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المملكة العربية السعودية

Business Finance 1-2

Secondary Stage – Pathways System
Second Year

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I N T R O D U C T I O N

The progress and development of countries can be measured by their ability to invest in education and by the extent to which their educational system responds to the requirements and changes of the age. It is the responsibility of the Ministry of Education to sustain the development of its educational systems. In response to the concept of Saudi Arabia's Vision 2030 policy, the Ministry has taken the initiative in adopting the Secondary Education Pathways system with the aim of bringing about effective and comprehensive reform at the secondary stage.

The Secondary Education Pathways system provides a distinguished and modern educational model for secondary education in Saudi Arabia, which efficiently contributes to:

- Strengthening the values associated with belonging to our homeland, the Kingdom of Saudi Arabia, and of loyalty to its wise leaders, may Allah protect them, based on pure belief founded on tolerant Islamic teachings.
- Strengthening the values of citizenship by focusing on them in the school curriculum and in class activities, in line with the demands of sustainable development and the development plans of Saudi Arabia, which emphasize the consolidation of the duality of values and identity, founded on the teachings of Islam and moderation.
- Offering qualifications to students that are in line with future specializations in universities and colleges or the required professions, and ensuring that educational outputs are consistent with the requirements of the labor market.
- Enabling students to pursue education along their preferred track at an early stage, according to their inclinations and abilities.



- Enabling students to enrol in specific scientific and administrative disciplines related to the labor market and future jobs.
- Integrating students into an enjoyable and stimulating learning environment within the school, based on a constructive philosophy and applied practices within an active learning environment.
- Guiding students on an integrated educational journey from the primary stage to the end of secondary stage, and facilitating the process of their transition to the post-general education stage.
- Providing students with the technical and personal skills which will help them to deal with life and to respond to the requirements of the stage they are at.
- Expanding opportunities for graduate secondary school students through various options in addition to universities, such as by obtaining professional certificates, joining applied colleges, and obtaining job diplomas.

The Pathways system consists of nine semesters taught over three years, including a common first year in which students receive lessons in various scientific and human fields, followed by two specialized years during which students follow a general pathway as well as four specialized pathways consistent with their inclinations and abilities. These are: the Legal Pathway, the Business Administration Pathway, the Computer Science and Engineering Pathway, and the Health and Life Pathway. This makes this system the best option for students in terms of:

- The existence of new study materials that comply with the requirements of the so-called Fourth Industrial Revolution and its associated development plans, as well as the Saudi Vision 2030 policy which aims to develop higher-order thinking, problem solving, and research skills.
- Elective field programs which are consistent with the needs of the labor market and the students' own preferences. This enables students to enrol in a specific elective field according to a specific job skills matrix.
- An "inclination" scale that ensures the attainment of students' efficiency levels and effectiveness, and helps them to determine their own tendencies, predispositions, and strengths—all of which enhances their chances of success in the future.



Introduction

- Volunteer work designed specifically for students in line with the philosophy of activities in schools, which is also one of the graduation requirements. This helps to promote humane values, build up society, and ensures its development and cohesion.
- A transfer procedure that enables students to move from one pathway to another according to specific mechanisms.
- Proficiency classes in which skills are developed and achievement levels improved, by providing intensive and remedial lessons.
- Options for combining education with e-learning and blended learning/teaching, which are built into the Pathways system for reasons of flexibility, convenience, interaction, and effectiveness.
- A graduation project that helps students to integrate theoretical experiences with applied practices.
- Professional and skill-based certificates that are awarded to students after completing specific tasks and certain tests in partnership with specialized bodies.

The Business Administration Pathway is one of the paths developed at the secondary level. It contributes to achieving best practices by investing in human capital and providing students with the knowledge, experience, and skills that will allow them to keep pace with the Fourth Industrial Revolution and the challenges of the 21st century. This pathway also seeks to provide students with the necessary skills to deal with the administrative and financial challenges of the digital economy era in order to ensure a stable economic future. This is driven and supported by: 1) the contents of the Saudi Vision 2030 policy, 2) the two associated programs for developing human capabilities and the quality of life, and 3) the labor market's need for qualified personnel to work in future jobs. The pathway is also intended to promote the values of hard work, discipline, determination, perseverance, positivity, flexibility, national values, enhanced national identity, support for a culture of innovation and entrepreneurship, support for the value of volunteer work—all to prepare students for the labor market and to expand educational opportunities for them. It may also contribute to preparing students to continue their studies at university level, or to obtain professional certificates in one of the related disciplines.



“Business Finance” is one of the main subjects in the Business Administration Pathway. It helps students to:

- Become familiar with and understand the most important basic concepts of financial management.
- Gain knowledge of the relevant authorities for financial institutions and markets, and their role in making financial and investment decisions at the individual and organizational level.
- Appreciate the importance of financial analysis and how to benefit from it in the making of financial and investment decisions at the individual and organizational level.
- Understand the concepts of yield, risk, and the time-value of money.

The subject includes applied exercises relating to what students have learnt in order to assist them in solving realistic problems that develop their cognitive skills, under the guidance and supervision of the teacher.

This book “Business Finance” is characterized by modern methods and contains elements that make the subject attractive and appealing, which increases students’ willingness to learn and interact with the subject through the concepts, exercises, and various activities the book provides. It emphasizes important aspects represented by:

- The close connection between the content and real-life situations and problems.
- Presenting the content in diverse, attractive, and interesting ways.
- Highlighting the role of the student in the teaching and learning processes.
- Paying attention to the coherence of its content, which forms an integrated whole.
- Encouraging interest in employing technology in different situations.
- Encouraging interest in employing a variety of methods in evaluating the students, taking into account the individual differences between them.

In order to keep pace with global developments in this field, the book “Business Finance” provides the teacher with an integrated set of diverse



Introduction

educational materials that take into account the individual differences between students. Furthermore, it gives references to educational software and websites, all of which provide students with the opportunity to employ modern technologies and practice-based communication that serve to further confirm the book's role in the teaching and learning process.

Finally, we ask Allah the Almighty to grant that this book may contribute to preparing and qualifying our sons and daughters as students for the world of work and business, and that it may act as an incentive to invest their energies wisely, to build their future, and to contribute to the development of their country.

It is Allah who grants success!





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P R E F A C E

In business, finance refers to the supply, management, administration, and regulation of money. It is impossible to succeed in business without a clear understanding of the basics of finance. Whatever career path you choose to take in life—whether the CEO of a large corporation, an individual investor, or the owner of a small independent business—you will come into contact with financial concepts and practices.

Finance is a broad discipline. From an individual's perspective, finance encompasses financial institutions and investments. Virtually every day, most people have some contact with a financial institution. Individuals write and receive checks, review their bank balances online, and use debit or credit cards. As you become an adult, your contact with financial institutions will probably be just as frequent.

People make investment decisions that often meet a specific purpose, such as a stock purchase in a retirement account or a college fund account. They may sell a stock that they believe is overvalued or buy one that they think is undervalued. Many people periodically make investment decisions. They may not even be conscious of these decisions: having income withheld from wages, to be invested in a retirement plan, is an investment decision, even if the individual does not select the specific assets to include in the plan. The same applies when someone leaves funds in a mutual fund or continues to hold a stock. Maintaining those positions are also investment decisions.

Business owners and managers make financial decisions, so the third facet of finance is often referred to as business finance, or corporate finance. The employees of governments and nonprofit institutions also make similar financial decisions. Since expected future cash inflows and



outflows affect current financial decisions, many tools used for making business decisions also apply to non-business financial decisions.

Of course, financial institutions, investments, and business finance do not operate independently. Some courses in finance are called 'Managerial Finance', while others have titles such as 'Financial Management'. The focus in managerial finance is business financial decision making. Financial management is generally broader and combines financial institutions, investments, and business finance, although the emphasis is usually on their application to business decision making.

Business Finance introduces you to a range of financial institutions that play a central role in the Saudi economy. These include regulatory bodies and intermediaries that facilitate a range of transactions and serve the financial markets. Among these, one of the most important is the Saudi Central Bank (SAMA), which fulfills a range of functions from issuing currency and setting monetary policy to regulating the banking industry. The Saudi Exchange (Tadawul) is another key institution that connects businesses with investors. As highlighted in the book, the Saudi Exchange is one of many institutions helping to support the objectives of Saudi Vision 2030.

This text introduces you to the key areas of the finance discipline. It provides you with a breadth of knowledge of finance and is a foundation on which you may build. This text gives you a working knowledge of the terms, environment, and mechanics of financial decision making.

Besides introducing you to the broad field of finance, *Business Finance* also aims to encourage all students to do additional work in the field. To do this additional work, you need a basic background. By exposing you to all facets of finance, this textbook lays a foundation that will encourage and facilitate your taking of additional courses in finance.



Pedagogical Features

All textbooks feature a variety of pedagogical tools designed to improve learning.

Learning Outcomes are stated at the start of each chapter to give a clear outline of the concepts that will be addressed. After completing a chapter, it is useful to revisit these Learning Outcomes to ensure that each step has been clearly understood.

Key Terms are highlighted in bold throughout the text, with definitions placed in boldface in the margins. These key terms for each chapter are then repeated at the end of each chapter in a table for easy reference and revision.

Problems, Exercises, and Assessment Questions are provided at the end of each chapter, to stimulate thinking and test your understanding of the concepts.

Numerical **You Try It** exercises feature throughout the chapters, where relevant, and there are problems and exercises with which to review the material. These problems primarily replicate the text illustrations or present straightforward variations on the text examples.

Real-world **Case Studies** around the themes of each chapter appear at the end of each chapter. Each longer case is accompanied by **Study Questions** and an optional **Online Activity** to test understanding and stimulate further research.



CHAPTER 1

An Introduction to Financial Markets



Learning Outcomes

Once you have completed this chapter, you should be able to:

1. Give an overview of financial markets and the security trading process.
2. Understand the mechanics of investing in securities.
3. Describe specialized securities including margin purchasing and short sales.
4. Explain different measures used to track security prices.
5. Explain alternative foreign securities.
6. Describe the impact of competition in securities markets.

The Arabian Peninsula has been a center for trade since ancient times. These traders would take frankincense and myrrh to Roman markets by camel caravans along the Incense Route. Traders faced risks in purchasing in one market while transporting and selling in other markets. These markets were not regulated and investors faced the risk of loss. Nevertheless, money would need to be exchanged in different markets by negotiating exchange rates. Currency exchangers would make money on a spread, or the difference between their purchase price and their sales price.

Traders have always looked for ways to lower risks. One strategy is to share the risk of ownership across a number of investors. A company, or group of people who act as a single entity, can share risk by creating a corporation. This gives each person who invests in the corporation legal ownership represented by shares of stock. Because investors have stock ownership, they can buy and sell the shares in a secondary stock market.

To share the risk of international trade, in 1602 the Dutch East India Company became the first publicly traded company to sell stock and



pay dividends to investors. In 1611, the Amsterdam Stock Exchange was created to facilitate the trading of the Dutch East India Company stock. Soon after, other international trading companies incorporated and traded their stocks in exchanges. Not all of these companies were successful, and many individuals lost their investments.

This chapter considers securities markets, with a focus on both international and Saudi Arabian stock markets. Financial markets will be explained along with the role of brokers and securities dealers, the mechanics of investing, measures of security pricing, and foreign securities. The chapter ends with a discussion of the efficient market hypothesis, which suggests that over a period of years few investors will outperform the market.



How do currency exchangers make money on a spread?



Link to digital lesson



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1.1 Markets

At its most basic economic definition, a market is the means through which goods and services are exchanged by buyers and sellers. A seller brings something to the market and bids a sales price. The buyer asks for a price from the seller. The buyer and the seller can negotiate directly or use an intermediary called a broker to arrange and negotiate, or broker, the deal.

1.1a Securities Markets

Every day, trillions in Riyal are traded in stock exchanges around the world. These buyers and sellers never meet; instead, the securities markets are intermediaries, impersonally transferring the **stocks**, **bonds**, and **sukuk** from the sellers to the buyers. The transfers typically occur on an organized exchange such as the Saudi Exchange. The world's largest exchange is in the United States at the New York Stock Exchange (NYSE).

There certainly is no question that investing in securities involves the potential for loss. Without the possibility of loss, there would be no possibility of gain. Of all the financial institutions, the stock market may be the best known, but its purpose is often misunderstood. The primary function of a stock market is not to raise funds for firms, but to transfer securities from sellers to buyers. There is no net change in the number of securities in existence; no funds are transferred to firms. All that occurs is a transfer of ownership from the seller to the buyer.

The Saudi Stock Market started in 1932 with the first joint-stock company in the Kingdom of Saudi Arabia, the Arab Automobile Company. The Saudi Stock Market Exchange was established in 1985. A financial market exchange allows for the trading of securities. In 1990, the Saudi exchange started using an electronic system for the exchange of stock. In 2001, an advanced system of trading, settlement and clearing mechanisms (finalizing sales), the Saudi Tadawul exchange system, was introduced. Tadawul was restructured in 2007 as a joint stock company in accordance with Article 20 of the Capital Market Law where the exchange is the sole entity in Saudi Arabia authorized to act as a securities exchange. The vision of the Saudi Exchange is to be an integrated financial exchange that fosters

Stocks

The capital raised by a company through the issue of shares

Bonds

A debt obligation issued by entities such as governments and businesses

Sukuk

A sukuk is a Shariah-compliant bond-like instrument used in Islamic finance representing a direct asset ownership interest



the development of a diverse Saudi Arabian capital market and competes internationally. The Saudi Exchange's mission is to offer sound, efficient and attractive capital market products and services that deliver superior value to market participants and stakeholders.

The Saudi Exchange, or Tadawul, operates under the authority of the Saudi Arabian Capital Market Authority (CMA). The CMA sets rules for corporations that want to list on Saudi Arabian exchanges. In the United States, the Securities and Exchange Commission sets rules for companies in that country. Exchanges enforce rules for companies that want to trade on their exchanges. The CMA regulates the Saudi Capital Market by issuing required rules and regulations to implement provisions of Capital Market Law. The CMA regulations create an investment environment that boosts confidence of investors, reinforces transparency and disclosure standards in all listed companies, and protects investors and dealers from illegal acts in the market.

Many countries allow for over-the-counter (OTC) exchange markets. This allows smaller companies that may not meet major exchange requirements to sell securities, such as stocks, directly from a broker-dealer network instead of an investor purchasing from a centralized exchange. A broker does not actually sell stock but acts as an agent connecting sellers and buyers. Saudi Arabia has set up the Nomu Parallel Market providing an additional source of funding for issuers of security to access capital. Companies listed in the Nomu Parallel Market have modified and less stringent applications submitted to the Saudi Capital Market Authority (CMA) and the Saudi Exchange. This allows for a simpler and more flexible offering and listing process. While there are organizational differences between the exchanges from the perspective of a potential investor, they work in essentially the same way.

Saudi Vision 2030 has set goals for developing an advanced financial and capital market open to the world. This will allow greater funding opportunities in Saudi Arabia which will stimulate economic growth. To reach this goal, the Saudi Exchange system facilitates access to investing and trading in securities markets, easing the process of listing private Saudi Arabian companies and state-owned enterprises. Improvements in the exchange market have added liquidity (funding) to capital markets, strengthened debt markets, and opened additional investment opportunities.





How has automation changed the stock market?

1.1b Major Types of Traded Securities

It is important for both investors and financial managers to understand the major types of traded securities. Financial managers need to obtain capital from investors, while investors need to know where to place their investments to obtain the highest return given their risk tolerance.

There are two major types of traded securities, stocks, and bonds:

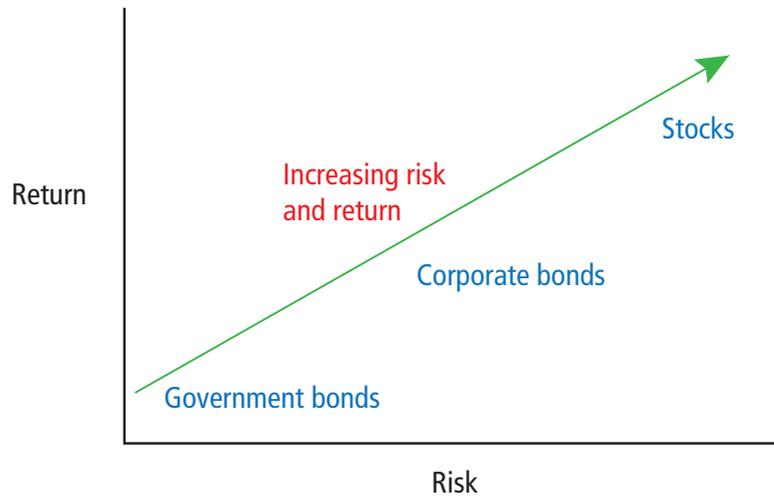
1. Stocks, or equity ownership through the holding of shares, have stock markets which are secondary markets that facilitate the transfer of existing securities among investors.
2. A bond is a debt obligation issued by entities such as governments and businesses.
 - 2.1 Governments issue bonds to finance their operations.
 - 2.2 Corporations issue corporate bonds to obtain assets.

Investors who buy bonds are making a loan to the entity issuing the bonds. These entities make a legal commitment to pay interest on the principal, or amount loaned, and in most cases return the principal when the bond comes due, or matures, at a specific date. Bonds can be discounted instead of paying interest. A discounted bond will sell for less than face value, or the money's actual value, but at maturity pays a specified return on investment. A bond's return is based on the entity's risk. Government bonds are considered to be the most secure, so have a lower required



return. Businesses can have a bond rating. A business considered to be low risk will have a lower required return than a business considered to be higher risk. Figure 1.1 shows the relationship between risk and return.

FIGURE 1.1
The Relationship between
Risk and Return



The Saudi Exchange has a market for bonds and sukuk. A sukuk is a Shariah-compliant bond-like instrument used in Islamic finance. Bonds are typically an interest-bearing debt obligation. A sukuk is a direct asset ownership interest in the issuer of the sukuk. Like other investments, sukuk are traded in secondary markets.



Do you think smaller investors are more likely to buy stocks or bonds? Why?

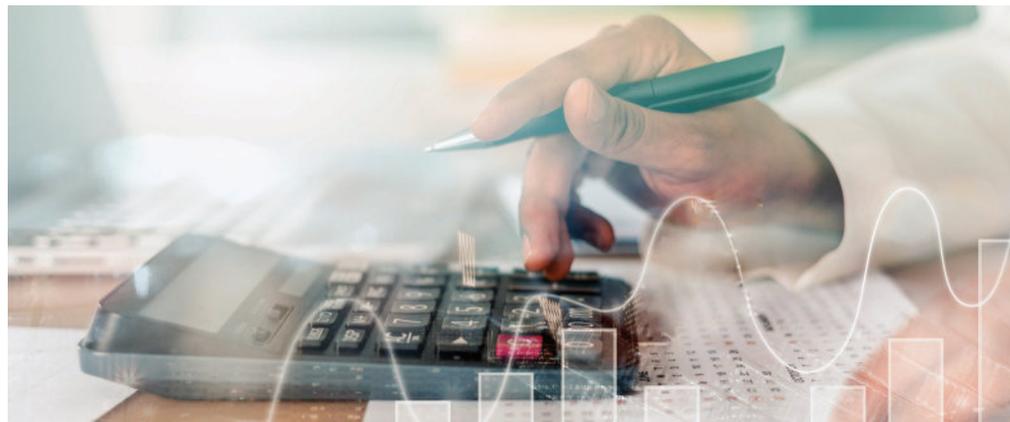


Transferability of securities is extremely important

Financial managers want their securities in a secondary market where securities may be sold and converted into cash. This increases the willingness of investors to buy and hold stocks, bonds, and sukuk and thus increases the ability of firms to issue securities and raise capital. Without secondary markets, investors would be reluctant to buy the securities when a firm initially issued them.

Understanding exchange markets is vital for financial managers and investors

New business start-ups may want to offer stock through an initial public offering (IPO). Existing corporations may want to issue additional shares of stock, buy back shares of stock, issue bonds, or issue sukuk. Both businesses and individuals invest in markets to obtain the highest returns on their investments.



Why might a bond be issued, and why might an investor purchase it?

1.1c Market Makers

Financial markets may have market makers (the securities dealer). Assume a seller wanted to sell a stock or other security, but no buyers want to buy that day. How low should the bid sales price go? Should it go to zero SAR? This would disrupt the market. Stock market makers help to ensure that a stock price remains in a range by buying and selling stocks and “making the market.” A **market maker** is a dealer who engages in the business of buying and selling securities for their own account. Market makers work in a variety of equity markets including the bond markets. In

Market maker

A market maker is a dealer who engages in the business of buying and selling securities for their own account



most cases, market makers are dealers in large investment banks or other specialized trading companies. A “designated market maker”, or DMM, supervises trading in a company’s stock to ensure that trading (buying and selling) goes smoothly. If trading for that stock becomes volatile, the DMM would step in and buy or sell the securities for their own account. In effect, DMMs offer to buy securities from sellers and sell securities to buyers. Because they make a market in the security, an investor is able to buy and sell stocks and bonds. The Saudi Stock Exchange has set rules for Saudi market maker dealers to participate in the exchange.

EXAMPLE

For example, a market maker may be willing to purchase a stock at SAR 200 a share and sell it at SAR 210. The security is then quoted 200–210, which are the **bid and ask prices**. The market maker is willing to purchase at the bid price of a stock from a seller at SAR 200 and to sell, or ask, at SAR 210 a share for the stock to a buyer.

