controlled to prevent risks and misconduct. These mechanisms improve the operational efficiency of the company. Similarly, when the board defines the risk profile of the firm, sets its strategic direction, and supervises its implementation, managerial decisions and firm operations are better aligned with shareholder interests, paving the way for better operational results.

## Legal, Regulatory, and Reputational Risks and Benefits

Compliance weaknesses in the implementation of regulatory requirements or the lack of proper reporting practices may expose a company to legal, regulatory, or reputational risks. In such cases, the company may be investigated by government or regulatory authorities for violation of applicable laws. A company may also be vulnerable to lawsuits filed by shareholders, employees, creditors, or other parties for breach of contractual agreements or company bylaws or for violation of stakeholders' legal rights. Improperly managed conflicts of interest or governance failures can cause reputational harm to a company, and its associated costs can be significant. Such risks are particularly acute for publicly listed companies subject to scrutiny by investors, analysts, and other market participants, as in the following example.

### VOLKSWAGEN AG AND DIESELGATE

In 2014, an independent study revealed that certain Volkswagen (VW) diesel automobiles had abnormally high emissions in excess of legal limits. VW insisted for a year that the excess emissions were due to technical conditions before admitting to the US Environmental Protection Agency (EPA) in 2015 that it had deliberately manipulated emission test results using illegal software. The

emissions software was installed in as many as 11 million Volkswagen and Audi vehicles worldwide, 500,000 of which were sold in the USA. Legal action was taken by governments in the USA, the EU, and elsewhere.

Whether company executives were aware of the illegal software remains unanswered. However, Volkswagen's reputation was severely damaged amid concerns about board independence, proper governance and oversight of the employees who installed the software, and the blatant violation of air quality standards in the communities where the cars were sold. While legal action continues against the company, its management, and certain employees, the impact of the scandal includes the following:

- VW's share price immediately fell by over a third in the days following the announcement of the scandal.
- VW CEO Martin Winterkorn resigned in 2015 and was criminally indicted in the USA and Germany on fraud and conspiracy charges.
- Volkswagen AG has incurred over EUR32 billion (USD37.7 billion) in vehicle recalls, fines, and legal costs.
- Ongoing shareholder lawsuits seek settlements against management and board directors totaling several billion euros in additional damages.

This example illustrates the importance of a company's reputation being based on strong governance and the ability to protect the interests of stakeholders, including customers, government authorities, and ultimately, in Volkswagen's case, shareholders. Employees, creditors, customers, and suppliers often seek to build and maintain long-term relationships with companies that have a reputation for respecting constituent and stakeholder rights. Such a reputation can enhance a company's ability to attract talent, secure capital, improve sales, and reach better terms with suppliers. In addition, ethics education and training for key stakeholders help support strong governance practices. Effective governance enables a company to mitigate risks, underlying conflicts of interest, and agency problems and to maintain stable operations.

## Financial Risks and Benefits

Poor corporate governance, including weak management of creditors' interests, can affect a company's financial position and hinder its ability to honor its debt obligations. A rise in the possibility of corporate default has consequences well beyond creditors and shareholders, extending to managers, employees, and suppliers, and even society and the environment.

Governance arrangements that seek to manage creditor conflicts of interest restrict those corporate actions that would hinder the company's ability to repay its debt and thus reduce its default risk. Default risks are also mitigated by the proper functioning of audit systems, the transparency and better reporting of earnings, and the control of information asymmetries between the company and its capital providers. Lower default risks are associated with a lower cost of debt, as creditors typically require a lower return when their funds are better secured and their rights are protected.

Governance practices at shareholder meetings, as well as internal corporate mechanisms such as the board of directors and its committees, give investors greater assurance that their capital is well managed. These mechanisms help assure investors that their rights to participate in discussions, vote on important matters, and enjoy fair and equal treatment are protected. Investor confidence and the company's credibility in the marketplace are also enhanced by the appropriate and timely disclosure of material information concerning operating, financial, and governance activities. The improved

transparency, the integrity of financial reporting processes, and an independent audit promote the trust of shareholders and market participants in both the quality of the firm's reported earnings and the fair representation of its financial position. These controls reduce investors' risk perception of well-governed firms and, therefore, the return required on capital invested in such firms. Consequently, good governance enhances the attractiveness of firms to investors, improves their valuations and stock performance, and reduces their cost of equity.[1] Studies have shown the following:

- Improved corporate governance practices increase the likelihood of a credit rating upgrade from speculative to investment grade, reducing the cost of debt.[2]
- Listed companies with experienced audit committees possessing financial expertise tend to have stronger market performance during a crisis.[3]
- Board diversity and independence appear to be key factors in firm valuation.[4]

Key questions analysts should consider about a company's corporate governance and stakeholder management include the following:

- What is the company's ownership and voting structure?
- Do board members' skills and experience match the current and future needs of the company?
- How closely does the management team's compensation and incentive structure align with factors expected to drive overall company results?
- Who are the significant investors in the company?
- How strong are company shareholder rights versus its peers?
- How effective is the company in managing long-term risks and sustainability?

An analysis of these areas and questions—for which a company's proxy statements, annual reports, and sustainability reports are a good starting point—can provide important insights about the quality of management and sources of potential risk.

**QUESTION SET**

1. Which of the following is *not* a benefit of an effective corporate governance structure?

   **A.** Operating performance can be improved.

   **B.** A corporation's cost of debt can be reduced.

   **C.** Corporate decisions and activities require less control.

   **Solution:**

   C is correct. A benefit of an effective corporate governance structure is to enable adequate scrutiny and control over operations.

1 Paul A. Gompers, Joy L. Ishii, and Andrew Metrick, "Corporate Governance and Equity Prices," *Quarterly Journal of Economics* 118, no. 1 (February 2003): 107–55; available at SSRN: https://ssrn.com/abstract=278920 or http://dx.doi.org/10.2139/ssrn.278920.

2 Sanjeev Bhojraj and Partha Sengupta, "Effect of Corporate Governance on Bond Ratings and Yields: The Role of Institutional Investors and Outside Directors," *Journal of Business* 76, no. 3 (2003): 455–75; available at JSTOR: https://doi.org/10.1086/344114 (accessed 28 May 2022).

3 H. Aldamen, K. Duncan, S. Kelly, R. McNamara, and S. Nagel, "Audit Committee Characteristics and Firm Performance during the Global Financial Crisis," *Accounting & Finance* 52, no. 4 (December 2012): 971–1000.

4 D. A. Carter, B. J. Simkins, and W. G. Simpson, "Corporate Governance, Board Diversity, and Firm Value," *Financial Review* 38, no. 1 (February 2003): 33–53; available at https://doi.org/10.1111/1540-6288.00034.

A is incorrect, because improved operating efficiency may indeed be a benefit of an effective corporate governance structure.
B is incorrect, because an effective governance structure can reduce investors' perceived credit risk of a corporation, thus potentially lowering the corporation's cost of debt.

2. An investment analyst would likely be *most* concerned about an executive compensation plan that:

   **A.** varies each year.

   **B.** is consistent with the compensation plans of a company's competitors.

   **C.** is cash-based only, without an equity component.

   **Solution:**

   C is correct. If an executive remuneration plan offers cash only, the interests of management and investors (and other stakeholders) may be misaligned. An equity-based compensation plan is commonly used to align management interests with those of shareholders.
   A is incorrect, because a plan that varies over time would typically be of less concern to an analyst compared with one that did not change.
   B is incorrect, because an analyst would likely be concerned if a company's executives were under- or overcompensated relative to competitors.

3. Benefits of effective corporate governance include all of the following *except*:

   **A.** avoidance of fraud.

   **B.** higher investor confidence.

   **C.** reduced cost of equity.

   **Solution:**

   A is correct. Effective corporate governance allows for the mitigation, not the avoidance, of risk factors such as fraud, or at least their identification and control at early stages.
   B and C are incorrect, as these are both benefits of effective corporate governance.

4. Your colleague suggests that governance and controls are bureaucratic and slow down decision-making and value creation at companies. Discuss.

   **Solution:**

   Strong governance practices and a proper balance among stakeholders' interests are often reflected in increased competitiveness and operational efficiency, better control processes, and improved performance. Studies have shown that listed companies with experienced audit committees possessing financial expertise tend to have stronger market performance during a crisis, and board independence and diversity appear to be key factors in firm valuation—particularly for initial public offerings—and play an important role in value creation and value protection for firms.
   However, governance and controls can be ineffective and slow down decision-making when the board is too big, there are too many managerial layers, managers lack relevant experience for their role, or the controls consist of a check-the-box approach that fails to produce relevant and actionable information.

5. True or False: So long as employees are not represented by labor unions or collective bargaining agreements, management and the board can ignore employee relations.

   **A.** True

   **B.** False

   **Solution:**

   False. For many companies, employees (human capital) are a crucial input to success and the largest category of cost. Employee relations are important whether or not employees are represented by labor unions or collective bargaining agreements, as the quality of their work directly affects customer experience and product or service quality. Employee attrition, productivity losses, the need for repeat training, and poor practices discussed in the press or social media are costly and could result in regulatory action. Companies that build and maintain positive, long-term relationships with employees can develop a competitive advantage.

# PRACTICE PROBLEMS

## The following information relates to questions 1-5

Kobe Steel Ltd. is a major Japanese steel manufacturer formed in 1905 that supplies global manufacturers of cars, planes, and trains. The company issued a report in March 2018 apologizing for falsifying data on the strength and durability of its aluminum, copper, steel products, and iron ore powder. Following the scandal, its stock sank to a five-year low and its cost of debt jumped to record levels.

An Independent Investigation Committee (IIC) investigated the misconduct and authored the report, which concluded that the misconduct resulted from (1) a management style that overemphasized profitability amid inadequate corporate governance, (2) the imbalanced operation of plants that resulted in reduced awareness of quality compliance among employees, and (3) insufficient quality control procedures that allowed the misconduct to take place. The report also emphasized that the company had "a culture that prioritized winning purchase orders and meeting delivery deadlines over ensuring quality."

The company committed to implementing various measures to prevent a recurrence of the misconduct. Regarding governance, measures included the following:

- Appointing an independent chairman of the board of directors
- Having at least one-third of the board of directors be independent
- Creating a nominating and compensation committee, consisting of a majority of independent directors, to serve as a voluntary advisory body to the board of directors
- Creating an independent quality supervision committee consisting of external experts
- Creating an audit and supervisory committee consisting of five members: two internal directors and three independent directors with backgrounds in legal, financial, and industrial fields

1. Identify three key stakeholder relationships for Kobe Steel and discuss their role in the misconduct or how they were affected.

2. Discuss the stakeholder incentives and the conflicts that arose between Kobe's management and the company's customers.

3. Which of the following is considered a best practice that would strengthen the measures discussed to prevent a recurrence of the misconduct?

   **A.** A shareholder rights plan

   **B.** A stock-based compensation plan

   **C.** An audit committee composed solely of independent board members

4. Discuss the financial risk implications of the post-scandal stock and bond prices

with regard to investor confidence.

5. Kobe Steel's governance failures *most likely* resulted in reduced:

**A.** cost of debt.

**B.** agency costs.

**C.** growth opportunities.

# SOLUTIONS

1.

| Stakeholder 1 | Stakeholder 2 | Relationship Type | Role or Impact |
|---|---|---|---|
| Kobe Corporation | Customers (manufacturers of cars, planes, and trains) | Contractual | The company delivered an inferior-quality product that could have resulted in harm to the public. |
| Board of Directors | Kobe Corporation | Agent | The board failed to monitor the activities of the corporation, resulting in reputational damage, civil complaints, and legal action. |
| Managers | Employees | Contractual | The culture prioritized winning purchase orders and meeting delivery deadlines over ensuring quality. |

2. The company supplied potentially faulty steel and other material inputs to manufacturers of cars, planes, and trains. The customers were incentivized by the advertised quality of the products, while management was incentivized by winning purchase orders and meeting delivery deadlines. A certain quality standard should have aligned interests, but instead the potential for profits created a conflict between the directors and customers.

3. C is correct. The company formed an audit and supervisory committee that included a majority of independent directors, but best practices would recommend an audit committee composed solely of independent members, with at least one director with accounting or related financial management experience.

   A is incorrect. A shareholder rights plan, also known as a poison pill, is used to defend against unwanted takeovers that could potentially undervalue the company, but it does not defend the company or shareholders against management or employee misconduct.

   B is incorrect. A stock-based compensation plan is used to align the interests of management with those of shareholders, though it might further incentivize risk-taking and misconduct, which is the issue in this case.

4. The stock price fell and the cost of debt increased, indicating that investor and creditor confidence in the company declined. Investors will have to assess how much the company's financial results benefited from the past misconduct and estimate the impact from (1) the company no longer falsifying data and (2) the loss of customer confidence even if the company fixes the issues. Strengthening governance to include best practices is a first step toward restoring investor confidence, but the impact on future sales and profitability is key to the stock price and cost of debt going forward.

5. C is correct. The misconduct likely caused reputational damage to Kobe among current and prospective customers, which reduces growth opportunities.

   A is incorrect, because bond yields jumped to record levels soon after the scandal was announced, suggesting a higher perceived default risk. Higher default risks are associated with a higher cost of debt, as creditors typically require a higher return when their funds are less secured and their rights less protected.

   B is incorrect, because Kobe is incurring higher agency costs in the wake of the governance failure by hiring an independent investigative committee, independent directors, and external quality assurance experts.

LEARNING MODULE

# 4

# Working Capital and Liquidity

## LEARNING OUTCOMES

| *Mastery* | *The candidate should be able to:* |
|---|---|
| ☐ | explain the cash conversion cycle and compare issuers' cash conversion cycles |
| ☐ | explain liquidity and compare issuers' liquidity levels |
| ☐ | describe issuers' objectives and compare methods for managing working capital and liquidity |

## INTRODUCTION

1

Earlier lessons introduced the balance sheet of corporate issuers, composed of assets financed by liabilities (including debt) and equity. This learning module covers the analysis of *short-term* assets and liabilities, those that result in cash inflows or outflows within a year. The behavior of these assets and liabilities is primarily determined by an issuer's payment and delivery terms with its customers and suppliers. Subsequent modules cover issuers' *long-term* assets, liabilities, and equity financing. Short-term assets and liabilities are a key determinant of an issuer's ability to generate cash flows for investors, and mismatches between the timing and liquidity of assets and liabilities can have catastrophic effects on a firm. For these reasons and others, analysts closely scrutinize issuers' cash conversion and liquidity.

**LEARNING MODULE OVERVIEW**

- Issuers invest cash to generate revenues and profits. The cash conversion cycle is the length of time from paying suppliers to collecting cash from customers.
- The cash conversion cycle is measured as the sum of days of inventory on hand and days sales outstanding, less days payable outstanding. A short cash conversion cycle means that an issuer converts an investment in inventory into cash quickly, while a long cash conversion cycle means that an issuer converts its inventory investments into cash slowly.

- Collecting cash from customers sooner, delaying payments to suppliers, and reducing inventory levels relative to sales improve an issuer's cash conversion cycle.
- Working capital is defined as an issuer's short-term assets minus its short-term liabilities. Net working capital adjusts for non-operating accounts such as cash, marketable securities, and short-term debt. The ratio of net working capital to sales is closely related to an issuer's cash conversion cycle a long cash conversion cycle is associated with higher net working capital to sales, while a short cash conversion cycle is associated with lower net working capital to sales.
- An issuer's liquidity is primarily determined by the relative amounts and liquidity of its short-term assets and liabilities, which are determined by the issuer's business model. The long-run primary source of liquidity for most issuers is cash flow from operations. Secondary sources of liquidity are typically used in crises and impose significant costs, such as issuing equity, renegotiating contracts, selling assets, and filing for bankruptcy protection.
- Drags and pulls on liquidity affect an issuer's liquidity situation. Drags on liquidity reduce cash inflows and include such issues as uncollectible receivables and obsolete inventory. Pulls on liquidity are accelerations in cash outflows or interruptions in credit.
- Issuers may adopt a conservative, moderate, or aggressive approach to working capital management, and these approaches differ in the amount of working capital held on the balance sheet as well as in their reliance on external financing and the composition of short- and long-term financing.

## LEARNING MODULE SELF-ASSESSMENT

These initial questions are intended to help you gauge your current level of understanding of this learning module.

1. Which of the following actions or events will most likely decrease an issuer's cash conversion cycle?

   **A.** Buying short-term marketable securities using cash on hand

   **B.** Offering customers a discount for payment received within 10 days

   **C.** Slowing of sales of certain goods due to changing preferences in styles

   **Solution:**

   B is correct. A prompt-payment discount would likely reduce days sales outstanding and, in turn, decrease the issuer's cash conversion cycle.
   A is incorrect, because increasing marketable securities by reducing cash does not affect the issuer's cash conversion cycle.
   C is incorrect, because the slowing of sales of certain goods would likely increase days of inventory on hand and, in turn, increase the issuer's cash conversion cycle.

2. Which of the following actions will most likely increase an issuer's liquidity?

   **A.** Forgoing a supplier's discount for prompt payments

   **B.** Relaxing terms for customers by lengthening the payment period

**C.** Purchasing short-term marketable securities with cash on hand

**Solution:**

A is correct. Forgoing the discount is using the supplier's financing and will result in the issuer stretching out payments on accounts payable, putting less drain on liquidity in the short run. This action increases the issuer's cash conversion cycle.

B is incorrect, because by relaxing credit terms, customers will take longer to pay, so this action increases the cash conversion cycle.

C is incorrect, because marketable securities are generally *less* liquid than cash, so this action would reduce liquidity. Even if the marketable securities are as liquid as cash (e.g., short-term Treasuries), this action would not materially affect liquidity.

3. The Plough Corporation reports the following items on its two most recent balance sheets (in millions)

| | Fiscal Year-End | |
|---|---|---|
| | **31 December 20X2** | **31 December 20X1** |
| Cash | 10 | 15 |
| Short-term marketable securities | 20 | 15 |
| Accounts receivable | 100 | 80 |
| Inventory | 200 | 150 |
| Prepaid expenses | 5 | 5 |
| Accounts payable | 100 | 120 |
| Accrued expenses | 50 | 60 |

Based on the cash ratio, the company has:

**A.** become less liquid.

**B.** become more liquid.

**C.** not changed regarding liquidity.

**Solution:**

B is correct. The cash ratios for the two fiscal year-ends are:

$$\textit{Cash ratio}, 20X1 = \frac{15 + 15}{120 + 60} = \frac{30}{180} = 0.1667$$

$$\textit{Cash ratio}, 20X2 = \frac{10 + 20}{100 + 50} = \frac{30}{150} = 0.20$$

The cash ratio has increased from 0.1667 to 0.20, indicating an increase in liquidity.

4. Which of the following events or activities is most likely to be a drag on liquidity?

**A.** Inventory that becomes obsolete

**B.** Making payments to suppliers earlier

**C.** Offering a discount to customers who pay within 10 days

**Solution:**

A is correct. As inventory becomes obsolete, it becomes more challenging to sell and inventory levels increase. This event is a drag on liquidity, because it slows cash flows.
B is incorrect, because making payments to suppliers earlier is a pull on liquidity.
C is incorrect, because offering a prompt-payment discount is likely to result in cash receipts sooner, which would improve liquidity.

5. Which of the following actions provides a secondary source of liquidity?

**A.** Issuance of equity securities

**B.** Collecting accounts receivable

**C.** Taking advantage of a supplier's financing and paying on the net day, day 40

**Solution:**

A is correct. Primary sources of liquidity include cash on hand, borrowings, and cash flow from operations. Secondary sources of liquidity generate cash at a greater cost when primary sources are insufficient, such as issuing equity.
B is incorrect, because collection of accounts receivable is a primary source of liquidity.
C is incorrect, because supplier financing is a primary source of liquidity.

6. Classify each of the following actions as either a conservative or an aggressive approach to working capital management:

| | Conservative | Aggressive |
|---|---|---|
| Minimize inventory levels | | |
| Greater reliance on long-term debt and equity financing | | |
| Lower level of short-term assets | | |
| Greater reliance on short-term debt | | |

**Solution:**

| | Conservative | Aggressive |
|---|---|---|
| Minimize inventory levels | | ✓ |
| Greater reliance on long-term debt and equity financing | ✓ | |
| Lower level of short-term assets | | ✓ |
| Greater reliance on short-term debt | | ✓ |

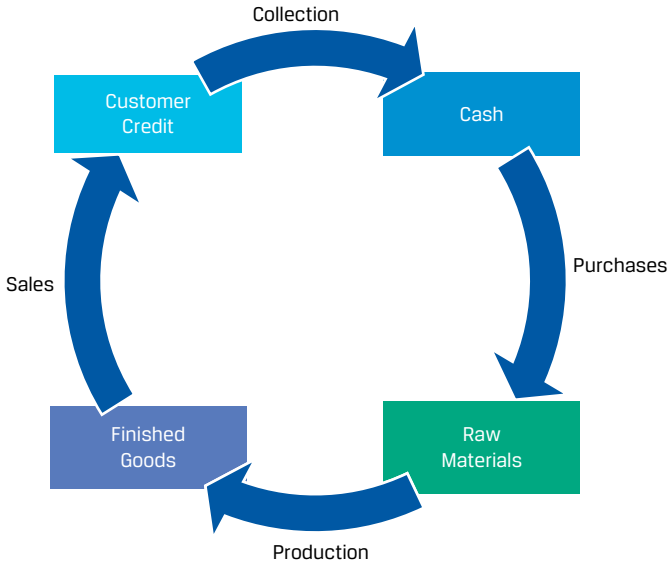
# CASH CONVERSION CYCLE

2

☐ explain the cash conversion cycle and compare issuers' cash conversion cycles

A company's business operations are usually composed of several sequential steps. For a company that makes and sells physical goods, its operations include acquiring materials, producing inventory, selling products to customers, and collecting cash. These activities are known as the issuer's **operating cycle** and occur once or many times over a year, as illustrated in Exhibit 1.

**Exhibit 1: Operating Cycle**




These activities result in cash outflows and inflows that usually do *not* occur at the same time as the activity. For example, materials are purchased and received by a firm but may not be paid for in cash until weeks or months later. Goods are sold to customers, but cash may not be received until weeks or months later. Finally, inventory may take time to produce or be ready for sale, such as in the spirits industry, where an aged product like whiskey can take years before it is ready to be sold to customers.

Future cash inflows within the operating cycle are recorded as short-term assets on issuers' balance sheets, while future cash outflows within the operating cycle are recorded as short-term liabilities. Issuers' financial statements often use the terms and associated definitions in Exhibit 2 for different types of future cash inflows and outflows.

**Exhibit 2: Selected Short-Term Assets and Liabilities**

| Short-Term Asset | Meaning |
|---|---|
| Accounts receivable | Amounts to be collected from customers for products or services sold |
| Inventory | Cost of products produced or purchased for sale |

| Short-Term Liability | Meaning |
|---|---|
| Accounts payable | Amounts owed to suppliers for products or services received |

These short-term assets and liabilities are recognized based on the performance or occurrence of an activity and are derecognized when the cash inflow or outflow occurs, as illustrated in Exhibit 3.

**Exhibit 3: Selected Short-Term Assets and Liabilities Recognition Criteria**

| Short-Term Asset | Recognized When . . . | Derecognized When . . . |
|---|---|---|
| Accounts receivable | Product or service is sold to customer on credit | Cash is received from customer |
| Inventory | Issuer takes ownership of materials, goods, supplies, etc. | Product is sold to customer |

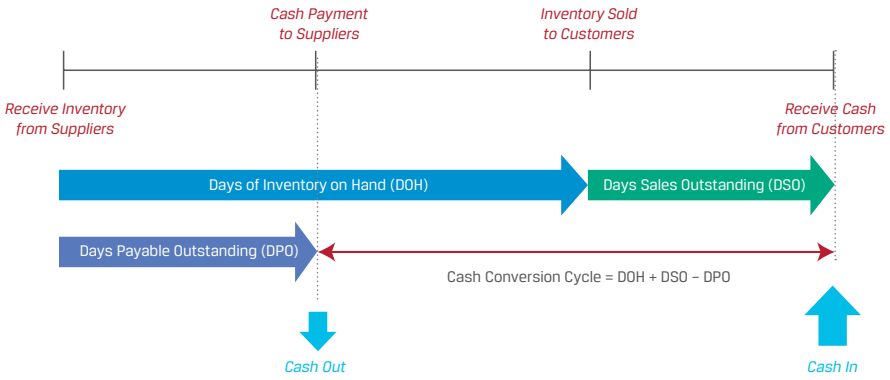
| Short-Term Liability | Recognized When . . . | Derecognized When . . . |
|---|---|---|
| Accounts payable | Product or service is received, and issuer defers payment to supplier | Cash is paid to supplier |

We can use the average duration of each of these short-term accounts to construct a timeline for a company's operating cycle. The amounts of time that accounts payable, inventory, and accounts receivable are outstanding on the balance sheet are known, respectively, as **days payable outstanding (DPO)**, **days of inventory on hand (DOH)**, and **days sales outstanding (DSO)**. The calculations of these amounts, known as **activity ratios**, will be discussed in detail later in the curriculum. An important quantity from this timeline for analysts is the **cash conversion cycle**: the amount of time between an issuer's paying its suppliers and receiving cash from customers (i.e., the time between derecognition of accounts payable and derecognition of accounts receivable). Formally, the cash conversion cycle, in days, is expressed in Equation 1 as:

$$\text{Cash conversion cycle} = \text{Days of inventory on hand} + \text{Days sales outstanding} - \text{Days payable outstanding} \quad (1)$$

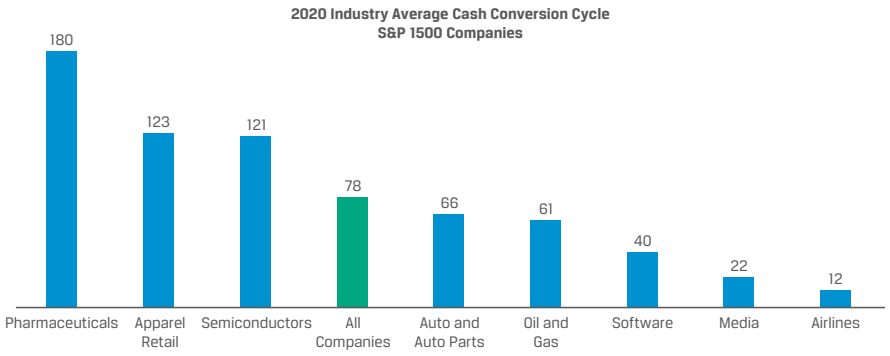
Exhibit 4 depicts the cash conversion cycle on a timeline within the broader operating cycle.

**Exhibit 4: The Cash Conversion Cycle**




The cash conversion cycle is the number of days it takes a company to convert an inventory investment into cash receipts from customers. Therefore, the longer the cash conversion cycle, the longer a company needs financing to pay its bills, such as payroll, because it has not yet received cash from customers. In 2020, the average US-listed company had a cash conversion cycle of 78 days, though there was considerable variance by industry, as shown in Exhibit 5. Pharmaceutical manufacturers tend to have relatively long cash conversion cycles because they keep a considerable inventory of pharmaceuticals on hand. Airlines—a service business with minimal inventories of goods and mostly prepaid sales to customers in cash or credit cards—tend to have short cash conversion cycles.