Bid and ask prices

Prices quoted by market makers at which they are willing to buy and sell securities

Spread

Difference between the bid and ask prices

Market makers set specified prices at which they will buy and sell the security. The difference between the bid and the ask is the **spread**. The spread, like brokerage commissions (or the fee paid to the broker for carrying out the transaction), is part of the cost of investing. When someone wants to buy a security, the value of security offer is the bid price, but the price requested from a buyer is the ask price. The difference between the bid and the ask is a cost of obtaining the security. In some markets, if there are several market makers for a particular security, this spread will be smaller due to competition between market makers. If there are only one or two market makers, the spread may be larger as a percentage of the bid price. For example, if a corporation had a bond issue, they may have multiple investment banks participate in the sales. These investment bank market makers would then compete for the sale of the bonds shrinking the spread. The spread is also affected by the volume of transactions in the security and the number of outstanding shares the firm has. If there is a large volume of transactions or the number of outstanding shares is large, then there is usually a larger number of market makers. This increased competition reduces the spread between the bid and the ask. If the number of outstanding shares is small, the spread is usually larger.

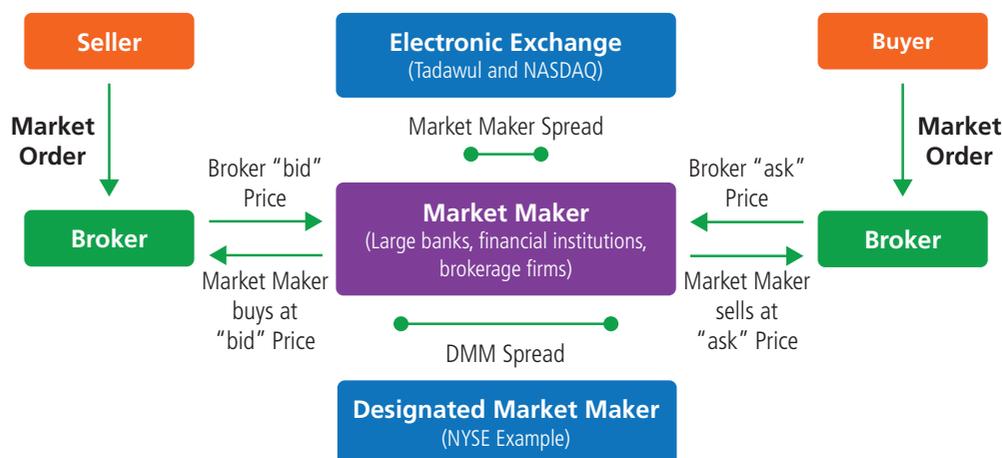


The New York Stock Exchange (NYSE), like many exchanges, has both a physical auction managed by human DMMs and completely automated auctions that include algorithmic computer-based quotes from DMMs and other market participants. Some exchanges, such as the Saudi Exchange, use only computer-based trading engines to determine an equilibrium price. All possible bid and ask matching orders are executed at the end of the auction day. The execution price is an auction-based bid and ask price at the market close and becomes the next day's reference, or starting, price.

Automated exchanges like the Saudi Exchange and NASDAQ use their auction engines to settle prices. This has greatly reduced the spread and therefore the retail commissions for market makers. At the same time, this has greatly increased the total amount of stock trades.

Figure 1.2 illustrates the exchange process. A buyer places a purchase order with a broker who is registered to buy and sell securities on an exchange. The broker places the ask price and number of shares to the exchange. The exchange market maker matches this ask request with a seller who has a bid price delivered through their broker. The bid-ask process will arrive at a settled price for the exchange of the securities.

FIGURE 1.2
The Exchange Process



The spread is one source of the market makers' profits as they turn over the securities in their portfolios. As illustrated in Figure 1.2, the spread for electronic exchanges is much smaller than for exchanges that use DMMs. Market makers also profit when the prices of the securities rise, because the value of their inventory of securities also rises. Market makers also bear the risk if the value of any securities they hold were to fall. These profits are a necessary facet of securities markets, for the profits induce the market makers to serve the crucial function of buying and selling securities.



These market makers guarantee to buy and sell at the prices they quote. Therefore, investors know what the securities are worth at a point in time and that there is a place to sell current security holdings or to purchase additional securities. For this service the market makers must be compensated, and this compensation is generated primarily through the spread between the bid and the ask.



Why are market makers important to the running of the stock market?

EXERCISES

Choose the correct answer.

1. The primary function of a stock market is to raise funds for firms.
True / False
2. Organized securities markets are:
 - a. examples of commercial bank.
 - b. transferring money from savers to borrowers.
 - c. secondary markets.
 - d. not subject to regulation.
3. Under Saudi Capital Market Law, Tadawul is the sole entity in the KSA authorized to act as a securities exchange.
True / False
4. Tadawul sets rules for corporations that want to list on Saudi Arabian exchanges.
True / False



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1.2 The Mechanics of Investing in Securities

Suppose an authorized investor wants to buy a stock of Saudi Aramco or Saudi Basic Industries Corporation. Companies listed on an exchange have a ticker symbol or trading name. In the Saudi Exchange, Saudi Aramco's trading name is SAUDI ARAMCO and Saudi Basic Industries Corporation's ticker symbol is SABIC. Both companies trade through the Saudi Exchange, which advises potential investors to work with a member of the exchange, typically a broker, to open an investment portfolio. Authorized investors include Saudi Arabian citizens, companies, charitable institutions and associations, endowments, investment companies, public institutions, government funds, and other authorized persons to purchase stocks through the exchange.

1.2a Brokerage Mechanics

As shown previously in Figure 1.2, a buyer places a purchase order with a broker whose role is to buy and sell securities for customers through the exchange. The broker and the market maker (the securities dealer) should not be confused since they perform different, but crucial, roles in the mechanics of purchasing and selling securities. Brokers execute orders for customers. Securities dealers make a market; they buy and sell securities for their own accounts. Dealers bear the risk associated with their purchases and sales. Because brokers buy and sell for their customers' accounts, they do not bear the risk associated with fluctuations in securities prices. These risks are borne by the investors. Most brokers allow their retail, or personal account, clients to buy and sell online through a brokerage portal.

Order Types:

1. A **market order**: an order to buy or sell a security at the best current price.

A buyer can ask the broker to buy the security at the best price currently available, which is the asking price set by the market maker. Such a request is a market order. The investor is not assured of receiving the security at the currently quoted price, since that price

Market order

Order to buy or sell a security at the best current price



Limit order

A limit order is a direction given to a broker to buy or sell a security at a specific price

Day order

Order to buy or sell at a specified price that is canceled at the end of the day if it is not executed

Good-till-canceled order

Order to buy or sell at a specified price (limit price) that remains in effect until it is executed by the broker or canceled by the investor

may change by the time the order is executed. However, the order is generally executed at or very near the asking price.

2. A **limit order**: an order to buy or sell a security at a specific price. A buyer may enter a limit order and specify a price below the current asking price and wait until the price declines to the specified level.

Orders Validity:

The timing menu allows the order to be placed for one day (a **day order**) or the order may remain in effect indefinitely (a **good-till-canceled order**). Such an order remains in effect until it is either executed or canceled.

Once the purchase or sale has been made, the broker sends a confirmation statement notice of the exchange settlement. This confirmation gives the number of shares and type of security purchased or sold, the per unit price, and the total amount of the purchase or sale including the transaction fees, if any. Figure 1.3 illustrates the buying and selling menus used by online brokerages.

FIGURE 1.3
Online Brokerage Order

Symbol ARAMCO	Strategy [Dropdown]	Saudi Aramco 39.70 SAR	Bid/Size 39.25/2 PSE Ask/Size 39.83/1 EDGX	Day Range 39.70 – 40.05 52 Week Range 31.36 – 43.35
Action Buy	Quantity 0	Today's Open 39.95 Previous Close 39.75	Volume 11,124,913	
Order Type Limit	Limit Price [Input]	Strategy Day Only	Estimated Amount SAR ---- Based on Limit Price <small>(does not include commission or fees)</small>	
<small>Expires at the end of the trading day if not filled</small>				

Symbol ARAMCO	Strategy Stock	Saudi Aramco 39.70 SAR	Bid/Size 39.25/2 PSE Ask/Size 39.83/1 EDGX	Day Range 39.70 – 40.05 52 Week Range 31.36 – 43.35
Action Sell	Quantity 0	Today's Open 39.95 Previous Close 39.75	Volume 11,124,913	
Order Type Market Order	Timing Day Only	Estimated Amount SAR ---- Based on Limit Price <small>(does not include commission or fees)</small>		
<small>Expires at the end of the trading day if not filled</small>				



1.2b Trading on the Saudi Exchange

The Saudi Exchange has set specific rules for buying and selling through the exchange.

Investors need to open an investment account with a broker authorized to carry out the securities business on exchange. The investor needs to fill out the required application to buy or sell a specific stock. This could be through a form issued by the broker, online, or through a telephone authorization.

The most common orders available in the Saudi Exchange are “market orders” and “limit orders”. The investor also can specify the duration of the validity of the order. The duration could be a “day order” or a “**good-till-date-order**”.

Good-till-date order

An order active until a specific date

EXERCISES

Choose the correct answer.

1. A broker and a market maker (the securities dealer) perform the same roles in the mechanics of purchasing and selling securities.
True / False
2. The major transaction fee for a brokerage firm is the _____.
 - a. commission
 - b. spread
 - c. ask
 - d. return
3. An order placed to be filled in one day is called a day order.
True / False
4. An investor placing a market order is assured of receiving the security at the currently quoted price.
True / False



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1.3 Special Security Purchases

There are a number of different types of market orders that can be made based on an exchange's rules. These include margin purchases, short sales, and derivatives.

1.3a Margin Purchases

Margin

Investor's equity in a security position

Investors can purchase securities on **margin**, which is buying the stock with a combination of the investors' cash and credit supplied by the broker. The phrase "on margin" can be confusing, since it is similar to buying "on credit". Margin is not the amount borrowed but is the investor's equity in the security. This amount is often expressed as a percentage:

$$\text{Margin} = \frac{\text{Equity}}{\text{Total value of portfolio}}$$

EXAMPLE

If an investor owns stock worth SAR 10,000 and borrows SAR 2,000 from the broker, the investor has SAR 8,000 of equity in the stock.

(The amount of equity in any investment is the total amount minus the borrowed amount.)

In this example, the equity is SAR 8,000 (SAR 10,000 – SAR 2,000) and the margin is:

$$80\% = \frac{\text{SAR } 8,000}{\text{SAR } 10,000}$$

Margin requirement

Minimum percentage of the total price that must be put up to buy securities

The **margin requirement** is the minimum percentage of the total price that the investor must pay. Individual brokers may require more margin, or a higher level of equity. The minimum payment required of the investor is the value of the securities times the margin requirement.



EXAMPLE

If the price of 1 share is SAR 100 and 100 are purchased, the investment is SAR 10,000 (SAR 100 x 100 shares).

If the margin requirement is 60%, the investor must supply SAR 6,000 (10,000 x 60%) of cash equity to purchase the stock.

The other SAR 4,000 (SAR 10,000 – SAR 6,000) is borrowed from the broker.

The broker will have a fee for allowing the investor to purchase on margin using the broker's funds. Investors use margin purchases to increase the potential return on the investment. The use of borrowed funds to magnify the investors' return is referred to as **financial leverage**.

Financial leverage

Use of borrowed funds to magnify the percentage return on an investment

**YOU TRY IT**

Nora wants to purchase a stock on margin. Her broker will allow a 70% margin requirement. Nora wants to invest SAR 15,000 in the stock.

How much must Nora provide to make the purchase of the stock?

How much will the broker loan for the purchase?

1.3b The Short Sale

When an investor purchases a stock and profits when its price rises and sustains a loss when its price declines, it is called a **long position**. However, a long position is not the only way an investor can profit from a

Long position

Purchase of securities in anticipation of a price increase



Short position

Sale of borrowed securities in anticipation of a price decrease

stock. An investor can also earn a profit from a decline in the price of a stock by taking a **short position**. In a short sale, an investor will borrow stock and sell it at a later date. If the price declines, the investor buys back the stock and pays off the loan (that is, pays off the borrowed stock). The investor earns a profit because the stock is bought for less than it was sold (at the borrowed level).

EXAMPLE

Assume a stock is selling for SAR 500. Nora believes that the stock is overvalued and that the price will decline.

She borrows 1 share of the stock from a broker and sells this in the market for SAR 500.

Several weeks later, the stock price has declined and she is able to purchase the share back for SAR 350. She then returns this to the broker.

The profit on this trade is calculated by: Sale price - Purchase price

Nora makes a profit of SAR 150 ($500 - 350 = 150$).

However, if the stock price rises to SAR 650 before she can repurchase it, she will make a loss of SAR 150 ($500 - 650 = -150$).

**YOU TRY IT**

Nora believes a stock will decline in value, she borrows and sells a share for SAR 200.

Two weeks later, she repurchases the share for SAR 140.

What profit did she make from the transaction?



1.3c Other Securities

There are a number of other securities available on the Tadawul exchange market as well as exchanges around the world. Many of these are created by and used by professional investors and companies. These securities carry higher risk. **Derivatives** are contracts between two parties that derive their price from the value, but not ownership, of an underlying asset, such as stock, a group of stocks (an index), or other measure. As the price of the underlying asset changes, so does the value of the derivative contract. One type of derivative is a **futures contract**. A futures contract is an agreement to buy or sell a commodity or security at some point in the future. Most commodities have “futures market contracts”, such as the oil and gas market or grain markets. A chemical company may not want to face the market risk of rising oil and gas prices used in their production so they will purchase a futures contract to lock in a price for the commodity to be received in the future. If the price of the commodity rises, the company benefits. If the price drops in the future, the company will pay higher than market rates.

Derivatives

Derivatives are contracts between two parties that derive their price from the value of an underlying asset, such as stock, group of stocks (an index), or other measure

Futures contract

A futures contract is an agreement to buy or sell a commodity contract or security at some point in the future

Mutual funds

An assortment of securities developed by investment firms and offered to investors

Exchange-traded funds

Like mutual funds but passive trade like stocks

Exchange-traded funds and mutual funds

Investors will often use exchange-traded funds or mutual funds as investment vehicles. **Mutual funds** are an assortment of securities developed by investment firms and offered to investors. These mutual funds can hold securities that match an overall market, an industry, or a portfolio of security investments (stocks and bonds). The mutual funds can be actively managed by the investment company, buying and selling securities as the market changes. They can also be passive or locked to a set of securities. **Exchange-traded funds**, or ETFs, are like mutual funds but are passive and trade like stocks. Like stocks, market makers provide bid and ask quotes to enhance liquidity for ETFs.



EXERCISES

Answer the questions.

1. Ali wants to make two stock investments, one is a long position in stock A and one is a short position in stock B.

Stock A is currently priced at SAR 200 and Stock B is priced at SAR 100.

Ali takes a long position in 100 shares of Stock A and a short position in 100 shares of Stock B.

A month later, Stock A is priced at SAR 220 and Stock B is priced at SAR 80.

- a. What is Ali's total gain/loss from the long position?

- b. What is Ali's total gain/loss from the short position?

2. A futures contract is an agreement to buy or sell a commodity or security at some point in the future.

True / False



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1.4 Measures of Securities Prices

Stock market exchanges have been one of the largest mechanisms of wealth creation for individuals around the world.

1.4a Market Downturns

Throughout the history of stock market investing across the world, there have been a number of market crashes or downturns. Famous crashes include the South Sea bubble of 1720 and the 1929 Wall Street crash. Despite downturns being a recurring theme of stock market investing globally, over the long-term stock markets have recovered and made good long-term investments. Crashes often follow a “bubble” or run up in prices and follow a similar pattern of irrational exuberance. Historically, the period after a crash has resulted in a period of strong investment performance for long-term investors, as the inexperienced investors cut their losses and sell when the market is low.

1.4b Market Index

There are a number of market indexes used in exchanges around the world. A market index tracks a set of securities showing trends in market performance. An index can show trends over time for a basket of securities in a market. An index could be calculated by the prices of all securities in the index or by a market capitalization-weighted index. A **market capitalization-weighted index** is the total market capitalization of shares listed on the market on a day divided by the total market capitalization of the shares previously listed on the index. With this index companies with a higher market capitalization (most overall value) will receive a higher weighting and companies with a small market capitalization will have less of an impact on the performance of the index. Securities prices and related indexes fluctuate daily.

A number of market indices are used to measure the performance of Saudi securities:

1. The Tadawul All Share Index (TASI), measures the stock price of publicly traded companies on the Saudi Stock Exchange. The MSCI Tadawul 30 Index (SAR) was developed by the Morgan Stanley

Market capitalization-weighted index

The total market capitalization of shares listed on the market on a day divided by the total market capitalization of the shares previously listed on the index



Capital International (MSCI) firm and the Saudi Exchange. This index includes the top 30 securities listed on the Saudi Main Equity Market.

2. The Parallel Market Capped Index (NomuC) uses a market capitalization-weighted calculation methodology but caps a threshold of 20% for any security to avoid a single security dominance on the Nomu Capped Index.
3. The TASI Islamic Index is a Shariah-compliant index. This index tracks the performance of companies listed as Shariah-compliant on the Saudi Exchange.
4. There are also indexes of subsets of the securities market. For example, the Saudi Exchange's website lists industry indexes based on the Global Industry Classification Standard (GICS). GICS is a common global industry classification standard, allowing investors to invest in specific industries such as energy, capital goods, consumer services, retailing, etc.

Figures 1.4A and 1.4B illustrate index market values changing over time.

FIGURE 1.4A



Figure 1.4A shows the increase in the market value of the TASI stocks. Note that the index moves up and down but has seen considerable growth since 2020. This is a 5-year chart and shows that the index has increased 74.15% over the last 5 years. These types of online charts allow for tracking over 1 day, 5 days, 1 month, 6 months, year to date (YTD), 5 years, and a maximum based on the historical data available which can be found on the TASI index of the Saudi exchange. This same type of information on individual stocks is available as well.



FIGURE 1.4B

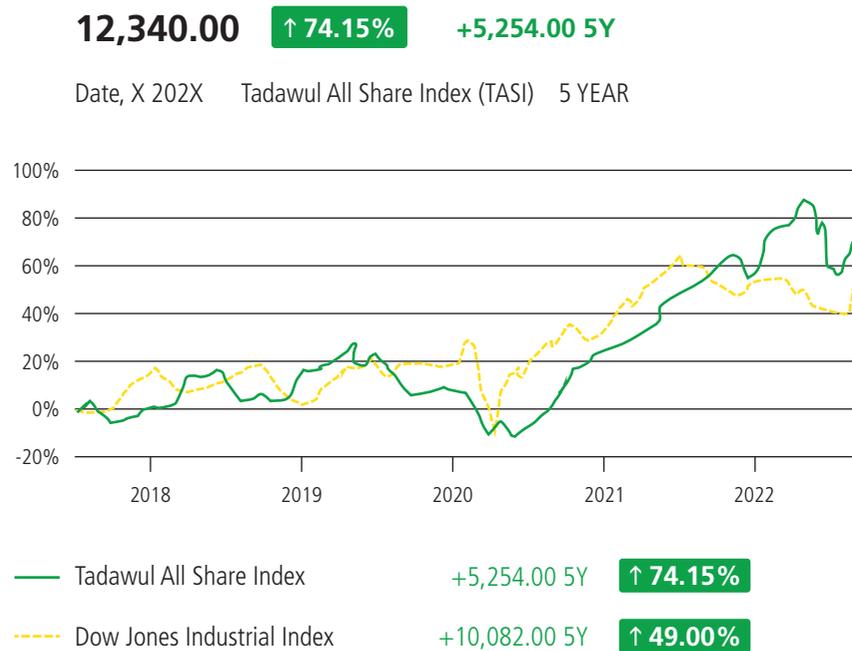


Figure 1.4B shows a comparison of two indexes, the TASI and the U.S. Dow Jones Industrial Average (DJI) index. Since these two indexes are based on different currencies, percent growth in the overall value is used. There is some general similar movement in these trends. A company's value reflects not only what happens within the firm or country, but also the larger impact of the global economy on a company's perceived value. While the TASI index increased 74.15% over the last 5 years, the DJI only increased 49.00% in the same period.

EXERCISES

Choose the correct answer.

1. Stock markets almost never drop in value.
True / False
2. A _____ tracks a set of securities showing trends in market performance over time.
 - a. market tracker
 - b. market trader
 - c. market index
 - d. stock tracker



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1.5 Foreign Securities

There are a vast number of securities in international markets. How investors access those securities depends upon the securities regulations in a country. For example, foreign securities cannot be listed on the Saudi Exchange. However, a Saudi citizen can purchase a Saudi developed mutual fund or ETF that focuses on international equity markets.

If a citizen of a country is able to transfer funds to foreign accounts and set up brokerage accounts in a foreign country, they can invest directly into that country. Brokerages can also have an international presence and can invest funds into foreign equities.

1.5a Depository Receipts

A security authority, like the Capital Market Authority (CMA), sets the rules for securities that can be exchanged in a country. While the CMA can place reporting and other requirements for companies in Saudi Arabia that list on the Saudi Exchange, they have little control over the regulation of companies outside of Saudi Arabia. Investment banks and companies can set up **depository receipts (DR)**. These are denominated negotiable instruments issued by a depository bank in the local currency. The DR represents ownership of shares in a foreign market and can be purchased as an investment.

Depository receipts (DRs)

Receipts issued for foreign securities held by a trustee

1.5b International Bonds

In addition to stocks, bonds sold in foreign countries are purchased internationally. There are three general types: (1) bonds issued by foreign firms; (2) bonds issued by foreign governments; and (3) bonds issued in foreign countries by international firms. Bonds issued by firms internationally depend on the currency in which they are denominated. A firm can sell bonds abroad denominated in the foreign currency or the firm can sell bonds denominated in the home currency (for example, Saudi SAR). These are called **Eurobonds** but this is not related to Europe. When a Saudi Arabian firm issues a Eurobond, it promises to make payments in SAR. In this case, a Saudi investor will not have to convert the payments from the country currency where the bonds are issued (such as British pounds) back into SAR.

Eurobonds

Bonds sold in a foreign country but denominated in the currency of the issuing firm



EXERCISES

Choose the correct answer.

1. Which of the following are true of depositary receipts (DR):
 - a. Investment banks and companies can set up depositary receipts (DR).
 - b. DRs are denominated negotiable instruments issued by a depositary bank in the local currency.
 - c. A DR represents ownership of shares in a foreign market and can be purchased as an investment.
 - d. All are true.
2. A bond sold in a foreign country but denominated in the currency of the issuing firm is called a(n):
 - a. Exchange bond
 - b. Transnational bond
 - c. Eurobond
 - d. Savings Eurobond



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1.6 Competition in the Securities Markets

Countries, and the companies that operate in a country, depend upon equity markets to maintain and grow their economies. If equity markets are competitive and many informed participants can readily enter and exit equities, then a market becomes efficient. The Saudi Capital Market Authority attempts to create these market conditions by setting information regulations for companies that list on the Saudi Exchange. The Exchange provides performance information on equities, such as immediate market rates, daily results, and historical results and trends. The Exchange also provides educational information for investors to help them make good investment choices. This allows individuals to readily buy and sell securities, find information that is rapidly disseminated, and follow prices as they quickly change in reaction to changes in the economic and financial environment. The securities markets are among the most competitive markets in existence.

1.6a Efficient Market Hypothesis (EMH)

Competition among investors has led to an **efficient market hypothesis (EMH)**. The efficient market hypothesis asserts that securities markets are so competitive that the current price of a stock properly values the firm's future prospects—that is, the firm's future earnings and its dividends. If a firm's stock were perceived as undervalued, investors would rush to purchase it. This increase in demand would push up the price. The converse would occur if the stock were perceived as overvalued; investors would sell the stock and this increase in supply would cause the price to fall. Hence the current price is a true measure of the security's worth. Under EMH, security analysis by an individual investor designed to determine if a stock is **overpriced** (or costs more than its worth) or **underpriced** (or costs less than its worth) is futile because the stock is neither. The market has determined an equilibrium price.

An important implication of this theory of efficient markets is that an investor cannot consistently beat the **market return** (the return on the overall value of the equities). An investor will earn a return consistent with the market return and the amount of risk perceived in the investment. The efficient market hypothesis suggests that the probability of an investor

Efficient market hypothesis (EMH)

Theory that securities prices correctly measure the current value of a firm's future earnings and dividends

Overpriced

An item that costs more than its worth

Underpriced

An item that costs less than its worth

Market return

The return on the overall value of the equities



outperforming the market over any extended period is very small. That does not mean that an investor cannot outperform (or underperform) the market during a short period of time. During a brief period, such as a year, some investors will earn a return that is higher than the return earned by the market. However, there is little chance that those individuals will be able to achieve superior results for an extended period of time (in other words, to outperform the market consistently). Some stock investors engage in day trading. These investors will buy and sell stocks continuously hoping to take advantage of small changes in stock prices.

Information that enters the market can have immediate effect on the price of equities. Future prices can change radically due to weather events, political changes, changes in competitive actions, or any number of other events. Stock prices for companies can go up or down based on information that enters the market. Professional traders monitor information streams and make decisions accordingly. There is considerable information to back the efficient market hypothesis and this strongly suggests that few individual investors will, over a period of time, outperform the market consistently.

One primary reason for the efficient market hypothesis is the speed with which securities prices adjust to new information. The hypothesis requires that prices adjust extremely rapidly as new information is disseminated. In the modern world of advanced communication, information is rapidly dispersed in the investment community. The market then adjusts securities prices in accordance with the impact of the news on the firm's future earnings and dividends. By the time that the individual investor has learned the information, securities prices probably will have already changed. Thus, the investor will not be able to profit from acting on the information.





How can professional traders react more quickly to price changes than other investors?

1.6b Insider Trading

Insider trading

When someone inside a company, or someone who has access to insider information, trades the company's securities because they have confidential or non-public information about the company

Because information is so important, there are laws against insider trading. **Insider trading** is when someone inside a company, or someone who has access to insider information, trades the company's securities because they have confidential or non-public information about the company. For example, if an insider knew that a company was going to release information that would greatly lower the stock price, the insider could sell their stock in the company or short sell the company's stock. Insider trading is considered to be a criminal activity in most countries, including the Kingdom of Saudi Arabia.

If the markets were inefficient and prices did not adjust rapidly, some investors would be able to adjust their holdings and take advantage of differences in investors' knowledge. If some investors, such as insiders, knew that the acquisition would be announced but others would not, the insider could buy stock from those who were not informed. The price then could rise over a period of time as the knowledgeable buyers accepted progressively higher prices in order to buy the stock. Of course, if a sufficient number of investors had learned quickly, the price increase would be rapid



as these investors adjusted their valuations of the stock in accordance with the new information. Government decisions can impact markets. To avoid giving some investors advantages, specific announcement times for the release of government information is announced to the public.

EXERCISES

Choose the correct answer.

1. The Saudi Capital Market Authority attempts to create competitive market conditions by setting information regulations for companies that list on the Tadawul exchange.
True / False
2. In an efficient market, security prices:
 - a. adjust rapidly to new information.
 - b. adjust slowly to new information.
 - c. poorly value a firm's future prospects.
 - d. indicate that the firm is overvalued.



Summary



Securities are traded on organized exchanges, such as the Saudi Exchange. Securities are bought through brokers, who buy and sell for their customers' accounts. The brokers submit orders for the securities to market maker dealers, who "make markets" in them. These market makers offer to buy and sell at specified prices (quotes), which are called the bid and the ask prices. Brokers and investors obtain these prices through electronic systems that transmit the quotes from the various dealers.

After securities are purchased, investors must pay for them with either cash or a combination of cash and borrowed funds. When investors use borrowed funds, they are buying on margin.

Investors may establish long or short positions. With a long position, investors purchase stock in anticipation of its price rising. If the price of the stock rises, investors may sell it for a profit. With a short position, investors sell borrowed stock in anticipation of its price declining. If the price of the stock falls, investors may repurchase the stock at the lower price and return it to the lender. The position generates a profit if the selling price exceeds the purchase price.

Both the long and short positions are the logical outcomes of securities analysis. If the investor thinks a stock is underpriced, a long position (purchase of the stock) should be established. If an investor believes a stock is overvalued, a short position (the sale of borrowed securities) is established. In either case, if the investor is correct, the position will generate a profit. Either position may, however, generate a loss if prices move against the investor's expected price change.

Investors may purchase securities issued by foreign firms. This is usually accomplished through the purchase of depositary receipts, or DRs, which are issued by financial institutions and represent the foreign securities. Investors may also acquire securities such as Eurobonds—debt instruments issued abroad by firms that are denominated in the firm's currency instead of the foreign currency.

Securities markets are very competitive and efficient. New information is disseminated rapidly, and prices adjust quickly in response to the new information. The efficient market hypothesis suggests that few investors will be able to outperform the market over an extended period of time. Although an investor may outperform (or underperform) the market for a given period, consistently superior returns may be impossible to achieve.



Problems



1. Explain the bid-ask spread. Which price would you pay if you are purchasing a stock? Which would you receive if you were selling a stock?

2. Explain the role of brokers in modern stock markets. Why are they important?

3. Contrast long and short positions in stocks.

4. Illustrate the mechanics of a short sale.

5. List several market indices used to measure the performance of Saudi securities.



6. Determine how Depositary Receipts (DRs) facilitate trading in foreign securities.

7. Explain why an investor should not expect to outperform the market on a consistent basis.

Exercises



1. You purchase 100 shares for SAR 500 a share (SAR 50,000), and after a year the price rises to SAR 600. What will be the return on your investment if you bought the stock on margin and the margin requirement was:
- 25%
 - 50%
 - 75%?

2. Repeat Problem 1 to determine the return on your investment, but in this case suppose the price of the stock falls to SAR 400 per share. What generalization can be inferred from your answers to Problems 1 and 2?



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3. A stock is currently selling for SAR 45 a share. What is the gain or loss on the following transactions?
- a. You take a long position and the stock's price declines to SAR 41.50.
 - b. You sell the stock short and the price declines to SAR 41.50.
 - c. You take a long position and the price rises to SAR 54.
 - d. You sell the stock short and the price rises to SAR 54.

4. A sophisticated investor, Nasira, wanted to engage in a short sale. Nasira borrowed from a broker 500 shares of a green energy company and sold the stock at SAR 20 a share. The price of the stock subsequently fell to SAR 15 at which time Nasira covered the position (that is, closed the short position by buying 500 shares at SAR 15 a share and returning those to the broker). What was the amount of profit or loss on this short sale?

5. Abdullah purchased 200 shares of a pharmaceutical company for SAR 25 on margin. The margin requirement was 40%. How much does Abdullah need to provide to make the purchase of the shares?



6. Thana buys 100 shares of a software company, DEM, at SAR 35 a share and 200 shares of GOP at SAR 40 a share. She buys on margin.
- If the margin requirement is 50%, what is the maximum amount she can borrow?
 - If the margin requirement is 70%, what is the maximum amount she can borrow?

7. After an analysis of an electronics store, Omar has concluded that the firm will face financial difficulty within a year. The stock is currently selling for SAR 50 and Omar wants to sell it short. If he does, what is the return he will receive if the stock price drops to SAR 10?

8. Lina buys stock on margin at SAR 20 per share. The margin requirement is 50%. What is the amount that Lina should provide to make the purchase of this stock?

9. Ali sells short 1 stock which is currently priced at SAR 20. He is able to repurchase it for SAR 16. What return does he make?



CHAPTER 1 An Introduction to Financial Markets

10. Nawaf sells short 100 shares of a stock priced at SAR 50. He repurchases them for SAR 53 each. What return does he make?

ASSESSMENT QUESTIONS

Choose the correct answer

1. The Tadawul Exchange:
 - a. is a financial intermediary
 - b. is a secondary market
 - c. transfers funds to businesses
 - d. forbids buying stock on margin
2. The major types of traded securities in the Tadawul exchange are 1. stocks, 2. bonds, 3. sukuk.
 - a. 1 only
 - b. 2 only
 - c. 1, 2 and 3
 - d. 1 and 2
3. Available exchange orders in the Tadawul exchange include:
 - a. hit order
 - b. take order
 - c. market order
 - d. all of the above
4. The use of borrowed funds to magnify the investor's return is referred to as financial leverage.
True / False



5. Buying stock on margin 1. is an example of financial leverage, 2. is buying stock with borrowed funds, 3. requires leaving the stock with the broker.
 - a. 1 and 2
 - b. 1 and 3
 - c. 2 and 3
 - d. 1, 2, and 3
6. If the margin requirement is 65% and the investment is SAR 10,000. The investor must supply how much in cash?
 - a. SAR 3,500
 - b. SAR 6,500
 - c. SAR 10,000
 - d. The answer cannot be determined from this information.
7. An investor can also earn a profit from a decline in the price of a stock by taking a:
 - a. long position
 - b. short position
 - c. declining position
 - d. parallel position
8. The MSCI Tadawul 30 measures the stock price of publicly traded companies on the Saudi Stock Exchange.
True / False.
9. Foreign securities can be listed on the Tadawul exchange.
True / False.
10. The CMA can place reporting and other requirements for companies outside of Saudi Arabia.
True / False.
11. Stock prices tend to adjust rapidly to new information.
True / False.
12. It is impossible for a trader to beat the market in the short term.
True / False.



- 13.** When someone trades a company's securities because they have confidential or non-public information about the company, they are engaging in:
- insider trading
 - co-conspiracy trading
 - security trading
 - non-competitive trading
- 14.** The efficient market hypothesis:
- suggests that the market for securities is becoming less efficient
 - implies that investors can consistently outperform the market
 - is built upon competition and the rapid dissemination of information
 - suggests that security prices change slowly over time

Key Terms



Term	Definition
Bid and ask prices	Prices quoted by market makers at which they are willing to buy and sell securities
Bonds	A debt obligation issued by entities such as governments and businesses
Day order	Order to buy or sell at a specified price that is canceled at the end of the day if it is not executed
Depository receipts (DRs)	Receipts issued for foreign securities held by a trustee
Derivatives	Derivatives are contracts between two parties that derive their price from the value of an underlying asset, such as stock, group of stocks (an index), or other measure
Efficient market hypothesis (EMH)	Theory that securities prices correctly measure the current value of a firm's future earnings and dividends
Eurobonds	Bonds sold in a foreign country but denominated in the currency of the issuing firm
Exchange-traded funds	Like mutual funds, but passive and trade like stocks
Financial leverage	Use of borrowed funds to magnify the percentage return on an investment
Futures contract	A futures contract is an agreement to buy or sell a commodity contract or security at some point in the future



Key Terms



Term	Definition
Good-till-canceled order	Order to buy or sell at a specified price (limit price) that remains in effect until it is executed by the broker or canceled by the investor
Good-till-date order	An order active until a specific date
Insider trading	Insider trading is when someone inside a company, or someone who has access to insider information, trades the company's securities because they have confidential or non-public information about the company
Limit order	A limit order is a direction given to a broker to buy or sell a security at a specific price
Long position	Purchase of securities in anticipation of a price increase
Margin	Investor's equity in a security position
Margin requirement	Minimum percentage of the total price that must be put up to buy securities
Market capitalization-weighted index	The total market capitalization of shares listed on the market on a day divided by the total market capitalization of the shares previously listed on the index
Market maker	A market maker is a dealer who engages in the business of buying and selling securities for their own account
Market order	Order to buy or sell a security at the best current price
Market return	The return on the overall value of the equities
Mutual funds	An assortment of securities developed by investment firms and offered to investors
Overpriced	An item that costs more than its worth
Short position	Sale of borrowed securities in anticipation of a price decrease
Spread	Difference between the bid and ask prices
Stocks	The capital raised by a company through the issue of shares
Sukuk	A sukuk is a Shariah-compliant bond-like instrument used in Islamic finance representing a direct asset ownership interest
Underpriced	An item that costs less than its worth

Key Formulas



$$\text{Margin} = \frac{\text{Equity}}{\text{Total value of portfolio}}$$



MINI CASE**MINI CASE 1.1: Investment Decisions**

Ali is new to investing and wants to set up a brokerage account. Ali has heard that investors have many options for investing. Ali wants to be prepared before he talks to a broker. He knows that he needs to understand the major investment options for individual investors. He also needs to understand the difference between the Tadawul exchange and the Nomu Parallel Market.

Task

1. Considering the information presented in this chapter, what are the investment options Ali has for his brokerage account?

2. Help Ali understand the difference between the Tadawul exchange and the Nomu Parallel Market by describing each market.



MINI CASE**MINI CASE 1.2: Efficient Market Hypothesis**

Omer is convinced that he can beat the market by making short-term decisions in his investments. You are Omer's friend and you want to tell him that he needs to be careful because of the efficient market hypothesis (EMH). You decide to make a plan to explain the EMH to Omer.

Task

1. Define in your own words the efficient market hypothesis.

2. Use the efficient market hypothesis to explain why it is very difficult to beat the market.



MINI CASE**MINI CASE 1.3: Long and Short Sales**

Omer has heard that investors can make the most money in the fastest time by purchasing long and short sales. Omer is considering buying Company ABC stock at SAR 25 because he thinks it will rise to SAR 30 within a year. He is also considering selling CGQ short. CGQ currently sells for SAR 25, but Omer believes it will drop to SAR 20 within a year.

Task

1. Determine Omer's return on his investment in Company ABC, long position, if Omer buys at SAR 25 and the stock rises to SAR 30 within a year.

2. Determine Omer's return on his investment in CGQ using a short sale if he borrows a share of CGQ from his broker and sells this for SAR 25 and then purchases a share of CGQ for SAR 20 within a year to repay the broker (assume no related fees).

3. Justify which of these investment strategies you would recommend to Omer.



Case Study: Investment Strategies

Yasser, like many young Saudi professionals, is considering opening a brokerage account to both invest for retirement and to take advantage of the growing Saudi economy. Yasser is aware that under Saudi Vision 2030, small to medium-sized enterprises (SMEs) are expected to grow in the Saudi economy. Yasser is also looking to diversify his investments for his retirement by purchasing shares of stocks, investment funds, sukuk and bonds, and exchange-traded funds. Yasser also needs to understand the trading cycle and his purchase and sales options.

Yasser knows that his first stop for research is the Tadawul exchange website to use the Invest Wisely section of the Knowledge Center to learn how to invest wisely. Yasser has reviewed the table providing a comparison between financial instruments available in the Saudi capital market table. Yasser understands that there is a tradeoff between the risk of an investment and the expected return of an investment. Some of the investment options have higher risks and others have lower returns. Yasser doesn't know if he should invest in one area or develop a portfolio of multiple options.

The Invest Wisely website outlines common mistakes made when investing and how to avoid them. This sounds like good advice to Yasser but he isn't sure how much time he has to follow markets. The site also recommends strategies for using financial statements and ratios for evaluating companies, but he finds this confusing. The more Yasser reads, the more he thinks he will need professional advice to help him invest.

Yasser decides to find a brokerage firm authorized to work with the Saudi Arabian exchange. Yasser checks the Members Directory on the Tadawul website to find firms authorized by the Saudi Arabian Capital Market Authority to provide brokerage services in Saudi Arabia and finds a very long list.

Yasser identifies SNB Capital as the largest brokerage firm by trading volume with close to 18% market share in Saudi Arabia. SNB is also the largest Shari-ah-compliant asset manager globally. SNB Capital was founded in 2007 as the investment banking and asset management arm of the Saudi National Bank. This is a large bank-based brokerage company and Yasser thinks this may be the right fit for his investing strategy. SNB will allow Yasser to trade independently online, by phone, or with the help of a personal broker. SNB is registered for trading in Tier 1 countries such as the US and parts of Europe and Asia. SNB has an online trading platform, AlAhli Tadawul, which is designed to allow trading through an easy to control platform, with analytical tools to help make decisions. With the online platform Yasser can trade in the US stock market.

Yasser has also found many other Saudi brokers in the Members Directory. He also looked at large international investment banking companies such as the US based Citi and Goldman Sachs, European companies Credit Suisse and Deutsche



CHAPTER 1 An Introduction to Financial Markets

Securities, and Asian companies such as HSBC. He wonders if these may be too large to take care of his personal needs.

Yasser has a decision to make. He wants to have a brokerage account that will meet his needs in making long-term investments to support his retirement, but at the same time, he wants to invest in exciting growth opportunities.

Study Questions

1. Use the Invest Wisely website to make a recommendation on how Yasser should develop his financial plan.

2. List the reasons that Yasser should consider using a personal broker to help him invest.

Online Activity

Research a broker in Saudi Arabia other than SNB. Identify the services offered by this broker including the countries where someone can purchase equities. Identify the trading platform offered by this broker and list the advantages and disadvantages of using this broker.



CHAPTER 2

Opportunity Costs and the Time Value of Money



Learning Outcomes

Once you have completed this chapter, you should be able to:

1. Identify personal and financial opportunity costs.
2. Calculate the future value of a single amount.
3. Calculate the future value of a series of amounts (annuity).
4. Calculate the present value of a single amount.
5. Calculate the present value of a series of amounts (annuity).
6. Understand other time value of money situations.

The basis of the time value of money is money makes money, and a Riyal received in the future is not equal to a Riyal received today. The time value of money, which in many societies is based on an interest rate, is the cost of money borrowed or lent. Interest is a type of rent, the fee for using the money of someone else. The time value of money is based on the fact that a Riyal received today is worth more than a Riyal received later, because one Riyal received today can be saved and invested and will be worth more than a Riyal in the future. Similarly, a Riyal that will be received one year from today is currently worth less than a Riyal today.

The time value of money is a vital element of business and personal finance that can help you make decisions such as:

- “If I deposit SAR 6,000 today, how much will I have in five years?”
- “Will SAR 16,000 saved each year give me enough money when I retire?”
- “How much must I save today to have enough for my future education expenses?”



In addition to these personal financial decisions, the time value of money is used each day for business decisions. For example, if an investment in plant and equipment costs SAR 120,000,000 and creates an annual cash flow of SAR 18,210,000 for seven years, what is the investment's return? The cash outflow, or money leaving a business, is in the present, but the cash inflows, or money going into a business are in the future. Time value of money calculations equate these cash inflows and outflows to determine the return. Once the expected return is calculated, the financial manager will decide whether to proceed and make the investment. These types of business investments contribute to support the objectives of Saudi Vision 2030.

The time value of money involves two major types:

1. **Future value.** With future value calculations, also called **compounding**, you are given an amount to save or invest, and you calculate the amount available at some future date.
2. **Present value.** With present value, calculated through a process called **discounting**, you are given the amount that will be available at some future date, and you calculate the current value (See Figure 2.1).

Discounting

The process of determining the present value of a payment that is to be received in the future

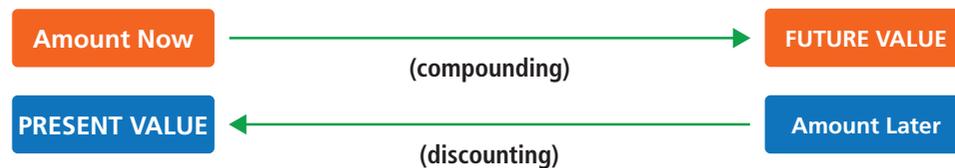


FIGURE 2.1
Time Value of Money

Time value of money refers to increases from earnings over time. With future value (compounding), the current amount grows to a greater future amount. Present value (discounting) determines the present amount that will grow to the desired future amount.

In this chapter, the four basic time value situations are discussed:

1. the future value of a single amount;
2. the future value of a series of amounts (an annuity);
3. the present value of a single amount; and
4. the present value of a series of amounts (an annuity).

Each situation is explained and illustrated using several calculation tools.



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2.1 Opportunity Costs

With every decision you make, you give up something. For example, money spent on an item gives up the opportunity to save or invest that money for the future. This tradeoff involved in every decision is commonly called **opportunity cost**, which is what a person gives up by making a choice. In other words, you sacrifice something (time or money) to obtain something else that you consider more desirable. The opportunity costs of your resources should be considered when making personal and financial decisions (see Figure 2.2).