**Exhibit 5: 2020 S&P 1500 Industry Average Cash Conversion Cycles**




Source: JPMorgan Working Capital Index 2021. Authors' analysis.

The ideal scenario is a short or even negative cash conversion cycle, which means that cash invested in inventory is quickly returned for subsequent investment. A negative cash conversion cycle can result from receiving cash from customers before—in some cases, *well* before—suppliers are paid. This scenario results in cash that can be used elsewhere, reducing the need for alternative financing to fund operations.

### INDITEX'S NEGATIVE CASH CONVERSION CYCLE

Industria de Diseño Textil, S.A., known as Inditex, is an apparel designer, manufacturer, and retailer listed on the stock exchanges of Madrid, Barcelona, Bilbao, and Valencia. Its largest brand concept is ZARA, which specializes in fast fashion.

Inditex has a unique business model in apparel, in which it leverages its vertically integrated supply chain to design, make, and sell numerous limited runs of inventories, enabling it to keep up with and influence customers' changing fashion tastes. Inditex sells off-the-rack items directly to customers (who pay with cash or credit cards), eschews stocking inventory to mitigate fashion risk, and sources raw materials from a vast number of suppliers over whom it has considerable leverage on payment terms. As a result, Inditex has a negative cash conversion cycle, as shown in the table below.

| (in millions of EUR) | 2021 | 2020 |
|---|---|---|
| Accounts receivable | 842 | 715 |
| Inventories | 3,042 | 2,321 |
| Accounts payable | 6,199 | 4,659 |
| | | |
| Sales | 27,716 | 20,402 |
| Cost of goods sold | 11,902 | 9,013 |
| | | |
| Days sales outstanding | 11 | 13 |
| Days of inventory on hand | 93 | 94 |
| Days payable outstanding | 190 | 189 |
| Cash conversion cycle | –86 | –82 |

Issuers can shorten their cash conversion cycle in several ways, including the following:

- Reduce days of inventory on hand by discontinuing products or product lines with low or niche demand, by negotiating with suppliers to do more frequent deliveries in order to establish "just in time" inventory levels, and by using data analytics to improve customer demand forecasts and to rationalize stocking levels.
- Reduce days sales outstanding by offering prompt-payment discounts to customers, imposing late fees, tightening credit standards, imposing upfront deposits or accelerating installment payments, and working with third-party collection agencies.
- Increase days payable outstanding by negotiating supplier contracts for longer terms. This approach may be feasible by establishing preferred suppliers—purchasing more in volume in exchange for better terms. However, it may result in suppliers charging higher prices or asking for deposits. The ability to lengthen days payable outstanding is highly dependent on the power dynamics between the company and its suppliers. If a company can purchase a critical component from only one supplier who sells to many others, it may not have the ability to negotiate better terms.

While extending days payable outstanding can improve the cash conversion cycle, suppliers typically offer discounts for prompt payment, such as requiring payment in 30 days but offering a 2% discount if payment is received within 10 days. If a company forgoes this discount in favor of paying in 30 days, it is implicitly borrowing from the

supplier for 30 – 10 = 20 days at the cost of the forgone discount. One strategy is to borrow from a third party (e.g., a bank) at a relatively low interest rate, pay the supplier early to receive the prompt-payment discount, and later repay the bank. Such a strategy avoids the high cost of supplier financing but preserves cash, as shown in the following example.

**EXAMPLE 1**

## Keown Corporation—Internal versus External Financing

Keown Corporation is an established manufacturer of custom paddleboards operating in the North American market. Keown operates its own manufacturing plant in Canada and sells its paddleboards exclusively through its website to avoid the cost of retail locations.

Most of Keown's sales take place during the North American summer season from May to August. Keown's customers expect orders to be filled immediately, so it must maintain substantial inventory to start the summer season or risk losing sales to competitors. Given the seasonality of the business, Keown is particularly focused on meeting customers' needs.

Since Keown lacks the necessary cash to pay its suppliers within 10 days, the CFO must decide whether to borrow from its bank at an effective annual rate (EAR) of 7.7% to take the prompt-payment discount offered by its supplier of materials or pay in 30 days. The terms from the supplier are 2/10, net 30.

1. Should Keown use the bank loan and pay the supplier within 10 days to receive the 2% discount, or simply forgo the discount and pay the supplier in 30 days?

   **Solution:**

   To compare the relative cost of the bank loan with that of the trade credit, we can calculate the effective annual rate on the trade credit. Essentially, we are calculating the interest rate on a loan for which the interest cost is the forgone discount and the term is the additional time Keown gets to pay; in this case, 30 – 10 = 20 days.

$$\text{EAR of Supplier Financing} = \left(\left(1 + \frac{\text{Discount \%}}{100\% - \text{Discount \%}}\right)^{\frac{\text{Days in Year}}{\text{Payment Period} - \text{Discount Period}}}\right) - 1$$

$$\text{Effective Annual Rate of Supplier Financing} = \left(\left(1 + \frac{2\%}{100\% - 2\%}\right)^{\frac{365}{30-10}}\right) - 1$$

$$\text{Effective Annual Rate of Supplier Financing} = 0.446 \text{ or } 44.6\%$$

   Since the effective annual rate of 44.6% on the supplier financing is significantly higher than the 7.7% interest rate on the bank loan, Keown should borrow from its bank. That way, it will still be able to preserve cash but will pay a far lower interest rate on the financing.

A long cash conversion cycle may reflect industry or business model characteristics, but a longer cycle relative to competitors and a lengthening over time are of particular concern for analysts. A longer cycle may signal worsening customer demand, deteriorating customer financial health or credit quality, or the loss of bargaining power with suppliers.

**EXAMPLE 2**

## Cash Conversion for US Discount Retailers

Consider the following activity ratios for large US discount retailers Walmart Inc., Target Corporation, Costco Wholesale Corporation, The TJX Companies, and Ross Stores for the 2021 calendar year, as shown below.

| | Walmart | Target | Costco | TJX | Ross |
|---|---|---|---|---|---|
| Days sales outstanding | 5 | 2 | 3 | 7 | 2 |
| Days of inventory on hand | 48 | 68 | 29 | 63 | 61 |
| Days payable outstanding | 47 | 75 | 34 | 47 | 63 |

1. Which company has the shortest cash conversion cycle? The longest?

   **Solution:**

   Cash conversion cycle = DSO + DOH − DPO

   Cash conversion cycle for Walmart = 5 days + 48 days − 47 days = 6 days

   Cash conversion cycle for Target = 2 days + 68 days −75 days = −5 days

   Cash conversion cycle for Costco = 3 days + 29 days − 34 days = −2 days

   Cash conversion cycle for TJX = 7 days + 63 days − 47 days = 23 days

   Cash conversion cycle for Ross = 2 days + 61 days − 63 days = 0 days

   Target has the shortest cash conversion cycle of the five companies.

2. These companies accept payment from customers at the point of sale in either cash or a debit or credit card. Does this fact align with the activity ratios presented?

   **Solution:**

   Yes, because days sales outstanding is small. Debit and credit card payments typically settle in a couple of days, and cash sales are settled immediately.

3. In examining annual reports, you find that approximately 54% of Costco's sales are food or food-related items, a larger percentage than that of the other companies, which sell a greater percentage of apparel and non-food items. Does this fact align with the activity ratios presented?

   **Solution:**

   Yes. Companies like Costco that sell perishable goods tend to have a lower number of days of inventory on hand, because inventory must be sold soon after receiving it from suppliers or else it spoils.

In addition to the cash conversion cycle, another measure analysts use to assess the efficiency of business operations is the amount of **working capital** used by the firm, particularly its quantity relative to sales so that it can be compared across time and firms. There are several definitions of working capital in practice. We distinguish between **total working capital**, formally defined in Equation 2 as a broad measure, and **net working capital**, defined in Equation 3 as a measure that excludes items that are less related to the cash conversion cycle or business operations, such as cash, marketable securities, and short-term debt.

Current assets
Minus: Current liabilities
Total Working Capital

(2)

Current assets, excluding cash and marketable securities
Minus: Current liabilities, excluding short-term and current debt
Net Working Capital

(3)

To control for size and for comparability across firms, total or net working capital is often expressed as a percentage of annual sales.

Consider the information on Licht Vernieuwend N.V. for the fiscal year ending 31 December 20X2, as shown in Exhibit 6. The total working capital is the difference between the current assets of EUR335 million and the current liabilities of EUR220 million, or EUR115 million. The net working capital excludes cash, marketable securities, and short-term bank loans from the calculation, giving a net working capital of EUR225 million – EUR160 million = EUR65 million.

**Exhibit 6: Total and Net Working Capital Extracted from the Licht Vernieuwend N.V. Balance Sheet for the Year Ending 31 December 20X2**

| | (in millions of EUR) | |
|---|---|---|
| Cash | 40 | |
| Marketable securities | 70 | |
| Accounts receivable | 85 | 85 |
| Inventory | 130 | 130 |
| Prepaid accounts | 10 | 10 |
| Total | 335 | 225 |
| | | |
| Accounts payable | 130 | 130 |
| Accrued expenses | 30 | 30 |
| Short-term bank loan | 60 | |
| Total | 220 | 160 |
| | | |
| Total working capital | 115 | |
| Net working capital | | 65 |

The cash conversion cycle and the ratio of working capital to sales are interrelated. Since receivables and inventories are often large components of short-term assets and payables are a large component of short-term liabilities, a short cash conversion cycle is associated with a low ratio of working capital to sales and vice versa.

## INDITEX'S NEGATIVE CASH CONVERSION CYCLE AND WORKING CAPITAL

Continuing the earlier example, owing to Inditex's business model—which includes prompt payment from customers for off-the-rack apparel, limited runs of inventories with fast turnover, and a vast number of suppliers over which it has leverage—Inditex has not only a negative cash conversion cycle but also negative net working capital and negative ratios of net working capital to sales, as shown in the table below.

| (in millions of EUR) | 2021 | 2020 |
|---|---|---|
| Accounts receivable | 842 | 715 |
| Inventories | 3,042 | 2,321 |
| Accounts payable | 6,199 | 4,659 |
| Net working capital | −2,315 | −1,623 |
| As a % of sales | −8.4% | −8.0% |
| | | |
| Sales | 27,716 | 20,402 |
| Cost of goods sold | 11,902 | 9,013 |
| | | |
| Days sales outstanding | 11 | 13 |
| Days of inventory on hand | 93 | 94 |
| Days payable outstanding | 190 | 189 |
| Cash conversion cycle | −86 | −82 |

A high ratio of working capital to sales may be a result of industry characteristics, such as in the spirits industry, where inventory must age for several years before being sold to customers, or in the pharmaceutical industry, where companies hold a large amount of inventory, sometimes to comply with regulations. Besides cases of necessity, as illustrated in Example 1, or cases of compliance with regulations, issuers are generally better off holding less working capital and either using capital elsewhere on higher-return projects or returning capital to investors.

**QUESTION SET**

1. Classify each of the following actions by an issuer based on the likely effect on its cash conversion cycle:

| | Effect on the Cash Conversion Cycle | |
|---|---|---|
| **Action** | **Shorten** | **Lengthen** |
| Offering larger discounts to its customers for payments received before the due date | | |
| Paying suppliers sooner | | |
| Lowering reliance on just-in-time inventory methods while increasing safety stocks of inventory | | |
| Negotiating longer payment periods with its suppliers | | |
| Tightening credit standards for its customers | | |

**Solution:**

| | Effect on the Cash Conversion Cycle | |
|---|---|---|
| **Action** | **Shorten** | **Lengthen** |
| Offering larger discounts to its customers for payments received before the due date | ✓ | |
| Paying suppliers sooner | | ✓ |

| Action | Effect on the Cash Conversion Cycle: Shorten | Effect on the Cash Conversion Cycle: Lengthen |
|---|---|---|
| Lowering reliance on just-in-time inventory methods while increasing safety stocks of inventory | | ✓ |
| Negotiating longer payment periods with its suppliers | ✓ | |
| Tightening credit standards for its customers | ✓ | |

2. Identify the issuer with the longest cash conversion cycle and explain the effects of that length on that issuer relative to the other issuers.

| | Issuer A | Issuer B | Issuer C |
|---|---|---|---|
| Days of inventory on hand | 20 | 35 | 15 |
| Days payable outstanding | 15 | 10 | 5 |
| Days sales outstanding | 30 | 25 | 30 |

**Solution:**

Using:

$$\textit{Cash conversion cycle} = \textit{Days of inventory on hand} + \textit{Days sales outstanding} - \textit{Days payable outstanding}$$

| | Issuer A | Issuer B | Issuer C |
|---|---|---|---|
| Days of inventory on hand | 20 | 35 | 15 |
| Plus: Days sales outstanding | 30 | 25 | 30 |
| Minus: Days payable outstanding | 15 | 10 | 5 |
| Cash conversion cycle | 35 | 50 | 40 |

Issuer B has the longest cash conversion cycle, 50 days. By having the longest cycle, Issuer B is more reliant on alternative financing to support its operations relative to the other issuers.

3. Assuming no change in days sales outstanding and days of inventory on hand, an issuer in need of cash flow that forgoes the discount offered by its vendor for payments within 10 days and chooses to pay on the due date in 30 days is:

**A.** shortening its cash conversion cycle.

**B.** lengthening its cash conversion cycle.

**C.** not affecting its cash conversion cycle.

**Solution:**

B is correct. The issuer that uses the vendor financing by delaying payments is increasing its days payable outstanding and thus lengthening its cash conversion cycle. The issuer is reducing its need for liquidity by taking advantage of the vendor financing at the cost of the forgone discount.

4. An issuer with limited cash flow is deciding which of its suppliers' credit terms are least costly. Which of the following credit terms offered to the issuer by its suppliers have the *lowest* effective interest rate?

   **A.** 1/10, net 50

   **B.** 2/15, net 40

   **C.** 3/15, net 60

   **Solution:**

   A is correct. The implicit financing cost that the issuer faces when forgoing a discount that the supplier or vendor offers is based on the amount of the forgone discount and length of the payment period beyond the discount period; 1/10, net 50 would permit the issuer to borrow for 50 – 10 = 40 days at a cost of only 1% of the purchase price (the forgone discount). The calculations for the cost of financing for each set of credit terms, expressed as an effective annual rate, are as follows:

   $$\text{EAR of Supplier Financing} = \left(\left(1 + \frac{\text{Discount \%}}{100\% - \text{Discount \%}}\right)^{\frac{\text{Days in Year}}{\text{Payment Period} - \text{Discount Period}}}\right) - 1$$

   $$\text{EAR of 1/10, net 50} = \left(\left(1 + \frac{1\%}{100\% - 1\%}\right)^{\frac{365}{50-10}}\right) - 1$$

   $$\text{EAR of 1/10, net 50} = 0.096 \text{ or } 9.6\%$$

   $$\text{EAR of 2/15, net 40} = \left(\left(1 + \frac{2\%}{100\% - 2\%}\right)^{\frac{365}{40-15}}\right) - 1$$

   $$\text{EAR of 2/15, net 40} = 0.343 \text{ or } 34.3\%$$

   $$\text{EAR of 3/15, net 60} = \left(\left(1 + \frac{3\%}{100\% - 3\%}\right)^{\frac{365}{60-15}}\right) - 1$$

   $$\text{EAR of 3/15, net 60} = 0.280 \text{ or } 28.0\%$$

5. An issuer is comparing a bank loan at a rate of 15% with taking advantage of a supplier's terms of 1/14, net 30, paying on day 14. The best decision in terms of the lower cost of financing is to:

   **A.** forgo the discount and use the supplier's financing to pay on day 30.

   **B.** borrow from the bank to take advantage of the trade credit terms.

   **C.** use either option because the cost of the bank loan and the cost of the trade credit are identical.

   **Solution:**

   B is correct.
   The cost of the supplier's trade credit, expressed as an effective annual rate, is 25.769%, which is higher than the 15% interest rate on the bank loan.

   $$\text{EAR of Supplier Financing} = \left(\left(1 + \frac{\text{Discount \%}}{100\% - \text{Discount \%}}\right)^{\frac{\text{Days in Year}}{\text{Payment Period} - \text{Discount Period}}}\right) - 1$$

   $$\text{EAR of 1/14, net 30} = \left(\left(1 + \frac{1\%}{100\% - 1\%}\right)^{\frac{365}{30-14}}\right) - 1$$

EAR of 1/14, net 30 = 0.25769 or 25.769%

A and C are incorrect, because the bank loan rate of 15% is lower than the effective annual rate, 25.769%, on the supplier's trade credit.

6. Consider the following balance sheet for an issuer:

| | |
|---|---|
| Cash | 100 |
| Marketable securities | 20 |
| Accounts receivable | 600 |
| Inventory | 800 |
| Prepaid expenses | 30 |
| Property, plant, and equipment | 10,000 |
| Intangibles | 500 |
| Total assets | 12,050 |
| | |
| Accounts payable | 980 |
| Accrued expenses | 70 |
| Short-term debt | 1,000 |
| Long-term debt | 2,000 |
| Shareholders' equity | 8,000 |
| Total liabilities and equity | 12,050 |

7. The issuer's net working capital is *closest* to:

**A.** –500.

**B.** 380.

**C.** 500.

**Solution:**

B is correct. Net working capital is defined as:

Current assets, excluding cash and marketable securities
Minus: Current liabilities, excluding short-term and current debt
Net Working Capital

Current assets, excluding cash and marketable securities:

| | |
|---|---|
| Accounts receivable | 600 |
| Inventory | 800 |
| Prepaid expenses | 30 |
| Sum | 1,430 |

Current liabilities, excluding short-term and current debt:

| | |
|---|---|
| Accounts payable | 980 |
| Accrued expenses | 70 |
| Sum | 1,050 |
| Net working capital | 380 |

A is incorrect, because cash, marketable securities, and short-term debt are mistakenly included in the calculation, resulting in the calculation of total working capital instead of net working capital.

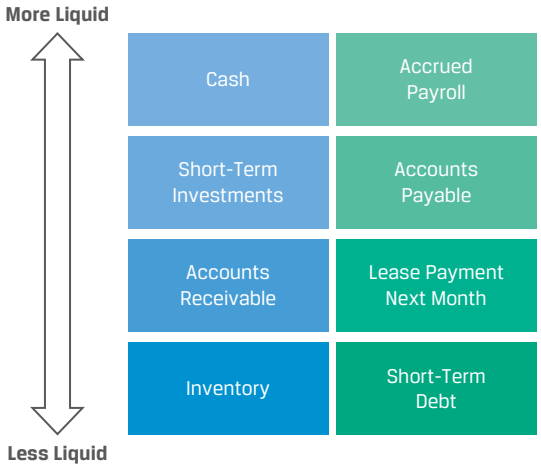
C is incorrect, because cash and marketable securities are mistakenly included in the calculation.

# 3 LIQUIDITY

☐ explain liquidity and compare issuers' liquidity levels

**Liquidity** for an individual asset or liability is its nearness to cash or settlement. Cash is already cash, so it is the most liquid asset, while inventories can take issuers significant time to sell and ultimately collect cash from customers and are thus less liquid than cash. Similarly, accounts payable due to a supplier in five days are more liquid than a lease payment due next month. Issuers report assets and liabilities on their balance sheet in descending order of liquidity. Assets and liabilities that are not expected to convert into cash or settle within 12 months are presented as long-term assets and liabilities. Exhibit 7 depicts the relative liquidity of short-term assets and liabilities.

**Exhibit 7: Relative Liquidity of Short-Term Assets and Liabilities**




Liquidity for an *issuer* refers to its ability to meet its short-term liabilities. It is determined by the amounts and liquidity of its short-term assets and liabilities, which in turn are determined by an issuer's business model and cash conversion cycle. For example, if an issuer has 20 in total short-term liabilities and 100 in cash, it is highly liquid and will face no problem paying its short-term liabilities. If the reverse is true and the company has 20 in cash and 100 in short-term liabilities, the company will have to seek other sources of liquidity to meet its short-term liabilities.

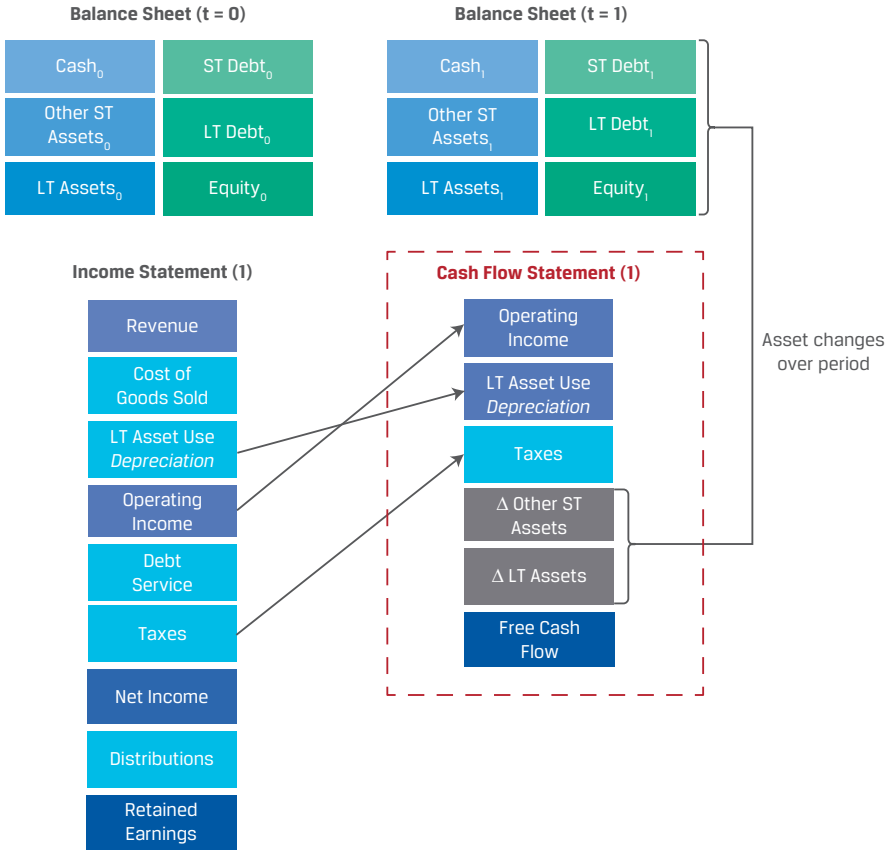
## Primary Liquidity Sources

Primary sources of liquidity represent the most readily accessible cash available to the company and include the following:

- *Cash and marketable securities on hand*, which is cash available in bank accounts or held as currency or securities that could be sold quickly without significant loss of value.
- *Borrowings*, from banks, bondholders, or suppliers' trade credit. While this source can yield cash to settle near-term obligations, it creates another obligation that will need to be repaid in the future.
- *Cash flow from the business*, though it takes time to generate, is a substantial source of liquidity for profitable firms. For example, if a firm has a liability of 40 due in six months but expects to generate 100 in cash from its operations over the next six months, it will not have to use cash on hand or borrowings to settle this liability. However, firms in an earlier stage of growth or earning net losses may not generate sufficient cash flows to meet liabilities.

While cash and securities on hand and borrowings are an important source of liquidity in the short run, an issuer's cash flow from its business is the primary long-term source of liquidity. For that reason, financial analysts closely track this information using a financial statement reported by issuers known as the **statement of cash flows**, the basic elements of which are shown in Exhibit 8.

**Exhibit 8: Statement of Cash Flows for a Firm**



There are several measures of cash flows that analysts use or calculate from the statement of cash flows. **Cash flow from operations** is a cash profit measure over a period for an issuer's primary business activities, calculated as:

Cash received from customers
Plus: Interest and dividends received on financial investments
Minus: Cash paid to employees and suppliers
Minus: Taxes paid to governments
Minus: Interest paid to lenders
Cash flows from operations

(4)

However, this measure does not account for capital investments (covered in a subsequent learning module) that issuers make to improve operations or expand. Therefore, analysts calculate an additional measure known as **free cash flow** that accounts for this factor:

Cash flows from operations
Minus: Investments in long-term assets
Free cash flow

(5)

An alternative measure of free cash flow adds back interest paid to lenders in order to compute cash flows that are available for both debt and equity investors. This important topic will be addressed in greater detail later in the curriculum.

## Secondary Liquidity Sources

While primary liquidity sources are preferable and are unlikely to affect a firm's ongoing operations, a secondary source may have to be used. Secondary sources of liquidity include the following:

- Suspending or reducing dividends to shareholders.
- *Delaying or reducing capital expenditures*, which will preserve cash in the near term but may result in missed opportunities and impair long-term value.
- *Issuing equity*, by issuing shares in the public markets or privately to select investors. While equity issuance provides cash, it comes at the cost of dilution for existing shareholders.
- *Renegotiating contract terms*, such as refinancing short-term debt to long-term debt; seeking concessions on interest, rent, and/or lease payments; restructuring debt covenants; and renegotiating payment or delivery terms with customers and suppliers.
- *Selling assets*, which depends on the degree to which short-term and/or long-term assets can be liquidated and converted into cash without substantial loss in value.
- *Filing for bankruptcy* protection and reorganization to continue operations while restructuring debt contracts and possibly selling assets.

The use of secondary sources often signals a company's deteriorating financial health, as it seeks to increase its cash position at a relatively high price or disadvantage to existing debt and equity holders, the company's employees, and other stakeholders. For example, early in the COVID-19 pandemic, airlines raised funds to shore up their cash positions as revenue severely declined: Lufthansa raised EUR600 million through a convertible bond offering, Singapore Airlines raised SGD$8.8 billion using a rights issue, and Delta Airlines deferred USD500 million in capital expenditures.

Example 3 shows the net proceeds from the primary and secondary sources of liquidity for an issuer in a liquidity crisis. It also shows the liquidation costs incurred by the company when those sources are used to raise funds. These costs can include the fees and commissions involved with the asset sale as well as any discount in asset value due to liquidity issues.

**EXAMPLE 3**

## Estimating Keown Corporation's Cost of Liquidity

1. Keown Corporation is facing a liquidity crisis. As an analyst, you have identified four potential actions that Keown could take to raise funds. Your estimates of fair value for Keown's assets and liquidation costs are shown below.

| Source of Funds | Fair Value (millions of CAD) | Liquidation Costs (%) |
|---|---|---|
| Sell short-term marketable securities | 10 | 0 |
| Sell select inventories and receivables | 20 | 10 |
| Sell excess real estate property | 50 | 15 |
| Sell a subsidiary of the firm | 30 | 20 |

The liquidation costs include the fees and commissions for selling an asset as well as any reduction in value due to its illiquidity. In this case, liquidation costs for marketable securities are zero.

Net of liquidation costs, how much liquidity can Keown raise if all four sources of funds are used, and what are Keown's total liquidation costs?

**A.** 110 million, 9.5 million

**B.** 94.5 million, 15.5 million

**C.** 125.5 million, 15.5 million

**Solution:**

The gross and net amounts of liquidity raised are summarized in this table:

| | | Liquidation Costs | | |
|---|---|---|---|---|
| Source of Funds | Fair Value (millions of CAD) | % | (millions of CAD) | Net Proceeds (millions of CAD) |
| Marketable securities | 10 | 0 | 0 | 10 |
| Inventories and receivables | 20 | 10 | 2 | 18 |
| Real estate property | 50 | 15 | 7.5 | 42.5 |
| Subsidiary of the firm | 30 | 20 | 6 | 24 |
| **Total** | | | 15.5 | 94.5 |

B is correct. Total net proceeds from the sales are CAD94.5 million, and the total liquidation costs incurred are CAD15.5 million.