Opportunity cost

What a person gives up by making a choice

FIGURE 2.2
Personal and Financial
Opportunity Costs



2.1a Personal Opportunity Costs

Time is a commonly overlooked resource available to every person. A personal opportunity cost occurs when time used for one activity cannot be used for other activities. Time used for studying, working, or shopping will not be available for other uses. Like other resources, your time must be managed to achieve your personal goals and to satisfy your values.

The health of a person is another possible personal opportunity cost. Eating unhealthy foods, not getting enough rest, or not exercising can result in illness, school absences, and higher medical expenses. Your personal resources (time, energy, health, abilities, knowledge), along with finances, require careful decision making.



2.1b Financial Opportunity Costs

Would you rather have SAR 100 today or SAR 105 a year from now? How about SAR 120 a year from now instead of SAR 100 today? Your choice will depend on current needs, future uncertainty, and current rates of earnings. If you wait to receive your money in the future, you want to be rewarded for the risk.

Time value of money

Increases in an amount of money as a result of earnings over time

The **time value of money** calculates increases in an amount of money as a result of earnings over time. Saving and investing a Riyal instead of spending it today results in a future amount greater than a Riyal.

Spending, saving, and investing money involves financial opportunity costs. Common examples include:

- Spending money from savings means lost future earnings; however, the purchase may have a higher priority than the earnings.
- Borrowing to make a purchase involves the opportunity cost of paying interest on the loan, but your current needs may make the tradeoff worthwhile.

The opportunity cost of the time value of money is also present in these financial decisions:

- Setting aside funds in a savings plan with little or no risk has the opportunity cost of potentially higher returns from an investment with greater risk.
- Making annual deposits in a retirement account can avoid the opportunity cost of having inadequate funds later in life.
- Purchasing a new automobile or home appliance has the potential benefit of saving money on future maintenance and energy costs.

2.1c Interest Calculations

Three amounts are required to calculate the time value of money for savings in the form of interest earned:

1. The amount of the savings (commonly called the principal).
2. The annual rate.
3. The length of time the money is on deposit.



These three items are multiplied to obtain the amount of simple interest. Simple interest is calculated as follows:

$$\text{Amount in savings} \times \text{Annual interest rate} \times \text{Time period} = \text{Interest}$$

EXAMPLE

Assume SAR 1,000 is invested today at 3% for a year. Calculate the amount of simple interest earned.

The simple interest earned = (SAR 1,000) \times (0.03) \times (1 year) = SAR 30.

**YOU TRY IT**

What would SAR 2,000 invested today at 4% for a year earn?

The increased value of money from interest earned involves two types of calculations:

1. Future value; the amount available at a later date.
2. Present value; the current value of an amount in the future.

Four methods are available for calculating time value of money:

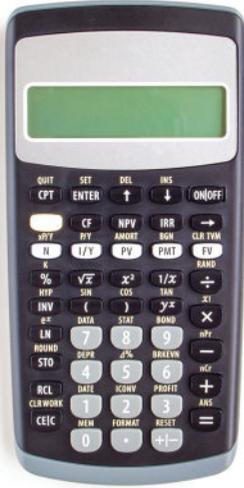
1. **Formulas.** Traditionally, math notations were used to compute future value and present value.
2. **Financial Calculators.** Specialized calculators with financial functions use appropriate keystrokes to perform future value and present value calculations.
3. **Spreadsheets.** Spreadsheet software has built-in financial formulas that include future value and present value calculations.



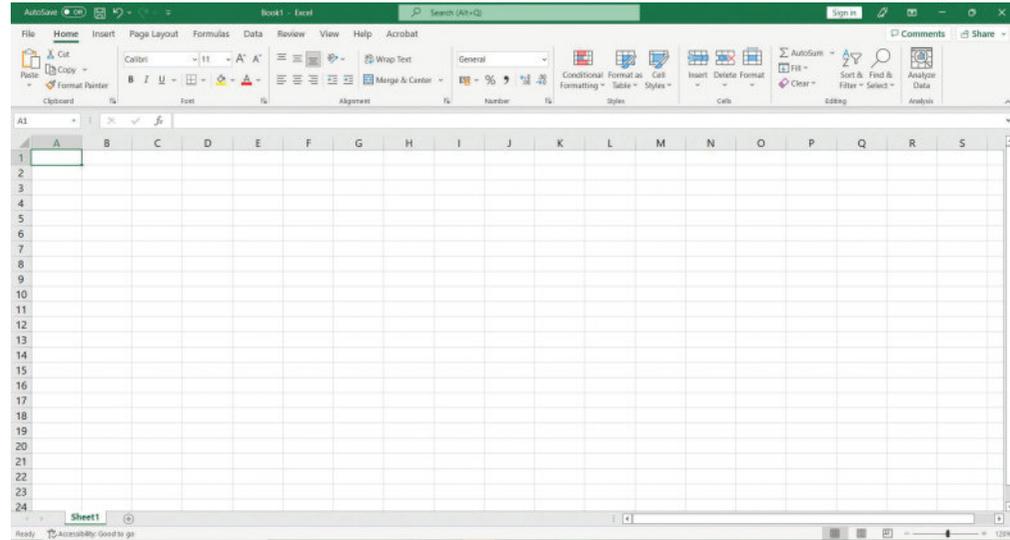
CHAPTER 2 Opportunity Costs and the Time Value of Money

4. **Websites and apps.** Time-value-of-money calculators are available online and through mobile devices.

(**Note:** In this chapter, the four basic time value of money calculations are explained using the formula, financial calculator, and spreadsheet software methods. Different financial calculators may require slightly different keystrokes.)



A financial calculator



Spreadsheet software

Financial calculators generally have five special keys for calculating time value of money:

- N** number of time periods
- I** or % rate for the time period
- PV** current amount (present value)
- PMT** periodic payment (annuity)
- FV** future amount (future value)



EXERCISES

Choose the correct answer.

1. Opportunity cost refers to what a person gives up when making a decision.
True / False
2. Which of these is **not** needed to calculate simple interest?
 - a. annual rate
 - b. length of time
 - c. currency exchange rate
 - d. amount of savings
3. If SAR 5,000 is invested at 3% for one year, what is the amount of simple interest earned?
 - a. SAR 100
 - b. SAR 120
 - c. SAR 150
 - d. SAR 180



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2.2 The Future Value of a Single Amount

Money deposited in an investment account will grow as a result of earnings paid to the investor. In various cultures these earnings are referred to as *interest* or *profit rate*, resulting in your savings increasing in value.

Future value is the amount to which current savings will grow based on a certain rate and a certain time period.

$$FV = PV (1 + i)^n$$

Where:

FV = Future value

PV = Present value

i = Interest rate

n = Number of time periods.

The future value of a single amount calculation may be used to:

- Determine the value of savings and investment at a later date.
- Grow money to achieve a financial goal.
- Set aside funds by a business to replace equipment or machinery in the future.

EXAMPLE

What is the future value of a SAR 100 deposited in a 4% account for one year?

$$\text{Future value (FV)} = PV (1 + i)^n$$

$$\text{Future Value (FV)} = \text{SAR } 100 (1 + 0.04)^1$$

$$\text{Future Value (FV)} = \text{SAR } 104$$



EXAMPLE

If you deposit SAR 1,000 in a 5% account at age 40, how much will you get at age 65? (invested for 25 years)

The future value (FV) will be = SAR 1,000 $(1 + 0.05)^{25}$

$$FV = \text{SAR } 3,386$$

What if you deposit the same amount of SAR 1,000 in the same 5% account at the early age of 25, how much will you get at age of 65 (invested for 40 years)?

The future value (FV) will be = SAR 1,000 $(1 + 0.05)^{40}$

$$FV = \text{SAR } 7,040$$

If you make deposits at age 25 rather than at age 40, the greater the future value will be. The same deposit made at the age of 25 would give an account balance of SAR 7,040 at age 65 due to the extra 15 years of compounding.

Compounding

The process by which earnings are based on the original amount as well as previous amounts earned

Earning interest on interest is called **compounding**. Money that is deposited in savings accounts is frequently referred to as being compounded because interest is earned on both the original amount and the previously earned interest. Compounding allows the future value of a deposit to grow faster than if interest were paid only on the original deposit. The sooner you make deposits, the greater the future value will be.



Why is it a benefit to let your savings compound?



EXAMPLE

What is the future value of SAR 100 at 10% after three years?

There are three methods to solve this problem; 1. the formula method, 2. the financial calculator method; and 3. the spreadsheet method. Each will give the same answer.

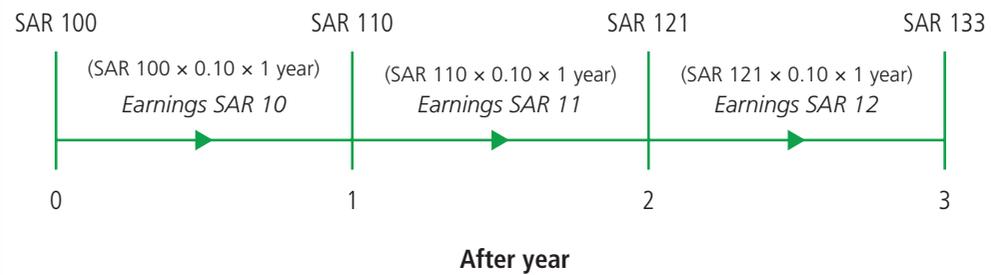
Calculations involve the following elements:

FV = Future value

PV = Present value

i = Interest rate

n = Number of time periods

Future value (rounded)**Calculation Methods**

Using this same example (future value of SAR 100 at 10% after three years), the formula, financial calculator, and spreadsheet calculations are as follows:

Future Value of a Single Amount	Process, keystrokes	Calculation
Formula	$FV = PV (1 + i)^n$	$SAR\ 133 = SAR\ 100 (1 + 0.10)^3$
Financial Calculator (Note: Different financial calculators may require slightly different keystrokes)	PV, I/Y, N, PMT, CPT, FV	-100 PV, 10 I/Y, 3 N, 0 PMT, CPT FV 133
Spreadsheet	= FV (rate, nper, pmt, pv, type)	= FV (0.1,3,0, -100,0) = 133

Note: Financial calculators and spreadsheet software may require you to enter amounts as negative numbers since these are viewed as *cash outflows*, money that is going into a savings account and investment. The result is a positive number, a *cash inflow*.



**YOU TRY IT**

Noor invests SAR 700 at 4% for seven years. What would the future value be?

Sara invests SAR 1,000 in a 6% account for five years. What amount does she receive after five years?

Ali starts two investment accounts, both with SAR 1,000. The first is a 5% account and the second is a 6% account. What is the difference between the account balances after five years?

EXERCISES

Choose the correct answer.

- Which of the following are needed to calculate the future value of an investment:
 - the amount of savings
 - the annual rate
 - length of time the money is on deposit
 - all of the above
- What amount will be in an investment account after five years of earning 3% if the starting balance is SAR 100?
 - SAR 114
 - SAR 116
 - SAR 118
 - SAR 110



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2.3 The Future Value of a Series of Amounts (Annuity)

Annuity

A series of equal, annual payments with a constant rate of return

Instead of a single amount, people often make regular deposits to an investment plan for savings goals or retirement. An **annuity** is a series of equal deposits or payments each year with a constant rate of return. To determine the future value of these equal yearly deposits, the calculation is called *the future value of a series*.

$$FV(\text{annuity}) = PMT \times \frac{(1 + i)^n - 1}{i}$$

Where

FV (annuity): future value of annuity

PMT: payment per period

i: interest rate

n: number of payments

Common uses of the future value of a series of amounts include:

- A student/young professional saving a set amount each year for a future financial goal, such as future education costs or retirement.
- A young entrepreneur setting aside an amount each year to start a small business in four years.
- A business owner creating a fund with annual deposits to expand the company into other countries in the future.

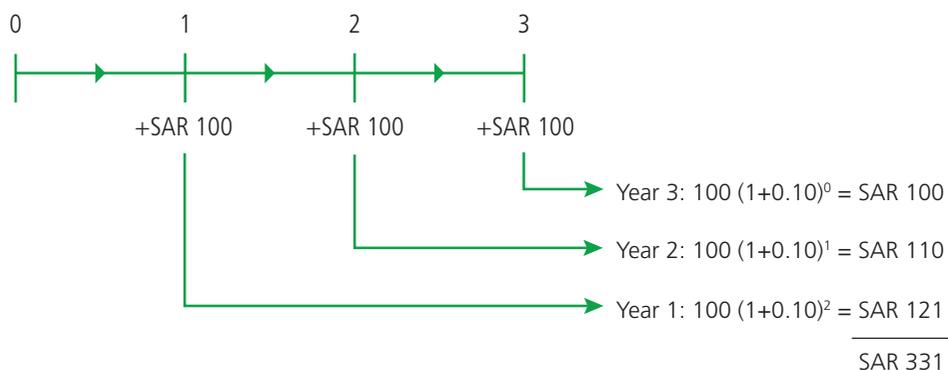


What uses can you think of for the future value and present value calculations?



EXAMPLE

What is the future value of three SAR 100 deposits made at the end of each of the next three years, and earning 10% per year?



The future value of the series would be SAR 331 based on the total future values of the SAR 100 deposits.

The answer can be calculated using the formula, financial calculator, and spreadsheet calculations as shown in the table below:

Future Value of a Series of Amounts	Process, keystrokes	Calculation
Formula	$FV(\text{annuity}) = PMT \times \frac{(1+i)^n - 1}{i}$	$331 = 100 \times \frac{(1+0.10)^3 - 1}{0.10}$
Financial Calculator (Note: Different financial calculators may require slightly different keystrokes)	PMT, N, I/Y, PV, CPT, FV	-100 PMT, 3 N, 10 I/Y, 0 PV, CPT FV 331
Spreadsheet	= FV (rate, nper, pmt, pv, type)	= FV (0.1,3, -100,0,0) = 331

Remember, this example assumes that:

1. Each deposit is for the same amount.
2. The rate is the same for each time period.
3. The deposits are made at the end of each time period.





YOU TRY IT

What amount would Sara have in five years if she invested SAR 1,200 each year at a rate of 3%?

Ali makes three annual deposits of SAR 500, each earning 5%. What is the future value of the investment?

Nora invests SAR 250 each year for six years into her investment account which earns her 6% per year. What is her total investment at the end of six years?

EXERCISES

Choose the correct answer.

1. Every series of deposits is an annuity.
True / False
2. The future value of a series of amounts may be used to calculate the future value of an annuity.
True / False



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2.4 The Present Value of a Single Amount

Sometimes a person might want to know the amount to set aside today that will grow to an amount in the future. The calculations for time value of money may be used to determine the current value of an amount desired in the future. **Present value** is the current value for a future amount based on a particular rate for a certain time period. Present value calculations, also called *discounting*, determine how much to deposit now to obtain a desired amount in the future.

Present value

The current value for a future amount based on a certain rate and a certain time period; also referred to as discounting

$$PV = \frac{FV}{(1 + i)^n}$$

Where:

FV: Future Value.

PV: Present Value.

i: Interest rate.

n: Number of time periods.

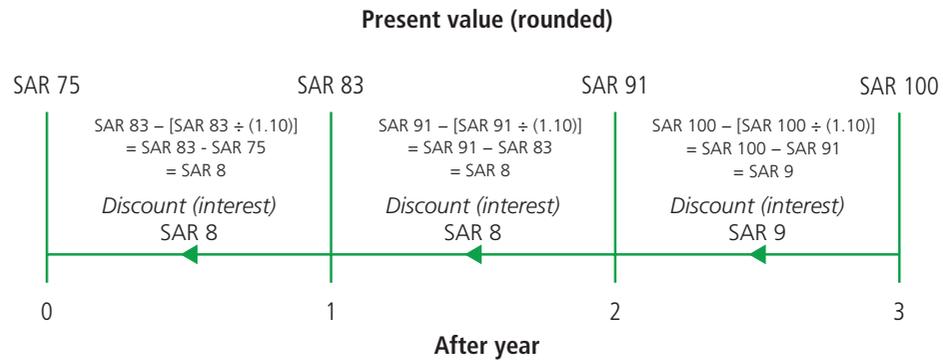
Present value calculations are often used by a business to determine the current worth of future cash flows from company operations. Other common uses of present value of a single amount include:

- Determining an amount to deposit today to achieve a certain financial goal in the future.
- Comparing different investments based on discounting the potential future returns.
- Discounting potential future cash flows of a business to decide if a new product would be profitable for the company.



EXAMPLE

What is the present value of SAR 100 to be received three years from now based on a 10% rate?



In this example, the calculation involves determining the present value of SAR 100 to be received three years from now based on 10%, which may be calculated as follows:

Present Value of a Single Amount	Process, keystrokes	Calculation
Formula	$PV = \frac{FV}{(1 + i)^n}$	$75 = \frac{100}{(1 + 0.10)^3}$
Financial Calculator (Note: Different financial calculators may require slightly different keystrokes)	FV, N, I/Y, PMT, CPT, PV	100 FV, 3 N, 10 I/Y, 0 PMT, CPT PV = 75
Spreadsheet	= PV (rate, nper, pmt, fv, type)	= PV (0.1,3,0, -100,0) = 75



**YOU TRY IT**

Khalid's goal is to have SAR 1,000 five years from now. If his investment earns 5%, what amount would he need to invest today?

Ali wants to have SAR 2,000 six years from now. If his investment account pays 4% per year, how much does he need to invest today?

Nora's goal is to have SAR 2,000 in four years time. She can either invest in an account which pays 4% or one that pays 5%. What is the difference between the present value amounts of the two accounts?

EXERCISES

Choose the correct answer.

1. A present value calculation is referred to as compounding.
True / False
2. If you want to have SAR 5,000 in three years' time and your investment account earns 4% each year, how much do you have to deposit into your account now?



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2.5 The Present Value of a Series of Amounts (Annuity)

A person may wish to withdraw an amount each year for a certain number of years. To determine how much must be deposited now, the calculation involves *the present value of a series (annuity)*.

$$PV(\text{annuity}) = PMT \times \frac{1 - \frac{1}{(1+i)^n}}{i}$$

Where:

PV (annuity): present value of annuity

PMT: payment per period

i: interest rate

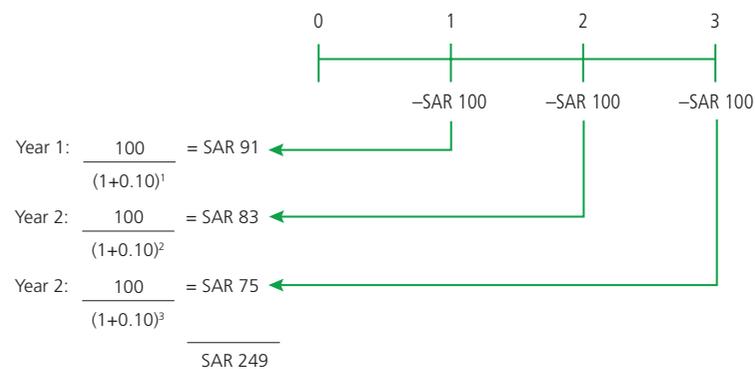
n: number of payments

The present value of a series of amounts may be used for:

- Setting up a fund in which a person could withdraw funds, to cover living expenses while in school.
- Making a current deposit to withdraw funds each year to update a school's computers.
- Creating a company fund that would allow an amount to be withdrawn each year to provide employees with advanced training.

EXAMPLE

What is the present value of a SAR 100 withdrawal at the end of the next-three years for money earning 10%?



EXAMPLE CONTINUED

Using this same example, the calculations are as follows:

Present Value of a Series of Amounts	Process, keystrokes	Calculation
Formula	$PV(\text{annuity}) = PMT \times \frac{1 - \frac{1}{(1+i)^n}}{i}$	$249 = 100 \times \frac{1 - \frac{1}{(1+0.10)^3}}{0.10}$
Financial Calculator (Note: Different financial calculators may require slightly different keystrokes)	PMT, N, I/Y, FV, CPT, PV	-100 PMT, 3 N, 10 I/Y, 0 FV, CPT, PV 249
Spreadsheet	= PV (rate, nper, pmt, fv, type)	= PV (0.1,3,-100,0,0) = 249



YOU TRY IT

How much must Omer deposit today if he wants to take SAR 400 out of an investment account each year for nine years for money earning an annual rate of 8%?

If Ali needs to withdraw SAR 100 every year for five years from an account that earns 6%, how much does he need to invest now?



If Sara needs to withdraw SAR 250 every year for seven years and the account earns 7%, how much must she invest now?

EXERCISES

Choose the correct answer.

1. Present value of a series may be used by a person who wants to withdraw an amount each year for a certain number of years.
True / False
2. The present value of a series requires calculating the amount set aside today to allow regular future withdrawals.
True / False



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2.6 Other Time Value of Money Situations

In addition to the four basic time value of money calculations, other situations exist related to future value and present value computations.

2.6a Uneven Amounts

A person may not deposit an equal amount each year. These uneven cash flows will require that you calculate amounts individually.

2.6b Time Periods of Less Than a Year

This chapter has only discussed time value of money activities involving full years, however, you will likely encounter situations consisting of less than a year.

2.6c Non-annual Compounding

Throughout the chapter, examples involved compounding that occurred only once a year. Compounding can and often does occur more frequently, such as twice a year (semi-annually) or every three months (quarterly). **Non-annual compounding** is payment of interest more frequently than once a year. In those situations, calculations need to be adjusted.

Non-annual compounding

Payment of interest more frequently than once a year

2.6d Loan Payments Calculations

In addition to using time value of money for saving and investing growth, these calculations can determine loan payments. When borrowing an amount for a certain time period at a certain rate, a financial calculator, spreadsheet software, or an online app will allow you to compute the monthly repayment amount.

The steps for the loan payment are similar to other present value calculations. For example, if you borrow SAR 1,000 with a 6% rate to be repaid in three equal payments at the end of the next three years, the payments will be SAR 374. This is calculated as follows:



Present Value to Determine Loan Payments	Process, keystrokes	Calculation
Financial Calculator	PV, I/Y, N, FV, CPT, PMT	1000 PV, 6 I/Y, 3 N, 0 FV, CPT PMT 374
Spreadsheet	= PMT (rate, nper, pv, fv, type)	= PMT (.06,3,1000,0,0) = 374

EXERCISES

Choose the correct answer.

- Uneven amounts require individual calculations for the time value of money.
True / False
- Earning interest more than once a year is called:
 - non-annual compounding.
 - annual compounding.
 - discounting.
 - an annuity.



Summary



Every decision has an opportunity cost, which is what a person gives up by making a choice. Personal opportunity costs include your time and health. Financial opportunity costs can be measured in terms of monetary gains based on the time value of money. The increased value of money involves two types of calculations: future value and present value. The amount available at a later date is called the *future value*. In contrast, the current value of an amount in the future is the *present value*. Future value and present value calculations commonly involve two types of cash flows – a single amount and an *annuity*, which is a series of equal amounts. The annuity involves both a series of equal deposits or payments each year along with a constant rate of return. As shown here, four basic variations of the time value of money exist.

Time Value of Money Summary	Single Amount	Series of Equal Amounts (annuity)
Future Value	Future value of a single amount	Future value of a series of amounts
Present Value	Present value of a single amount	Present value of a series of amounts

Other time value of money situations that vary from these four basic situations include uneven amounts each year, time periods of less than a year, and non-annual compounding. Finally, using a time value of money adaptation, present value calculations may be used to determine monthly loan payments when an amount is borrowed for a certain number of years at a certain rate.

Problems



1. Describe opportunity costs, or the value of what was lost when choosing between two or more options, you have encountered in your life.

2. Explain the difference between *future value* and *present value*.



CHAPTER 2 Opportunity Costs and the Time Value of Money

3. Explain how the frequency of compounding affects the growth of a person's money.

4. Describe a situation for which a person might use the future value of a series of amounts calculation.

5. In which situations would a present value calculation be used?

6. For these situations, decide if the event is an example of a *future value* calculation or a *present value* calculation:

- a. calculating the amount to deposit today to achieve an amount in the future;
- b. determining the value of an investment that will grow over the next ten years;
- c. investing SAR 50 a month for six years.



Exercises



1. Fatemah has invested SAR 6,000 with an annual rate of 2.5%. What would be the earnings on this amount?

2. Nora has invested SAR 850. What would be the future value in six years at 7%?

3. Saad plans to invest SAR 6,400 a year for the next six years, earning 4%. What would be the future value of this savings amount?

4. Ibrahim invests SAR 6,000 a year into a retirement account. If these funds have an average earning of 9% over the 40 years until retirement, what will be the value of the retirement account?



CHAPTER 2 Opportunity Costs and the Time Value of Money

5. If Layla hopes to have SAR 60,000 for a down payment for a house in five years, what amount would she need to invest today? Assume that the money will earn 5% interest.

6. Abdullah is planning to go to graduate school in a program of study that will take three years. He wants to have SAR 12,000 available each year for various school and living expenses. If he earns 4% on his money, how much must he deposit at the start of his studies to be able to withdraw SAR 12,000 a year for three years?

7. What amount would Myriam have to invest today to be able to take out SAR 800 a year for 10 years from an account earning 8%?

8. What amount would Tala have to invest today at a 6% rate of interest to have SAR 1,000 five years from now?



ASSESSMENT QUESTIONS

Choose the correct answer.

1. Time used for recreation is considered to be a financial resource.
True / False
2. Interest is calculated by multiplying an amount of money times a rate times a length of time.
True / False
3. Future value is the amount to which current savings will grow based on a certain rate and a certain time period.
True / False
4. Earning interest on interest is called compounding.
True / False
5. When using a financial calculator, the rate is indicated by:
 - a. N
 - b. PMT
 - c. I
 - d. FV
6. The future value of a series of amounts would best be used for determining the value of:
 - a. an account with annual deposits.
 - b. loan payments.
 - c. an amount set aside for employee benefits.
 - d. changing foreign currency rates.
7. A present value of a savings account would be larger than the future value of that account.
True / False
8. To determine the growth of an amount you would use the:
 - a. present value of a series.
 - b. future value of a series.
 - c. future value of a single amount.
 - d. present value of a single amount.



9. Time value of money calculations may be used to determine the amount of a loan payment.
True / False
10. Compounding can only occur on an annual basis.
True / False
11. If a person deposits SAR 150 in year 1, SAR 250 in year 2, and SAR 200 in year 3, this is referred to as:
- uneven amounts.
 - time periods of less than a year.
 - non-annual compounding.
 - annual discounting.

Key Terms



Term	Definition
Annuity	A series of equal, annual payments with a constant rate of return
Compounding	The process by which earnings are based on the original amount as well as previous amounts earned
Discounting	The process of determining the present value of a payment that is to be received in the future
Future value	The amount to which savings will increase based on a certain rate and a certain time period; the process is also referred to as compounding
Non-annual compounding	Payment of interest more frequently than once a year
Opportunity cost	What a person gives up by making a choice
Present value	The current value for a future amount based on a certain rate and a certain time period; also referred to as discounting
Time value of money	Increases in an amount of money as a result of earnings over time



Key Formulas



Simple interest calculation

Simple interest = Principal \times Rate of interest (annual) \times Time (years)

Future value of a single amount

$$FV = PV (1 + i)^n$$

Future value of a series of amounts (annuity)

$$FV (\text{annuity}) = PMT \times \frac{(1 + i)^n - 1}{i}$$

Present value of a single amount

$$PV = \frac{FV}{(1 + i)^n}$$

Present value of a series of amounts (annuity)

$$PV (\text{annuity}) = PMT \times \frac{1 - \frac{1}{(1 + i)^n}}{i}$$



MINI CASE**MINI CASE 2.1: Time Value of Money for Investment Calculations**

Asma is planning an investment program for her long-term saving. She plans to select various investments, including stocks, mutual funds, and real estate. Asma plans to deposit SAR 12,000 per year. She estimates an average annual return of 9% for the next 20 years. Asma will use time value of money calculations to determine the growth of her investment portfolio.

Task

1. What would be the future value of Asma's investment after 20 years?

2. Would you advise Asma to deposit the 12,000 once as a single amount at the beginning of the investment program or as an annuity at the end of each year? Explain your answer.



MINI CASE**MINI CASE 2.2: Time Value of Money and Personal Financial Decisions**

Personal financial security is vital for the personal welfare and economic satisfaction of individuals and their families. Younis and his wife Ayesha have two children, ages six and eight. Their current home is too small for their growing children. They also want to save for their children's future education costs and their retirement. Personal financial goals can be measured with the use of time value of money (future value and present value).

Task

1. What financial goals do Younis and Ayesha need to set?

2. What do Younis and Ayesha need to start planning for from today, and how?



Case Study: Selecting a Capital Project

Should our company open a branch office in another country, or take a new product to market? This type of business decision is part of Saudi Vision 2030 to diversify the economy.

Every organization is dependent on capital assets for current operations and long-term success. Purchasing new equipment, constructing additional buildings and obtaining updated technology are examples of capital spending activities. The decision to purchase long-term assets such as machinery, computers, trucks, and machine tools can use a five-step process:

1. **Set Capital Spending Goals.** The capital projects of a company should be based on the organizational goals, which may include expanding sales, reducing costs, and increasing profits.
2. **Determine Potential Capital Projects.** After setting clear capital spending goals, different projects will be considered. For example, if providing customer service is a priority, spending for upgraded technology to answer customer questions may be appropriate. If improving distribution is a necessity, a new warehouse or additional delivery trucks might be considered.
3. **Forecast Cash Flows.** Next, managers must identify amounts of expected cash flows for the project. The two main sources of cash inflows are: (1) additional sales revenue, and (2) reduced operating expenses. Lower expenses create a positive cash flow since *money not going out is like money coming in*.
4. **Identify Rate and Risks.** Financing the capital project is the next step. A *discount rate* is used to calculate the present value of the future cash flows. Managers also assess potential risks, such as inflation, lower consumer spending, new government regulations and natural disasters. Risk is usually considered by using a higher discount rate to reflect potential risk.
5. **Select and Implement Project.** Finally, managers must decide which capital projects will be selected and how to put the projects into operation.

So, if a manager evaluated the two options (opening a branch office in another country, or taking a new product to market), here are example calculations they would use:

- A. Opening a branch office in another country.
 - Cost = SAR 10,000,000
 - Average expected annual cash flows for the following 10 years = SAR 2,100,000
 - Discount rate = 8%



B. Taking a new product to market.

Cost = SAR 9,000,000

Average expected annual cash flows for the following 10 years = SAR 1,900,000

Discount rate = 7%

As companies implement plans for Saudi Vision 2030, capital projects will be vital for business growth and expansion. Planning new products and services, selling in new markets, and updating technology for production and distribution are some of the capital spending decisions that will result in a more diverse economy.

Study Questions

1. What are the present values of the two options?

2. Comparing the present value of the two projects with their costs, which project will the company choose?

3. Which other factors should the company consider when deciding which project to select?

Online Activity

Several online calculators are available for computing time value of money. Locate an online present value calculator and provide the following information:

1. Describe the format and process presented for the online calculator.
2. Calculate the present value for the following situation: a six-year project with an expected annual cash flow of SAR 44,000 using a discount rate of 5%.



CHAPTER 3

Risk and Its Measurements



Learning Outcomes

Once you have completed this chapter, you should be able to:

1. Explain the basic principles of risk.
2. Calculate the return on an investment.
3. Identify sources of risk.
4. Describe methods for measuring risk.
5. Recommend risk management actions.

Risk is the uncertainty of an event or outcome. Sometimes the word “uncertainty” is used as a substitute for “risk”. When you are uncertain, you have doubt about a possible outcome. If you face a risk, there is a chance of a positive outcome and a chance of a negative result. Individuals face risks that can affect health, income, and property.

Since the future is uncertain, you will be required to take calculated risks. The reward for taking those risks is the anticipated return. While business managers and investors may make risk decisions on a qualitative basis, quantitative measures of risk are available. Even if you never compute these statistical measures, you need to know them, since you will encounter them when analyzing financial assets.

This chapter provides an elementary introduction to risk and the measurement of risk, starting with an overview of risk factors faced by businesses, followed by different uses for the word “return” and varied methods to measure risk. These include the dispersion around the return or central tendency, called a “standard deviation” and an index of the volatility of an asset’s return relative to a base, such as the return on the



market, referred to as a “beta” coefficient. While the chapter does illustrate how standard deviations and beta coefficients are calculated, you may never have to calculate them. (If you do, a spreadsheet program such as Excel does the mechanics virtually instantaneously.) What you need to know is how to use and interpret these measures of risk.

Portfolio diversification is next addressed, which involves investing in more than one asset or security to reduce risk. The concluding sections of the chapter discuss risk management strategies and the use of business insurance as a method of risk transfer.



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3.1 Risk

Each day, everyone faces uncertainty and **risk**. Businesses face risks that can have a significant economic effect. Property and inventory can be damaged, lost, or stolen; personnel can become ill, injured, or even die; and the company's products or employees can cause damage to property or harm to others for which the business is liable. Risk carries with it the possibility of financial loss.

Risk

The uncertainty of an event or outcome

Economic risk

Uncertainty with a potential financial impact

Pure risk

Uncertainty with no opportunity for financial gain, only a potential loss

Speculative risk

A situation with the possibility of either financial loss or gain

3.1a Types of Risk

An **economic risk** has a potential financial impact. Some risks are not economic in that they have no direct or immediate financial impact. When you attend a social activity with friends you risk not enjoying yourself. If you do not study for an exam, you risk earning a poor grade. But if an employee becomes ill and cannot work for several weeks, the person faces a financial loss of wages. If a business warehouse is destroyed by fire, the money invested in the building, equipment, and inventory is lost.

Economic risks are either pure or speculative.

1. With a **pure risk** there is no opportunity for financial gain but only loss. Businesses that face the risk of fire earn no more money if the fire does not occur but suffer financially if property is damaged by fire. Severe weather is another example of a pure risk.
2. A **speculative risk** has the possibility of either financial loss or gain. Investments have speculative risk. By investing money where the value of the investment may rise or fall, the investor can make money or lose money.

Why Do Individuals and Businesses Take Risks?

Individuals and businesses take risks because of opportunities, or the possibility for success. Financial success is one of the possible outcomes of a speculative risk. In addition to financial gain, success can be measured in non-financial ways. Recognition and personal satisfaction are viewed by some as successful outcomes that do not carry a financial reward.





What risks might a business encounter?

Risks Sources or Causes

Risks have many sources or causes.

Natural risks

Uncertainty as a result of natural events or phenomena

Human risks

Uncertainty resulting from the actions of individuals, groups, or organizations

1. **Natural risks** arise from natural events or phenomena. Hurricanes, floods, earthquakes, droughts, and sand storms are all natural risks that can result in damage and loss.
2. **Human risks** result from the actions of individuals, groups, or organizations. Injuries suffered by negligent driving, losses from customer or employee theft, or fires that start from unsafe storage of products are results of human risks.

Controllable and Uncontrollable Risk

Some risks can be controlled while others cannot:

Controllable risks

Risks that can be reduced or avoided by careful actions

Uncontrollable risks

Risks that cannot be influenced by human action

1. **Controllable risks** can be reduced or avoided by careful actions. Most human risks are controllable, for example, safe driving, employee safety programs, and proper maintenance of buildings can reduce accidents and injuries.
2. **Uncontrollable risks** cannot be influenced by human action. Natural events such as floods and hurricanes cannot be stopped, although careful planning and preparation can reduce the losses that result from many natural risks.

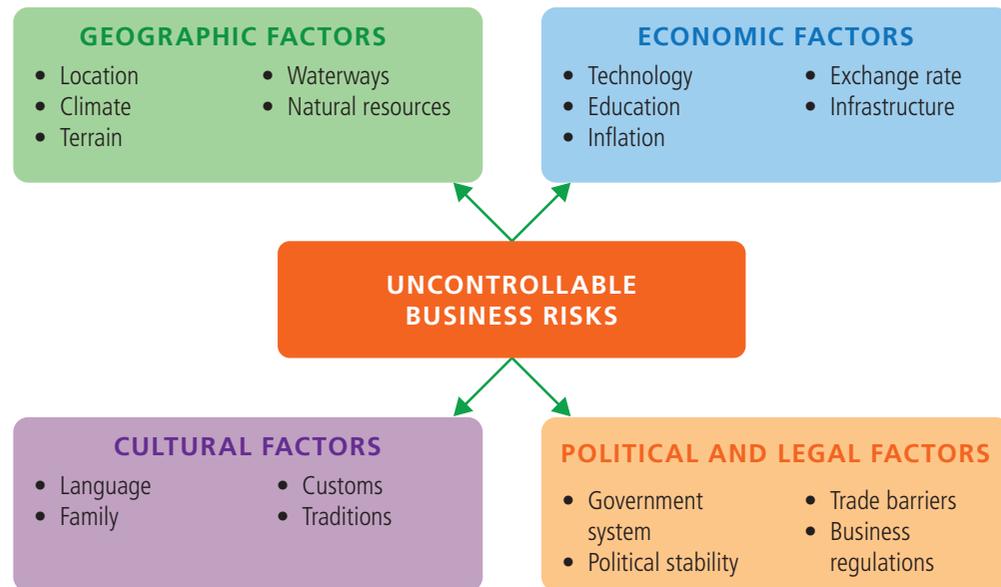


3.1b Uncontrollable Business Risks

Whenever a company implements a business decision, risk is involved. An accidental fire may destroy a factory in another country, or a company may go bankrupt and not be able to repay its debts.

The four common uncontrollable risks faced by companies are geographic risk, economic risk, cultural risk, and political risk, see Figure 3.1.

FIGURE 3.1
Uncontrollable Business Risks



Geographic Risks

A geographic risk is the risk which is incurred in certain geographic regions worldwide. Examples include extreme weather conditions such as hurricanes, typhoons, and flooding, as well as dust storms and earthquakes. As a result, poor weather conditions can destroy agricultural crops, or a rough terrain in a country can result in transportation difficulties, with each resulting in widespread economic and infrastructural problems. These and other geographical factors create risks for businesses.

Economic Risk

Changing prices, currency values, and consumer spending create economic uncertainty. Economic conditions have ups and downs affecting the demand for a company's goods and services.





What type of geographic risk might a business be subject to?

Cultural Risk

Cultural differences such as traditions, social values, and family relationships can create uncertainty when doing business in different settings. Business activities are conducted differently in different parts of the world. Companies doing business in other countries must respect and be sensitive to cultural variations and beliefs of people in those nations. Failure to do so is likely to result in an unsuccessful endeavor even if all other business actions are appropriate.

In a similar manner, companies that stress individualism would face greater risk when doing business in nations that emphasize collectivism. Also, the connection between family and business is very important in some cultures and less important in others. Companies must work within this cultural environment to minimize business risk.

Political-Legal Risk

Political risk is difficult to evaluate. Government instability and political uncertainty are risks global companies must monitor constantly.

Business regulations vary from country to country. Regulations on business might be very tight in one nation, while great freedom is allowed elsewhere. Food packages in one country may require extensive nutritional



information. However, another market may have different laws regulating food labeling. Trade barriers also pose a potential political risk. Tariffs, anti-dumping laws, import quotas, and currency exchange controls are examples of political actions taken to limit imported goods.

Awareness of these international business risks is especially important for Saudi Vision 2030 with diversified economic activities expanding in various global markets. In contrast to uncontrollable uncertainty, controllable risks are often related to internal business situations.

3.1c Controllable Business Risks

Operational Risks

The day-to-day activities of a company also create risks. Failure to innovate or to meet the needs of customers can cause lost profits. A disruption in the supply chain or distribution process also means less business. Higher prices of production inputs or a shortage of raw materials are other possible risks.

EXERCISES

Choose the correct answer.

1. A pure risk is a situation with an opportunity for a future financial gain.
True / False.
2. A _____ risk is a situation with the possibility of either financial loss or gain.
 - a. pure
 - b. speculative
 - c. natural
 - d. controllable
3. Government regulations of business can create a _____ risk.
 - a. political-legal
 - b. geographic
 - c. cultural
 - d. controllable



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3.2 The Return on an Investment

All investments are made in anticipation of a **return**. This applies to individuals and to financial managers of firms.

Return

What is earned on an investment: the sum of income and capital gains generated by an investment

Dividends

A dividend is a period payment to a stock shareholder in cash or other shares of stock

Capital gain

The increase in the value of the asset, based on the asset's original price

The Sources of Return

An investment may offer a return from two sources:

- The first source of return is the flow of income. In many countries, an investment yields a flow of interest income. This could be from an investing account, a bond, or some other type of debt obligation, such as a loan. Interest is typically specified contractually for these investments. Income from stocks will come in the form of **dividends**. A dividend is a periodic payment to a stock shareholder in cash or other shares of stock. Businesses are not required to pay dividends, but many investors consider dividends as part of the expected return from owning a stock.
- The second source of return is capital appreciation.
 - If an investor buys a stock and its price increases, the investor earns a **capital gain**. A capital gain is the increase in the value of an asset based on the original price of the asset.
 - A discounted bond, where the maturity price is SAR 10,000, may be purchased for a discounted rate. The difference between the discounted rate and the maturity rate is the capital gain.
 - All investments offer potential income and/or capital appreciation. Investments, such as an investment in land, may offer only capital appreciation. Some investments may require expenditures, such as taxes, on the part of the investor.

The Expected Return and The Required Return

Investors and financial managers make investments because they anticipate a return. It is important to differentiate between the **expected return** and the realized return. The expected return is the incentive for accepting risk. This must be compared with the **required return**, which is the return necessary to induce you to bear the risk. Typically, the higher the risk involved in an investment, the higher the expected return. The

Expected return

The expected return is the incentive for accepting risk

Required return

The return necessary to induce an individual to make an investment



expected return depends on individual expected outcomes and the probability of their occurrence.

EXAMPLE

Assume Abdullah works for a mutual fund company. He is a professional investor who must consider all of the factors that can influence the return on an investment given possible risks. His company has multiple mutual funds with different goals. These funds could be to have low, moderate, or higher risk growth opportunities. Abdullah's mutual fund company can't promise expected returns, but he must structure the mutual funds to allow investors to reach their investment goals.

- Abdullah will evaluate potential company stocks to include in the mutual funds and may determine that under normal economic conditions, which occur 60% of the time, the expected return on this stock is 10% through capital gains and dividends.
- After reviewing the potential company's management, competition, and market conditions, Abdullah determines there is a 20% chance the economy will grow more rapidly and the company will do well, in which case the investment will return 15%.
- Abdullah also determines there is a 20% chance the economy will enter a recession and the company will do poorly, in which case it will earn only a 5% return.

Given the possible outcomes and their probabilities, Abdullah needs to determine the expected return on this investment.

Abdullah answers this question by looking at the outcomes and the probability of their occurring (in other words, the probability of the economy growing more rapidly, growing at a normal rate, or entering into a recession). Since Abdullah believes these probabilities are 20%, 60%, and 20%, respectively, the expected return on the investment is determined by a weighted average, see Equation 3.1:

Expected Return = Weighted Average

Weighted Average = (probability of event 1 x return on event 1) + (probability of event 2 x return on event 2) + ...

In this case, the weighted average would be calculated as:

Weighted Average = (0.2 x 15%) + (0.6 x 10%) + (0.2 x 5%)

Weighted Average = 10%.

Note: The sum of the probabilities should be 100%.



Notice that the expected return is a weighted average of the individual expected outcomes and the probability of occurrence. If the individual expected outcomes had been different, the expected return would differ.



YOU TRY IT

Assume you are analyzing an expected return on a stock. The expected returns of the stock under different economic conditions are shown in the table below:

	Normal	Positive outlook	Negative outlook
Probability	60%	15%	25%
Returns	9%	12%	3%

Determine the weighted average return on the investment. Will you buy this stock? Why or why not?

You now choose to analyze an expected return on a second stock:

	Normal	Positive outlook	Negative outlook
Probability	50%	20%	30%
Returns	8%	15%	1%

What is the weighted average of the second investment? Which stock would you prefer to invest in?