## Factors Affecting Liquidity: Drags and Pulls

A company's cash conversion cycle has significant effects on its liquidity position. Two classifications for negative forces on a firm's liquidity are drags and pulls on liquidity. A **drag on liquidity** occurs when cash inflows lag, creating a shortfall due to a decline in available funds. Alternatively, a **pull on liquidity** involves an acceleration of cash outflows or a situation where trade credit availability is limited, requiring companies to expend funds before they receive proceeds from sales that could offset the liability.

Major drags on receipts involve pressures from credit management and deterioration in other assets and include the following:

- *Uncollected receivables.* The longer customer receipts are outstanding, the greater the chance they will not be collected. As we will see in the following lesson, this drag is often measured by the average number of days that receivables are outstanding as well as the level of customer payment delinquencies as a percentage of receivables.
- *Obsolete inventory.* If inventory of finished goods is held for long periods, it might be an indication that it is no longer in demand by customers or can be sold only at a discounted price.
- *Borrowing constraints.* If credit conditions tighten due to adverse economic conditions, short-term debt becomes more expensive or unavailable.

In many cases, drags can be reduced by stricter enforcement of credit and collection practices, but this approach may also drive sales lower if customers are unwilling or unable to make a purchase if cash payment is required.

Managing cash outflows is of equal importance. If suppliers and other vendors who offer credit terms have greater market power over a firm or believe its financial position is weak, they might demand payment terms that strain the company's liquidity. Major pulls on liquidity include the following:

- *Making payments early.* By paying vendors, employees, or others before the due dates with no financial benefit, companies forgo the use of funds. Effective payment management means *not* making early payments.
- *Reduced credit limits.* If a company has a history of late payments, suppliers may cut the firm's credit outstanding at any time.
- *Limits on short-term lines of credit*. If a company's bank limits lending to it, the company may face liquidity constraints. Credit line restrictions can be government mandated, market related, or simply company specific.
- *Low liquidity positions*. Many companies face chronic liquidity shortages, often due to industry conditions or a weak financial position. This pull may be exacerbated by an aggressive approach to working capital management.

The following example addresses changes affecting Keown Corporation's liquidity position.

**EXAMPLE 4**

### Drags and Pulls on Keown Corporation's Liquidity

1. Keown Corporation is experiencing liquidity challenges. As an analyst, you note three recent trends related to Keown's working capital:

   **1.** An increase in average days sales outstanding is a drag on liquidity.

   **2.** An increase in days of inventory on hand is a drag on liquidity.

3. An increase in credit limits by lenders is a pull on liquidity.

Which trend does *not* contribute to the firm's liquidity challenges?

**A.** The change in average days sales outstanding

**B.** The change in days of inventory on hand

**C.** The change in credit limits

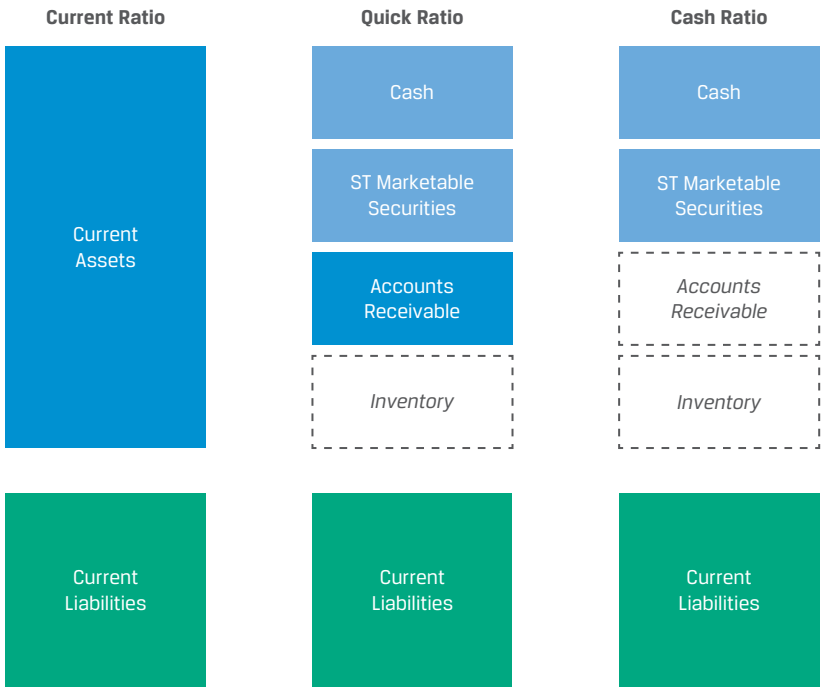
**Solution:**

C is correct. The increase in credit limits is not a pull on liquidity but is in fact the opposite: it provides liquidity.
A is incorrect, because an increase in days sales outstanding is a drag on liquidity as it results in slower or delayed cash inflows.
B is incorrect, because higher days of inventory on hand is a drag on liquidity as it extends the cash conversion cycle.

## Measuring and Evaluating Liquidity

The less liquid the company, the greater the risk it will experience financial distress if business conditions change unfavorably. Financial analysts are keenly interested in common measures to quantify and track changes in firm liquidity over time as well as to compare issuers' liquidity levels. To compare firms of different sizes with varying sources and uses of liquidity, financial *ratios* are frequently used. Liquidity assessment using financial ratios usually involves both **liquidity ratios** and the activity ratios introduced earlier in Example 2. Exhibit 9 summarizes the three most used liquidity ratios.

**Exhibit 9: Key Liquidity Ratios**



Liquidity ratios gauge a firm's ability to meet its short-term obligations from existing current assets. The broadest measure of liquidity is the **current ratio**, or ratio of current assets to current liabilities:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} \quad (6)$$

Recall from an earlier lesson that we defined total working capital as the *difference* between current assets and current liabilities. A firm with positive total working capital would therefore have a current ratio greater than one, with a higher current ratio representing greater liquidity under this aggregate measure, which includes all short-term assets.

This broad ratio is usually considered together with two narrower liquidity measures that exclude less liquid short-term assets. Recall that, unlike cash or short-term marketable securities, inventory and receivables are less readily convertible into cash. The **quick ratio** is a ratio of short-term assets to short-term liabilities that excludes inventory:

$$\text{Quick ratio} = \frac{\text{Cash + Short-term marketable instruments + Receivables}}{\text{Current liabilities}} \quad (7)$$

A firm able to meet its short-term obligations *without* liquidating inventory would therefore have a quick ratio greater than one. However, this scenario would require the firm to collect all receivables without delays or customer delinquencies. The **cash ratio** compares cash and short-term marketable securities with current liabilities and is the most conservative of these measures:

$$\text{Cash ratio} = \frac{\text{Cash + Short-term marketable instruments}}{\text{Current liabilities}} \quad (8)$$

A cash ratio equal to or greater than one indicates that a firm could satisfy all its short-term obligations without having to wait to sell inventory or collect receivables.

**KNOWLEDGE CHECK**

Consider the following balance sheet information for Licht Vernieuwend N.V. for the fiscal year 20X2 and the previous year, 20X1:

| *(in millions of EUR)* | 20X2 | 20X1 |
|---|---|---|
| Cash | 40 | 45 |
| Marketable securities | 70 | 90 |
| Accounts receivable | 85 | 90 |
| Inventory | 130 | 66 |
| Prepaid accounts | 10 | 15 |
| Net plant, property, and equipment | 1,000 | 950 |
| Intangibles | 90 | 75 |
| Total assets | 1,425 | 1,331 |
| | | |
| Accounts payable | 130 | 140 |
| Accrued expenses | 30 | 15 |
| Short-term bank loan | 60 | 70 |
| Long-term debt | 400 | 400 |
| Equity | 805 | 706 |
| Total liabilities and equity | 1,425 | 1,331 |

1. Has net working capital changed from 20X1 to 20X2? If so, what was the primary driver of the change?

**Solution:**

Net working capital is defined as:

Current assets, excluding cash and marketable securities
Minus: Current liabilities, excluding short-term and current debt
Net Working Capital

Licht Vernieuwend N.V.'s net working capital each year is equal to:

| *(in millions of EUR)* | 20X2 | 20X1 |
|---|---|---|
| Accounts receivable | 85 | 90 |
| Plus: Inventory | 130 | 66 |
| Plus: Prepaid accounts | 10 | 15 |
| Minus: Accounts payable | (130) | (140) |
| Minus: Accrued expenses | (30) | (15) |
| Net working capital | 65 | 16 |

Licht Vernieuwend N.V.'s net working capital has increased from EUR16 million in 20X1 to EUR65 million in 20X2, largely owing to the increased investment in inventory from EUR66 million to EUR130 million.

2. Has the liquidity changed from 20X1 to 20X2 based on the:

**i.** cash ratio?

**ii.** quick ratio?

**iii.** current ratio?

**Solution:**

**i.** The cash ratio is defined as:

$$\text{Cash ratio} = \frac{\text{Cash + Short-term marketable instruments}}{\text{Current liabilities}}$$

$$\text{Licht's cash ratio, 20X1} = \frac{45 + 90}{140 + 15 + 70} = 0.60$$

$$\text{Licht's cash ratio, 20X2} = \frac{40 + 70}{130 + 30 + 60} = 0.50$$

Based on the cash ratio, Licht Vernieuwend N.V.'s liquidity has declined from 20X1 to 20X2.

**ii.** The quick ratio is defined as:

$$\text{Quick ratio} = \frac{\text{Cash + Short-term marketable instruments + Receivables}}{\text{Current liabilities}}$$

$$\text{Licht's quick ratio, 20X1} = \frac{45 + 90 + 90}{140 + 15 + 70} = 1.00$$

$$\text{Licht's quick ratio, 20X2} = \frac{40 + 70 + 85}{130 + 30 + 60} = 0.89$$

Based on the quick ratio, Licht Vernieuwend N.V.'s liquidity has declined from 20X1 to 20X2.

**iii.** The current ratio is defined as:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Licht's current ratio, 20X1} = \frac{45 + 90 + 90 + 66 + 15}{140 + 15 + 70} = 1.36$$

$$\text{Licht's current ratio, 20X2} = \frac{40 + 70 + 85 + 130 + 10}{130 + 30 + 60} = 1.52$$

Based on the current ratio, Licht Vernieuwend N.V.'s liquidity has increased from 20X1 to 20X2.

3. Given the changes in liquidity ratios in Question 2, did the issuer become more or less liquid based on the most conservative liquidity ratio?

**Solution:**

The most conservative liquidity ratio is the cash ratio, as it measures the ability of an issuer to settle near-term obligations using only the most liquid assets: cash and short-term marketable instruments. Based on the cash ratio, Licht Vernieuwend N.V.'s liquidity has declined from 20X1 to 20X2.

## QUESTION SET

1. Classify each of the following as either a drag on liquidity or a pull on liquidity:

| | Effect on Liquidity | |
|---|---|---|
| **Action** | **Drag** | **Pull** |
| Customers delaying payments | | |
| Inventory becoming obsolete | | |
| Paying suppliers before due dates without a discount incentive | | |
| Lender reducing a line of credit | | |
| Vendors reducing trade credits | | |

**Solution:**

| | Effect on Liquidity | |
|---|---|---|
| **Action** | **Drag** | **Pull** |
| Customers delaying payments | ✓ | |
| Inventory becoming obsolete | ✓ | |
| Paying suppliers before due dates without a discount incentive | | ✓ |
| Lender reducing a line of credit | | ✓ |
| Vendors reducing trade credits | | ✓ |

2. Consider the following information from the Statement of Cash Flows for the Lucor Corporation:

| | |
|---|---|
| Net income | 1,000 |
| Cash flow from operations | 1,400 |
| Cash flow from investing | (700) |
| Investment in long-term assets | (800) |
| Cash flow from financing | 500 |
| Funds from debt issue | 600 |
| Total net cash flow for the period | 1,200 |

Lucor's free cash flow for this period is *closest* to:

**A.** 200.

**B.** 600.

**C.** 700.

**Solution:**

B is correct. Free cash flow is the difference between cash flow from operations and the investment in long-term assets, or
*Free cash flow* = 1,400 – 800 = 600

3. An issuer is facing a liquidity crisis. Based on these estimations, complete the following table:

| | Fair Value (millions of USD) | Liquidation Cost (% of fair value) | Liquidation Cost (millions of USD) | Net Proceeds (millions of USD) |
|---|---|---|---|---|
| Selling a production plant | 1,000 | 20 | | |
| Selling short-term marketable securities | 100 | 0 | | |
| Selling receivables | 900 | 10 | | |
| Selling inventory | 600 | 12 | | |
| Total | | | | |

**Solution:**

| | (1) Fair Value (millions of USD) | (2) Liquidation Cost (% of fair value) | (3) Liquidation Cost (millions of USD) | (4) Net Proceeds (millions of USD) |
|---|---|---|---|---|
| Selling a production plant | 1,000 | 20 | 200 | 800 |
| Selling short-term marketable securities | 100 | 0 | 0 | 100 |
| Selling receivables | 900 | 10 | 90 | 810 |
| Selling inventory | 600 | 12 | 72 | 528 |
| Total | | | | 2,238 |

The liquidation cost in column (3) is the result of multiplying the column (1) and (2) entries. The net proceeds in column (4) are the result of subtracting the liquidation cost from the fair value, column (1). The total net proceeds is the sum of the net proceeds from each source in column (4).

4. Rank the following ratios from smallest (rank 1) to largest (rank 3) for a company that has inventory, accounts receivable, and payables:

| Ratio | Rank |
|---|---|
| Cash ratio | |
| Current ratio | |
| Quick ratio | |

**Solution:**

The denominator is the same for each of these ratios (current liabilities), so the differences among these ratios are attributable to the numerator. In the case of the cash ratio, the numerator is simply cash and short-term marketable securities. In the case of the quick ratio, receivables are added to cash and short-term marketable securities in the numerator. Finally, the current ratio has all current assets in the numerator.

| Ratio | Rank |
|---|---|
| Cash ratio | 1 |
| Current ratio | 3 |
| Quick ratio | 2 |

5. An issuer has the following current assets and current liabilities on its balance sheet:

| | |
|---|---|
| Cash | 200 |
| Marketable securities | 40 |
| Accounts receivable | 600 |
| Inventory | 800 |
| Prepaid expenses | 60 |

| | |
|---|---|
| Accounts payable | 500 |
| Accrued expenses | 50 |
| Short-term debt | 600 |

The issuer's cash and quick ratios, respectively, are closest to:

**A.** 0.2087; 0.7304.

**B.** 0.4363; 1.5273.

**C.** 0.5455; 1.6364.

Solution to 5:

A is correct.

The cash ratio is:

$$\text{Cash ratio} = \frac{200 + 40}{1,150} = 0.2087$$

The quick ratio is:

$$\text{Quic ratio} = \frac{200 + 40 + 600}{1,150} = 0.7304$$

# MANAGING WORKING CAPITAL AND LIQUIDITY

4

☐ describe issuers' objectives and compare methods for managing working capital and liquidity

The primary goal of working capital and liquidity management is to maximize firm value while maintaining ready access to funds necessary for day-to-day operations and obligations to creditors. Often, reaching this goal involves shortening the cash conversion cycle, estimating required liquidity, and minimizing any excess so that cash can be invested elsewhere in higher-return projects or returned to shareholders.

The realistic bounds of working capital and liquidity management depend on a firm's business model. For example, some types of manufacturing may involve more complex and lengthy conversion of inputs into finished goods, which may require that inventory be held for weeks or months. A distributor of less complex goods, however, may have just a few days of inventory on hand. Some businesses in the same industry require more investment in inventory and receivables than others. For example, retail businesses with multiple sales locations where finished goods are available for purchase, as well as those that offer customers sales on credit versus immediate payment, will need more working capital (in inventories and/or accounts receivable). In contrast, service and software businesses may have far lower working capital requirements, as they do not have inventories and may receive payments from customers upfront.

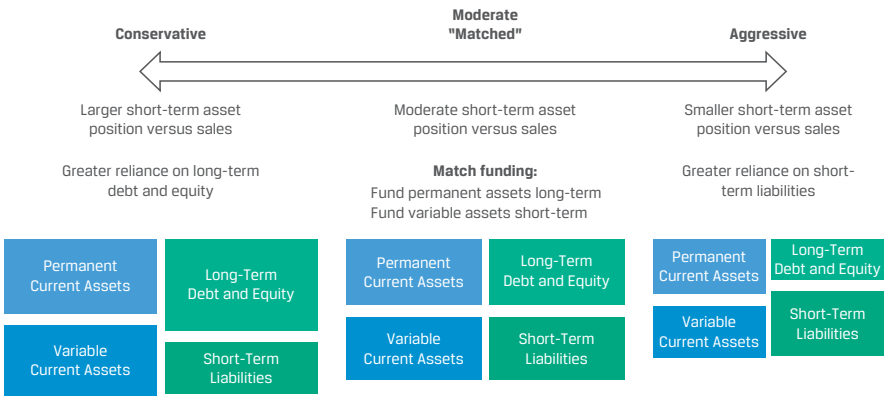
## Working Capital Management

Firms estimate working capital requirements by first determining optimal working capital requirements in relation to revenue and then forecasting future working capital levels based on their revenue forecast. In doing so, firms often distinguish between, on the one hand, base levels of inventory, staffing, and receivables that are *permanent*

current assets and relatively constant over time and, on the other hand, additional inventory and labor needed during a company's seasonal peak production and sales period or during a growth phase that are considered *variable* current assets. During this process, managers also weigh the cost versus benefit of different inventory and receivables management policies. For example, higher inventory levels may reduce the likelihood of a shortfall due to supplier risk or unanticipated demand but may also increase the obsolescence risk of existing inventory. Although more accommodative sales credit policies that increase receivables may help drive sales or revenue growth, they may also lead to higher billing costs and increased payment delinquencies over time.

Companies take different approaches to both the *size* of current assets and the *composition* of financing used to support those assets. Exhibit 10 outlines three different approaches to working capital management, from the highest cost (i.e., higher levels of current assets funded on a longer-term basis) to the lowest (fewer assets funded on a shorter-term basis) for a given level of sales.

**Exhibit 10: Working Capital Management and Funding Approaches**




A conservative approach to working capital management involves more cash, receivables, and inventory relative to sales, with a greater reliance on long-term funding sources. While this strategy provides a firm with the most financial flexibility to meet its needs, it is also typically the costliest. The pros and cons of a conservative working capital approach are outlined in Exhibit 11.

**Exhibit 11: Conservative Working Capital Approach: Pros and Cons**

| Pros | Cons |
|---|---|
| Stable, permanent financing avoids rollover risk associated with short-term debt | Long-term debt typically involves a higher interest rate |
| Financing costs are known upfront | High cost of equity |
| Certainty of working capital needed to purchase the necessary inventory | Permanent financing eliminates the opportunity to borrow only as needed |

| Pros | Cons |
|---|---|
| Extended payment term reduces short-term cash needs for debt service | A longer lead time is often required to establish the financing position |
| Higher flexibility during market disruptions that can be covered by larger cash or marketable securities positions | Long-term debt may involve more restrictions on business operations |

Firms in an early-growth phase are more likely to consider a conservative approach due to limited access to short-term debt. More established companies with higher profit margins pursuing such a policy may also be able to pass these higher financing costs on to customers. Firms may choose to pursue a conservative working capital strategy for a number of other reasons:

- Reduced need to access capital during times of market stress
- Expectation of flat to rising interest rates
- Preference for cash flow stability over rollover risk of short-term debt
- Benefits of greater certainty and access to more permanent capital, which are perceived to offset the higher associated financing cost

An aggressive working capital approach, in contrast, seeks to minimize excess cash, receivables, and inventory relative to sales, with more reliance on short-term funding to meet variable and some permanent working capital needs. With fewer committed resources to support current assets, the firm has reduced its short-term financial flexibility in exchange for higher returns for investors.

The pros and cons of an aggressive working capital strategy are outlined in Exhibit 12.

**Exhibit 12: Aggressive Working Capital Approach: Pros and Cons**

| Pros | Cons |
|---|---|
| Lower financing cost | Interest expense may fluctuate as rates on short-term financing change |
| Flexibility to borrow only as needed reduces overall interest expense | May result in higher short-term cash needs to satisfy debt maturities |
| Short-term debt usually involves fewer restrictions on business operations | Rollover risk of short-term debt increases bankruptcy risk, particularly during market disruptions |
| Flexibility to refinance if rates decline | May have to rely on more costly trade credit, tighten customer credit, or sell receivables if unable to refinance at favorable terms |

Firms in industries with lower profit margins may consider pursuing a more aggressive working capital policy to gain a cost advantage over competitors. While greater reliance on short-term financing lowers debt cost versus a conservative approach, a firm also faces greater exposure to debt rollover risk in times of market stress. This exposure affected many firms during the 2008–2009 financial crisis and in early 2020 during the initial phase of the COVID-19 pandemic.

Firms choosing an aggressive working capital policy may do so for one or more of the following additional reasons:

- Ability to forecast future sales and cash needs with a high degree of precision
- Expectation of stable or falling interest rates
- Expectation that firm will shorten its cash conversion cycle (i.e., shorten its accounts receivable and inventory period and extend its accounts payable period)
- Ability to quickly liquidate inventory and minimize accounts receivable

A moderate working capital approach strikes a balance between the use of long-term financing for more permanent current asset needs and short-term debt for variable needs. Since stable, predictable needs are met with long-term financing and less predictable seasonal or growth-based needs are met with short-term resources, this method is often also referred to as a "matched" approach.

The pros and cons of a moderate working capital strategy are outlined in Exhibit 13.

**Exhibit 13: Moderate Working Capital Approach: Pros and Cons**

| Pros | Cons |
|---|---|
| Lower financing cost versus conservative approach; lower risk than aggressive approach | Access to short-term capital may be limited for seasonal or growth needs |
| Flexibility to increase financing for seasonal requirements or growth as needed | Uncertain cost of short-term debt for variable needs during market disruptions |
| Diversified sources of funding, with a more disciplined approach to balance sheet management | May have to rely on more costly trade credit to meet seasonal or growth needs if unable to refinance at favorable terms |

Under a moderate approach, firms face lower financing costs than under a more conservative policy, with lower refinancing risk relative to a more aggressive working capital strategy. While these firms may also pursue measures to reduce working capital and shorten their cash conversion cycle, the use of long-term debt and equity to support permanent needs allows for more gradual changes in doing so. Other reasons a firm might pursue a moderate approach to working capital management include the following:

- Ability to accurately forecast base current asset requirements, with less certainty surrounding variable needs
- Reduced financing costs relative to a conservative approach, with lower rollover risk and greater financial flexibility than a more aggressive approach
- To balance the use of less costly short-term financing with the stability and certainty of permanent working capital supported by long-term financing

The interaction between a firm's sales strategy and its working capital approach is an important consideration for financial analysts. For example, extending more credit, or more generous credit terms, to customers in order to boost sales will also increase working capital. In addition to an increase in accounts receivable, a firm may well face rising customer payment delinquencies, both of which require additional financing. The added cost of monitoring, billing, and collecting receivables over a longer period, as well as higher borrowing costs, must be weighed against the additional profit generated under the new strategy.

Effective management of liquidity is a core finance function for most firms. Even profitable companies can encounter financial difficulties by failing to ensure they have sufficient liquidity to meet current liabilities.

**EXAMPLE 5**

### Changes to Keown Corporation's Credit Policy

1. Keown Corporation is considering an increase in the line of credit it offers to new customers as its sales manager believes doing so will lead to increased sales. What would be the expected impact on Keown's short-term funding needs if this change were made?

   **A.** The company would reduce its inventory levels.

   **B.** The company would likely collect faster, reducing its receivables.

   **C.** The company would have an increased need for working capital.

   **D.** The company could pay its suppliers sooner, reducing its accounts payable.

   **E.** The company would not see any change in working capital needs as a result of the change.

   **Solution:**

   C is correct. The company would likely need more short-term funding to support the expected increase in required inventory and accounts receivable resulting from an increase in sales.

## Liquidity and Short-Term Funding

As described in a prior lesson, liquidity involves a firm's relative ability to convert resources into cash to meet immediate obligations. For most firms, this ability includes using existing cash balances, cash flow from operations, or borrowings. Firms can maximize financial flexibility by developing a short-term financing strategy and regularly evaluating available alternatives to fund themselves. Companies that fail to sufficiently explore available options or to take advantage of cost savings from available forms of financing are more likely to face higher financing costs or even financial distress, in which they are unable to borrow from any source.

A prudent short-term financing strategy (when to borrow and in what form) achieves several objectives, including the following:

- Maintaining sufficient and diversified sources of credit to fund *ongoing* cash needs. While many firms have a primary source of short-term funding, such as trade credits and credit facilities, a company should ideally ensure it has additional sources of financing available to reduce reliance on one lender or type of funding.
- Securing adequate funding capacity to handle the firm's *changing* cash needs. This objective may involve accommodation of peak seasonal needs or planned growth.
- Confirming that financing rates offered, as well as associated terms and conditions, are competitive and understanding how these rates might change under different capital markets and economic conditions.
- Ensuring that both implicit (e.g., the cost of supplier financing discussed earlier) and explicit funding costs are considered in calculating the company's effective cost of borrowing.

A firm's industry, size, location, and other factors may also influence its approach to short-term funding in the following ways:

- *Size*. A company's size is an important determinant of available financing alternatives. For example, a small, privately held firm might be limited to short-term credit advances from a single bank, while very large firms are able to access short-term fixed-income markets, among other sources. Many funding alternatives involve either a minimum size or fixed costs, making them prohibitively expensive or unavailable for small and midsize companies.
- *Creditworthiness*. A firm's creditworthiness determines not only whether a loan will be approved by a lender and the rate it will pay, but also whether the loan contains terms and conditions that restrict the firm's operations. For example, a lender may impose borrowing conditions on a less creditworthy firm that restrict its ability to sell or use its assets for different purposes. This topic will be covered in greater detail in later learning modules.
- *Legal considerations*. Some firms in emerging or frontier markets with less well-defined legal systems may have fewer funding alternatives from financial intermediaries or financial markets than firms in developed economies. As a result, they may rely more heavily on trade credits from suppliers.
- *Regulatory considerations.* Several industries in developed markets are highly regulated. Firms in these industries, such as utilities or banks, may be restricted in both how much they can borrow and the type of borrowing they can access. In other instances, they may have access to unique sources of short-term funding unavailable to other firms. For example, financial institutions can borrow and lend central bank reserves with one another and can also directly access central bank funding. The funding of financial institutions will be addressed in detail later in the curriculum.
- *Underlying assets.* Depending on their business model, companies may have assets, such as inventory, that are considered attractive as collateral for secured short-term funding.

For firms of any size, industry, or location, proper planning enables a company to manage its short-term debt needs more efficiently. For example, forecasting cash positions over a cash conversion cycle and beyond can help firms reduce the likelihood of financial distress under adverse market conditions. Matching the timing of debt maturities to expected cash receipts and spacing debt maturities out over time can also help reduce short-term funding risk.