EXERCISES

Choose the correct answer:

1. The expected return on an investment includes both the expected income plus expected price appreciation.
True / False
2. The difference between the discounted rate and the maturity rate is the capital gain.
True / False



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3.3 The Sources of Risk

If there were certainty, there would be no risk. In the real world, there is uncertainty, which requires the financial manager or investor to analyze possible outcomes and assess the investment's risk. Of course, the realized outcome may be better than expected, but the emphasis in the analysis of risk is on the negative: the outcome will be worse than expected. Since financial decisions are made in the present but the results occur in the future, risk permeates all financial decision making. The future is not certain; it is only expected.

However, sources of risk can be identified. These are frequently classified into "diversifiable" risk and "undiversifiable" risk or "unsystematic risk" and "systematic risk". (Both sets of terms are used to differentiate the sources of risk.)

Diversifiable risk

A **diversifiable risk** (or **unsystematic risk**) refers to the risk associated with the individual asset. Since the investor buys specific assets, such as the stock of or the bonds of a company, that individual must bear the risk associated with each specific investment.

Sources of diversifiable risk:

1. **Business risk:** refers to the nature of the firm's operations.
2. **Financial risk:** refers to how the firm finances its assets.

Undiversifiable risk

Undiversifiable risk (or **systematic risk**, sometimes called non-diversifiable risk) refers to those sources that are not reduced through the construction of a diversified portfolio.

Sources of undiversifiable risk:

1. **Market risk:** the risk associated with movements in securities prices.
2. **Interest rate risk:** the risk associated with fluctuations in interest rates.

Diversifiable risk (Unsystematic risk)

Risk associated with individual events that affect a particular asset; firm-specific risk that is reduced through the construction of diversified portfolios

Undiversifiable risk (Systematic risk)

Risk associated with fluctuations in securities prices and other non firm-specific factors: market risk that is not reduced through the construction of diversified portfolios



3. **Reinvestment rate risk:** refers to the risk associated with reinvesting funds generated by an investment.
4. **Purchasing power risk:** is the risk associated with inflation.
5. **Exchange rate risk:** is the risk associated with fluctuations in the prices of foreign monies.
6. **Sovereign risk:** applies to investing in the debt obligations of a specific country and the possibility that the government will default.



Why might diversification be important for investors?

EXERCISES

Choose the correct answer.

1. A diversified portfolio:
 - a. increases systematic risk.
 - b. reduces systematic risk.
 - c. increases unsystematic risk.
 - d. reduces unsystematic risk.
2. Systematic risk is reduced through portfolio diversification.
True / False



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3.4 Risk Measurements

As stated earlier in this study guide, there are a number of factors that can impact the risks faced by firms and by extension, their management and investors. In Chapter 1, there was also a discussion of the Efficient Market Hypothesis (EMH). Under this hypothesis, the value of a firm reflects all the information, including risk information, that exists in the marketplace.

For an investor, there are several indicators to assess risk developed in the finance field. This includes standard deviations of asset prices and beta coefficients.

3.4a The Standard Deviation as a Measure of Risk

As stated earlier, risk is concerned with the uncertainty that the realized return will not equal the expected return. One measure of risk, the **standard deviation**, emphasizes the extent to which the return differs from the average or expected return. An alternative measure of risk, a **beta coefficient**, is an index of the return on an asset relative to the return on a portfolio of assets (for example, the return on a stock relative to the return on a stock index).

The standard deviation measures the dispersion around an average value. As applied to investments, it considers an average return and the extent to which individual returns deviate from the average. If there is very little difference between the average return and the individual returns, the dispersion will be small. If there is a large difference between the average return and the individual returns, the dispersion will be large. Typically, the larger this dispersion, the greater the risk associated with the investment.

This measurement is perhaps best illustrated by a simple example. Consider the returns on two stocks over a period of five years:

Return Year	Return Stock 1	Return Stock 2
1	13.5%	11%
2	14.5%	13%
3	15%	15%
4	15.5%	17%
5	16.5%	19%
Average return	15%	15%

Standard deviation

Measure of dispersion around an average value; a measure of risk

Beta coefficient

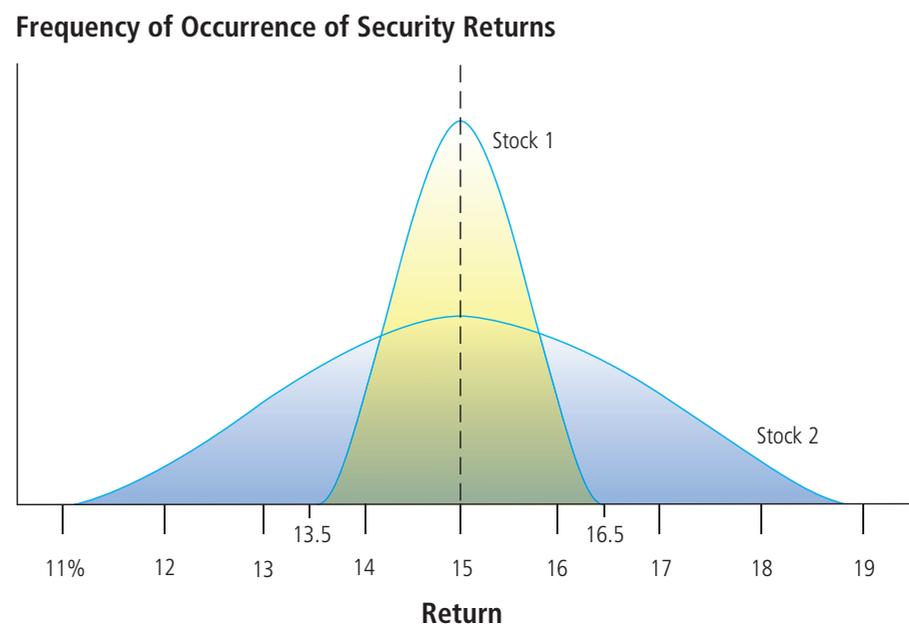
Index of systematic risk; measure of the volatility of a stock's return relative to the market return



The average return over the five years is the same for both stocks, 15%, but annual returns differ. Stock 1's individual returns were close to the average return. The worst year generated a 13.5% return while the best year generated a 16.5% return. None of the individual returns deviated from the average by more than 1.5%. Stock 2's individual returns differ from the average return, ranging from a low of 11% to a high of 19%. With the exception of year 3, all the returns deviate from the average by 2%.

Dispersion can be measured by the standard deviation. The standard deviation measures the tendency of the individual returns to cluster around the average return, it may be used as a measure of risk. The larger the dispersion, the greater the standard deviation and the larger the risk associated with the particular investment. The standard deviation is easily calculated using a computer program.

FIGURE 3.2
Distribution of Two Stocks



Even though both stocks achieved the same average return, an investor needs to evaluate these changes in determining the riskiness of the stocks. Figure 3.2 above shows that Stock 1 has not varied greatly over five years while Stock 2 shows a larger standard deviation.



3.4b Beta Coefficients

A beta coefficient is a measure of the systematic risk associated with an asset. While the concept may be applied to any asset, the usual explanation employs common stock. A beta coefficient is an index of risk that quantifies the responsiveness of a stock's return to changes in the return on the market. Since a beta coefficient measures a stock's return relative to the return on the market, it measures the systematic risk associated with the stock.

EXAMPLE

1. A beta coefficient of 1 means that the stock's return moves exactly with an index of the market as a whole. A 10% increase in the market produces a 10% increase in the return on the specific stock. Correspondingly, a 10% decline in the market results in a 10% decline in the return on the stock.
2. A beta coefficient of less than 1 implies that the return on the stock tends to fluctuate less than the market as a whole. A coefficient of 0.7 indicates that the stock's return will rise only 7% as a result of a 10% increase in the market, but will fall by only 7% when the market declines by 10%.
3. A beta coefficient of more than 1 implies that the return on the stock tends to fluctuate more than the market as a whole. A coefficient of 1.2 means that the return on the stock will rise by 12% if the market increases by 10%, but the return on the stock will decline by 12% when the market declines by 10%.

The greater the beta coefficient, the more market (systematic) risk is associated with the individual stock. High beta coefficients may indicate higher returns during rising markets, but they also indicate greater losses during declining markets. The converse is true for stocks with low beta coefficients, which should underperform the market during periods of rising stock prices but outperform the market as a whole during periods of declining prices. Such stocks are referred to as "defensive."



3.4c The Capital Asset Pricing Model and an Investment's Required Return

Capital asset pricing model (CAPM)

Model used in the valuation of an asset that specifies the required return for different levels of risk

The development of beta coefficients and a theory of risk reduction through diversification are exceedingly important to the process of asset valuation. The **capital asset pricing model** or **CAPM** is one method used to determine that required return. The CAPM specifies the relationship between risk and return that is used either to value or to judge an asset's expected return (valuation expresses an asset's present worth in monetary units such as SAR, an asset's return is expressed in percentages). If an asset's value exceeds its cost, or if an asset's expected return exceeds the required return, the asset is purchased. Either method produces the same decision, since the only difference is the units of measure.

The CAPM builds on the proposition that additional risk requires a higher return. This return has two components: (1) what may be earned on a risk-free asset, such as a high-quality government bond, plus (2) a premium for bearing risk. For an investor, why should they purchase a risky security when they can purchase a risk-free security unless the risky security pays a higher rate of return? Since unsystematic risk is reduced through diversification, a stock's risk premium is the additional return required to bear the undiversifiable, systematic risk associated with the stock.

This risk-adjusted required return (k) is expressed in Equation 3.2:

$$k = \text{risk-free rate} + \text{risk premium}$$

The risk premium is composed of two components: (1) the additional return that investing in securities in general offers above the risk-free rate and (2) the volatility of the particular security relative to the market as a whole, as measured by the security's beta coefficient. The additional return is measured by the difference between the expected return on the market (r_m) and the risk-free rate (r_f). This differential ($r_m - r_f$) is the risk premium that is required to induce the individual to purchase risky assets.

To induce the investor to purchase a particular stock, the risk premium associated with the market must be adjusted by the market risk associated with the individual security. This risk adjustment uses the stock's beta coefficient, which indicates the stock's volatility relative to the market. The risk adjustment is achieved by multiplying the security's beta coefficient by the



difference between the expected return on the market and the risk-free rate. Thus, the risk premium for the individual stock is expressed in Equation 3.3:

$$\text{Risk premium} = (r_m - r_f) \times \text{beta}$$

EXAMPLE

The calculation steps of the risk-adjusted return of two stocks, Stock A and Stock B is shown below.

Risk-free rate (r_f)	4.303%
Market return (r_m)	9%
Stock A beta	1
Stock B beta	1.31

Risk-adjusted required return $k = (r_f) + \text{beta} (r_m - r_f)$	
Stock A	Stock B
$k = 0.04303 + (r_m - 0.04303) \times 1$	$k = 0.04303 + (r_m - 0.04303) \times 1.31$
$k = 0.04303 + (0.09 - 0.04303) \times 1$	$k = 0.04303 + (0.09 - 0.04303) \times 1.31$
$k = 0.04303 + (0.04697) \times 1$	$k = 0.04303 + (0.04697) \times 1.31$
$k = 0.04303 + 0.04697$	$k = 0.04303 + 0.0615307$
$k = 0.09$ or 9%	$k = 0.1045607$ or 10.46%

The risk-adjusted required return for Stock A is 9% which is the same as the expected market return. This makes sense since the beta for Stock A is 1, or the risk is the same as the market return. Stock B has a higher beta indicating a more volatile stock, so the risk-adjusted required return is higher at 10.46%. A stock with the higher beta coefficient has the higher required return because it is riskier.





YOU TRY IT

Assume you are analyzing a risk-adjusted required return for a stock. You have determined the risk-free rate is 4.55%. The expected market return is 12%.

Determine the expected risk-adjusted required return for this stock if:

a. Company A beta is 0.87.

b. Company B beta is 1.21.

What does this tell you about the stock?

EXERCISES

Choose the correct answer.

1. The standard deviation measures an asset's expected return.
True / False
2. To measure risk, the capital asset pricing model uses:
 - a. beta.
 - b. an asset's standard deviation.
 - c. the volatility of an asset's cash flows.
 - d. the term during which the asset is held.



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3.5 Risk Management Strategies

Since risk can be expected in almost all activities, efforts should be made to anticipate which risks are most likely, and then attempt to reduce the risk and minimize the possible loss. The process of systematically identifying potential risks and making plans to reduce the impact of risk is known as **risk management**. Because most businesses face many risks that can cause significant financial harm or even result in business failure, risk specialists have the responsibility of planning and coordinating risk management programs. Risk management most often involves *pure* rather than *speculative* risk. Financial managers are responsible for decision-making about speculative risks or the investment decisions of a business.

Risk management

The process of systematically identifying potential risks and making plans to reduce the impact of risk

3.5a Planning a Risk Management Program

Risk management specialists work at all levels of a business to identify potential risks, determine the financial impact each risk may have, develop plans and programs to prevent controllable risks and reduce the financial impact of uncontrollable risks, and provide the necessary resources and training needed to manage the risks. Risk management programs are concerned with the security of computer systems, property protection, employee health, and plans to respond to the negative effects of natural and man-made disasters.

The primary sources of risk faced by companies involve three categories: property risks, personnel risks, and liability risks.

1. Property risks are potential damage or loss to property owned, leased, and used by a business. If a business is responsible for the property of other businesses, that also is a source of property risk. For example, if a company supplies raw materials to a manufacturer, disruption of the supply or quality problems with the raw materials can result in financial loss for the manufacturer as well as the supplier.
2. Personnel risks include factors that affect the health, life, or earnings of employees. Businesses are responsible for controlling risk by providing safe equipment and working conditions. Employee



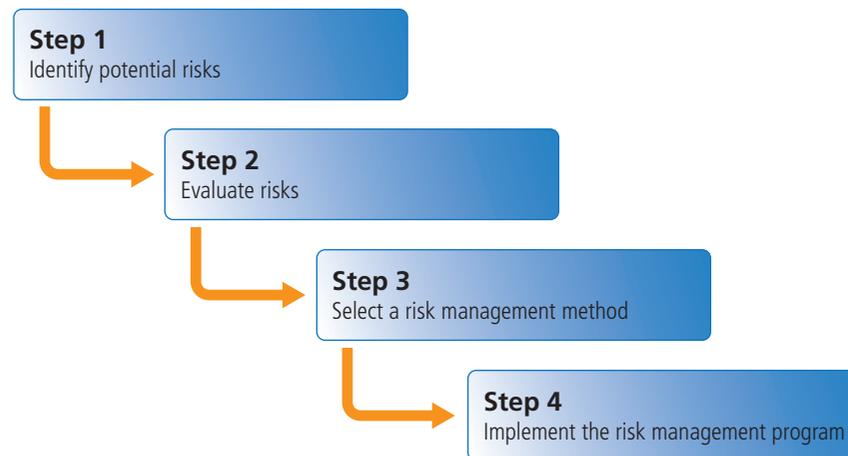
illness, injury, or death can result from poorly maintained equipment, unsafe working conditions, or lack of safety procedures.

3. Liability means an individual or business is responsible to others for negligence. Negligence can result from an action taken or from a failure to act. If people are injured or their property damaged due to the negligence of a business, the injured party can make a financial claim against the business. The injury or damage can result from the use of property or products or the actions of company personnel.

3.5b The Risk Management Process

Companies face many risks. To address this uncertainty, Figure 3.3 shows four steps commonly taken to manage business risks.

FIGURE 3.3
The Risk Management
Process



Step 1: Identify Potential Risks

In the first step of the risk management process, managers list the factors that might affect a company's operations. Currency values and local customs are some examples of risk-causing elements. Managers can use current reports, field interviews, and other data sources to discover situations that increase uncertainty.

Step 2: Evaluate Risks

In this step, managers analyze possible effects of risks on the company. Will a change in environmental regulations create higher costs? Or could the company face new trade barriers when doing business in a certain country? A manager must decide how and to what extent the risks will influence sales and profits.



Step 3: Select a Risk Management Method

Next, managers must decide how to address the identified risks. The four risk management methods commonly used are risk avoidance, risk reduction, risk transfer, and risk assumption.

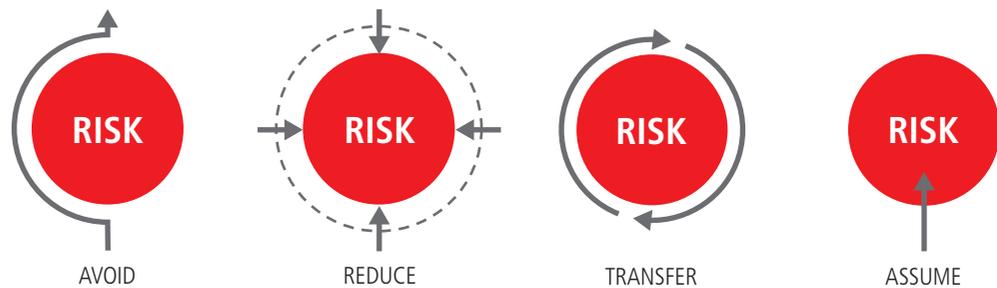
Step 4: Implement the Risk Management Program

Finally, managers must put the risk management plan into action. This phase involves both taking appropriate actions and measuring the success of those actions.

3.5c Risk Management Methods

When planning and implementing a risk management program, as shown in Figure 3.4, there are four possible ways to deal with risks: avoid, reduce, transfer, and assume.

FIGURE 3.4
Possible Ways of Dealing
With Risks



Risk Avoidance

With careful planning, some risks can be avoided. To avoid risks, decision-makers need to be aware of risks that can threaten a business decision. They must determine the costs and possible rewards of their decisions. They must estimate the size of losses if anticipated problems occur. If the likelihood of risk or the amount of loss is too great, they may make the decision to avoid the action. This ensures that there will be no loss.

Examples of risk avoidance include:

- If a country has an unstable economic environment, a business can choose to avoid operations in that country.
- If a certain manufacturer of production equipment has a poor safety record, equipment can be purchased from another supplier.



- A company avoids the risks related to international business by only selling products in its home country.
- If market research suggests there may not be enough demand for a new product to cover the costs, a business can choose not to make that product.

From a personal perspective, if you don't believe you have enough experience or skill to start your own business, you can decide not to become an entrepreneur. If severe weather is forecast, you can choose not to drive your car to avoid a possible accident.

Risk Reduction

When a company is unable or unwilling to avoid a risk, uncertainty may be reduced by taking preventive actions. For example:

- Businesses use security systems and sprinklers to reduce the risk of theft and fire.
- Enhanced online protection can reduce data breaches and cybercrime.
- Multinational companies can reduce business risks by only selling products that have been successful in other countries.

Personal risk reduction can be the result of obeying traffic laws and wearing seatbelts when driving.

Risk Transfer

Often a business activity must occur even though there is a risk with significant financial consequences. If a business is not able to assume the risk, it may choose to transfer it. When a business transfers a risk, someone else assumes the risk. Examples of transferring risk include:

- Hiring a company to handle sales and collections. The bank or financial service company accepts the risk of unpaid accounts in exchange for fees earned on each sale.
- Using the services of a transportation and storage company to transfer the risk of product damage for items in transit.



- Creating a joint venture with an experienced research company to transfer the risk of a costly or unsuccessful research process to plan a new product.



How can businesses manage their risks?

Also called “*risk sharing*”, a risk transfer strategy may involve insurance. Sharing risks among many companies that face similar risks is a common practice. Insurance is often purchased for financial protection from property losses, motor vehicle accidents, and other business activities.

For risks that can be reasonably predicted, it is possible to purchase insurance. Businesses that face the risk of fire damage to their buildings, equipment, and inventories can pool those risks with other businesses by purchasing fire insurance.

A few businesses may have losses from fires during a specific period. Based on the history of fires in businesses, experts can reasonably estimate the total amount of fire damage among several businesses for that amount of time. Each business will pay a small amount for insurance that will cover the losses of the businesses that suffer a loss from fire.

By purchasing insurance, the company pays a small percentage of the possible loss to an insurer for protection against the larger loss if the risk occurs. The greater the likelihood of the risk or the larger the possible loss, the more expensive the insurance will be. Taking steps to reduce the possibility or cost of the loss can reduce the insurance costs.



Self-insurance

Setting aside money to cover a potential financial loss

Risk Assumption

In some situations, avoiding, reducing, or transferring risk may not be possible. Or a company may decide to take responsibility for losses from certain risks. For example, a business may set aside funds for fire damage that may occur to its factories. This action, called **self-insurance**, involves setting aside money to cover a potential financial loss. A company with many stores or factories in different locations may save money by using self-insurance.

If a business decides to assume a risk, the result of damage will usually not have serious negative consequences. The company believes funds will be available to cover the financial loss. Large companies may choose to set aside a small amount of money each month for unexpected expenses or unforeseen risks.

Risk assumption may be used if a risk is unlikely to occur or if the possible financial loss is relatively small. If the cost to the business to insure or transfer the risk is high, it may be more reasonable for the company to assume the risk.

Business operations of a company also involve risk assumption. Once a business offers an item for sale, it must be able to sell the product at a price to cover the costs. If the sales goal is not achieved, the business suffers a loss. Companies assume the risk of being able to make a profit.

3.5d Diversification of Risk

Another strategy used for reducing business and investment risk is “diversification”, which involves obtaining a variety of assets and securities. Instead of investing in a single stock, the selection of two or more companies can reduce your **portfolio risk**, the total risk of combined investments.

For example, portfolio risk can be reduced when investing in a utility company and an oil company instead of just one of those industries. In times of higher interest rates and inflation, the earnings of the utility company may decline as costs rise and regulations limit the amount of price increases. In contrast, the oil company may benefit from higher prices resulting in higher earnings. The price of the utility company’s stock may decline, producing negative returns, while the price of the oil company’s stock may rise producing positive returns.