**KNOWLEDGE CHECK: EVALUATING SHORT-TERM FINANCING CHOICES**

1. Which of the following factors should a company consider when evaluating short-term financing choices?

   **A.** The cost of the funds borrowed

   **B.** The flexibility offered by the source

   **C.** The ease with which the funds can be accessed

   **D.** Legal or regulatory constraints that might favor one source over another

**E.** All of the above

**Solution:**

E is correct. The cost of funds for a company is the most obvious item to consider, but it may choose to borrow at a slightly higher cost after taking all the other items into consideration.

## KNOWLEDGE CHECK: MEETING KEOWN CORPORATION'S SHORT-TERM FINANCING NEEDS

1. Keown Corporation has accounts payable of CAD2 million with terms of 2/10, net 30 and accounts receivable of CAD2 million. In addition, the company holds CAD5 million in marketable securities. Keown has a short-term need of CAD200,000 to meet payroll. Which of the following choices makes the most sense for raising the CAD200,000?

   **A.** The company should issue long-term debt.

   **B.** The company should issue common stock.

   **C.** The company should delay paying accounts payable and forgo the 2% discount.

   **D.** The company should sell accounts receivable at a 10% discount.

   **E.** The company should sell marketable securities at a 0.5% brokerage cost (ignore capital gains tax).

   **Solution:**

   E is correct.
   The options for raising CAD200,000 are summarized in this table.

| | | Liquidation Cost | |
|---|---|---|---|
| **Source of Funds** | **Action** | **%** | **CAD** |
| C. Accounts payable (2/10, net 30) | Delay CAD200,000 in payment and forgo 2% discount | 2.0 | 4,000 |
| D. Accounts receivable | Sell CAD222,222 in value at 10% discount to raise CAD200,000 | 10.0 | 22,222 |
| E. Marketable securities | Sell CAD200,000 in value | 0.5 | 1,000 |

   Choosing C involves forgoing a 2% discount, which on CAD200,000 amounts to a cost of CAD4,000. To net CAD200,000 using option D, the company would have to sell CAD222,222 of accounts receivable at a cost of CAD22,222. E appears to be the best choice. Marketable securities are liquid and can be easily sold for market value, less the relatively minor brokerage cost of CAD1,000.

**QUESTION SET**

1. Classify each of the following in terms of approaches to working capital management:

| | Conservative | Aggressive |
|---|---|---|
| Greater level of inventory relative to sales | | |
| Greater reliance on long-term financing | | |
| Greater level of cash on hand | | |
| Greater level of marketable securities | | |
| Greater reliance on short-term bank loans | | |

**Solution:**

| | Conservative | Aggressive |
|---|---|---|
| Greater level of inventory relative to sales | ✓ | |
| Greater reliance on long-term financing | ✓ | |
| Greater level of cash on hand | ✓ | |
| Greater level of marketable securities | ✓ | |
| Greater reliance on short-term bank loans | | ✓ |

2. A company has USD30 million of accounts payable, for which it could delay payment to day 14, forgoing the 2% discount it would receive for paying within ten days. The liquidation cost in millions of USD is closest to:

   **A.** 0.6.

   **B.** 6.1.

   **C.** 8.4.

   **Solution:**

   A is correct. The liquidation cost is the forgone 2% discount applied to the USD30 million value of the accounts payable.

   Liquidation cost = USD 30 million × 0.02 = USD 0.6 million

   B and C are incorrect, because they represent effective annual rates of the forgone interest applied to the value of the accounts payable.

3. A company changed the credit terms it offers its customers from 1/10, net 30 to 1/15, net 30. The most likely effect of this change is:

   **A.** an increase in accounts receivable.

   **B.** no change in accounts receivable.

**C.** a decrease in accounts receivable.

**Solution:**

A is correct. The company extended the discount period by 5 days and did not change the discount amount as a percentage of the sale price (1%). More generous credit terms for its customers will likely increase accounts receivable, because customers will take longer to pay even if they take the discount. In addition, the more attractive credit terms may result in increased accounts receivable due to increased sales.
B and C are incorrect, because a more generous discount period will result in increased accounts receivable as customers will take longer to pay if they take advantage of the discount.

4. Changing its accounts receivable policy to extend credit to customers with lower creditworthiness will most likely result in:

**A.** a pull on liquidity.

**B.** a drag on liquidity.

**C.** no effect on liquidity.

**Solution:**

B is correct. By extending credit to customers with lower creditworthiness, the company is likely to experience more delinquent or uncollectible accounts and an increase in days sales outstanding, resulting in a drag on liquidity.
A is incorrect, because a pull on liquidity would result from an acceleration of cash outflows. In this case, the change to the company's credit policy has the effect of slowing cash inflows.
C is incorrect, because the change in the company's accounts receivable policy would likely increase its working capital needs due to having higher accounts receivable.

5. The Lucor Corporation is seeking to raise liquidity and is evaluating two potential actions.

Option 1 Selling accounts receivable to a financial intermediary at a 5% discount off their carrying value

Option 2 Accelerating payments to suppliers to receive a 5% discount

Which of the options would achieve Lucor's objective?

**A.** Option 1

**B.** Option 2

**C.** Neither, because they both incur liquidation costs

**Solution:**

A is correct. Option 1 would increase liquidity by converting a less liquid asset (accounts receivable) into cash immediately, albeit at a cost.
B is incorrect, because Option 2 would decrease liquidity by accelerating cash outflows.
C is incorrect, because Option 2 would decrease liquidity by accelerating cash outflows and would not incur liquidation costs.

# PRACTICE PROBLEMS

1. An issuer changing its credit terms for customers from 2/10, net 30 to 2/10, net 40 will most likely experience:

   **A.** a pull on its liquidity.

   **B.** a drag on its liquidity.

   **C.** no change in its liquidity.

2. Which of the following will most likely *decrease* an issuer's cash conversion cycle? An increase in its days:

   **A.** sales outstanding.

   **B.** of inventory on hand.

   **C.** payable outstanding.

3. An analyst gathers balance sheet information for the most recent fiscal year for three issuers.

| | Issuer A | Issuer B | Issuer C |
|---|---|---|---|
| Cash | 100 | 120 | 50 |
| Marketable securities | 20 | 10 | 20 |
| Accounts receivable | 300 | 300 | 200 |
| Inventory | 500 | 600 | 300 |
| Prepaid expenses | 50 | 0 | 10 |
| Accounts payable | 400 | 500 | 300 |
| Accrued expenses | 40 | 20 | 0 |

   Which issuer is most liquid based on the quick ratio?

   **A.** Issuer A

   **B.** Issuer B

   **C.** Issuer C

4. An analyst is evaluating an issuer's liquidity and calculates a negative cash conversion cycle for the issuer in the most recent fiscal year. This result is:

   **A.** not feasible.

   **B.** possible, because the issuer has sufficient cash and marketable securities on hand to support short-term needs.

   **C.** possible, because the investment in inventory is returned quickly and the issuer takes advantage of vendor financing.

5. An issuer eliminated the prompt-payment discount it had offered to customers. This action most likely will:

   **A.** increase the issuer's liquidity.

**B.** decrease the issuer's liquidity.

**C.** not affect the issuer's liquidity.

# SOLUTIONS

1. B is correct. By extending the net period, the issuer will likely see its accounts receivable increase, lengthening its cash conversion cycle and producing a drag on its liquidity.

   A is incorrect, because the change will slow payments from customers (inflows) rather than pull on liquidity in terms of outflows.

   C is incorrect, because extending the net period will slow payments from customers and produce a drag on liquidity.

2. C is correct. Increasing days payable outstanding would reduce the cash conversion cycle, because payments to suppliers are delayed. Days payable outstanding is subtracted from the sum of days sales outstanding and days of inventory on hand to compute the cash conversion cycle.

   A is incorrect, because an increase in days sales outstanding will increase the issuer's cash conversion cycle.

   B is incorrect, because an increase in days of inventory on hand will increase the issuer's cash conversion cycle.

3. A is correct. The quick ratio is defined as:

   $$\text{Quick ratio} = \frac{\text{Cash + Short-term marketable instruments + Receivables}}{\text{Current liabilities}}$$

   The quick ratio for each issuer is:

   $$\text{Issuer A quick ratio} = \frac{100 + 20 + 300}{400 + 40} = \frac{420}{440} = 0.9545$$

   $$\text{Issuer B quick ratio} = \frac{120 + 10 + 300}{500 + 20} = \frac{430}{520} = 0.8269$$

   $$\text{Issuer C quick ratio} = \frac{50 + 20 + 200}{300 + 0} = \frac{270}{300} = 0.9000$$

4. C is correct. If days of inventory on hand is low, the accounts receivable collection period is short, and the issuer takes advantage of its vendors' financing, a negative cash conversion cycle is a possible result.

   A is incorrect, because issuers may have a negative cash conversion cycle if days payable outstanding is larger than the sum of days of inventory on hand and days sales outstanding.

   B is incorrect, because the amount of cash and marketable securities on hand does not affect the company's cash conversion cycle.

5. B is correct, because the elimination of the discount will likely result in customers paying later as there is no incentive to pay early without the discount. With customers paying later, this action becomes a drag on liquidity.

   A and C are incorrect, because customers likely paying later will reduce the issuer's liquidity.

LEARNING MODULE

# 5

# Capital Investments and Capital Allocation

## LEARNING OUTCOMES

| *Mastery* | *The candidate should be able to:* |
|---|---|
| ☐ | describe types of capital investments |
| ☐ | describe the capital allocation process, calculate net present value (NPV), internal rate of return (IRR), and return on invested capital (ROIC), and contrast their use in capital allocation |
| ☐ | describe principles of capital allocation and common capital allocation pitfalls |
| ☐ | describe types of real options relevant to capital investments |

## INTRODUCTION

1

The previous learning module described issuers' *short-term* investments and financing activities. In this module and the next, we turn our attention to issuers' *long-term* investment and financing activities. First, we explore the various forms of capital investment and their purposes. We then discuss the investment decision-making process and compare analytical approaches employed in that process. In the third lesson, we describe principles of capital allocation and common pitfalls. While the goals of both capital allocation and estimating expected investment returns are to select the best choice among investment alternatives, a firm's decision today may influence future investment decisions, resulting in so-called real options, which are discussed in the final lesson.

### LEARNING MODULE OVERVIEW

- Companies make capital investments to maintain or expand operations. Capital investments can be grouped into four categories based on their risk and return characteristics: (1) going concern projects, (2) regulatory/compliance projects, (3) expansion projects, and (4) other.
- Capital allocation is a process undertaken by issuers' management and board for evaluating investment opportunities based on their expected contribution to shareholder value, as well as other considerations, such as environmental, social, and governance (ESG) factors. Although

some projects might look profitable on an accounting or standalone basis, they might be uneconomical compared to alternatives or from an overall strategic perspective. Such projects should not be pursued, and capital should instead be returned to shareholders.

- Net present value (NPV) and internal rate of return (IRR) are two tools used to evaluate individual investment projects. NPV estimates the increase in firm value from a project, while IRR is an estimate of the rate of return on a project, subject to certain assumptions, which can be compared to a hurdle rate.
- Unlike NPV and IRR, return on invested capital (ROIC) is a company-wide measure and can be calculated using data available to independent analysts. ROIC is the rate of return an issuer earns over a period across all investments and can be compared to an investor's required rate of return. Like NPV and IRR, ROIC is subject to limitations and assumptions.
- Before investment projects are appraised on a quantitative basis, they should be modeled in accordance with certain principles, including measurement of cash flows on an after-tax basis, avoiding double counting, and including a project's impact on the rest of the firm. Impacts can be positive, such as cost savings, or negative, such as the loss of sales from existing products.
- Apart from deviations from these principles, capital allocation is additionally prone to behavioral biases and cognitive errors. These pitfalls can be detected by a thorough analysis of a company's financials on a historical and comparative basis, as well as an examination of corporate governance and management renumeration policies.
- Real options are like financial options in that they provide a right, not an obligation, for management to alter different aspects of capital projects in the future. Those aspects include timing and size of a project, as well as flexibility with regard to future pricing policies or operating capacity.
- The most common approach to evaluating projects with real options is to compare a project's NPV before and after inclusion of an option's value less the option's cost. More advanced methods include decision trees and option pricing models, which require assumptions about the probability of future events.

## LEARNING MODULE SELF-ASSESSMENT

These initial questions are intended to help you gauge your current level of understanding of this learning module.

1. The following list contains either an example or an attribute of a capital investment project. Assign each item to either *maintenance* or *growth*.

   - Acquisition
   - Expand business scope
   - Research and development
   - Replace outdated facilities
   - High-risk investment and uncertainty

- Limited downside risk and uncertainty
- Needed to meet safety, compliance, regulatory standards

| Maintenance | Growth |
|---|---|
| | |

**Solution:**

| Maintenance | Growth |
|---|---|
| Replace outdated facilities | Acquisition |
| Needed to meet safety, compliance, regulatory standards | Expand business scope |
| Limited downside risk and uncertainty | Research and development |
| | High-risk investment and uncertainty |

2. When calculating IRR, the interim cash flows are assumed to be reinvested and earn a rate of return rate that is:

   **A.** lower than IRR.

   **B.** the same as IRR.

   **C.** higher than IRR.

   **Solution:**

   B is correct. An important assumption of IRR is that it represents only the (geometric) rate of return on the investment if interim cash flows are reinvested at the IRR.
   A is incorrect because if reinvestment rates are lower compared to IRR, the rate of return on the investment will be lower than the IRR.
   C is incorrect because if reinvestment rates are higher compared to IRR, the rate of return on the investment will be higher than the IRR.

3. Complete the following sentences by filling in the blanks using the terms provided.

   When calculating ROIC, an independent analyst should add _____ and _____ to calculating average invested capital. ROIC, _____ project NPV and IRR, can be calculated using data available to independent investment analysts.

   like

   unlike

   equity

   short-term assets

   long-term assets

long-term liabilities

**Solution:**

When calculating ROIC, an independent analyst should add *equity* and *long-term liabilities* to calculate average invested capital. ROIC, *unlike* project NPV and IRR, can be calculated using data available to independent investment analysts.

4. Explain why capital allocation decisions should *not* be based on accounting measures such as earnings per share (EPS).

**Solution:**

Capital investments with a positive NPV can reduce rather than increase accounting measures in the near term, while cost cutting and share buybacks, in contrast, may have a positive effect on such measures. Basing investment decisions on short-term accounting numbers can lead a company to choose investments that are not in the long-run interests of its shareholders. Additionally, capital allocation should consider opportunity costs, such as by using a required rate of return for calculating NPV and an appropriate hurdle rate for an IRR. Accounting profits do not consider opportunity costs.

5. The annual report of company XYZ contains the following disclosures:

Disclosure 1: "XYZ's management compensation is based on exceeding a target EPS growth rate."

Disclosure 2: "XYZ's management does not change the required rate of return when evaluating capital projects based on whether they are financed by internal or external sources."

Disclosure 3: "When evaluating investment projects, XYZ prepares cash-flow projections based on inflation-adjusted cash flows and discounts them using real rates."

Which of the disclosed policies does *not* conform to best practices regarding capital allocation?

**A.** Disclosure 1

**B.** Disclosure 2

**C.** Disclosure 3

**Solution:**

A is correct. Positive-NPV investment projects can reduce, rather than increase, EPS in the near term, even though they increase shareholder value. Management compensation should incorporate a longer-term perspective and a measure that better considers required rates of return, such as ROIC.
B is incorrect because internally generated capital, such as cash flow from operations, is equity financing and it could be returned to equity investors as a dividend. Regardless of the financing source, management should use appropriate risk-adjusted required rates of return to evaluate capital investments.
C is incorrect because companies may perform analysis in either nominal or real terms, but the approach to cash flows and the discount rate should be consistent. That is, nominal cash flows should be discounted at a nominal discount rate, and real (inflation-adjusted) cash flows should be discounted at a real rate.

6. Explain what real options are and how they influence company value.

   **Solution:**

   Real options are similar to financial options, except that they deal with real, instead of financial, assets. Real options grant companies the right to make a decision (but do not impose an obligation) in the future that alters the value of capital investment decisions made today. Real options, by providing future decision-making flexibility to companies, can be an important piece of the value in many capital investments.

# CAPITAL INVESTMENTS

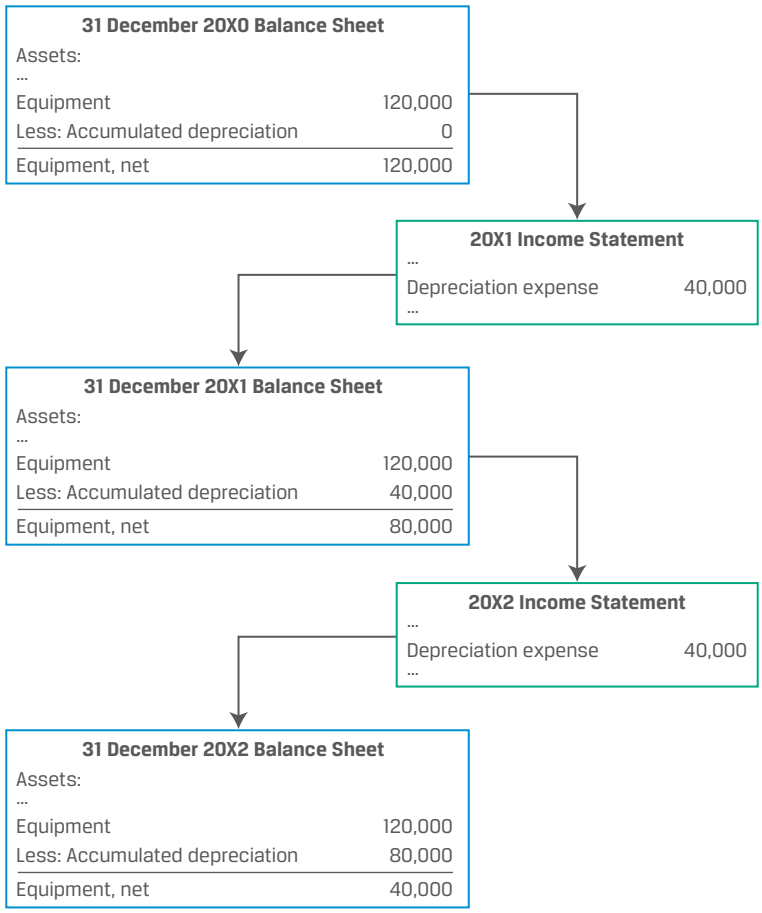
# 2

☐ describe types of capital investments

**Capital investments**, also referred to as *capital projects*, are investments with a life of one year or longer, which usually appear on the balance sheet as long-term assets. Like most assets, capital investments are initially recorded at cost. The expenditure is not recorded on the income statement; rather, a portion of the cost is recorded on the income statement periodically as a non-cash **depreciation** or **amortization** expense over the asset's useful life. The result is that capital spending is "smoothed" over time and aligned with the inflow of benefits from the investment. On the statement of cash flows, cash capital spending is simply reported as incurred.

In subsequent periods, capital investment assets are presented on the balance sheet on a *net* basis: cost less accumulated depreciation or amortization. As depreciation or amortization is recorded over time and accumulates, this net value declines to zero or a salvage value. The process is illustrated in Exhibit 1 and will be covered in greater detail later in the curriculum.

**Exhibit 1: Depreciation/Amortization of a Long-Term Asset**




A firm's capital investment and allocation process are central to its success and therefore important for analysts to understand. Capital investments describe a company's prospects best, providing insight into both the quality of management decisions and how the company creates value. Note that capital investments are not limited to property, equipment, and other tangible assets; increasingly, capital investments are in the form of digital capabilities and other intangible assets. Regardless of the nature of the asset, the principles in this learning module apply because we are focused on cash flows.

Four categories of capital investments and their potential uses are summarized in Exhibit 2. These investments usually link to the business model of the firm and reflect its strategic and competitive environment.

**Exhibit 2: Types of Capital Projects**

| Maintain Business | Grow Business |
|---|---|
| **Going Concern (Maintenance)** | **Expansion of Existing Business** |
| ▪ Continue current operations<br>▪ Improve efficiency<br>▪ Risk management | ▪ Expand business size<br>▪ Expand business scope<br>▪ Research and development and acquisitions within core business<br>▪ Low to moderate risk |
| **Regulatory/Compliance** | **New Lines of Business and Other** |
| ▪ Usually imposed by a third party, laws, etc.<br>▪ Needed to meet safety, compliance, regulatory or supervisory standards | ▪ Research and development, investments, and acquisitions outside the firm's current business<br>▪ Often high risk |

## Going Concern Projects

Going concern projects, often known as **maintenance capital expenditures**, are investments to continue the company's current operations and maintain the existing size of the business. Common going concern projects include replacing assets nearing the end of their useful life, maintaining IT hardware and software, and continuous improvements of existing facilities. For example, a company might replace data center cooling units with newer, more efficient alternatives.

These maintenance projects are relatively easy for management to evaluate since they usually involve the replication of existing business operations. Projects aimed at improving efficiencies typically involve comparing the upfront cost to the expected periodic savings over time in the context of current operations. Typically, these projects are lower risk.

To fund these projects, managers (and debt investors who provide the financing) usually seek to match the term of incremental financing with the lifespan of new assets. For example, a utility company may issue a 30-year bond to finance replacement power generation equipment with an expected useful life of 30 years. This so-called **match funding** approach reduces financing risk, because funding long-term assets with shorter debt obligations introduces rollover risk, or uncertain financing cost or availability during the project before the capital investment reaches the end of its useful life. Similarly, a company that borrows for longer than necessary may either pay a higher long-term rate of interest or face the cost of buying back debt in the future that is no longer needed.

Issuers are not required to disclose the amount of maintenance capital expenditures or the composition of total capital expenditures generally. Analysts often estimate that annual maintenance capital expenditure is equal to the amount of depreciation and amortization expense reported on the income statement. The accuracy of this estimate depends on how closely the expected useful life of assets approximates actual useful life and whether the historical cost of an asset approximates its replacement cost; both assumptions are likely to be more accurate for shorter-lived assets.

## Regulatory Compliance Projects

Unlike projects based on management discretion, regulatory compliance projects are required to meet rules and standards. For example, such projects may be driven by a new law to reduce pollution or financial regulations requiring banks to monitor and report transactions and balances to regulators.

Regulatory compliance projects often increase a firm's expenses with no added revenue but are required to avoid fines and/or to continue operations. However, industry incumbents may find that such rules and standards serve as a barrier to industry entry and therefore increase or protect their profitability. Also, when firms work directly with regulators to develop these new standards, their timing and impact may be tailored to best suit an industry's ability to adapt while continuing operations. Firms with greater financial flexibility may consider early adoption of new rules to reduce business uncertainty going forward and gain a competitive edge versus their peers. Moreover, such investments can attract new customers and are often considered to create a strategic advantage.

As standards evolve, firms must decide whether the returns on an underlying business remain attractive once additional regulatory costs are imposed. In some cases, firms may be able to pass some or all of the additional regulatory costs from these projects on to end users in the form of higher prices. In other cases, a firm may decide that a business no longer meets its minimum return requirement (once the costs of such projects are included) and it would be better off winding down or ceasing certain affected operations altogether.

**EXAMPLE 1**

### Complying with Anti-Money-Laundering Regulations

Danske Bank A/S ("Danske"), the largest financial institution in Denmark, is subject to a large anti-money-laundering investigation after a report from a whistle blower and audit letters from Group Internal Audit. Danske acknowledged in a press release that "*major deficiencies in controls and governance made it possible to use Danske Bank's branch in Estonia for criminal activities, such as money laundering.*"

The examination of Danske's anti-money-laundering policies resulted in the resignation of its CEO, the closure of the Estonian branch, and the arrests of multiple employees. Danske is also expected to pay fines of up to several billion dollars to financial regulators in the United States, Denmark, and other European countries. The scandal not only had an impact on Danske but also resulted in increasing penalties for money laundering in Denmark.

While regulatory compliance projects can be costly, they can prevent scandals and losses from fines and legal proceedings that damage firms' reputations.

Businesses seeking to grow often engage in capital projects to increase the *scale* of existing business activities, expand their *scope* to new areas of operation, or enter new areas. These expansion projects typically involve greater uncertainty, time, and amounts of capital than going concern or regulatory compliance projects.

## Expansion of Existing Business

Capital projects aimed at increasing the size of a firm's existing operations may introduce execution risks, such as sourcing additional inputs, addressing unforeseen production and distribution bottlenecks, or failing to budget for the cost of acquiring new customers. These risks are highest among firms in an early phase without established

operations whose expansion projects are therefore usually largely financed by equity. More established firms also spend heavily on expansion projects. For example, pharmaceutical and energy exploration companies often invest over 10% of annual revenues in pursuit of new medications and energy reserves, respectively. Similarly, technology companies typically invest heavily in expansion projects initially to accelerate product development cycles, maintain competitiveness, acquire customers and clients, and stay ahead of rivals. Established firms with an existing track record of successful expansion are more often able to use debt financing for such capital projects given investor perception of lower associated risk.

Capital investments are also usually necessary if an established firm decides to extend its existing operations to adjacent products and services or expand to new regions or markets. The expansion of business scope may take advantage of existing capabilities to meet the needs of a different customer base. Unforeseen risks related to increasing scope include the added complexity of managing multiple business lines and facing new competitors. Investors and analysts often look to a firm's competitive position and past performance by peers in executing similar strategies when gauging the likelihood of success.

**EXAMPLE 2**

### Sony Grows Gaming Business

Sony Interactive Entertainment ("SIE") is a global, leading video game and digital entertainment company owned by Japanese multinational conglomerate Sony. SIE conducts the research and development, production, and sales of both hardware and software for the PlayStation console.

In January 2022, SIE announced it would acquire Bungie Inc. ("Bungie") for $3.6 billion. Bungie is a US-based independent videogame developer and long-time partner of SIE that has created some of the videogame industry's most highly acclaimed franchises, including Halo, Myth, and Destiny.

In the press release, SIE summarized how the acquisition would expand its business: "This acquisition will give SIE access to Bungie's world-class approach to live game services and technology expertise, furthering SIE's vision to reach billions of players."

## New Lines of Business and Other Projects

A firm's management may decide to invest in an activity completely outside or only minimally related to its existing business. Usually seen as a special situation offering unusual growth, investment, or innovation opportunities for a company's business or business model, these projects are likely to be the riskiest capital investments.

Either these projects will have characteristics of a startup, such as investing capital to explore a new technology or a business idea/model for sources of new business growth, or the company will acquire a firm in a new industry or sector. Important risks include the unforeseen challenges of an unfamiliar business and the risk of overpaying.

**EXAMPLE 3**

## Kirin Enters New Market

Kirin Holding ("Kirin") is an integrated beverage producer and the second largest brewer in Japan. Kirin's top brands include both alcoholic beverages, such as Kirin Ichiban and Honkirin, and soft drinks, such as Kirin Gogo-no-Kocha and Nama-cha.

In September 2019, Kirin invested ¥129 billion to become a top shareholder of Fancl Corp. ("Fancl"), a Japanese cosmetics and dietary supplement maker. Fancl has more than 25 years of experience as a pioneer in the supplement market and is a market leader in foods with functional claims. Both companies want to combine their research and development capabilities with their strong brands to offer a wide range of products.

Analysts should carefully examine issuers' overall level and trend of expansion capital investment, as well as the segment and market if disclosed, to analyze growth prospects, management priorities, and the rates of return on investment relative to alternatives. The level and trend of expansion capital spending may be estimated by subtracting maintenance (often estimated using depreciation and amortization expense) from total capital expenditures.

**QUESTION SET**

1. Match the following examples of capital projects with type of the project.

   - Project 1: An office equipment producer decides to develop a new line of computer peripherals intended for gamers.
   - Project 2: A tire producer decides to invest in solar panel production to benefit from government subsidies.
   - Project 3: A global bank migrates its on-site data storage to cloud computing data storage to improve its cost efficiency.
   - Project 4: A property management company undertakes a new capital project intended to install an advanced ventilation system in all its office buildings to meet stricter air pollution regulations.

| Project Type | Capital Project |
|---|---|
| Expansion of existing business | |
| Going concern/maintenance | |
| Regulatory or compliance | |
| New lines of business and other | |

**Solution:**

| Project Type | Capital Project |
|---|---|
| Expansion of existing business | Project 1, because it aims to increase the size of a firm's existing operations and acquire new customers |
| Going concern/maintenance | Project 3, which allows the bank to continue its current operations using more efficient technology |
| Regulatory or compliance | Project 4, because unlike projects based on management discretion, this project is to comply with air pollution regulations. |
| New lines of business and other | Project 2, which is an investment into a new market not related to the company's existing business |

2. It is true that the capital allocation process:

   **A.** involves the use of significant proprietary, non-public information about a company.

   **B.** aims at identifying projects with the highest absolute non-risk-adjusted rate of returns.

   **C.** uses less information compared to the process used to construct investment management portfolios.

   **Solution:**

   A is correct. The capital allocation process is the process used by a firm's management and board to make capital investment based on both internal, non-public *and* public information. The process is substantially similar to those used by investors and analysts constructing investment management portfolios but occurs at a more granular level of detail and more in "real time" because insiders do not need to wait for quarterly earnings reports.
   B is incorrect because the capital allocation process is used by a firm's management to deliver superior risk-adjusted returns, when compared to similarly risky investments.
   C is incorrect because the capital allocation process is more granular compared to the process used to construct investment management portfolios. The capital allocation process focuses on identifying profitable projects and utilizes proprietary information. The process used to construct investment portfolios involves public information and non-material, non-public information, often at the company and segment level.

3. What type of capital allocation project will *most likely* be implemented even if it has a negative estimated NPV?

   **A.** New lines of business and other

   **B.** Expansion of existing business

   **C.** Regulatory or compliance

   **Solution:**

   C is correct. Regulatory compliance projects are required by third parties, such as government regulatory bodies, to meet rules and standards and to avoid fines or other legal consequences.
   A and B are incorrect because new lines of business and other as well as expansion of existing business projects are done at management's discretion

and would generally not be pursued if they were estimated to have a negative NPV.

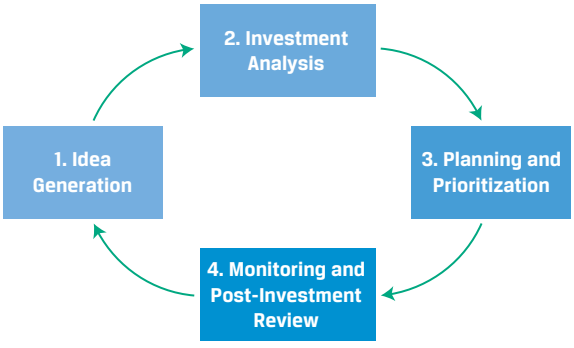
# 3 CAPITAL ALLOCATION

☐ describe the capital allocation process, calculate net present value (NPV), internal rate of return (IRR), and return on invested capital (ROIC), and contrast their use in capital allocation

**Capital allocation** is the process used by a firm's management and board to make capital investment and return decisions. Management seeks to deliver risk-adjusted returns greater than what investors could earn on similarly risky investments elsewhere. The process is substantially similar to those used by investors and analysts constructing investment management portfolios but occurs at a more granular level of detail. Rather than only investing in entire companies, issuers invest in projects and utilize significant proprietary, non-public information.

Investors and analysts must judge whether an issuer will manage capital wisely over the long term. To make that judgment, analysts should evaluate the issuer's capital allocation process and its adherence to first principles and, most importantly, assess the issuer's historical track record of capital allocation. The generic steps in the capital allocation process are shown in Exhibit 3.

**Exhibit 3: Steps in the Capital Allocation Process**




- *Idea generation:* While ideas may originate from anywhere, it is important that management has a strong understanding of the competitive environment that the prospective investment is situated in, as well as the firm's current operations, capabilities, and competitive position. Often, ideas come from managers engaged in the business and involve expanding scale and scope of existing activities or adjacent businesses. Executives may also engage external consultants for advice on idea generation. As will be discussed later, capital spending tends to be highly correlated from year to year, indicating that prior-period ideas and plans weigh heavily.

- *Investment analysis:* Following the generation of investment ideas, managers forecast the amount, timing, duration, and volatility of an investment's expected cash flows to estimate whether the investment is a wise use of capital.
- *Planning and prioritization:* Management selects and prioritizes profitable investment opportunities that, when considered together, are the most value enhancing on a risk-adjusted return basis. Only investment candidates estimated to generate returns greater than investors' opportunity cost (the returns they could earn elsewhere on similarly risky endeavors) should be pursued. Additionally, some projects that appear attractive in isolation may be less desirable when considered in the context of existing operations, other proposed projects, or constraints on financing.

When value-creative investment opportunities are exhausted, managers should return any remaining capital to shareholders. In this way, shareholders can redeploy that capital elsewhere to earn their required rate of return.

- *Monitoring and post-investment review:* This step involves monitoring the performance of the investment and related activities against projections and, often, making adjustments, such as increasing or decreasing investment levels (which will be discussed later as real options). This step is important for several reasons. First, it helps validate assumptions made in the capital allocation process, revealing systematic errors, such as overly optimistic forecasts. Second, it helps enforce discipline in business operations by focusing management attention on bringing performance into alignment with projections. Finally, it may produce ideas for future investments. Managers should seek to invest in profitable areas and scale down or dispose of assets in areas that generate suboptimal returns or may have greater value to other firms.

Two of the most widely used analytical tools in the investment analysis step are **net present value (NPV)** and **internal rate of return (IRR)**. These are applications of time-value-of-money concepts. While an independent investment analyst does not have access to the project-by-project information used by management in these calculations, an analyst should understand the rationale behind them, their strengths, and their limitations in practice (also, these tools are used elsewhere in investment management, which will be covered later in the curriculum). Analysts have access to highly aggregated consolidated financial statements, which they can use to calculate and analyze **return on invested capital (ROIC)**, a useful *aggregate*, rather than *project*, return measure.

## Net Present Value (NPV)

The NPV of an investment is the present value (in currency terms) of expected future cash inflows less the investment's costs (or cash *outflows*), as shown in Exhibit 4.

**Exhibit 4: Net Present Value of a Capital Investment**

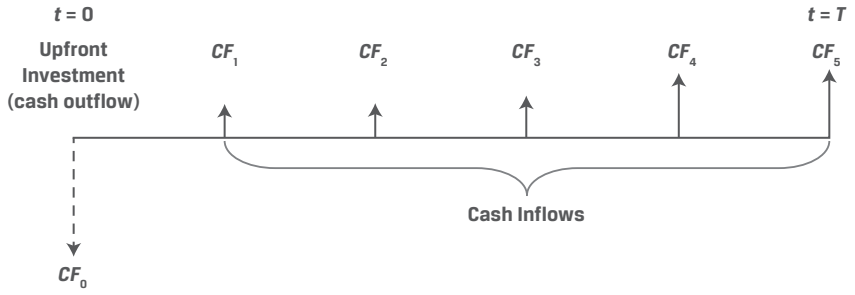



Exhibit 4 shows the simple case where a single investment ($CF_0 < 0$) occurs at inception followed by cash inflows. We may solve for the NPV using Equation 1:

$$\text{NPV} = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \ldots + \frac{CF_T}{(1+r)^T}. \tag{1}$$

$$\text{NPV} = \sum_{t=0}^{T} \frac{CF_t}{(1+r)^t},$$

where

$CF_t$ = After-tax cash flow at time $t$

$r$ = Required rate of return—the rate of return that a corporate issuer's investors could earn on a similarly risky investment

The calculation is illustrated in the following example.

**EXAMPLE 4**

## Gerhardt Corporation NPV

1. Assume that Gerhardt Corporation is considering a capital investment of €50 million today that is expected to return after-tax cash flows of €16 million per year for the next four years plus another €20 million in Year 5. If the required rate of return is 10%, what is the NPV of this investment?

   **Solution:**

   Using Equation 1, we may solve for the NPV as follows:

$$\text{NPV} = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \ldots + \frac{CF_T}{(1+r)^T}.$$

$$\text{NPV} = -50 + \frac{16}{(1+0.10)^1} + \frac{16}{(1+0.10)^2} + \frac{16}{(1+0.10)^3} + \frac{16}{(1+0.10)^4} + \frac{20}{(1+0.10)^5}.$$

$$\text{NPV} = -50 + 63.136 = 13.136.$$

   Since this investment may be acquired today at a cost of €50 million, the company exchanges €50 million today for an investment worth €63.136 million. The investment increases the present value of the firm's wealth by a net amount of €13.136 million.

   This can also be solved in Microsoft Excel or Google Sheets using the NPV function:

=NPV(rate,value1,value2,…)

where

*rate* = Required rate of return

*value(s)* = After-tax cash flows

Note that the NPV function uses $t = 1$ for the first cash flow, not $t = 0$, and assumes cash flows are evenly spaced. Therefore, cash flows at $t = 0$ (in this case, –50) need to be subtracted or added outside the function. The proper argument here is

= NPV(0.10, 16, 16, 16, 16, 20) – 50

= 13.136.

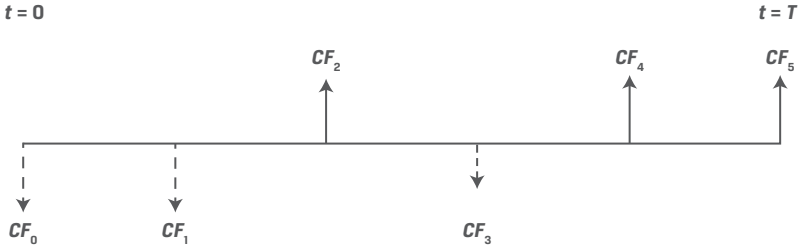
Because the NPV is the amount by which investors' wealth increases from an investment, the NPV decision rule is as follows:

| | |
|---|---|
| Invest if | NPV ≥ 0. |
| Do not invest if | NPV < 0. |

Positive-NPV investments increase the wealth of the shareholders, while a negative NPV reduces wealth. In the rare event that NPV is zero, a project could be accepted because it meets the required rate of return. However, because NPV analysis relies on estimated future cash flows, a zero-NPV project leaves no room for error. While the decision rule is straightforward, NPV is usually just one factor in capital allocation. There may be competing projects, intangible considerations, and so on, that factor into the decision. Therefore, NPV ≥ 0 can be viewed as a *necessary* but not *sufficient* condition for making an investment.

Many investments have unconventional cash flow patterns in which outflows may occur not only at inception but also on future dates, as in Exhibit 5. An example of this is an investment in additional capacity at a later stage.

**Exhibit 5: Unconventional Cash Flow Patterns**




Analysis of these types of investments is best handled using spreadsheet software, such as Microsoft Excel and Google Sheets, manually, or using the XNPV function, which, unlike the NPV function, does *not* assume evenly spaced periods and allows the user to specify the timing of cash flows. This concept is illustrated in the following example.

**EXAMPLE 5**

## Gerhardt Corporation NPV II

Assume that Gerhardt Corporation is considering a capital investment of €50 million today with the following estimated cash flow schedule over the next five years (all amounts in millions of euros).

| *t* | 0 | 1 | 1.5 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| **Cash flow** | –50 | 10 | -5 | 13 | 16 | 19 | 23 |

1. If the required rate of return is 10%, what is the NPV of this investment and should Gerhardt make the investment?

   **Solution:**

   Using Equation 1, we may solve for the NPV as follows:

$$\text{NPV} = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \ldots + \frac{CF_T}{(1+r)^T}.$$

$$\text{NPV} = -50 + \frac{10}{(1+0.10)^1} + \frac{-5}{(1+0.10)^{1.5}} + \frac{13}{(1+0.10)^2} + \frac{16}{(1+0.10)^3} + \frac{19}{(1+0.10)^4} + \frac{23}{(1+0.10)^5}.$$

$$\text{NPV} = 4.78.$$

   Since the NPV ≥ 0, Gerhardt should make the investment.
   This problem can also be solved in Microsoft Excel or Google Sheets using the XNPV function. The XNPV function syntax is as follows:

   =XNPV(rate,values,dates)

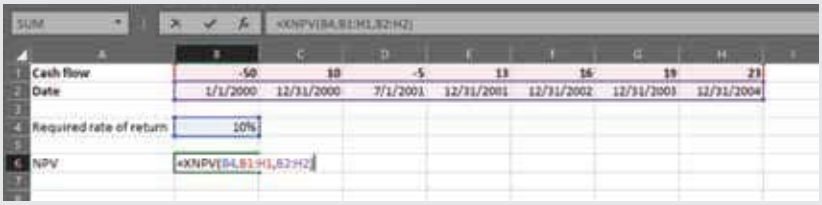
   where

*rate* = Required rate of return

*values* = After-tax cash flows at each date

*dates* = Date of each after-tax cash flow (for a problem like this without exact dates, the dates are arbitrary; what matters is that they are accurately spaced)

   The function is most clearly specified by referencing cash flow and date arrays that are aligned on a spreadsheet, as shown here:




## Internal Rate of Return

The **internal rate of return (IRR)** is the discount rate that makes the net present value of an investment equal to zero, as shown in Equation 2:

$$\sum_{t=0}^{T} \frac{CF_t}{(1+IRR)^t} = 0. \quad (2)$$

Note the similarity of the IRR calculation to Equation 1, which includes *r* (the required rate of return) in the denominator instead of *IRR*.

**EXAMPLE 6**

## Gerhardt Corporation IRR

1. Assume that Gerhardt Corporation is considering a capital investment of €50 million today that is expected to return after-tax cash flows of €16 million per year for the next four years plus another €20 million in Year 5. What is the IRR of this investment?

   **Solution:**

   Recall from Equation 1 that the NPV is

   $$\text{NPV} = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_T}{(1+r)^T}$$

   The IRR is the discount rate, *r*, that makes the NPV equal to zero. In other words,

   $$\text{NPV} = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_T}{(1+r)^T}$$

   $$0 = -50 + \frac{16}{(1+\text{IRR})^1} + \frac{16}{(1+\text{IRR})^2} + \frac{16}{(1+\text{IRR})^3} + \frac{16}{(1+\text{IRR})^4} + \frac{20}{(1+\text{IRR})^5}$$

   Besides trial and error, the IRR function in Microsoft Excel and Google Sheets is a straightforward approach to solving this problem. The IRR function syntax is

   =IRR(values,[guess])

   where

   *values* = After-tax cash flows

   *[guess]* = An optional user-specified guess for the IRR (the default is 10%)

   Importantly, like the NPV function, the IRR function assumes that cash flows are received or paid at the end of period and that each period is evenly spaced. Unlike the NPV function, it does not assume that the first cash flow is at $t = 1$, so the argument here is simply

   = IRR (–50, 16, 16, 16, 16, 20)

   = 0.1952, or 19.52%.

The IRR decision rule is to invest if the IRR *exceeds* the required rate of return (*r*) for a capital investment:

| | |
|---|---|
| Invest if | IRR ≥ *r*. |
| Do not invest if | IRR < *r*. |

For this reason, the required rate of return is often referred to as the **hurdle rate**. If the IRR is equal to *r*, the project is *theoretically* acceptable because it meets the required return with an NPV of zero. Since the IRR of 19.52% in our example exceeds the hurdle rate of 10%, Gerhardt should invest.

An important attribute of IRR is that it will only equal an investor's (geometric) rate of return on an investment if interim cash flows are reinvested at the IRR; if reinvestment rates are in fact lower, the rate of return on the investment will be lower than the IRR and vice versa. The NPV calculation instead assumes interim cash flows are reinvested at *r,* the required rate of return, which is often more economically realistic. Reinvestment rates and the implications therein will be explored in depth later in the curriculum in fixed-income lessons.

For an investment for which the assumptions of end-of-period, evenly spaced cash flows are inappropriate, the XIRR function in Microsoft Excel and Google Sheets is the proper tool, as in the following example.

**EXAMPLE 7**

## Gerhardt Corporation IRR III

1. Assume that Gerhardt Corporation is considering a capital investment of €50 million today with the following estimated cash flow schedule over the next five years (all amounts in millions of euros).

| *t* | 0 | 1 | 2 | 2.5 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| **Cash flow** | –50 | 0 | 1 | 3 | 16 | 20 | 25 |

What is the IRR of this investment, and should Gerhardt make the investment if its required rate of return is 10%?

**Solution:**

This problem can be solved in Microsoft Excel or Google Sheets using the XIRR function. The XIRR function syntax is as follows:

=XIRR(values,dates,[guess])

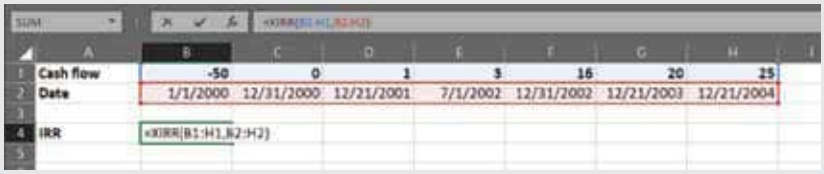
where

*values* = After-tax cash flows at each date

*dates* = Date of each after-tax cash flow (for a problem like this without exact dates, the dates are arbitrary; what matters is that they are accurately spaced)

*[guess]* = An optional user-specified guess for the IRR (the default is 10%)

The function is most clearly specified by referencing cash flow and date arrays that are aligned on a spreadsheet, as shown here:




The IRR is 6.76%, which is below Gerhardt's required rate of return of 10%, so it should not invest in this project.

An important limitation with IRR is that multiple IRRs exist if cash flow signs (+/–) change more than once. We can illustrate this with the following simple example:

| Time | 0 | 1 | 2 |
|---|---|---|---|
| Cash flow | −1,000 | 5,000 | −6,000 |

The IRR for this investment satisfies this equation:

$$-1,000 + \frac{5,000}{(1 + \text{IRR})^1} + \frac{-6,000}{(1 + \text{IRR})^2} = 0.$$

Two values of IRR satisfy the equation: 100% and 200%, which are clearly quite different. In such cases, where cash flow signs change more than once, NPV should be used instead of IRR. Financial calculators and spreadsheet software will often misleadingly return a single IRR solution, defaulting to the lowest value.

**WHICH TO USE: NPV OR IRR?**

While NPV and IRR criteria usually indicate the same investment decision, in the case of mutually exclusive investment projects, a company could face a decision between one project with a larger NPV and another with a higher IRR. If the company can invest in only one project, which should it choose?

The correct choice is the project with the higher NPV. While NPV shows the firm's wealth increase in currency terms from a capital investment, the IRR solely indicates a project's rate of return (subject to the IRR reinvestment assumption) rather than its size or the period over which the IRR is earned.

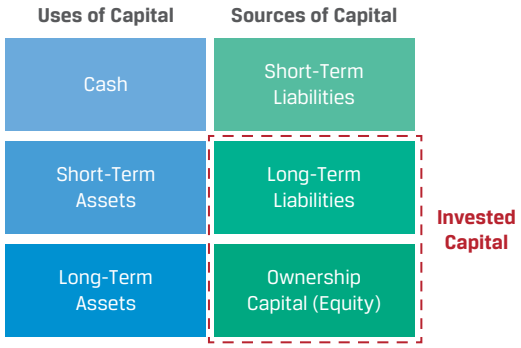
Many practitioners find IRR easier to use than NPV. If the required return is 10%, for example, a project IRR of more than 10% is desirable, while an NPV amount in currency terms may be harder to interpret because the number needs to be in the context of firm size. As a practical matter, once a firm has the data to calculate the NPV, it is simple to also calculate the IRR. However, the most appropriate and theoretically sound criterion is the NPV.

## Return on Invested Capital

Independent investment analysts do not have the necessary information to calculate or audit management's calculations of project NPVs or IRRs. Analysts of listed companies have consolidated financial statements and, sometimes, segment-level information, all of which are highly aggregated and include cash flows associated with many projects. Return on invested capital, also known as return on capital employed (ROCE), is a profitability measure for the total capital that management has invested, shown as Equation 3. Typically, an annual after-tax profit measure is used, so ROIC is measured *per year*.

$$\text{ROIC} = \frac{\text{After-tax operating profit}_t}{\text{Average invested capital}} = \frac{(1 - \text{Tax rate}) \times \text{Operating profit}_t}{\text{Average total LT liabilities and equity}_{t-1,t}}. \quad (3)$$

The denominator is a measure of total *capital* investment, so working capital is not included. From the perspective of the balance sheet, invested capital includes the amounts in the red box:




**EXAMPLE 8**

## Return on Invested Capital

Assume that a corporate issuer reported 24,395 in Year 2 after-tax operating profits and the following balance sheet information.

| Assets: | End of Year 1 | End of Year 2 |
|---|---|---|
| Cash | 4,364 | 6,802 |
| Short-term assets | 40,529 | 52,352 |
| Long-term assets | 287,857 | 279,769 |
| Total assets | 332,750 | 338,923 |

| Liabilities and Equity: | End of Year 1 | End of Year 2 |
|---|---|---|
| Accounts payable | 35,221 | 50,766 |
| Short-term debt | 21,142 | 5,877 |
| Long-term debt | 112,257 | 106,597 |
| Share capital | 15,688 | 15,688 |
| Retained earnings | 148,442 | 159,995 |
| Total liabilities and equity | 332,750 | 338,923 |

1. Calculate ROIC for Year 2.

**Solution:**

$$\text{ROIC} = \frac{\text{After-tax operating profit}_t}{\text{Average LT liabilities and equity capital}_{t-1,t}}$$

$$\text{ROIC} = \frac{24,395}{\frac{(112,257 + 15,688 + 148,442) + (106,597 + 15,688 + 159,995)}{2}}$$

ROIC = 8.73%.

2. If an investor has a required rate of return of 10%, is this company a promising investment candidate?

**Solution:**

No. Although the company is profitable, the company's ROIC is below the investors' required rate of return, so the investor should look to invest else-

where. However, this is only a single historical year, and myriad other factors will have to be considered by the investor.

ROIC has several practical benefits:

- Unlike project NPV and IRR, it can be calculated using data available to independent investment analysts.
- Unlike such measures as operating profit or operating profit margin (operating profit as a percentage of sales), ROIC accounts for the capital needed to generate returns. The relationship between operating profit margin and ROIC can be illustrated by decomposing ROIC as follows:

$$\text{ROIC} = \frac{\text{After-tax operating profit}}{\text{Average invested capital}}$$

$$\text{ROIC} = \frac{\text{After-tax operating profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average invested capital}}$$

The term on the left is after-tax operating profit margin, and the term on the right is a measure of capital or asset turnover—how much in annual sales the company's invested capital is generating. Therefore, there are two paths to a high or increasing ROIC: profit margin and turnover. A high-margin company can earn a low ROIC if turnover is low, and a low-margin company can earn an attractive ROIC if turnover is high.

- While NPV and IRR measures allow the comparison of individual projects within a firm, ROIC is an aggregate measure to gauge a firm's ability to create value across *all* its investments. This is important because investors generally cannot invest in individual projects, only the company as a whole (some exceptions exist, such as leases and asset-backed securities, which will be discussed later in fixed-income modules).
- ROIC can be compared to investors' required rate of return. If an issuer's ROIC is greater than the investors' required rate of return over time, the issuer is creating value for investors. Conversely, if the ROIC is below the required rate of return, it is an indicator that investors would have been better off investing elsewhere; the issuer should take actions to improve turnover or profit margins, dispose of investments in underperforming areas, return capital, or seek alternative areas of investment with greater returns.
- Since ROIC measures the returns that an issuer earns on investing both debt and equity, it should be compared to a required rate of return for both its debt *and* equity investors. As discussed in prior lessons, equity is riskier than debt and therefore has a higher required return, so using solely a required return for equity investors would be an overestimate. In the next module, we will calculate a blended required rate of return as part of a broader discussion of financing.

ROIC does have limitations and shortcomings:

- ROIC, unlike NPV and IRR, is an accounting, not cash-based, measure. Operating profit and cash flows can differ materially, owing to the recognition of certain items and the difference between depreciation and capital expenditures.
- ROIC is backward looking and can be volatile from year to year based on investment activity and business conditions, so examining trends and rates of change is essential. Profitable investments can sometimes take years to earn competitive returns.

- As a highly aggregated measure, ROIC may mask profitable or unprofitable areas of the issuer.

Analysts should also be aware that there is less consensus on the measurement of ROIC than such measures as operating profit margin, particularly the denominator. Many practitioners, for example, subtract some or all intangible assets and "excess" cash from the denominator and may exclude certain long-term liabilities, such as pension and deferred tax liabilities that are not considered "invested capital." Additional calculation issues, which will be addressed later in the curriculum, include treatments of "non-recurring" expenses, leased assets, and equity from non-controlling interests.

**QUESTION SET**

1. True or false. During the planning and prioritization step in the capital allocation process, a firm's management should accept any investment project with an estimated positive NPV.

   **Solution:**

   False. Some projects that appear attractive in isolation may be less desirable when considered in the context of existing operations, other proposed projects, ESG factors, or financing constraints.

2. Which step in the capital allocation process *most likely* involves the calculation of NPV and IRR?

   **A.** Idea generation

   **B.** Investment analysis

   **C.** Planning and prioritization

   **Solution:**

   B is correct. The investment analysis step involves forecasting the amount, timing, duration, and volatility of an investment's expected cash flows and subsequently using NPV and IRR to determine whether the investment will be a wise use of capital.
   A is incorrect because during the idea generation step, management gathers ideas and chooses the most promising ones for further analysis. However, in this early phase, no forecasts or profitability analysis involving NPV or IRR is conducted.
   C is incorrect because during the planning and prioritization step, management selects and prioritizes profitable investment opportunities that, when considered together, are the most value enhancing on a risk-adjusted return basis. This step occurs after NPV and IRR analysis.

3. Which of the following relationships is true?

   **A.** If IRR > Required rate of return, then NPV < 0.

   **B.** If IRR = Required rate of return, then NPV = 0.

   **C.** Required rate of return = Risk-free rate.

   **Solution:**

   B is correct. IRR is the required rate of return that makes an investment's NPV equal to zero.
   A is incorrect because IRR is the required rate of return for which NPV = 0. If IRR is greater than the required rate of return, then NPV of cash flows discounted at the required rate of return will be greater than zero, not less than zero.

C is incorrect because when calculating NPV, expected cash flows should be discounted at the required rate of return to reflect investors' opportunity cost for similarly risky projects, not a rate that ignores risk.