Portfolio risk

Total risk associated with owning a portfolio involving both systematic and unsystematic risk



Correlation

The relationship between two or more financial variables over time

This inverse relationship between the two stocks, measured with **correlation**, results in a lower portfolio risk:

1. *Positive correlation*: If there is a positive correlation between two stocks, combining them in a portfolio would not reduce risk as the stocks would tend to move in the same direction at the same time.
2. *Negative correlation*: If there is a negative correlation between two stocks, combining them in a portfolio would reduce portfolio risk as the stocks would not tend to move in the same direction at the same time.

Characteristics of a diversified investment portfolio include:

- Stocks should have returns that move in opposite directions; if the returns become positively correlated, combining the two stocks will not achieve a reduced portfolio risk.
- Effective diversification results in reduced unsystematic risk, which is associated with individual events affecting a particular asset or company; firm-specific risk is reduced with the creation of a diversified portfolio.
- Creating an investment portfolio with different industries does not eliminate the other sources of risk, such as changes in stock prices, inflation, changes in interest rates, or variations in exchange rates.
- Reduction in risk, not the returns, is the goal of diversification. This risk reduction can be viewed by comparing the standard deviations of the individual stock returns and combined portfolio return. With an appropriate diversification, the combined standard deviation for the portfolio would be lower than the standard deviations of the returns for any of the individual stock investments.

By creating a diversified portfolio of investments, even if one asset performs poorly, the impact on the total portfolio is reduced. The strategy of diversification is also used by companies when offering an array of products and services. For example, an industrial manufacturing company may also be involved in selling consumer goods to diversify its revenue sources.



EXERCISES

Choose the correct answer.

1. The first step of the risk management process is to:
 - a. evaluate risks.
 - b. implement the risk management program.
 - c. select a risk management method.
 - d. identify potential risks.
2. Self-insurance is considered to be an example of risk:
 - a. avoidance.
 - b. reduction.
 - c. transfer.
 - d. assumption.
3. Diversification is achieved by:
 - a. buying insurance.
 - b. obtaining a variety of assets.
 - c. creating a self-insurance program.
 - d. risk avoidance.



Summary



Risk is the uncertainty of an event or outcome and every business faces potential risks. With a pure risk there is no opportunity for financial gain but only loss. A speculative risk has the possibility of either financial loss or gain. Investments have speculative risk. Uncontrollable business risks can be the result of geographic, economic, cultural, and political factors, while controllable risks relate to the business operations of an enterprise.

Investments are made in anticipation of a return, which is a flow of income and/or price appreciation. Individuals and financial managers make investments in anticipation of a return, but the realized return may differ from the expected return. That is the element of risk; the future is uncertain.

Several sources of risk exist. These include the risk associated with the specific asset (diversifiable, unsystematic risk) and the undiversifiable, systematic risk from fluctuations in securities prices, changes in interest rates, reinvestment rates, inflation, and fluctuations in exchange rates.

Risk may be measured by an asset's (or portfolio's) standard deviation, which measures the dispersion around the realized return (in the case of historical returns) or the expected return (in the case of anticipated returns). The larger the dispersion of the returns, the greater the risk.

An alternative measure of risk determines the responsiveness of an asset's return relative to the market as a whole. This measure, called a beta coefficient, is an index of the systematic risk associated with the asset. The larger the beta coefficient, the greater the systematic risk associated with the security, since its return has risen or fallen more rapidly than the return on the market as a whole.

Beta coefficients are used to determine an investor's required rate of return. This capital asset pricing model specifies the required return and includes (1) the risk-free rate that may be earned on very safe investments plus (2) a risk premium. The risk premium includes a premium for purchasing risky assets instead of the risk-free asset, plus an adjustment for the systematic risk associated with the particular investment.

The process of systematically identifying potential risks and making plans to reduce the impact of risk is known as risk management. Risk specialists have the responsibility of planning and coordinating risk management programs. Risk management most often involves *pure* rather than *speculative* risk and the four risk management methods commonly used are risk avoidance, risk reduction, risk transfer, and risk assumption.

The construction of a diversified portfolio reduces the risk associated with the particular asset. By owning a variety of assets whose returns are not highly positively correlated, the investor reduces unsystematic risk without necessarily reducing the potential return on the portfolio as a whole. Unfortunately, the construction of a diversified portfolio does not reduce the other sources of risk.



Problems



1. List four different types of risk.

2. Describe the expected, and required returns.

3. What is the difference between the following risks: geographic risk, economic risk, cultural risk, and political risk?

4. Briefly describe risks you have observed throughout your daily life.

5. Differentiate the standard deviation and the beta coefficient as measures of risk.



6. Explain why larger standard deviations indicate increased risk.

7. Explain why higher beta coefficients indicate increased risk.

8. How is the required return calculated using the capital asset pricing model?

9. Illustrate the relationship between beta and the required return.

10. Describe a situation in which a company might use:

- a. risk avoidance
- b. risk reduction
- c. risk transfer
- d. risk assumption.



11. Why might an investor wish to invest in two uncorrelated industries?

12. What are the four most commonly used risk management methods?

Exercises



1. You are considering purchasing Stock A. What is your expected return on your investment given the range of economic outcomes and returns shown below?

	Rapid growth	Declining economy	Slow growth
Probability	15%	20%	65%
Returns	30%	-20%	6%

2. Two stocks, A and B, have beta coefficients of 0.8 and 1.4, respectively. If the expected return on the market is 10% and the risk-free rate is 5%, what is the risk premium associated with each stock?



3. What is the expected return of Stock A, assuming that it has a beta of 0.57, a risk free investment yields 2.3% and the expected return on the market is 8.1%?

4. What is the expected return on an investment with a beta of 1.3 if the risk-free rate is 2% and the return on the market is 8.1%? If the required return on the investment is 11.2%, what should you do?

ASSESSMENT QUESTIONS

Choose the correct answer.

- An earthquake can create a situation with a ____ risk.
 - speculative
 - human
 - natural
 - controllable
- The uncertainty that the realized return will not equal the expected return is called risk.
True / False
- Unsystematic risk is the tendency for stock prices to move together.
True / False
- The capital asset pricing model specifies the required return adjusted for systematic risk.
True / False



5. The risk-adjusted required rate of return excludes:
 - a. the stock's standard deviation.
 - b. the stock's beta.
 - c. the risk-free rate.
 - d. the anticipated return on the market.
6. Buying insurance is an example of risk avoidance.
True / False
7. The final step in the risk management program is to implement the program.
True / False

Key Terms



Term	Definition
Beta coefficient	Index of systematic risk; measure of the volatility of a stock's return relative to the market return
Capital asset pricing model (CAPM)	Model used in the valuation of an asset that specifies the required return for different levels of risk
Capital gain	The increase in the value of the asset, based on the asset's original price
Controllable risks	Risks that can be reduced or avoided by careful actions
Correlation	The relationship between two or more financial variables over time
Diversifiable risk (Unsystematic risk)	Risk associated with individual events that affect a particular asset; firm-specific risk that is reduced through the construction of diversified portfolios
Dividends	A dividend is a period payment to a stock shareholder in cash or other shares of stock
Economic risk	Uncertainty with a potential financial impact
Expected return	The expected return is the incentive for accepting risk
Human risks	Uncertainty resulting from the actions of individuals, groups, or organizations
Natural risks	Uncertainty as a result of natural events or phenomena
Portfolio risk	Total risk associated with owning a portfolio involving both systematic and unsystematic risk
Pure risk	Uncertainty with no opportunity for financial gain, only a potential loss
Required return	The return necessary to induce an individual to make an investment



Term	Definition
Return	What is earned on an investment: the sum of income and capital gains generated by an investment
Risk	The uncertainty of an event or outcome.
Risk management	The process of systematically identifying potential risks and making plans to reduce the impact of risk
Self-insurance	Setting aside money to cover a potential financial loss
Speculative risk	A situation with the possibility of either financial loss or gain
Standard deviation	Measure of dispersion around an average value; a measure of risk
Uncontrollable risks	Risks that cannot be influenced by human action
Undiversifiable risk (Systematic risk)	Risk associated with fluctuations in securities prices and other non firm-specific factors: market risk that is not reduced through the construction of diversified portfolios

Key Formulas



Weighted Average Return = (probability of event 1 x return on event 1)
+ (probability of event 2 x return on event 2) + ...

CAPM risk-adjusted required return (k) = risk-free rate + risk premium

Risk premium = (market return (r_m) – risk free return (r_f)) x beta



MINI CASE**MINI CASE 3.1: Investment Decisions**

Amina likes to make her own investments for her long-term retirement portfolio. She is seeing considerable systemic risk in the investment environment. Amina has decided to evaluate her investment portfolio given the risks she has identified. She doesn't want to be too conservative in her approach in case there is a sudden growth in the equities market.

Task

1. List the types of systemic risks Amina may be identifying.

2. Which methods can Amina use to evaluate and readjust her investment portfolio?

3. Use the risks you identified to recommend to Amina which of the financial tools she should be using. Justify your response.



MINI CASE**MINI CASE 3.2: Risk Management and Insurance**

One of the goals of Saudi Vision 2030 is to create paths for business success for small and medium enterprises and large corporations. As new enterprises develop and existing companies expand, an increased knowledge of risk management strategies will be needed. Sahar and several business partners have started a small manufacturing company to produce components for solar energy. The company has a production facility, warehouse and office space. Currently, 14 people are employed by the company involved in research, production, distribution, office activities, and administration. The company works with eight suppliers providing materials used in production, and has five main customers, which are companies that create solar panels and solar energy installations.

Task

1. Describe how Sahar and her business partners might use risk avoidance, risk reduction, risk transfer, and risk assumption to create a risk management plan for their company.

2. Recommend various types of insurance the company might consider to protect itself.



MINI CASE**MINI CASE 3.3: Capital Asset Pricing Model (CAPM)**

As commodity companies attempt to attract investors, managers realize that a higher rate of return may be required due to various risks. An investor will only buy a company's stock if rewarded for the risk. The expected return of an investor must exceed the required return based on a risk premium. The capital asset pricing model (CAPM) may be used to determine that risk premium. With CAPM the risk premium is based on: (1) an additional return above the risk-free rate, and (2) the unpredictability of the commodity company's stock compared to the market, measured by the beta of the stock. The risk premium using CAPM is calculated with this equation:

$$\text{Risk premium} = (r_m - r_f) \times \text{beta}$$

The components of the equation include: (1) the expected market return (r_m), (2) the risk-free rate (r_f), and (3) beta.

Task

1. Describe possible risks a commodity company might encounter to use the capital asset pricing model (CAPM) to determine the risk premium.

2. Using the CAPM formula, calculate the risk premium for the following situation:

beta: 1.2 risk-free rate: 5% average market rate: 11%



Case Study: Investment Consulting

The supervisor of the retiree's personal finance section of a large Saudi bank has given Khalid and Fatima their project assignment. Khalid and Fatima are both recent college graduates with degrees in finance. They have been instructed to devise a plan to attract young Saudi professionals to open a retirement investment account with the bank. Their plan will need to be presented the following week to the bank executive management. The bank has primarily served older Saudis with their business and personal banking.

Khalid and Fatima start their meeting. "I think we need a two-step approach. The first thing I think we need to do is point out to the executive management that one of the goals under Saudi Vision 2030 is to promote greater financial independence and retirement options. Then we need to design an investment strategy for our Saudi young professionals," Fatima says.

"That's true," replies Khalid, "but we need to present some data to show the potential of this plan. Let's do some research and meet tomorrow." The graduates gather their research and meet the following morning. Khalid starts, "Saudi Arabia's General Organization for Social Insurance fund has been doing very well earning returns of over 14% last year." Fatima replies, "True, but how long will that fund last? By 2050 the long-term population trends for Saudi Arabia will have a large percentage of the population both in and ready to move into retirement. Saudi life expectancies are also increasing. Individuals need to start retirement planning now so they will have retirement funds from the government, their workplace, and private savings and investment. That is where we come in."

"Okay, I think we have a strong case for starting retirement investment products for our bank, but what should we recommend for investors?" asks Khalid. "The bank's management is pretty conservative, and they may not approve of investments for individuals who are willing to take on higher growth strategies."

"We also have the issue of our targeted young investors. Many of them will be new to investing and their views may be based on what they hear from online sources about great investments," Fatima says. "We will most likely need to have an educational program for investors." "We will also need to determine if we will use existing Saudi investment products found on the Tadawul exchange or if we should use our international branch to offer investments outside of Saudi Arabia," Khalid points out. "Our bank already has licensed brokers and relationships with investment banks and their market maker dealers. Younger investors may want a portfolio that expands beyond Saudi equities."

Fatima replies, "I think we need to look at the current betas of our bank's investment products. These may be on the conservative side. Younger investors have a long-term investment horizon and may be willing to take more risk. They may also want to use investment strategies such as margin purchases and short selling."



Khalid replies, "We will need to devise a portfolio investment strategy for young professionals to present to executive management for their approval. We will need to convince bank management to expand our investment technology platform. Younger investors want to use their cell phones for monitoring their portfolios."

Fatima comments, "Let's put together our initial presentation for executive management and show it to our supervisor for comments."

Study Questions

1. To help Khalid and Fatima inform young Saudi professionals, create a list of uncontrollable risks that could influence business performance.

2. Khalid and Fatima need to explain financial risk beta coefficients to young Saudi professionals. Develop a short explanation of beta coefficients, how these are determined and how they should be used in making investment decisions.

3. Khalid and Fatima are concerned that young Saudi professionals may not see a reason to invest for retirement. Develop an explanation of how investing for retirement should fit into a risk management strategy for young Saudi professionals.

Online Activity

Research Saudi banks that are offering retiree personal finance plans. Identify the types of investment products and services they are offering. Determine how well these offerings meet the needs of young Saudi professions.



Stocks and Bonds



Learning Outcomes

Once you have completed this chapter, you should be able to:

1. Understand the various sources of funding for a company.
2. Describe the advantages and disadvantages of common stock.
3. Explain the strategies influencing a company's dividend policy.
4. Explain the advantages and disadvantages of preferred stock.
5. Describe the characteristics of all debt instruments.
6. Describe the types of corporate bonds.
7. Explain how companies can retire debt.
8. Understand the role of government securities and national debt.

In the Kingdom of Saudi Arabia, joint stock companies are regulated by the Capital Market Authority (CMA), as discussed previously in Chapter 1. The Saudi Vision 2030 has set a goal of facilitating the flow of private investment to improve Saudi business competitiveness. In response, Saudi Arabia's Cabinet of Ministers has set regulations designed to modernize the Saudi corporate law framework and provide flexibility in operating existing businesses in Saudi Arabia. These new regulations are also designed to attract foreign investment into the Saudi Arabian market by following international practices.

This chapter covers sources of funding available in public markets including common and preferred stock, and bonds. Companies need to determine the distribution or retention of earnings, stock dividend policy, stock splits, and stock buy-backs. Companies also need to determine how they can receive funding in bond markets. There always needs to be a balance between the various sources of funding for a business to limit risks and ensure business operations.



Fahd is eager to use his considerable corporate finance management experience in his new position as a chief financial officer (CFO). Fahd reports directly to Turki, the company's new chief executive officer (CEO). Their joint stock company, or corporation, has been in business for five years and the board of directors wanted new management to help the company grow. Fahd has reviewed the company's financial statements from both the public annual and quarterly reports, and internal documents. Turki wants to raise additional capital and has asked Fahd to review selling common stock to individuals who will become part owners (shareholders) in the corporation, as well as other financing options. Fahd needs to determine if the corporation should issue preferred stock or bonds, but he is not sure of the credit rating for the company. They have a Shari-ah-compliant business, so they are also considering the sukuk market.



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4.1 Sources of Funding

To obtain assets to operate, a company must find sources of funding through either equity or debt. Investors who own stock in a joint stock company have equity ownership. Joint stock companies, commonly called corporations, may also issue a variety of debt instruments, such as bonds and sukuk, to tap the funds of investors who purchase debt securities. A company's debt obligations have a prior claim to a company's earnings over equity. This means that a business must pay interest on debt before there are any earnings available to the owners. If the company is dissolved, debts must be paid first, and any remaining assets are distributed to the owners. Equity ownership, therefore, is a residual claim. As a **residual claim**, equity is riskier than debt. Common stock represents the final claim on the company's earnings and assets. While equity represents the residual claim, it is still a claim, and the managers and employees work for and are held responsible to the stockholders.

Residual claim

A claim to a share of earnings after a debt has been settled

4.1a Equity

Equity represents ownership of a company. If Fahd's company performs poorly, there may be little or no returns available to the owners. However, a profitable company can generate a large return for its owners, since after the debt obligations are met, the residual earnings accrue solely to equity owners. While there may be many different types of debt instruments, there are only two types of stock: common stock and preferred stock. As the name implies, preferred stock has a preferred or superior position.

EXERCISES

Choose the correct answer.

1. There are more than two types of stock.
True / False
2. Common stock represents the initial claim on the company's earnings and assets.
True / False



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4.2 Common Stock

Common stock is direct equity ownership in a corporation.

Common stockholders have the right to:

- attend a company's stockholder general assembly meeting and receive dividends when distributed;
- vote for a corporation's board of directors; and
- purchase, as a priority, additional shares stock if the company issues new shares.

Shareholders have residual claims on the assets and earnings of a corporation. In case of liquidation, the holder of common stock receives whatever is left after all other claims have been satisfied. A common stockholder receives earnings that have accrued after expenses, interest, and preferred stock dividends are paid. Common stock investors bear the risk and reap the rewards associated with the ownership of a corporation.

Investors who purchase common stock receive all the rights of ownership including the right to "vote the shares" to elect the corporation's board of directors. Voting is typically based on the proportion of stock ownership. Stockholders who own 20% of the common stock of a company would have 20 times more shares of the vote than a stockholder with 1% of the common stock. The **board of directors** selects the company's management. Management is then responsible to the board of directors, which, in turn, is responsible to the company's stockholders. If the stockholders do not think that the board is doing a competent job, they may elect another board to represent them.

Fahd's company has a set of bylaws, or procedures, for the operation of a joint stock company called **articles of association** or **articles of incorporation**. These articles indicate the total number of shares of common stock and preferred shares authorized to be issued by the company. The board may not want to have all authorized common stock shares issued, or floated, to the public for sale as outstanding shares. Some shares remain with the company as **treasury shares**. Treasury shares include shares held by the company for use as employee shares, reserved for employee compensation and incentives. Turki and the board strongly believe that an employee share strategy is needed for their business to hire

Common stock

Security representing ownership in a corporation; common stock owners have a final claim on the company's assets and earnings after the company has met its obligations to creditors and preferred stockholders

Board of directors

Body elected by and responsible to stockholders to set policy and hire management to run a corporation

Articles of association or articles of incorporation

Bylaws, or procedures, for the operation of a joint stock company

Treasury shares

Shares held by the company for use as employee shares





Why should the board of directors and the company's management be separate?

the best employees. Employees who stay with the business can receive shares of stock in the company. If the company meets performance goals, then management can be awarded additional shares as incentives.

There are multiple considerations in determining how to fund the operations of a company. Fahd's company's articles of association authorized the company to issue two million shares of common stock. One million shares were floated or issued to the public. As a publicly traded company, major financing decisions must be made public in a **prospectus**, a formal document providing details about the investment to the public. The Saudi CMA requires that a company's prospectus must contain all information necessary for an investor to make an assessment of the activities, assets and liabilities, financial position, management, and prospects for the company's profits and losses so investors can monitor the business's finances. In addition, the prospectus must include information related to the number and price of the securities, and any obligations, rights, powers, and privileges related to the securities.

Prospectus

Document that provides information about an investment such as a stock or mutual fund





What information might be included in a company's prospectus?

Figure 4.1 shows a simplified balance sheet for Fahd's company at the beginning of the year. The company has SAR 100 million in assets for the business to use to generate sales. This is balanced against debt of SAR 30 million and equity consisting of outstanding stock paid in, or share capital, of SAR 40 million and retained earnings of SAR 30 million.

FIGURE 4.1
Simplified Balance Sheet

All Numbers in SAR (million)	
Balance Sheet	Start of Year
Assets	100
Liabilities and Equity	
Debt	30
Owner's Equity	
Share Capital	40
Retained Earnings	30
	100

Fahd's company set an initial nominal value, or actual value, per share price for common stock for accounting purposes. In the balance sheet, the share capital represents the funds produced by the sale of outstanding stock. When Fahd's company issued stock through its investment bank, the



Retained earnings

Accumulated profit after dividends

funds received for the outstanding stock represent the stock share capital invested in the company. This has no relationship to the current stock price of shares in the open market. The open market prices are determined by the supply and demand for the stock shares. **Retained earnings** represent the accumulated earnings of the company that have not been distributed since the company's inception and, like the common stock, represent an investment in the company by common stockholders. Because these stockholders would receive the earnings if they were distributed, retained earnings are part of the stockholders' contribution to the company.

To raise additional funds, Fahd's company could try to issue the full remaining one million authorized shares. But this would mean that the current owner's equity of SAR 70 million would now need to be distributed across two million shares instead of one million shares. In addition, a current common stockholder would see their voting rights cut in half. Current stockholders could see a considerable reduction in the value of their stock. If Fahd's company is not able to provide expected returns to common stock owners, the stock owners could vote for new board members to replace management.

Fahd has seen that his company's articles of association authorize **preemptive rights**, which is the right of a current stockholder to maintain their proportionate ownership in the company if the company issues shares for sale. If the company wants to sell additional shares to the public, these new shares must be offered initially to the existing stockholders in a sale based on **tradable rights**.