4. A company is considering undertaking a new capital investment project that is expected to cost $33 million. The after-tax cash-flow projection for the next four years is shown below. Calculate NPV and IRR assuming a required rate of return of 7.5%.

| Year | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Cash flow | 0 | 16 | 24 | 7 |

**Solution:**

To calculate NPV, we use the following equation:

$$\text{NPV} = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \ldots + \frac{CF_T}{(1+r)^T}.$$

$$\text{NPV} = -33 + \frac{0}{(1+0.075)^1} + \frac{16}{(1+0.075)^2} + \frac{24}{(1+0.075)^3} + \frac{7}{(1+0.075)^4}..$$

NPV = $5.41 million.

Using the same equation, we can also solve for IRR by assuming that NPV = 0.

$$0 = -33 + \frac{0}{(1+\text{IRR})^1} + \frac{16}{(1+\text{IRR})^2} + \frac{24}{(1+\text{IRR})^3} + \frac{7}{(1+\text{IRR})^4}.$$

IRR = 13.57%.

5. Based on the information below, calculate ROIC for year 20X2. Values in each column are as of the end of the period. Assume operating profit of 3,890 and a tax rate of 17% in Year 20X2.

**Balance Sheet**

| Assets: | 20X1 | 20X2 |
|---|---|---|
| Cash | 490 | 700 |
| Short-term assets | 10,520 | 11,790 |
| Long-term assets | 22,400 | 23,740 |
| Total assets | 33,410 | 36,230 |
| **Liabilities and equity:** | | |
| Accounts payable | 5,970 | 6,620 |
| Short-term debt | 2,470 | 2,840 |
| Long-term debt | 9,880 | 10,550 |
| | | |
| Share capital | 15,090 | 16,220 |
| Total liabilities and equity | 33,410 | 36,230 |

**Solution:**

ROIC can be calculated using the following formula:

$$\text{ROIC} = \frac{(1 - \text{Tax rate}) \times \text{Operating profit}_t}{\text{Average LT liabilities and equity}_{t-1,t}}.$$

$$\text{ROIC} = \frac{(1 - 0.17) \times 3,890}{(9,880 + 15,090 + 10,550 + 16,220)/2}.$$

ROIC = 12.48%.

6. Complete the sentences by filling in the blanks using the following terms. Note that each term can be used more than once.

   equity

   profit margin

   asset turnover

   long-term liabilities

   average invested capital

   ROIC can be increased by increasing _____ or _____. A high-_____company can earn a low ROIC if _____ is low, and a low-_____ company can earn a high ROIC if _____ is high.

   **Solution:**

   ROIC can be increased by increasing *profit margin* or *asset turnover*. A high-*profit margin* company can earn a low ROIC if *asset turnover* is low, and a low-*profit margin* company can earn a high ROIC if *asset turnover* is high.

7. Explain why a government-owned company may have a low required rate of return compared to a small technology company.

   **Solution:**

   The required rate of return is the discount rate that investors require given the riskiness of the project or company and the rate of return available on other similarly risky investments. Considering the business risk of both companies, a government-owned company can be perceived as a lower-risk issuer compared to a small technology company. Consequently, investors would require less compensation for risk.

# 4 CAPITAL ALLOCATION PRINCIPLES AND PITFALLS

☐ describe principles of capital allocation and common capital allocation pitfalls

## Capital Allocation Principles

While the analytical tools and investment decision criteria introduced in the prior lesson are quantitative and straightforward, there is considerable latitude for errors and misjudgment. To improve the decision-making process, key principles should be followed when using these tools.

- *After-tax cash flows:* Managers should evaluate capital allocation decisions based on after-tax cash flows rather than other profit- or accounting-based measures. Managers must reflect the impact of taxation on a project's expected cash flows, specifically the tax benefits derived from non-cash deductions, such as depreciation and amortization.
- *Incremental cash flows only but examine broadly:* Capital allocation analysis should ignore **sunk costs**, or those expenses that have already been incurred (or written off), and include only incremental cash flows associated with a new investment as compared to without it. However, capital investments often have an impact on the rest of the firm, which may be positive or negative. A positive effect might include cost savings with business activities that directly result from making the investment, while a negative effect might be the loss of sales from a similar product. Both are incremental cash flows, so they should be included in the analysis.
- *Timing of cash flows:* The forecasted timing, duration, volatility, and change in the possible direction of the expected cash flows must be considered for a capital investment. Notice how the NPV and IRR can change when cash flows are moved from one period to another.

## Capital Allocation Pitfalls

Despite adhering to the principles, capital allocation is challenging for most firms. We divide common capital allocation pitfalls into cognitive errors and behavioral biases. Cognitive errors include calculation and other mistakes, while behavioral biases include errors in judgment and blind spots.

### *Cognitive Errors in Capital Allocation*

- *Internal forecasting errors:* Management may make errors in their forecasts, which may be difficult to impossible for external analysts to identify. However, if significant enough, the incorrect or flawed analysis will ultimately manifest itself in failed, or underperforming, investments. Forecasting errors include incorrect cost or required rates of return inputs. For example, overhead costs such as management time, information technology support, financial systems, can be challenging to estimate. Finally, companies often fail to incorporate competitor responses into the analysis of a planned investment.
- *Ignoring costs of internal financing:* The primary source of financing for investments by large corporate issuers is cash flows from operations (i.e., not borrowing or issuing shares). Many management teams behave as if these internally generated funds are "free" but scarce and allocate them according to a budget that is closely tied to prior-period amounts. External financing from debt or equity issuance, however, is treated differently: It is used less often, typically only for larger investments, such as acquisitions, and treated as "expensive." This is flawed logic. Internally generated capital, such as cash flow from operations, *is* equity financing because it could be returned to equity investors as a dividend. While it is not raised from equity

investors by issuing shares, it is withheld from them, incurring their opportunity cost nonetheless. Regardless of financing source, management should use appropriate risk-adjusted required rates of return to evaluate capital investments; those funded by internally generated funds do not automatically get a lower *r*.

This error is hard to detect and isolate from other errors and biases, but analysts should inquire about management's capital allocation process and how the source of financing influences investment decisions. If a company has an aversion to raising external capital and to returning capital, management may potentially be affected by this.

- *Inconsistent treatment of, or ignoring, inflation:* Inflation affects capital allocation in several ways. The first is whether the investment analysis is done in nominal or in real terms. Nominal cash flows include inflation effects, whereas real cash flows are adjusted downward to remove the effect of inflation (or adjusted upward to remove the effect of deflation). Companies may perform analysis in either nominal or real terms, but the approach to cash flows and discount rate should be consistent. That is, nominal cash flows should be discounted at a nominal discount rate, and real cash flows should be discounted at a real rate.

Investment analysis embeds, explicitly or implicitly, expectations for inflation, which probably does not affect all unit prices and unit costs uniformly. For example, rising oil prices are obviously beneficial for oil producers, which sell their product at a higher price. However, rising oil prices over longer time periods can be associated with rising production and capital costs, eroding some of the benefit. Second, many oil companies also own refining and chemical businesses, for which crude oil is the main input. Profitability of those businesses tends to decline as crude prices rise. If actual inflation differs from expected inflation, after-tax cash flows will be better or worse than expected depending on how specific sales outputs or cost inputs are affected.

### *Behavioral Biases in Capital Allocation*

- *Inertia:* In a study of more than 1,600 US listed companies, researchers from McKinsey found a 0.92 correlation between levels of capital investment in a business segment or unit from one year to the next.[1] This is the result of management anchoring capital investment budgets to prior-year amounts. Analysts identify this bias by examining the level of capital investment in total, by segment, or by business line, if disclosed, and comparing it to the prior year and the return on investment. If capital investment each year is static or rising despite falling returns on investment, analyst should question the issuer's justification for a capital investment and whether management should consider alternative uses.
- *Basing investment decisions on accounting measures, such as EPS:* Managers often have an incentive to increase accounting measures, such as earnings per share, net income, or return on equity. Many capital investments, even those with high NPVs, can reduce rather than increase these accounting results in the near term, while cost cutting and share buybacks, in contrast, may have a positive effect on such measures. Paying too much attention to short-run accounting numbers can lead a company to choose investments that are not in the long-run interests of its shareholders. Analysts may observe this behavior first by examining the direct financial incentives of management based on the structure and composition of their compensation.

1 Stephen Hall, Dan Lovallo, and Reiner Musters, "How to Put Your Money Where Your Strategy Is," *McKinsey Quarterly* (March 2012).

Second, analysts can compare the level of capital spending to historical and peer levels to judge whether management has prioritized shorter-term, accounting-based measures. That said, lower capital investment may be a sign of limited investment opportunities, in which case allocating capital to alternative uses is a wise decision.

- *Pet project bias:* Projects that receive preferential treatment, or so-called **pet projects**, are sometimes selected without thorough capital allocation analysis. In other cases, such analysis is conducted but overly optimistic projections are used to inflate the pet project's profitability. Identifying pet projects is difficult, because financial statements are usually aggregated and such projects may not meet the threshold of materiality. Instead, analysts should evaluate the corporate governance structure for warning signs that increase the chances of misallocation of capital: controlled companies or significant ownership concentration by a single individual or group, weak oversight by the board of directors, and executive compensation that is not aligned with stakeholders' interests.
- *Failure to consider investment alternatives or alternative scenarios:* While investment idea generation is the first step in the capital allocation process, many viable alternatives are never even considered at some companies. Firms also often fail to consider different outcomes, which can and should be incorporated through breakeven, scenario, and simulation analyses. This error may stem from limited capital investment experience, such as not making divestitures or acquisitions, or no experience with a failed investment. While failure is obviously undesirable, the lack of failure over time may reflect a management team that is not taking enough risk.

**QUESTION SET**

1. True or false: Investment projects funded using internally generated funds (e.g., cash flow from operations) should be evaluated using a lower required rate of return as compared to projects funded using debt or share issuance.

   **Solution:**

   False. Ignoring the cost of internal financing is a common cognitive error. Internally generated capital, such as cash flow from operations, is equity financing because it could be returned to equity investors as a dividend or share repurchase. While internally generated capital is not raised from equity investors by issuing shares, it is withheld from them, therefore incurring their opportunity cost. Regardless of financing source, management should use an appropriate risk-adjusted required rate of return to evaluate capital investments.

2. Alexandra Tolonen, an investment analyst, prepares forecasts for expansion of a car battery plant and wants to consider the effect of rising lithium carbonate prices. Tolonen adjusts future after-tax cashflows downward to remove the effects of an expected lithium carbonate price increase of 5%

and uses real discount rates to calculate the project's NPV. In the second year of the project, the actual lithium carbonate price increased by 10%.

True or false. Given that Tolonen has used inflation-adjusted cash flows and discount rates, the rise in lithium carbonate prices will not impact the project's profitability.

**Solution:**

False. Even though Tolonen was consistent in using real cash flows and real rates while preparing the forecast, this fact does not make the project immune to changes in inflation. If actual inflation differs from expected inflation, after-tax cash flows will be better or worse than expected, depending on how specific cost inputs are affected.

3. An analyst is analyzing company XYZ and has gathered annual invested capital and ROIC for each of the three XYZ business segments.

| | Capital Expenditures ($ m) | | | ROIC | | |
|---|---|---|---|---|---|---|
| **Segment** | **20X0** | **20X1** | **20X2** | **20X0** | **20X1** | **20X2** |
| **A** | 264 | 282 | 303 | 7.50% | 7.10% | 6.80% |
| **B** | 297 | 318 | 340 | 10.00% | 8.90% | 7.10% |
| **C** | 211 | 226 | 242 | 6.90% | 7.80% | 9.00% |

Based on the information provided, XYZ's management is *most likely* prone to which of the following biases?

**A.** Inertia

**B.** Sunk cost

**C.** Pet project

**Solution:**

A is correct. Inertia can be identified by examining the level of capital investment in total, by segment, or by business line, if disclosed, and comparing it to the prior year and the return on investment. If capital investment each year is static or rising despite falling returns on investment, the analyst should question the issuer's justification for a capital investment and whether management should consider alternative uses. In the case of XYZ, we can observe that for segments A and B, ROIC is decreasing, but both segments are getting a higher capital allocation each year.

B is incorrect because sunk cost is related to the capital allocation process in determining a potential project's profitability. Sunk costs, or those expenses that have already been incurred, should be ignored when evaluating potential projects.

C is incorrect because a detailed view of individual investment projects undertaken by XYZ's management is not provided. Identifying pet projects from outside the firm is difficult, because financial statements are aggregated and such projects may not meet the threshold of materiality.

4. Bradshaw, a financial analyst, prepares a forecast of future expected gross (pre-tax) cash flows for an investment project. Bradshaw also forecasts future depreciation related to that project and assumes a required rate of return 6%. Based on the information provided and a tax rate of 18%, calculate

the NPV of the project. In this jurisdiction, depreciation is not deductible for taxes.

**Cash Flow and Depreciation Forecast**

| Time | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| **Gross cash flow** | −7.50 | 4.50 | 4.50 | 6.00 |
| **Depreciation** | 0.00 | −1.00 | −1.00 | −1.00 |

**Solution:**

To calculate NPV for this project, Bradshaw should first calculate after-tax cash flows and consider depreciation only to the extent that it is tax deductible and reduces taxes, because it is non-cash. After-tax cash flows can be calculated by applying the following formula to all cash flows to be received in the future.

$$\text{After-tax cash flow}_t = \text{Gross cash flow}_t \times (1 - \text{Tax rate}).$$

**After-Tax Cash Flow Forecast**

| Time | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| **After-tax cash flow** | −7.50 | 3.69 | 3.69 | 4.92 |

The calculation of NPV is follows:

$$\text{NPV} = -7.5 + \frac{3.69}{(1+0.06)^1} + \frac{3.69}{(1+0.06)^2} + \frac{4.92}{(1+0.06)^3}.$$

$$\text{NPV} = 3.396$$

5. Explain why some managers might reject projects that significantly increase shareholder value (i.e., have a high NPV).

**Solution:**

Managers may have an incentive to increase accounting profitability measures, such as earnings per share, net income, or return on equity. Many capital investments, even those with high NPVs, can reduce rather than increase these measures in the near term, while cost cutting and share buybacks, in contrast, may have a positive effect on such measures. If this incentive is strong enough, management may forgo high-NPV projects in favor of actions that increase near-term earnings per share.

# REAL OPTIONS

# 5

☐ describe types of real options relevant to capital investments

The capital allocation process described earlier implied that firms make all capital investment decisions for a project at inception, maintaining one course of action throughout the life of a project. In practice, firms often have alternatives, known as **real options**, that can alter the value of capital investments. That is, some capital investment decisions are in fact a series of decisions; some are taken today, while

others can be postponed and will be based on future economic events or information. Similar to financial options, such as derivatives, real options grant a firm the right, but not the obligation, to take an action in the future. A company should only pursue (or **exercise**) a real option if it is value enhancing.

Just as the value of a financial option depends on the future value of an underlying asset, real options are contingent on future events for a company. Real options offer flexibility to companies that can greatly enhance the NPV of companies' capital investments in one or more of the following forms:

- *Timing option:* Instead of investing now, the company can choose to delay its investing decision. In doing so, companies forgo near-term returns and hope to obtain improved information for the NPV of projects selected. Investments may be sequenced over time, so that investing in a project creates the option to make future investments.
- *Sizing option:* An **abandonment option** allows a company to abandon the investment after it is undertaken if the financial results are disappointing. At some future date, if the cash flow from abandoning an investment exceeds the present value of the cash flows from continuing the investment, the company should exercise the abandonment option. Conversely, if the company can make additional investments when future financial results are strong, the company has a **growth option**, or expansion option.
- *Flexibility option:* Companies may also benefit from operational flexibility other than abandonment or expansion once an investment is complete. For example, suppose a firm finds that demand for a product or service exceeds capacity. Management may be able to exercise a **price-setting option**. By increasing prices, the company could benefit from the excess demand, which it cannot do by increasing production. Alternatively, a firm may consider **production flexibility options** to alter production when demand differs from its forecast. For example, a firm may add overtime or extra shifts to increase production for a given capacity.
- *Fundamental option:* The entire value of an investment may depend on factors outside the firm's control, such as the price of a commodity. For example, the value of an oil well or refinery investment is contingent on the price of oil. The value of a gold mine is contingent on the price of gold. If oil prices were low, a company likely would not choose to drill a well. If oil prices were high, it would go ahead and drill. Many R&D (research and development) projects are also very similar to such options.

Firms use several approaches in evaluating capital investments with these characteristics, such as the following:

1. Investment analysis *without* considering options: If the NPV is positive without considering real options and the project involves real options that could increase its net present value, then the NPV represents a *minimum* return and the firm should make the investment.
2. Calculation of NPV with real options: Under this approach, the firm calculates a project's NPV based on expected cash flows and then subtracts the incremental cost of the real option and adds its associated value, as shown in Equation 4:

$$\text{Project NPV} = \text{NPV (without options)} - \text{Option cost} + \text{Option value}. \quad (4)$$

3. Decision trees and option pricing models: Either approach may be used by firms seeking to assess the value of a capital investment that involves future sequential decisions and alternative outcomes for a given investment. These models often assign a probability and expected timing to future outcomes, which are used to calculate the project's NPV.

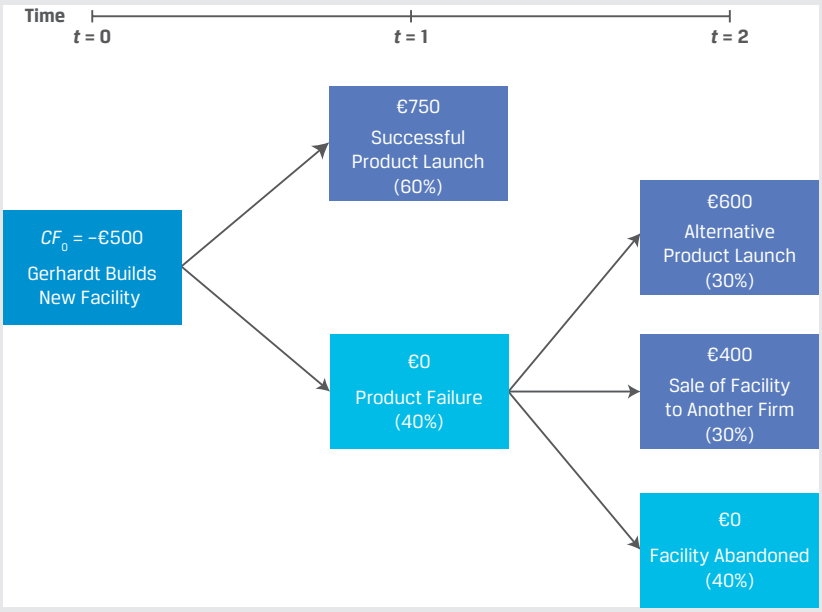
To calculate the return on capital investments with or without real options, firms must often assume an expected probability for future events. The following example provides an illustration using a decision tree for evaluating the return on a capital investment with and without real options.

**EXAMPLE 9**

## Gerhardt Corporation Capital Allocation Using a Decision Tree

Assume that Gerhardt Corporation is considering a €500 million outlay for a capital investment in a facility to produce a new product. Gerhardt assigns a 60% probability to a successful product launch, which is expected to return €750 million in one year's time. Gerhardt's finance team has also conducted an analysis of alternative facility uses, summarizing the timing and probability of cash flows associated with each real option in the following decision tree.

Gerhardt Corporation Decision Tree




1. Calculate the NPV of Gerhardt's project *without* real options using a 10% required rate of return ($r$).

   **Solution:**

   The NPV without real options uses Equation 1 and a probability-weighted cash flow if the product is successfully launched (60%) and a 40% probability that future cash inflows are zero:

$$\text{NPV} = \text{CF}_0 + \frac{\text{CF}_1}{(1+r)^1} + \text{, or}$$

$$\text{NPV} = -500 + \frac{(0.6 \times 750)}{(1.10)}$$

Because NPV = –€90.91, Gerhardt should not pursue the project, based on the NPV decision rule.

2. Calculate the NPV of Gerhardt's proposed project *with* real options and a 10% required rate of return.

**Solution:**

Calculate NPV with real options using Equation 1 and probability-weighted cash flows in future periods:

$$\text{NPV} = CF_0 + \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2}$$

$$= -500 + \frac{(0.6 \times 750)}{(1.10)^1} + \frac{[(0.4 \times 0.3) \times 600] + [(0.4 \times 0.3) \times 400]}{(1.10)^2}$$

The NPV *with* real options equals €8.26, which implies based on the NPV decision rule that Gerhardt should invest in the new production facility if alternative uses in the future are considered. Note that the cash flow calculation for the second period is based on the conditional probabilities of specific outcomes. That is, in the case of both the possible alternative product launch and facility sale to another firm, the 30% probability of each of these mutually exclusive outcomes *given* a product failure in Period 1 (40%) makes the conditional probability of each event equal to 12% (= 0.4 × 0.3).

As the previous example shows, the inclusion of real options in the capital allocation process to incorporate different scenarios related to internal and external events and their expected impact on future after-tax cash flows can materially change the evaluation of an investment.

**QUESTION SET**

1. Which of the following statements about real options is true?

   **A.** Using option pricing models estimates an option's value with the highest accuracy.

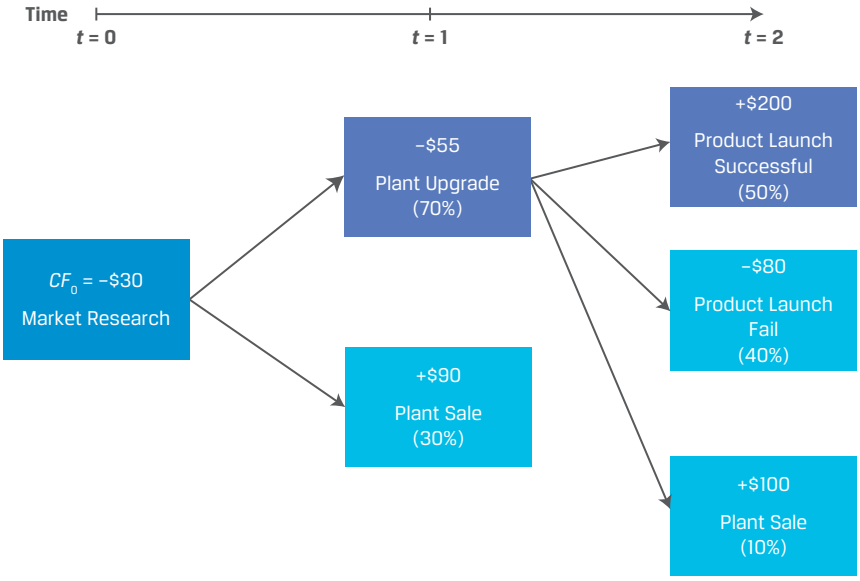
   **B.** Real options allow companies to abandon an investment project if its profitability is poor.

   **C.** Real options would allow a refinery to hedge future prices of crude oil needed for production.

   **Solution:**

   B is correct. An abandonment option is a type of real option, which allows a company to abandon the investment after it is undertaken.
   A is incorrect because even though real options can be priced using option pricing models, the estimates require multiple unobservable inputs, such as probabilities of events and timing of their occurrence. The complexity does not necessarily improve accuracy.
   C is incorrect because real options provide companies with flexibility with regard to future decisions; however, they do not allow the hedging of commodity prices. The risk of crude oil price changes can be hedged using financial options, not real options.

2. ScolarCorp is planning a market research campaign to gauge interest in a new type of product. If interest in the new product is high, the company will need to upgrade its existing production plant to allow for product manufacturing. Alternatively, if interest is low, ScolarCorp will sell the plant for $90 million. The required rate of return for the project is 7.5%. A ScolarCorp analyst summarized the timing and probability of cash flows associated with each alternative use in the following decision tree.




Based on the decision tree, match the following factors with the impact on the capital project's value (option value):

Increase in market research cost

Decrease in market research cost

Increase in plant sale price

Decrease in plant sale price

Increasing required rate of return

Decreasing required rate of return

| Increases Project Value | Decreases Project Value |
|---|---|
| | |

**Solution:**

| Increases Project Value | Decreases Project Value |
|---|---|
| Decrease in market research cost | Increase in market research cost |
| Increase in plant sale price | Decrease in plant sale price |
| Decreasing required rate of return | Increasing required rate of return |

The calculation of the NPV of the project, considering all alternatives and their probabilities, can be carried out as follows:

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

$$\text{NPV} = -30 + \frac{(-55 \times 0.7 + 90 \times 0.3)}{(1+0.075)^1} + \frac{(200 \times (0.7 \times 0.5) - 80 \times (0.7 \times 0.4) + 100 \times (0.7 \times 0.1))}{(1+0.075)^2}.$$

NPV = $6.549.

Impact of increase in market research cost

If the market research cost increases, for example, by 10 (to –40), the NPV of the entire project will decrease by the same amount. Given that initial outlay occurs at $t = 0$, it does not need to be discounted.

Impact of increase in plant sale price

If the plant sale price increases (either in Year 1 or Year 2), the NPV of the entire project will increase by a smaller amount, given that corresponding cash flow needs to be probability adjusted and discounted to $T_0$.

Impact of increase in required rate of return

An increase in the required rate of return will decrease the NPV of the entire project, given that it is used to discount future cash flows.

3. Company XYZ is considering expanding its distribution center in a foreign country. The local government is working on a new environmental regulation that introduces subsidies and tax breaks for investments related to renewable energy. Once the new law is approved, XYZ could upgrade the distribution center at lower cost. If the company decides to wait for the new regulation to come into effect, it will have to bear project-related costs of $1.8 million. XYZ's finance team estimates that if the company waits, the NPV of the project will be $9.7 million, compared to a current value of $8.9 million. Calculate option value.

**Solution:**

To determine option value, we need to compare the project value with and without the option and additionally consider option cost.

Project NPV (with option) = $9.7 million.

Project NPV (without option) = $8.9 million.

Option cost = $1.8 million.

Project NPV (with option)

= Project NPV (without option) – Option cost + Option value.

$9.7 million = $8.9 million – $1.8 million + Option value.

Option value = $2.6 million.

# PRACTICE PROBLEMS

## The following information relates to questions 1-5

Larissa Soroka, an analyst at ABC company, has been asked to prepare cash flow forecasts for two mutually exclusive investment projects related to new products. ABC's management asks Soroka to include the cost of market research that was recently completed as well as the potential loss of revenue from existing products that could occur if either project is undertaken. Soroka presents the forecast in Exhibit 1 and is asked to calculate IRR and NPV for both projects. Investors in ABC have a required rate of return of 8%.

**Exhibit 1**

**Cash Flow Forecast for Projects A and B**

| Time | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| **Project A** | (18.5) | 4.5 | 6.0 | 6.0 | 5.5 |
| **Project B** | (33.5) | (2.5) | (1.0) | 24.0 | 25.5 |

ABC's management asks Soroka to consider in her forecast the impact of a six-month delay in all future cash flows and estimate the impact of that event on IRR and NPV.

After reviewing the forecast, ABC's management asks Soroka to estimate ABC's ROIC for 20X2. ABC earned operating profit of $8,830, had an effective tax rate of 22%, and reported the balance sheet in Exhibit 2.

**Exhibit 2**

**ABC Balance Sheet (end-of-period values)**

| Assets: | 20X1 | 20X2 |
|---|---|---|
| Cash | 1,600 | 1,720 |
| Short-term assets | 30,450 | 29,910 |
| Long-term assets | 60,250 | 62,060 |
| Total assets | 92,300 | 93,690 |

| Liabilities and equity: | 20X1 | 20X2 |
|---|---|---|
| Accounts payable | 12,930 | 11,620 |
| Short-term debt | 8,030 | 8,390 |
| Long-term debt | 25,040 | 25,910 |
| Share capital | 39,800 | 40,990 |

| Liabilities and equity: | 20X1 | 20X2 |
|---|---|---|
| Retained earnings | 6,500 | 6,780 |
| Total liabilities and equity | 92,300 | 93,690 |

ABC's management has an ROIC objective of at least 9.2% and asks Soroka for her recommendation about the projects.

1. When preparing the cash-flow forecasts for both projects, Soroka should include:
   - **A.** only the cost of the market research.
   - **B.** only the loss of revenue from existing products.
   - **C.** both the market research cost and the loss of revenue from existing products.

2. With regard to Project A and Project B, which of the following is true?
   - **A.** Both projects should be invested in according to the IRR decision rule.
   - **B.** Both projects should be invested in according to the NPV decision rule.
   - **C.** Only Project B should be invested in according to the IRR decision rule.

3. The *most likely* impact from the cash-flow timing considered by Soroka is that:
   - **A.** both IRR and NPV would decrease.
   - **B.** both IRR and NPV stay unchanged.
   - **C.** only IRR would decrease but NPV would increase.

4. Based on ABC's balance sheet presented in Exhibit 2, Soroka should calculate:
   - **A.** average invested capital of $72,510 and ROIC of 9.50%.
   - **B.** average invested capital of $80,720 and ROIC of 10.94%.
   - **C.** average invested capital of $92,995 and ROIC of 9.50%.

5. Considering ABC management's ROIC-based investment criterion and the IRR and NPV of both projects, Soroka should recommend to:
   - **A.** reject both projects A and B.
   - **B.** invest only in Project B because it has a higher NPV.
   - **C.** invest only in Project A because has positive cash flow during all four years.

# SOLUTIONS

1. B is correct. Capital allocation analysis should include only incremental cash flows associated with a new investment. The loss of revenue from existing products is an incremental negative effect that should be included in the analysis. The market research costs in this case are a sunk cost because the research has already been completed and therefore does not affect cash-flow estimates, no matter whether ABC undertakes either of these projects or neither of them.

2. C is correct. The IRR decision rule is to invest if the IRR exceeds the required rate of return or hurdle rate. Project B's IRR is 8.97%, which exceeds the required rate of return of 8%; however, Project A's IRR is 7.04%, which is below the required rate of return of 8%.

   The NPV of both projects can be calculated as follows:

   $$\text{NPV}_A = -18.5 + \frac{4.5}{(1+0.08)^1} + \frac{6}{(1+0.08)^2} \frac{6}{(1+0.08)^3} \frac{5.5}{(1+0.08)^4} = -0.38.$$

   $$\text{NPV}_B = -33.5 + \frac{-2.5}{(1+0.08)^1} + \frac{-2.5}{(1+0.08)^2} \frac{24}{(1+0.08)^3} \frac{25.5}{(1+0.08)^4} = 1.12.$$

   Using the same equation, we can solve for the IRRs by assuming that NPV = 0.

   $$0 = -18.5 + \frac{4.5}{(1+\text{IRR}_\text{A})^1} + \frac{6}{(1+\text{IRR}_\text{A})^2} + \frac{6}{(1+\text{IRR}_\text{A})^3} + \frac{5.5}{(1+\text{IRR}_\text{A})^4}.$$

   $$\text{IRR}_A = 7.04\%.$$

   $$0 = -33.5 + \frac{-2.5}{(1+\text{IRR}_\text{B})^1} + \frac{-2.5}{(1+\text{IRR}_\text{B})^2} + \frac{24}{(1+\text{IRR}_\text{B})^3} + \frac{25.5}{(1+\text{IRR}_\text{B})^4}.$$

   $$\text{IRR}_B = 8.97\%.$$

   A is incorrect because Project B's IRR is 8.97%, which exceeds the required rate of return of 8%; however, Project A's IRR is 7.04%, which is below the required rate of return of 8%. Consequently, only Project B meets the IRR decision rule.

   B is incorrect because the NPV decision rule is to invest if the NPV is greater than 0. Project B's NPV is $1.12 million, while Project A's NPV is –$0.38. Consequently, only Project B meets the NPV decision rule.

3. A is correct. The forecasted timing of cash flow is an important factor affecting both projects' IRR and NPV. In the case of delaying all future cash flows from both projects by six months, the result would be a lower IRR and a lower NPV. Given that all future cash flows are to be received six months later, their present value decreases; hence, the NPV and IRR of an entire project also decrease.

   B is incorrect because when cash flows from the investment projects are delayed by six months, both projects' NPV and IRR would decrease, not stay unchanged.

   C is incorrect because when cash flows from the investment projects are delayed by six months, both project's NPV and IRR would decrease.

4. A is correct. To calculate ROIC, we can use the following formula:

   $$\text{ROIC} = \frac{(1 - \text{Tax rate}) \times \text{Operating profit}_t}{\text{Average invested capital}_{t-1,t}},$$

   where

$$\text{Average invested capital}_{t-1,t} = \frac{(\text{Debt} + \text{Equity})_{20X1} + (\text{Debt} + \text{Equity})_{20X2})}{2}$$

$$\text{Average invested capital}_{t-1,t} = \frac{[(25,040 + 39,800 + 6,500) + (25,910 + 40,990 + 6,780)]}{2}$$

$$\text{Average invested capital}_{t-1,t} = 72,510.$$

$$\text{ROIC} = \frac{(1 - 0.22) \times 8,830}{72,510}.$$

ROIC = 9.50%.

5. A is correct. ABC's management aims to achieve a minimum ROIC above 9.20%, but the IRR of both projects fails to meet this investment criterion. Even though Project B has a positive NPV, if it were undertaken, it would reduce ROIC.

   B is incorrect because even though Project B's NPV is $1.12 million (which increases ABC's value to shareholders), its IRR is 8.97%, which is below the target ROIC of 9.20%. Consequently, if Project B was undertaken, it would lower ABC's ROIC.

   C is incorrect because Project A's IRR is below ABC management's target ROIC of 9.2%. Additionally, Project A's NPV is negative, so it decreases ABC's shareholder value.

LEARNING MODULE

# 6

# Capital Structure

## LEARNING OUTCOMES

| *Mastery* | *The candidate should be able to:* |
|---|---|
| ☐ | calculate and interpret the weighted-average cost of capital for a company |
| ☐ | explain factors affecting capital structure and the weighted-average cost of capital |
| ☐ | explain the Modigliani–Miller propositions regarding capital structure |
| ☐ | describe optimal and target capital structures |

## INTRODUCTION

1

Earlier lessons addressed a firm's short-term activities and longer-term capital investment decisions. We now turn to the last part of the balance sheet: long-term debt and equity financing, known as a firm's capital structure. The first lesson introduces the basic objective of most managers when choosing a capital structure: minimizing the firm's weighted-average cost of capital. The second lesson considers the internal and external factors that influence a firm's choice of—and investors' willingness to offer—debt versus equity financing. While capital structure seems like an important decision for boards and managers, it is the present value of future cash flows, rather than a firm's capital structure, that primarily drives a firm's value, a central insight in the influential work of Franco Modigliani and Merton Miller. In the third lesson, we explore the simplifying assumptions used by Modigliani and Miller to demonstrate the irrelevance of capital structure to firm value, and then we relax these assumptions to show the impact of both taxes and the cost of financial distress. In the final lesson, we discuss optimal and target capital structures for issuers.

**LEARNING MODULE OVERVIEW**

- An issuer's cost of capital is composed of its cost of debt and equity, which are defined as its investors' required rates of return on debt and equity financing. An issuer's cost of capital is estimated using a weighted average of the costs of debt and equity, using either current market value or management's target weights of each type of financing as the weights.

- Issuers generally aim to minimize their weighted-average cost of capital and to match the duration of their assets and financing. Managements' target capital structures are usually stated using book values or indirectly through financial leverage ratios, such as a maximum ratio of debt or net debt to EBITDA or a minimum credit rating.
- While management has some influence, the total amount and type of financing needed or the weights in the WACC calculation often depends on the issuer's business model (e.g., capital intensive or capital light) and on the company's life cycle stage.
- The component costs of debt and equity are determined by top-down factors, such as financial market and industry conditions, and by issuer-specific factors, including the stability of revenues and operating and financial leverage.
- Modigliani and Miller (MM) showed, under a restrictive set of assumptions including no taxes, that an issuer's capital structure is irrelevant to firm value. MM relaxed the assumptions by considering corporate taxes, financial distress, and bankruptcy costs and showed that capital structure does matter, although far less than an issuer's future cash flows, for firm value.
- Under MM's static trade-off theory of capital structure, the optimal capital structure occurs where the tax benefit of debt equals the financial distress costs associated with debt.
- The pecking order theory of capital structure is an alternative to the static theory and suggests that a firm will use internal financing as much as possible. If external financing is needed, the firm prefers private debt over public debt and will limit the use of equity financing if possible.

## LEARNING MODULE SELF-ASSESSMENT

These initial questions are intended to help you gauge your current level of understanding of this learning module.

1. In computing WACC, the cost of equity is higher than the cost of debt because the:

   **A.** cost of debt is set by management.

   **B.** distributions to shareholders are tax deductible.

   **C.** debt investors take less risk than equity investors.

   **Solution:**

   C is correct. Debt is less risky than equity because it has a priority, contractual claim on the firm's cash flow. Additionally, some debt is secured with an underlying asset. In contrast, equity is a residual claim.
   A is incorrect because an issuer's cost of debt, like its cost of equity, is determined by financial market participants.
   B is incorrect because, generally, distributions to shareholders, such as dividends, are not tax deductible while interest expense is tax deductible in many jurisdictions.

2. Nutry, Inc., has a capital structure of 30% debt and 70% equity, and interest expense is tax deductible. Debt investors require a before-tax return of 5%,

and equity investors' required return is 10%. If the marginal corporate tax rate is 20%, the WACC is closest to:

**A.** 5.9%.

**B.** 8.2%.

**C.** 8.5%.

**Solution:**

B is correct. Nutry's WACC is calculated as follows:

WACC = (Weighting of debt × Cost of debt) + (Weighting of equity × Cost of equity)

= (0.3)(5%)(1 – 0.2) + (0.70)(10%) = 8.2%.

Thus, the WACC for Nutry is 8.2%. The cost of debt is stated on an after-tax basis because interest expense is tax deductible in Nutry's jurisdiction.

3. The optimal capital structure is determined where the benefit of the debt tax shield is offset by the cost of financial distress under the:

**A.** pecking order theory.

**B.** free cash flow hypothesis.

**C.** static trade-off theory of capital structure.

**Solution:**

C is correct. The static trade-off theory of capital structure incorporates both the value-enhancing effect of the tax shield and the value-reducing impact of the costs of financial distress. At the optimal level of debt, the financial distress cost equals the tax benefit of debt.

The pecking order theory states that firms use internally generated funds first because there are no floatation costs or negative signals. If more funds are needed, firms issue debt and only as a last resort will they issue equity. There is no optimal capital structure.

The free cash flow hypothesis argues that higher debt levels discipline managers by forcing them to manage the company efficiently and use cash wisely so the company can make its interest and principal payments.

4. True or False: Managers cannot precisely estimate the optimal capital structure, but they often establish a target capital structure. An issuer's actual capital structure may differ from its target based on business and financial market conditions.

**A.** True

**B.** False

**Solution:**

A is correct. Since management cannot estimate the optimal capital structure in practice, it instead sets a target capital structure. The actual capital structure may deviate from the target for several reasons. First, the firm may be able to issue debt at a favorable rate, so management takes advantage of these opportunities. Second, changing market values of the firm's debt and equity may cause the firm's actual capital structure to differ from its target. Transaction costs make it costly to constantly adjust to the changing market values.

5. The amount and type of financing needed or the weights in the WACC calculation depend on the issuer's:

   **A.** business model.

   **B.** financial leverage.

   **C.** proportion of fixed cost to total costs.

   **Solution:**

   A is correct. The amount and type of financing needed or the weights in the WACC calculation depend on the business model and the stage in the company's life cycle. Some businesses require large amounts of assets and are capital intensive. Other business models require less assets and are capital light.
   B and C are incorrect because the proportion of fixed assets to total costs (operating leverage) and financial leverage are issuer-specific factors that influence the component costs of debt and equity.

6. Under Modigliani and Miller (MM), if one assumes no taxes and no financial distress cost, among other assumptions, the value of the company is:

   **A.** determined by its capital structure.

   **B.** determined solely by its expected future cash flows.

   **C.** set so the value of levered company is greater than that of the unlevered company.

   **Solution:**

   B is correct. MM showed that under a set of restrictive assumptions, including zero taxes, the firm's value is unaffected by its financing mix or capital structure. It is the firm's cash flow that is the primary determinant of value. If the market value of the company is not affected by its financing mix, then the value of the levered firm is equal to the value of the unlevered firm.

# 2 THE COST OF CAPITAL

☐ calculate and interpret the weighted-average cost of capital for a company

As discussed in prior lessons, issuers make capital investments that are expected to have a return on investment greater than the required rate of return. An *issuer's* required rate of return on its capital investments is derived from its *investors'* required rates of return, adjusted for specific risks in the project. If the issuer has exhausted its positive-NPV project opportunities, it should return capital to investors so they can invest elsewhere and earn their required rate of return. Not doing so would destroy value for investors.

For an issuer, its required rate of return is also known as its **cost of capital**. Since issuers use both debt and equity, the cost of capital is composed of the **cost of debt** and the **cost of equity**. As described in prior lessons, debt is less risky than equity for investors because it is a priority, fixed claim on a firm's cash flows while equity is a residual claim of indeterminate length. Additionally, debt is sometimes secured with an underlying asset that would be transferred to the debtholder in the event of

default, further reducing risk for the debt investor. Therefore, debt investors have lower required rates of return than equity investors because they take less risk; equivalently, an issuer's cost of debt is lower than its cost of equity financing.

An issuer's **weighted-average cost of capital (WACC)** blends its costs of debt and equity to obtain a single cost of capital. The WACC, after adjusting for any project-specific risks, is what issuers use as $r$ in NPV analysis and as the hurdle rate for IRR analysis.

The calculation of WACC is shown in Equation 1:

$$\text{WACC} = (\text{Cost of debt} \times \text{Weighting of debt}) + (\text{Cost of equity} \times \text{Weighting of equity}). \tag{1}$$

The estimation of each component of Equation 1 will be covered in much greater detail in lessons on fixed income and equity later in the curriculum. For now, note the following observations.

- The cost of debt for an issuer is debt investors' required rate of return on debt financing. The interest rate on existing unsecured loans and bonds is typically a good starting point. However, if we want a forward-looking measure, meaning the interest rate on *new* debt raised to finance a new project, we might instead look to what interest rates similarly situated companies have recently borrowed at. Additionally, in jurisdictions where interest expense is tax deductible, we reduce the nominal cost of debt by multiplying by (1 – Tax rate) to obtain an after-tax amount.
- The weightings of debt and equity are either their market value proportions or target weights provided by management, which are typically on a book value basis. Market value weights are more commonly used because book values reflect historical prices of debt and equity, while investors' opportunity costs are based on current market prices of debt and equity.
- The cost of equity for an issuer is equity investors' required rate of return. Unlike the cost of debt, we do not have a historical interest rate to observe as a starting point. We do know that the cost of equity is higher than the cost of debt because of equity's riskiness and because distributions to shareholders are not tax deductible.

One simplistic approach is to simply observe the historical returns on equities in general—because perhaps equity investors are expecting a similar rate of return going forward—and adjust that rate for the company-specific considerations we will discuss in the next lesson, such as how stable a company's cash flows are.

One long-running broad market index of stocks has increased by a compound annual growth rate (CAGR) of 10% from 1928 to 2021, so 10% is a starting estimate for the cost of equity we'll use for these lessons. Expected and required rates of return for equity investors are rich topics that will be discussed in more detail later in the curriculum.

- If an issuer has additional types of financing with different risk and return characteristics from those of debt and equity—for example, preferred stock and non-controlling interests—the weighted-average after-tax cost of that financing needs to be added to Equation 1 as well.

**KNOWLEDGE CHECK: COMPUTING WACC**

1. Assume that ABC Corporation is financed with 40% debt and 60% equity. Also assume that interest expense is tax deductible. ABC Corporation wishes to maintain these proportions as it raises new funds.

   ABC's debt investors' required rate of return, measured before taxes, is 4%, and its equity investors' required rate of return is 10%. If the company's marginal tax rate is 23%, what is ABC's weighted-average cost of capital?

   **Solution:**

   ABC's weighted-average cost of capital is 7.23%:

   WACC = [(1 – Tax rate) × Pre-tax cost of debt × Weighting of debt] + (Cost of equity × Weighting of equity).

   WACC = [0.04 × (1 – 0.23) × 0.40] + (0.10 × 0.60).

   WACC = 7.23%.

**DISCUSSION**

If ABC's management maintains the company's current mix of financing (40% debt, 60% equity), what would happen to ABC's weighted-average cost of capital if its cost of debt decreases by 1%? If its cost of equity increases by 1%? What about if the company's tax rate changes? Write your responses on this lesson's discussion board on the LES.

As demonstrated in the prior module, capital investments increase firm value if their returns exceed required rates of return. The prior module focused on the return on investment as the main driver of value, but it is also clear that a lower required rate of return would increase NPV, too, or at least provide a lower threshold for value-creative investments. This forms the basis for one of the most common objectives for managers in **capital structure** decisions, the mix of debt and equity financing: Choose whichever one leads to the lowest WACC. However, the cost of debt and equity are not chosen by management but, rather, are determined in financial markets by investors, so it is a dynamic and non-trivial endeavor. The second objective of management in choosing a capital structure is, where possible and economical, matching the liquidity or time horizon with that of its capital investments.

**QUESTION SET**

1. XYZ corporation has a capital structure of 30% debt and 70% equity, and interest expense is tax deductible. Debt investors require a before-tax return of 6%, and equity investors' required return is 12%. If the marginal corporate tax rate rises from 20% to 25%, the change in the WACC is closest to:

   **A.** –0.09%.

   **B.** 0.09%.

**C.** 0.30%.

**Solution:**

A is correct. XYZ's WACC at a tax rate of 20% is calculated as follows:

WACC = (Weighting of debt × Cost of debt) + (Weighting of equity × Cost of equity)

= (0.3)(6%)(1 – 0.2) + (0.70)(12%) = 9.84%.

XYZ's WACC at a tax rate of 25% is calculated as follows:

WACC = (0.3)(6%)(1 – 0.25) +(0.70)(12%) = 9.75%.

Thus, WACC declines by 0.09% as the after after-tax cost of debt declines from 4.8% to 4.5%.

2. True or False: Since the cost of debt and equity are controlled by the firm, managers can lower the cost of capital for the firm by reduce reducing the cost of debt and equity used in their capital allocation process.

**A.** True

**B.** False

**Solution:**

B is correct. This statement is false because the costs of debt and equity are not selected by management but are determined in financial markets by investors, though they are influenced by management's actions.

**Questions 3 and 4 relate to the following information:**

Company X has the following on the right-hand side of its balance sheet:

Bonds $400,000

Common stock (40,000 shares) $600,000

Total liabilities and equity $1,000,000

The price of Company X stock is currently $20 per share. The required return before tax on debt is 5%, and the required return on equity is 10%.

3. In calculating WACC for Company X, the weight for debt using book values for the balance sheet components is likely to be _____ than the weight for debt using market values for the balance sheet components.

**A.** lower

**B.** the same

**C.** higher

**Solution:**

A is correct.

The book value weights are computed as follows:

$W_d$ = $400,000/$1,000,000 = 0.40.

$W_e$ = $600,000/$1,000,000 = 0.60.

The market value of equity is equal to $20 × 40,000 shares = $800,000.

The market value weights are computed as follows:

$W_d$ = $400,000/$1,200,000 = 0.33.

$W_e$ = \$800,000/\$1,200,000 = 0.67.

Thus, the book value weight for debt (0.40) is higher than the market value weight (0.33).

4. If the marginal corporate tax rate is 20% and the stock price increases to \$25, the WACC for Company X is closest to:

**A.** 7.60%.

**B.** 8.26%.

**C.** 8.55%.

**Solution:**

B is correct.
The book value weights are computed as follows:

$W_d$ = \$400,000/\$1,000,000 = 0.40.

$W_e$ = \$600,000/\$1,000,000 = 0.60.

The market value of equity is equal to \$25 × 40,000 shares = \$1,000,000.
The market value weights are computed as follows:

$W_d$ = \$400,000/\$1,400,000 = 0.29.

$W_e$ = \$1,000,000/\$1,400,000 = 0.71.

The appropriate weights for the WACC calculation are the market weights Company X's WACC, using the market weights, is calculated as follows:

WACC = (weighting of debt * cost of debt) + (weighting of equity * cost of equity)

= (0.29) (5%)(1-0.2) +(0.71)(10%) = 8.26%

5. Fill in the blanks using the following two terms:

higher

lower

Shareholder value is increased by a _____ return on investment and a capital structure that results in a _____ WACC.

**Solution:**

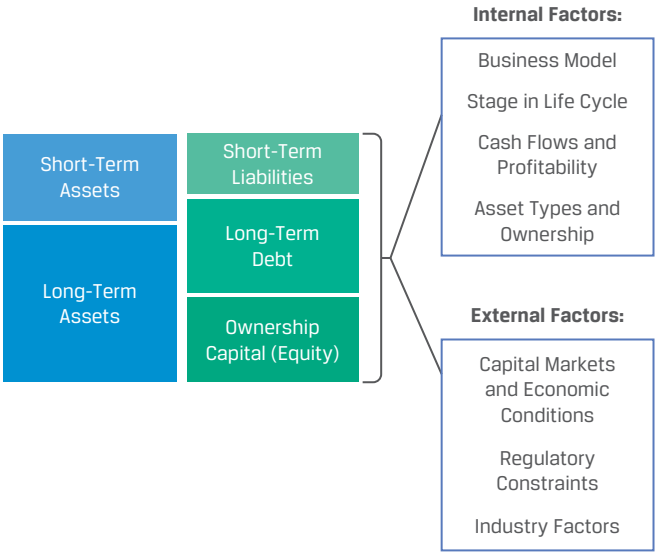
Shareholder value is increased by a *higher* return on investment and a capital structure that results in a *lower* WACC.

# 3 FACTORS AFFECTING CAPITAL STRUCTURE

☐ explain factors affecting capital structure and the weighted-average cost of capital

Issuers desire a capital structure that minimizes its weighted-average cost of capital and generally matches the duration of its assets. The total amount and type of financing needed are generally determined by the issuer's business model and its position in the corporate life cycle. The costs of debt and equity are determined in financial markets by top-down factors that affect debt and equity markets generally, as well as investors' assessments of issuer-specific risk factors, as summarized in Exhibit 1.

**Exhibit 1: Factors Affecting Capital Structure**




## Determinants of the Amount and Type of Financing Needed

The total amount and type of financing needed (thus, the weightings in the WACC calculation) generally depend on the issuer's business model and its position in the corporate life cycle.

### *Capital-Intensive Businesses*

Some businesses require a lot of assets—for example, those in utilities; transportation; real estate; some types of manufacturing, such as semiconductors; and natural resource production. These are known as **capital-intensive businesses**. This need for lots of assets is evident from low asset turnover (low sales-to-total-assets ratio), high capital expenditures to sales, and high net-working-capital-to-sales ratios.

While many businesses were once vertically integrated and more capital intensive, many have separated into multiple, focused companies where the capital-intensive business is separate from the customer-facing brand or service businesses. The businesses then have contractual rather than ownership relations. For example, Hilton Worldwide, one of the world's largest hotel companies, operates almost all its hotel rooms through long-term franchise or management agreements, with the hotels themselves owned by others. Similarly, NVIDIA designs and tests its products but does not manufacture semiconductor wafers; that capital-intensive activity is instead done by Taiwan Semiconductor Manufacturing Company Limited and Samsung Electronics Co. Ltd.

**EXAMPLE 1**

## Leases as Debt Financing

Many business models require fungible and tangible assets, such as

- office space,
- data centers,
- IT devices, such as PCs, phones, and tablets,
- aircraft, and
- automobiles.

While companies could buy these assets for cash or borrow cash and buy them, a more common approach is to lease them from a lessor, such as a bank or specialized asset lessor—for example, AerCap Holdings N.V., which leases over 1,000 aircraft to airlines.

A lease is like a loan, but rather than receiving cash in exchange for interest and principal payments, the borrower (lessee) receives an asset in exchange for lease payments. Implicit in the lease is an interest rate that is often much lower than what the lessee would have been lent cash for, because the leased asset is collateral and because lessors are often large companies that can borrow cheaply.

Another similar approach to financing fungible and tangible assets is through secured debt. By using the asset as collateral for a loan or bond, the issuer may be able to obtain a far lower cost of debt than on an unsecured basis. This is true of a downtown office building but probably not for a highly specialized factory in a remote location or a consumable asset that has little value to investors as collateral.

The capital structures of some firms can be regulated by governments. For example, banks must adhere to regulatory capital standards by maintaining a certain percentage of equity as a proportion of assets. Similarly, regulatory oversight of public utility companies by local governments can influence their capital structures through rules and regulations relating to setting pricing/rates. This generally increases WACC because it results in higher equity financing.

### *"Capital-Light" Businesses*

Some business models—notably in the technology sector, as well as service businesses that have shed their capital-intensive businesses—have low capital needs (i.e., high fixed asset turnover and/or low capital-expenditures-to-sales-ratios), known as **capital-light businesses**, or asset-light businesses. Their assets might be primarily composed of excess cash and some intangibles. This reflects several factors:

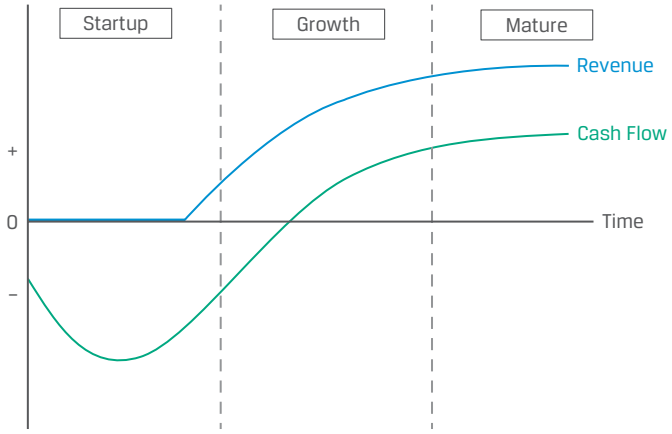
- They simply operate a network for others that own assets and thus do not need to seek financing for them from financial markets. For example, Uber and Airbnb operate global ridesharing and hospitality networks, respectively, that connect drivers and hosts who own the automobile and real estate assets with riders and guests. The companies earn commissions and fees from network users.
- The company may charge its customers upfront for services or have a very short or negative cash conversion cycle, thus obviating the need for external financing for working capital.

- The company may compensate employees and management primarily with stock, which the employees and management are happy to accept based on a rising stock price, again obviating the need for cash. This is technically a form of equity financing, but from employees rather than formal financial markets.
- If the company is profitable from an early stage and is capital light, it may not need to raise significant external financing unless management intends to expand quickly.

### *Corporate Life Cycle*

Besides the business model determining the amount of financing needed, a large determinant of the type of financing (debt versus equity) used is based on the company's life cycle stage. Rather than a static capital structure, most firms have a capital structure that changes over time. The framework in Exhibit 2 describes the relationship between a company's life cycle stage, its cash flow characteristics, and its ability to support debt.

**Exhibit 2: Capital Structure and Company Life Cycle**




| Feature / Phase | Startup | Growth | Mature |
|---|---|---|---|
| Revenue Growth | Initial | Rising | Slowing |
| Free Cash Flow | Negative | Rising | Stable |
| Business Risk | High | Medium | Low |
| Debt Availability | Little or None | Rising | High |
| Debt Type | Convertible | Secured | Unsecured |

As companies mature, business risk typically declines and a firm's cash flows turn positive and stabilize, allowing for greater use of debt financing on better terms and at lower cost. Note that the framework considers free cash flow, which is net of capital investment. Profitable, high-growth businesses may have negative free cash flow once greater investments are considered. While the life cycle stages of a company often mirror those of an industry, both startup and growth companies can often be found in mature industries. Examples include restaurants and apparel, with new concepts, formats, and fashions appearing regularly, as well as technology-driven disruption of established industries, such as advertising (TikTok and Douyin), retail (Shopify), and automobiles (Tesla and BYD).

#### Early Stage/Startup

- Early in its life, a company requires funding to develop and launch its first product or service. Revenues are zero or minimal, and the risk of business failure is high. The uncertain prospects and negative free cash flow lead most startups to seek equity rather than debt financing. Many stock exchanges have minimum size and profitability requirements and costly regulatory requirements, so equity financing for startups is usually sourced from founders, employees, and venture capital investors rather than through an IPO.
- At this early stage, the only types of debt financing that might be available are leases and convertible debt. Leased assets commonly include office or retail real estate that can be leased at a low cost. Second, in some cases, startups may be able to raise **convertible debt**, or debt that offers investors the right to convert the debt to equity in the future at a predetermined price, while usually deferring interest payments until maturity. Convertible debt and other instruments combining debt and equity features are covered later in the curriculum.

#### Growth

- As a company emerges from the startup stage, product demand may result in rising revenue and accelerating growth, but further investment is needed to support growth and build scale. This includes sales and marketing expenses, growth-related capital expenditures, and working capital. Free cash flow is still likely negative, but visibility is improving as the firm establishes its customer and supplier base.
- As business risk declines and free cash flow improves, the business becomes more attractive to lenders. Many growth companies use debt conservatively to preserve operational and financial flexibility and minimize the risk of financial distress. Equity remains the predominant source of financing.

#### Mature Phase

- As a firm reaches maturity, revenue growth slows but also becomes more predictable. A mature firm usually generates reliable and positive free cash flow and likely has an established customer and supplier base. There is typically a decline or a deceleration in growth-related investment spending. Consistent free cash flow allows the company to borrow more cheaply, which is usually more attractive than higher-cost equity.
- In practice, large, mature public companies commonly use significant debt in their capital structures, although many seek to maintain an investment-grade credit rating to preserve maximum financial flexibility and minimize the cost of debt. Mature companies may elect to distribute capital to shareholders by increasing dividends or repurchasing shares.

## Determinants of the Costs of Debt and Equity

The costs of debt and equity are determined in financial markets by top-down factors that affect debt and equity markets generally, as well as investors' assessments of issuer-specific factors. While the cost of debt is lower than the cost of equity, these costs are influenced by the same risk factors and thus tend to move together because they are claims on the same cash flows.

### *Top-Down Factors*

Top-down factors affecting the cost of capital include financial market conditions and industry conditions.

Economic conditions can significantly influence debt and equity investors' expected returns, whether in private or public markets. Debt investors can invest on a nearly risk-free basis in sovereign government debt and will demand a spread over that as compensation for assuming the issuer-specific risks. Macroeconomic and country-specific factors (real growth, inflation, monetary policy, and exchange rate changes) can increase both interest rates on sovereign governments debt and credit spreads across issuers. As recession risk increases, debt investors may charge borrowers much higher spreads, owing to the increasing possibility of default. This effect is often more pronounced among firms in cyclical sectors, such as mining, materials, or industrials, in which revenues and cash flows vary widely through the economic cycle. The same is true for equity investors; companies ideally want to borrow when interest rates are low, and they want to issue equity when stock prices are high. This tends to follow the same conditions as when credit spreads are low.

The industry in which a firm operates is likely to have a significant effect as well. Exposure to economic factors is generally based on the products or services the issuer sells. For example, higher oil prices might lead to lower credit spreads and greater investor willingness to increase financial leverage for oil producers, while the opposite may happen for airlines, for which fuel is a significant expense.

### *Issuer-Specific Factors*

Debt and equity investors consider the risk and return profile of an issuer and adjust their required rates of return relative to base rates or broad averages by evaluating risk factors, including the following:

1. Sales risks
2. Profitability risks (operating leverage)
3. Financial leverage and interest coverage
4. Collateral/type of assets owned by the firm.

Investors are more confident, all else equal, in firms with stable, predictable, and growing revenues and so will extend financing at lower costs to these types of firms. This is generally the result of size and the characteristics of the firm's products and services. For example, established firms in the telecommunications or software industries have stable cash flow streams from recurring subscription-based revenues from many customers, so no single customer represents more than a small fraction of total revenues. In contrast, such industries as automobile and construction equipment manufacturing have more volatile cash flows that are highly sensitive to economic conditions, increasing the risk of default should business conditions worsen.

Besides stability of revenues, stability of profit margins is also an important factor, which is determined by a company's proportion of fixed versus variable costs. This is often measured using a firm's **operating leverage**, or its proportion of fixed costs to total costs:

$$\text{Operating leverage} = \text{Fixed costs}/\text{Total costs}. \tag{2}$$

Companies with higher operating leverage experience a greater change in cash flow and profitability for a given change in revenue than firms with low operating leverage, as shown in the following example.

### KNOWLEDGE CHECK: FIXED VS. VARIABLE COST AND FIRM PROFITABILITY

Consider two companies fully financed by equity. Each firm has revenue of 100 over a particular period and expenses of 70.

- The first company ($Firm_{FC+}$) has fixed costs (*FC*) of 50 and variable costs (*VC*) equal to 20% of sales, or 20.
- The second company ($Firm_{FC–}$) has fixed costs of 20 and variable costs equal to 50% of sales.

1. Calculate profit (revenue – total costs) for each firm, and compare their returns on equity (profit/total equity).

   **Solution:**

   Solve for profit by subtracting fixed costs (*FC*) and variable costs from revenue and dividing the profit by total equity to calculate the one-period return on equity:

| **$Firm_{FC+}$ (Primarily Fixed Cost)** | | **$Firm_{FC–}$ (Primarily Variable Cost)** | |
|---|---|---|---|
| Revenue | 100 | Revenue | 100 |
| Less: Fixed Costs | –50 | Less: Fixed Costs | –20 |
| Variable Cost (20%) | –20 | Variable Cost (50%) | –50 |
| Profit | 30 | Profit | 30 |
| Total Equity | 100 | Total Equity | 100 |
| **Return on Equity** | **30%** | **Return on Equity** | **30%** |

2. Calculate the return on equity (ROE) for each firm if both firms experience a 25% increase in sales.

   **Solution:**

| **$Firm_{FC+}$ (Primarily Fixed Cost)** | **25% Sales Decline** | **Base Case** | **25% Sales Rise** |
|---|---|---|---|
| Revenue | 75 | 100 | 125 |
| Less: Fixed Costs | 50 | 50 | 50 |
| Variable Cost (20%) | 15 | 20 | 25 |
| Profit | 10 | 30 | 50 |
| Total Equity | 100 | 100 | 100 |
| **Return on Equity** | **10%** | **30%** | **50%** |

| **$Firm_{FC–}$ (Primarily Variable Cost)** | **25% Sales Decline** | **Base Case** | **25% Sales Rise** |
|---|---|---|---|
| Revenue | 75 | 100 | 125 |
| Less: Fixed Costs | 20 | 20 | 20 |
| Variable Cost (50%) | 37.5 | 50 | 62.5 |
| Profit | 17.5 | 30 | 42.5 |

| Firm$_{FC-}$ (Primarily Variable Cost) | 25% Sales Decline | Base Case | 25% Sales Rise |
|---|---|---|---|
| Total Equity | 100 | 100 | 100 |
| **Return on Equity** | **18%** | **30%** | **43%** |

3. Calculate the ROE for each firm if both firms experience a 25% decrease in sales.

**Solution:**

| Firm$_{FC+}$ (Primarily Fixed Cost) | 25% Sales Decline | Base Case | 25% Sales Rise |
|---|---|---|---|
| Revenue | 75 | 100 | 125 |
| Less: Fixed Costs | 50 | 50 | 50 |
| Variable Cost (20%) | 15 | 20 | 25 |
| Profit | 10 | 30 | 50 |
| Total Equity | 100 | 100 | 100 |
| **Return on Equity** | **10%** | **30%** | **50%** |

| Firm$_{FC-}$ (Primarily Variable Cost) | 25% Sales Decline | Base Case | 25% Sales Rise |
|---|---|---|---|
| Revenue | 75 | 100 | 125 |
| Less: Fixed Costs | 20 | 20 | 20 |
| Variable Cost (50%) | 37.5 | 50 | 62.5 |
| Profit | 17.5 | 30 | 42.5 |
| Total Equity | 100 | 100 | 100 |
| **Return on Equity** | **18%** | **30%** | **43%** |

4. Which firm might debt investors be willing to extend credit to at a lower cost of debt? Explain your answer.

**Solution:**

Based on the information provided, debt investors might be willing to extend credit at a lower cost of debt to Firm$_{FC-}$ because its profits and profitability are more stable, especially in the downside case of a 25% decline in sales. The firm's stability of profits makes it more likely than Firm$_{FC+}$ to be able to make promised interest and principal payments even if sales decline. The stability of profits results from a higher percentage of costs that are variable; in other words, it has lower operating leverage.

In practice, debt investors would, among other things, evaluate the stability of sales and develop an outlook for sales growth for both firms. While Firm$_{FC-}$ has lower operating leverage, it could have greater sales risk than Firm$_{FC+}$.

Financial leverage and interest coverage are important considerations because a company with significant indebtedness already is less able to support *incremental* debt because it has already committed to interest and principal payments. Additionally, for equity investors, high levels of indebtedness mean that there are significant priority claims ahead of them. Financial leverage, covered in a prior lesson, is often measured

using a ratio of either total debt or debt net of cash and marketable securities to a profit measure, such as operating income, or to total equity. Interest coverage measures an issuer's ability to make interest payments from its core business profits:

Interest coverage = Profit before interest and taxes/Interest expense. (3)

**KNOWLEDGE CHECK: FINANCIAL LEVERAGE AND FIRM PROFITABILITY**

Consider two companies both with assets of 100.

- Firm A is financed with 80 in equity and 20 in debt, while Firm B is financed with 40 equity and 60 debt.
- Each firm has revenue of 100 over a particular period and non-interest expenses of 70. Firm A has interest expense of 2, while Firm B has interest expense of 9. Ignore income taxes.

1. Calculate profit, interest coverage, and ROE for each firm.

**Solution:**

| **Firm A (Majority Equity)** | | **Firm B (Majority Debt)** | |
|---|---|---|---|
| Revenue | 100 | Revenue | 100 |
| Less: Operating expenses | –70 | Less: Operating expenses | –70 |
| Operating income | 30 | E | 30 |
| Less: Interest expense | –2 | Less: Interest expense | –9 |
| **Interest coverage** | **15** | **Interest coverage** | **3.3** |
| **Profit** | **28** | **Profit** | **21** |
| Total Equity | 80 | Total Equity | 40 |
| **Return on Equity** | **35%** | **Return on Equity** | **53%** |

2. Calculate ROE and interest coverage for each firm if both experience a 25% increase in operating income.

**Solution:**

| **Firm A (Majority Equity)** | **25% OI Decline** | **Base Case** | **25% OI Rise** |
|---|---|---|---|
| Operating income | 22.5 | 30 | 37.5 |
| Less: Interest expense | –2 | –2 | –2 |
| **Interest coverage** | **11** | **15** | **19** |
| Profit | 20.5 | 28 | 35.5 |
| Total Equity | 80 | 80 | 80 |
| **Return on Equity** | **26%** | **35%** | **44%** |

| **Firm B (Majority Debt)** | **25% OI Decline** | **Base Case** | **25% OI Rise** |
|---|---|---|---|
| Operating income | 22.5 | 30 | 37.5 |
| Less: Interest expense | –9 | –9 | –9 |

| Firm B (Majority Debt) | 25% OI Decline | Base Case | 25% OI Rise |
|---|---|---|---|
| **Interest coverage** | **2.5** | **3.3** | **4.2** |
| Profit | 13.5 | 21 | 28.5 |
| Total Equity | 40 | 40 | 40 |
| **Return on Equity** | **34%** | **53%** | **71%** |

3. Calculate ROE and interest coverage for each firm if both experience a 25% decrease in operating income.

   **Solution:**

| Firm A (Majority Equity) | 25% OI Decline | Base Case | 25% OI Rise |
|---|---|---|---|
| Operating income | 22.5 | 30 | 37.5 |
| Less: Interest expense | –2 | –2 | –2 |
| **Interest coverage** | **11** | **15** | **19** |
| Profit | 20.5 | 28 | 35.5 |
| Total Equity | 80 | 80 | 80 |
| **Return on Equity** | **26%** | **35%** | **44%** |

| Firm B (Majority Debt) | 25% OI Decline | Base Case | 25% OI Rise |
|---|---|---|---|
| Operating income | 22.5 | 30 | 37.5 |
| Less: Interest expense | –9 | –9 | –9 |
| **Interest coverage** | **2.5** | **3.3** | **4.2** |
| Profit | 13.5 | 21 | 28.5 |
| Total Equity | 40 | 40 | 40 |
| **Return on Equity** | **34%** | **53%** | **71%** |

4. Which firm might investors require lower rates of return for on debt and equity? Explain your answer.

   **Solution:**

   Firm A, which is primarily financed with equity. While Firm B has greater profitability (ROE) in the base case and higher upside for equity investors if operating income increases, it has a much wider range of outcomes owing to its substantially higher leverage. Even in the downside case, Firm A's interest coverage ratio is over 10; therefore, it can withstand a >90% decline in operating income before its ability to make interest payments is seriously imperiled.

   In practice, investors would, among other things, evaluate the stability of sales and operating leverage in developing an outlook for both firms. So while Firm A has lower financial leverage and higher interest coverage, it could have greater operating leverage and higher sales risk than Firm B.

Finally, the underlying assets associated with a firm's business model are also an important consideration. In general, assets that support the greater use of debt include those that are considered strong collateral, generate cash, or are fungible or liquid, such as real estate, automobiles, aircraft, and receivables from creditworthy customers. Secured debt and leases are covered in detail later in the curriculum.

**QUESTION SET**

1. Match each of the following phases of the company life cycle with the debt type:

| Phase of company life cycle | Likely debt type |
|---|---|
| A. Startup | i. Unsecured |
| B. Growth | ii. Convertible |
| C. Mature | iii. Secured |

**Solution:**

**A.** ii. Convertible: In the early stages of the corporate life cycle, the only types of debt available are leases and convertible debt.

**B.** iii. Secured: Business risk declines and free cash flow improves in the growth phase but is still likely negative, so secured debt financing is most likely.

**C.** i. Unsecured: Free cash is now positive and predictable. The firm is able to use a significant amount of debt, including unsecured debt.

2. The cost of debt and equity is likely to be higher for a firm with

**A.** stable revenue growth.

**B.** high operating leverage.

**C.** high interest coverage.

**Solution:**

B is correct. Operating leverage is the firm's proportion of fixed costs to total costs and measures the stability of profits. Firms with high operating leverage experience a greater change in operating profits for a given change in revenues. Thus, firms with high operating margins are riskier and likely to have higher debt and equity costs.

A and C are incorrect. Stable revenue growth and high interest coverage suggest a lower risk profile for the firm and a lower cost of debt and equity. A high interest coverage ratio indicates the firm has lower financial leverage and less risk.

Jason Jayman, a financial analyst, is preparing a report on two companies. Newtech is an early-stage company with a primarily variable operating cost structure, and its assets are largely cash and intangibles. Oldtech is a mature company with high fixed costs, low capital turnover, and a high capital expenditure to sales ratio. Jayman expects GDP growth to slow over the next year, which will lower the growth rate of revenues for both companies.

3. Newtech will likely finance activity by issuing:

**A.** unsecured debt.

**B.** equity through an IPO.

**C.** equity sourced from founders and employees.

**Solution:**

C is correct. Newtech is in the early stages of its corporate life cycle. Equity financing for early-stage firms is sourced from founders, employees through share-based compensation, and venture capital. Generally, the only sources of debt financing available for these firms are leases and convertible debt. Equity financing through an IPO is unlikely given that most stock exchanges have minimum size and profitability requirements.

4. Given the forecast of deteriorating business conditions, which company will experience a greater change in cash flow and profitability?

**A.** Newtech

**B.** No difference

**C.** Oldtech

**Solution:**

C. is correct. With revenue growth slowing, Oldtech is likely to experience a greater change in cash flow and profitability. Despite being in the mature phase of the corporate life cycle, during which one would expect stable profits, Oldtech has high operating leverage given its high degree of fixed cost. This will result in a greater change in profits for a given change in revenues. In contrast, Newtech's costs are variable, with low operating leverage.

5. The business model used by Oldtech can best be described as:

**A.** capital light.

**B.** capital intensive.

**C.** contractual rather than ownership relationships.

**Solution:**

B is correct. Oldtech's business model can best be described as capital intensive given its high fixed costs, low capital turnover, and high capital-expenditure-to-sales ratio. The firm requires a lot of assets and has significant financing requirements. Newtech is capital light since most of its costs are variable and its assets are largely cash and intangibles.

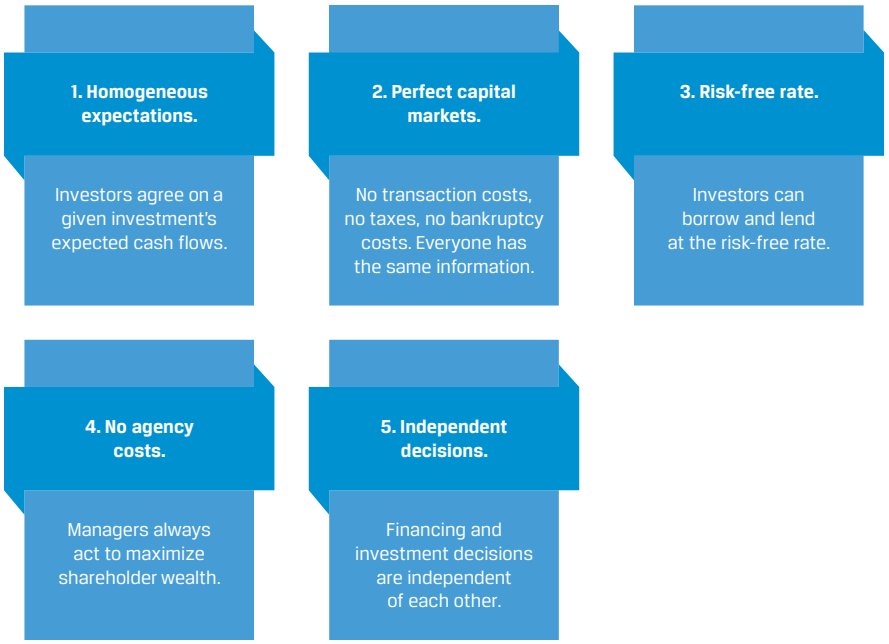
# MODIGLIANI–MILLER CAPITAL STRUCTURE PROPOSITIONS

4

☐ explain the Modigliani–Miller propositions regarding capital structure

In a classic 1958 paper, Nobel Prize–winning economists Franco Modigliani and Merton Miller argued that under certain assumptions, a company's choice of capital structure does not affect (or is "irrelevant" in determining) its value, where firm value is equal to the present value of the firm's expected future cash flows, discounted by its weighted-average cost of capital. In short, managers *cannot* change a company's value by simply changing its capital structure. The assumptions used by Modigliani and Miller (MM) are shown in Exhibit 3.

**Exhibit 3: Modigliani–Miller Assumptions**




Modigliani and Miller then relaxed their assumptions to show how taxes and financial distress costs *do* result in capital structure having an impact on firm value, though relatively modest in practice. While their assumptions do not hold in practice—which ultimately does alter MM's original conclusion of capital structure irrelevance—their theoretical framework remains a popular starting point for considering the use of debt in a company's capital structure. What is clear is that it's a firm's future cash flows that are the primary driver of value, not capital structure.

## Capital Structure Irrelevance (MM Proposition I without Taxes)

Modigliani and Miller demonstrated that changing the capital structure does not affect firm value based on investors being able to create any capital structure they wish for a company by simply borrowing and lending themselves in addition to owning a firm's shares. This "homemade" leverage argument relies on the assumption that investors can lend and borrow at the risk-free rate.

Say, for example that a company has a capital structure consisting of 50% debt and 50% equity and that an individual investor would prefer that the company's capital structure be 70% debt and 30% equity. The investor could borrow money to finance her share purchases so that her ownership of company assets would reflect her preferred 70% debt financing. This action would be equivalent to buying stock on margin and would have no effect on either the company's expected operating cash flows or company value.

Modigliani and Miller used the concept of arbitrage to demonstrate their point: If the value of an unlevered company (i.e., a company without any debt) is not equal to that of a levered company, investors could make a riskless arbitrage profit at no cost by selling shares of the overvalued company and using the proceeds to buy shares of the undervalued company, forcing their values to become equal. The value of a firm is thus determined not by how it finances itself but, rather, by its expected future cash flows. Their conclusion is summarized next.

**MM PROPOSITION I WITHOUT TAXES**

If the market value of a company is not affected by the company's capital structure, then the following is true:

1. The value of the levered company ($V_L$) is equal to the value of the unlevered company ($V_U$), or $V_L = V_U$.
2. The value of a company is determined solely by its expected future cash flows (not its relative use of debt versus equity capital).
3. In the absence of taxes, the weighted-average cost of capital is unaffected by capital structure.

## Higher Financial Leverage Raises the Cost of Equity (MM Proposition II without Taxes)

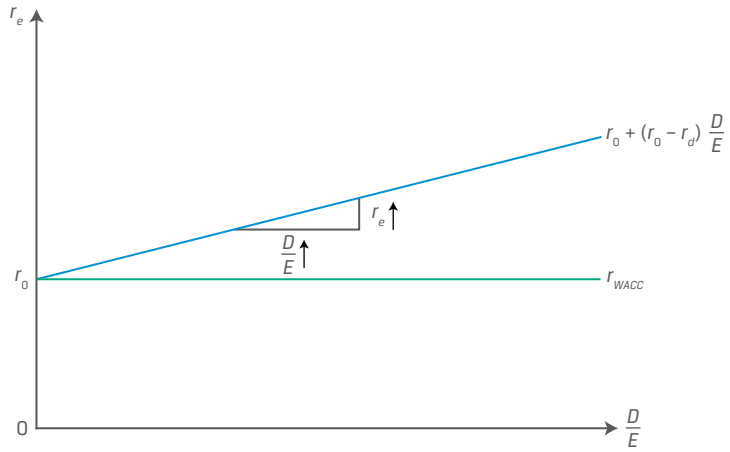
Debt is less costly than equity because debtholders have a priority claim. Therefore, one might expect a company's WACC to *decline* by increasing the proportion of debt in its capital structure. However, adding financial leverage increases risk, because more debt increases the probability of bankruptcy. As a result, equity investors will demand a higher return on equity to offset the increase in risk.

MM Proposition II without taxes tells us that adding any amount of lower-cost debt capital to the capital structure is always perfectly offset by an increase in the cost of equity, resulting in *no* change in the company's WACC. MM Proposition II explains why investors require higher returns on levered equity; their required returns should match the increased risk from leverage. Specifically, MM Proposition II without taxes implies that a firm's equity cost is a linear function of its debt-to-equity ratio ($D/E$):

$$r_e = r_0 + (r_0 - r_d)\frac{D}{E}, \tag{4}$$

where $r_e$ is the cost of equity, $r_0$ is the cost of capital for a company financed *only* with equity, $r_d$ is the cost of debt, $D$ is the market value of debt, and $E$ is the market value of equity. Exhibit 4 shows this relationship.

**Exhibit 4: Equity Cost as a Function of the Debt-to-Equity Ratio**



Note that $r_e$ increases with the debt-to-equity ratio with an intercept equal to $r_0$ and slope equal to the quantity ($r_0 - r_d$), while the WACC ($r_{WACC}$) does not change as debt levels change.

Given that capital structure changes do not affect the company's future cash flow stream and the company's weighted-average cost of capital remains unchanged for any chosen capital structure, there is no change in the value of the company. Note that Modigliani and Miller did not assume away the possibility of bankruptcy but simply assumed it occurs at zero cost.

### MM PROPOSITION II WITHOUT TAXES

If the cost of equity is assumed to be a linear function of the company's debt-to-equity ratio, then the following is true:

1. Higher leverage raises the cost of equity but does not change firm value or WACC.
2. The increase in the cost of equity must exactly offset the greater use of lower-cost debt.

### EXAMPLE 2

## Gerhardt Corporation Cost of Equity

Assume that Gerhardt Corporation has an all-equity capital structure. Gerhardt has expected annual cash flows (or $CF_e$) of EUR5,000 and a cost of equity of 10%, which is also its WACC since equity is the firm's only source of capital. For simplicity, we assume that all cash flows are perpetual. Therefore, Gerhardt's value is equal to

$$V = \frac{CF_e}{r_{wacc}} = \frac{\text{EUR5,000}}{0.10} = \text{EUR50,000}.$$

Now suppose that Gerhardt plans to issue EUR15,000 in debt at a cost of 5% and use the proceeds to buy back and reduce its outstanding equity by EUR15,000. This action leaves total invested capital unchanged at EUR50,000.

Under MM Proposition I, $V_L = V_U$, the value of Gerhardt must remain the same at EUR50,000 after the change in capital structure. Under MM Proposition II, after the change in capital structure, the cost of equity for Gerhardt—now with EUR15,000 in debt capital and EUR35,000 in equity capital—increases to 12.143%:

$$r_e = 0.10 + (0.10 - 0.05)\frac{\text{EUR15,000}}{\text{EUR35,000}} \approx 0.12143 = 12.143\%.$$

To prove that Gerhardt's firm value is unchanged under the new capital structure, we must show its WACC remains unchanged at 10%. With the new cost of equity, Gerhardt's WACC is now calculated as

$$r_{wacc} = \left(\frac{\text{EUR15,000}}{\text{EUR50,000}}\right)0.05 + \left(\frac{\text{EUR35,000}}{\text{EUR50,000}}\right)0.12143 = 0.10 = 10\%.$$

Gerhardt's WACC is still 10%, because the move to lower-cost debt was perfectly offset by an increase in the cost of equity. Thus, consistent with MM Proposition I, the value of the firm remains unchanged, at EUR50,000. Furthermore, the value of Gerhardt must equal the sum of the present values of