Preemptive rights

Right of current stockholders to maintain their proportionate ownership in the company

Tradable rights

Right holders to subscribe to new shares listed during a capital increase, such as the sale of new stock shares

	Consolidated		Separate	
	2015	2014	2015	2014
ASSETS				
CURRENT ASSETS :				
Cash	359,200	54,681	35,160	24,658
Temporary investments	58,462		354,800	254,800
Accounts Receivable	31,958	5,985	28,590	14,985
Note receivable	50,859	987	48,521	32,405
Inventory	585,090	0	535,084	320,535
TOTAL CURRENT ASSETS	1,072,211	5	1,002,155	647,383
NON-CURRENT ASSETS :				
Long - Term Investment	200,100	0	195,025	152,000
Property Plant & Equipment - net	1,452,600	1,200,000	1,452,600	1,350,652
Intangible Assets	25,305	0	20,658	25,000
Other assets	20,620	0	18,067	15,680
TOTAL NON-CURRENT ASSETS	1,698,625	1,200,000	1,686,350	1,543,332
TOTAL ASSETS	2,770,836	1,205,005	2,688,505	2,190,715

In the balance sheet what does share capital represent?



Acquisition

The purchase of the corporation by another company

The board of directors of Fahd's company have set a goal of having the company's stock listed in a Saudi fund. Funds are professionally managed, and these money managers often press corporate executives to achieve higher earnings and returns for stockholders. Funds and other organizations that purchase large blocks of stock will have large numbers of voting shares. If management is unable to achieve its goals, these money managers may seek the replacement of management or the **acquisition** of the corporation by another company whose goal is higher stock returns. The threat of a change in management or a takeover often encourages a corporation's board of directors and current executives to pursue strategies that increase the value of the company's stock.

Fahd wants to ensure that the company is working for all equity investors. This requires that the company provides the expected return on investment for shareholders. Common stockholder returns come from two sources:

1. increases in the value of the common stock; and
2. dividends paid to stockholders.

Fahd will need to recommend a dividend policy to his company's board of directors.

EXERCISES

Choose the correct answer.

1. To obtain assets to operate, a company must find sources of funding through either equity or debt.
True / False
2. A business must pay earnings to the owners before interest payments on debt.
True / False



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4.3 Dividend Policy

After a corporation has earned profits, management must decide what to do with these earnings. The company can retain earnings and increase each stockholder's investment in the company, reduce debt, or distribute earnings as a **cash dividend**. If the earnings are distributed, the cash flows out of the company. If the earnings are retained, management will put the funds to work by purchasing income-earning assets or retiring outstanding debt.

Fahd needs to consider alternative strategies for the use of retained earnings to present to the board of directors. Figure 4.2 below shows simplified balance sheets outlining three options for the company, assuming there is SAR 10 million in retained earnings at the end of the year.

The options are:

- **Option 1 – increase assets.** The retained earnings increase the cash available for the company to purchase additional assets to help increase sales.
- **Option 2 – reduce debt.** The earnings created can be used to reduce debt from SAR 30 million to SAR 20 million. This could lower debt costs for the company in the following years.
- **Option 3 – pay dividends.** The company would use the full SAR 10 million to pay dividends. This would not change the balance sheet because the funds that come into the company would be used to pay dividends to shareholders.

FIGURE 4.2

Options for Retained Earnings

Balance Sheet	All Numbers in SAR (million)			
	Start of Year	Option 1 Increase Assets	Option 2 Reduce Debt	Option 3 Pay Dividends
Assets	100	110	100	100
Liabilities and Equity				
Debt	30	30	20	30
Equity				
Share Capital	40	40	40	40
Retained Earnings	30	40	40	30
	100	110	100	100



In Option 1 and Option 2, the company retains all the earnings, so retained earnings increase by SAR 10 million. If earnings are distributed as cash dividends, the company's equity is not increased. Fahd's company board wants the business to grow, so investing in additional assets is needed. However, Fahd could recommend the use of alternative sources of funds. Money may be borrowed, but this could increase the financial risk to the company. Funds may be obtained by issuing additional stock, but it may not make sense to distribute earnings and then issue new shares to raise equity. The retention of the earnings would achieve the same effect and not involve the costs associated with selling new stock.

Few companies distribute all their earnings, and many distribute no earnings. Since the stockholders are the owners of the company and are entitled to the earnings, the question becomes what do the stockholders want—additional investment in the company or cash dividends? This would seem to be an easy question for Fahd to answer but it is not. Usually, many different stockholders own shares and some may seek income through dividends while others may seek capital gains.



Why might certain individuals prefer dividends to capital gains?



High-growth companies will often hold retained earnings to help grow the business. Stock investors in these growth stocks are more likely to want to see the value of their stock increase over time. Other companies may not have high growth, but they are known for paying dividends on a regular basis. These dividend stocks are often purchased by individuals who are more interested in the payment of dividends rather than the growth of the value of the stock.

It is important for Fahd to understand the company's investing shareholders as owners, and the transaction costs involved in financial decisions. **Financial transaction costs** are costs involved in buying or selling in financial transactions.

Financial transaction costs

Costs involved in buying or selling in financial transactions

Taxes typically have a major impact on financial decisions. However, in Saudi Arabia, Saudi citizens and citizens from Gulf Cooperation Council (GCC) nations don't pay income taxes on dividends or capital gains (profits from security sales). Instead, in Saudi Arabia Zakat, a religious wealth tax, is imposed at 2.5% on the higher of Zakat-adjusted income and the Zakat base. In some countries, such as the United States, dividends and capital gains are taxed at different rates.

Fahd's company does have to pay Zakat of 2.5%. This has an impact on Fahd's funding strategy for the company. Dividend payments for both common and preferred stock are paid from retained earnings after taxes and Zakat are paid. Payments for debt are considered an expense and therefore lower the overall net profit of the company, reducing the taxes and Zakat paid on profits.

4.3a Cash Dividends

For a Saudi citizen, receiving dividends or selling stock to receive capital gains can have the same impact on income, depending upon transaction fees. For Fahd's company, there is an impact on how retained earnings are used to fund the operation of the business:

- If the company chooses the option to retain all earnings to support future growth, the equity of the stockholder increases.
- If the company decides to pay out all the retained earnings in cash dividends, then the stockholders have increased their overall return by receiving dividends.



Dividend policy is a question of how much of a company's earnings should be distributed. Companies that pay cash dividends usually have a policy that is either stated or implicitly known by the investment community. If a company pays a cash dividend, the amount is often stable and well known. The proportion of the earnings distributed is measured by the **payout ratio**, which is:

Payout ratio

Ratio of dividends to earnings per share

$$\text{Payout ratio} = \frac{\text{Dividend per share}}{\text{Earnings per share}}$$

EXAMPLE

A company announces a dividend of SAR 3 per share, having previously announced earnings of SAR 10 per share.

Therefore, the payout ratio is $\frac{3}{10}$, or 30%.

**YOU TRY IT**

A company is currently trading at SAR 200 per share. The company announces a dividend of SAR 6 per share.

What is the dividend yield on the stock?

Yield

The return on a stock expressed as dividend per share divided by the current share price

The average **yield** of dividend-paying companies on the Saudi Exchange was 3.25% in 2021. There were 30 companies that have been paying regular dividends for over 10 years at an average rate of 3.78%. If the SAR amount of the dividend is stable, the payout ratio will fluctuate with fluctuations in earnings. The stability of dividends coupled with fluctuations in earnings means that the amount of earnings retained varies each year and that management has decided to maintain a stable dividend at the expense of stable increases in retained earnings.



In Saudi Arabia, companies distribute cash dividends on a quarterly, semi-annual, or annual basis. As earnings grow, a company can increase its cash dividends.

Distributing dividends – the process

Distributing dividends takes time and the process is outlined in the following three steps:

STEP 1

The first step is the dividend meeting of the company's board of directors. If they decide to distribute a cash dividend, two important dates are established. The first date determines who is to receive the dividend. On a particular day, the ownership books of the corporation are closed, and everyone owning stock in the company at the end of that day receives the dividend. This is called the **date of record**. If investors buy the stock after the date of record, they do not receive the dividend. The stock is purchased excluding the dividend; this is referred to as **ex dividend**, for the price of the stock does not include the dividend payment. When a stock goes ex-dividend, its price is adjusted downward for the dividend. This price change makes logical sense.

Date of record

Day on which an investor must own stock in order to receive the dividend payment

Ex dividend

Stock purchases exclusive of any dividend payment

Pay date or distribution date

Day on which a dividend is paid to stockholders

STEP 2

The second important date is the day that the dividend is distributed, known as the **pay date** or **distribution date**. The distribution date may be several weeks after the record date, as the company must determine the owners on the record date and process the payment. The company may not perform this task itself; instead, it may use its commercial bank, for which the bank charges a transaction fee.

STEP 3

The day that the dividend is received by the stockholder is likely to be many weeks after the board of directors announced the dividend payment.





Why might a company's management decide to maintain a stable dividend?

EXAMPLE

If a stock were selling for SAR 50 and paid a SAR 2 dividend, the stock could not be worth SAR 50 on the ex dividend date. If the price were not adjusted, an investor could buy the stock for SAR 50 the day before it went ex dividend, sell it for SAR 50 on the ex dividend date, collect the SAR 2 dividend, and net SAR 2. If one investor could make the SAR 2, everyone could make the SAR 2, but such easy profits do not happen. Instead, the price of the stock becomes SAR 48 on the ex dividend date. The investor's total position remains SAR 50, consisting of the SAR 48 stock plus the SAR 2 dividend.



YOU TRY IT

A stock is trading at SAR 40 and announces a dividend of SAR 3 per share.

When the stock goes ex-dividend, what is the stock price likely to be?



Fahd wants to maximize the wealth of the company's stockholders, so the dividend decision basically depends on who has the better use for the money—the stockholders or the company. Fahd is unsure of the stockholders' need for money. If the stockholders like the dividend policy, they may purchase more shares. If the stockholders do not like the company's dividend policy, they may sell their shares. However, if the sellers exceed the buyers, the value of the shares will fall, and Fahd will become aware of the stockholders' preference for cash dividends instead of the retention of earnings.

4.3b Share Dividends

Share dividends

Dividends paid to stockholders in a form of stocks, often in place of a dividend paid in cash

Some companies distribute **share dividends** in addition to (or instead of) cash dividends. Share dividends alter the entries on the company's equity section of its balance sheet, but they have no impact on the company's assets and liabilities. Since assets are neither increased nor decreased, share dividends do not affect the company's earning capacity. Share dividends transfer amounts from retained earnings to common stock and additional paid-in capital.

A share dividend does not increase an investor's wealth, but it does increase the number of shares the investor owns.

EXAMPLE

If an investor owned 100 shares at SAR 20 per share before the stock dividend, the investor had stock worth SAR 2,000 (100 shares \times SAR 20). After the stock dividend, the investor owns 110 shares (the extra 10 shares resulting from the share dividends). However, the 110 shares are also worth SAR 2,000, as the price per share falls from SAR 20 to SAR 18.18 (SAR $\frac{2000}{110}$ shares).

The reason the stock price falls is that there are 10% more shares outstanding in the market, but there has been no increase in the company's assets and earning power. The old shares have been diluted and so the price of the stock must decline to indicate this **dilution**. If the price of the stock did not fall, all companies could make their stockholders wealthier by declaring stock dividends. But investors would soon realize that the stock dividend does not increase the assets and earning power of the company, and they would not be willing to pay the old price for a larger number of shares. The market price would fall to adjust for the dilution of the old shares, and that is what happens.

Dilution

Reduction in earnings per share as the result of issuing additional shares





YOU TRY IT

An investor owns 100 shares of stock trading at SAR 10. The company announces a share dividend at a rate of 1 for every 10 an investor owns.

Given a share dividend does not increase an investor's wealth, what price will the shares trade at after the dividend?

Fahd needs to determine if a share dividend would increase the ability of the company to grow. If a share dividend were a substitute for a cash dividend, the statement would be partially true, because the company still has the asset cash that would have been paid to stockholders if a cash dividend had been declared. The company, however, would still have the cash if it did not pay the share dividend, for a company could retain its cash and not pay a stock dividend. The decision to pay the share dividend does not increase the company's cash; it is the decision not to pay the cash dividend that conserves the cash.

4.3c Stock Splits

After the price of a stock has risen substantially, management may choose to split the stock. A **stock split** lowers the price of the stock and makes it more accessible to investors. Implicit in this statement is the belief that investors prefer lower-priced shares and that reducing the price of the stock benefits the current stockholders by widening the market for their stock.

Like the stock dividend, the stock split does not alter the equity section on the balance sheet and it does not affect the assets or liabilities of the company. It does not increase the earning power of the company, and the wealth of the stockholder is not increased unless other investors prefer lower-priced stocks and increase the demand for this stock. In a two for one stock split, one old share becomes two new shares. There are no changes in the additional paid-in capital, retained earnings, or total

Stock split

Recapitalization achieved by changing the number of shares outstanding



equity. All that has happened is that there are now twice as many shares outstanding, and each share is worth half as much as an old share. Stock splits may be in any combination of terms, such as four for one or seven for four, but the most common splits are two for one or three for two. There are also reverse splits, which reduce the number of shares and raise the price of the stock.

All stock splits affect the price of the stock. With a two for one split, the stock's price is cut in half. A one for ten reverse split raises the price by a factor of ten. An easy method for finding the price of the stock after the split is:

$$\text{Price of stock after split} = \text{Stock price before split} \times \text{Reciprocal of the terms of the split}$$

EXAMPLE

If a stock is selling for SAR 54 a share and is split three for two, then the price of the stock after the split will be

$$\text{SAR } 54 \times \frac{2}{3} = \text{SAR } 36$$

**YOU TRY IT**

If a stock is selling for SAR 5.5 a share and there is a reverse split of one for two, what would the price of the stock be after the reverse split? Show your work.



Fahd is evaluating whether he should recommend to the board that the company should split its stock. This would result in a lower selling price and could increase the marketability of the company shares. This could create a wider distribution of ownership and increase investor interest in the company. This increased interest and marketability may ultimately cause the value of the stock to appreciate. If demand for the stock increases, the current stockholders would benefit. However, the price increase in the stock's value in the exchange market would not increase the company's earnings. He could also recommend a reverse split. This would increase the price of the stock but would not increase the wealth of the shareholders.

4.3d Repurchase of Stock

A company with cash may choose to repurchase some of its stock. Stock repurchases (stock buy-backs) decrease the number of shares outstanding. Since the earnings will be spread over fewer shares, the earnings per share should increase. The higher per-share earnings may then lead to a higher stock price in the future. Repurchased stocks by the issuing company become treasury stocks. The company can hold these stocks, re-issue them, or cancel them. These shares are not part of the company's capital, and they don't pay dividends.

Fahd is considering repurchasing shares as an alternative to paying cash dividends. Instead of distributing the money as cash dividends, the company could offer to purchase the shares from the stockholders. This offers the stockholders a major advantage. They have the option to sell or retain their shares. If the stockholders believe that the company's potential is sufficient to warrant retention of the shares, they do not have to sell them. The decision to sell the shares rests with the stockholder. Figure 4.3 summarizes the stock strategies mentioned above.



FIGURE 4.3
Stock Strategies

Stock Policies	Owner Wealth Impact	Company Impact
Cash Dividends	Receiving dividends have an impact on income, depending on transaction fees.	Paying cash dividends lessens the growth in retained earnings for the company used to support future growth.
Share Dividends	Does not increase an investor's wealth, but it does increase the number of shares the investor owns.	Share dividends alter the entries on the company's equity section of its balance sheet, they have no impact on the company's assets and liabilities and have no affect the company's earning capacity.
Stock Splits	A stock split lowers the price of the stock and makes it more accessible to investors. If investors prefer lower-priced shares, then reducing the price of the stock benefits the current stockholders by widening the market for their stock.	Does not alter the equity section on the balance sheet and it does not affect the assets or liabilities of the company.
Repurchase of Stock	Stock repurchases (stock buy-backs) decrease the number of shares outstanding, increasing the earnings per share. The higher per-share earnings may then lead to a higher stock price in the future.	Repurchased stocks by the issuing company become treasury stocks. The company can hold these stocks, re-issue them, or cancel them. These shares are not part of the company's capital and they don't pay dividends.



EXERCISES

Choose the correct answer.

1. A stock dividend paid from company profits reduces a firm's total equity.
True / False
2. Dividends are paid on the:
 - a. declaration date.
 - b. ex dividend date.
 - c. date of record.
 - d. distribution date.
3. A share dividend:
 - a. reduces the firm's cash.
 - b. increases the firm's total equity.
 - c. decreases the firm's stock price.
 - d. increases the firm's assets.



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4.4 Preferred Stock

Preferred stock

Class of stock (equity) that has a claim prior to common stock on the firm's earnings and assets

Preferred stock is a class of equity but is more like debt than common stock since it pays a fixed dividend return that may accumulate if it is not paid. **Preferred stock** gives holders a priority to receive a predetermined percentage of a company's profits, and priority over holders of common stock in obtaining rights in the event of a company's liquidation. Like common stock, preferred stock can be perpetual so the company never has to retire it, but the company can call back the preferred shares. Unlike common stockholders, preferred stock does not allow holders to vote. Issuing preferred stock provides equity and is included in share capital instead of being included as debt on a balance sheet.

Like many companies, Fahd's company has not issued preferred stock, although the company's articles of association allow for the issuance of preferred stock under Saudi Companies Law articles.

- Issuing preferred stock can provide additional capital for the company but will lock in a percentage of net profits to be paid to preferred stockholders.
- If Fahd's company fails to pay the specified percentage of their company's net profits in a given year, under the Saudi Companies Law, no dividends can be distributed for the following years except after payment of the percentage specified to holders of preferred shares.
- Fahd's companies don't have to retire the preferred shares like most debt, therefore, their preferred shares will often be purchased by investment firms rather than individuals.

4.4a Analysis of Preferred Stock

Because preferred stock is an income-producing investment for investors, Fahd's analysis is primarily concerned with the capacity of his company to meet the dividend payments. Although dividends must ultimately be related to current earnings and the company's future earning capacity, preferred dividends are paid from cash. Even if the company is operating at a loss, it may still be able to pay dividends to the preferred stockholders if it has sufficient cash. In fact, cash dividends might be paid despite the



earnings deficit to indicate that the losses are expected to be temporary and that the company is financially strong.



Why might it be important reputationally for a company to keep paying dividends even during a loss-making year?

EXERCISES

Choose the correct answer.

1. Preferred stock dividends are paid after interest but before dividends to common stock.
True / False
2. Common features of preferred stock include:
 - a. variable dividends
 - b. skip dividends
 - c. adjustable dividends
 - d. fixed dividends
3. Dividends can be paid to the preferred shareholders even if the company is operating at a loss.
True / False



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4.5 Bonds

A **bond** is a fixed-income promise to pay, issued by a company or government representing a loan made by an investor to a borrower.

Fahd has considered raising capital by issuing bonds since the cost of funds raised through the issue of equity is higher than the cost of funds from bond issues.

4.5a Characteristics of All Debt Instruments

All bonds and other long-term debt instruments share several characteristics. They are liabilities of their issuers for a specified amount, called the **principal** (face value). Virtually all debt has a **maturity date**; it must be paid off by a specified date. If maturity occurs after a year, it is long-term debt. When this debt is issued, the length of time to maturity can range from a few years to 20 years or more. The owners of debt instruments receive payments (interest); this is sometimes called yield and may be expressed as **current yield or yield to maturity**. The payments are usually fixed and are often referred to as the **coupon**. Interest paid should not be confused with other forms of cash outlays for a company, such as cash dividends paid by common and preferred stock. Dividends come from the company's earnings, while interest is an expense to a company.

Each debt agreement has terms that the debtor must meet, and these are stated in a legal document called the **indenture**. One of the most frequent requirements is the pledging of collateral that the borrower must put up to secure the loan. For example, the collateral for a mortgage loan is a building and land. Other assets, such as securities or inventory owned by the borrower, may also be pledged to secure the loan. If the borrower **defaults** on the loan (fails to pay the interest or fails to meet other terms of the indenture), the creditor may seize the collateral and sell it to recoup the principal.

Other examples of common loan restrictions are limits on dividend payments, limits on the issue of additional debt, and the requirement to periodically retire a proportion of the debt. These examples do not exhaust all the possible conditions of a given loan. Since each loan is separately negotiated, there is ample opportunity for subtle differences among loan

Principal

The amount owed

Maturity date

The date by which the debt must be repaid

Current yield/yield to maturity

The rate of return on a bond investment

Coupon

The interest rate received by the bondholder

Indenture

Document specifying the terms of a debt issue

Default

Failure to meet the terms specified in the indenture of a debt issue



agreements. The important point, however, is that if any part of the loan agreement is violated, the creditor may declare that the debt is in default and the entire loan is due. Default is not just the failure to pay the interest. Failure to meet any of the indenture provisions places the loan in default, even though the interest is still being paid.



Why might a limit be set on dividend payments?

There are two influences on the expected return on debt instruments. This includes the expected market return and the perceived risk of a company's ability to pay interest and principal on debt. Fixed-income securities, such as preferred stock and fixed-rate bonds, offer no protection from inflation. If the rate of inflation increases, the real purchasing power of the dividend or coupon yield is diminished. In addition, increased inflation will probably lead to higher interest rate payments by new securities, which will drive down the market value of all current lower interest rate fixed-income securities, including preferred stock and bonds. Higher rates of inflation impact fixed-income, long-term securities through both decreased purchasing power of the dividend or yield, and the market value of the stock or bond will be diminished.



EXAMPLE

Assume a SAR 1,000 fixed rate bond pays 4% when the inflation rate is 2%. Investors are willing to pay SAR 1,000 to receive a yield, after considering inflation, of 2%. If inflation rose to 3%, what discount (less than the face value) would an investor be willing to pay for the fixed rate bond to maintain a 2% post-inflation return?

At 4%, the investor receives SAR 40 (SAR 1000 x 4%) per year.

Whereas inflation = SAR 1,000 x 2% = SAR 20. Therefore, the investor receives SAR 20 above inflation (SAR 40 – SAR 20).

With inflation at 3%, the investment would need to earn a return of 5% (Required Investment Return is: Inflation 3% + Return above inflation 2%) to maintain the 2% $\left(\frac{20}{1000}\right)$ above inflation.

So, the annual payment is still at SAR 40. Thus the new price will be

SAR New Bond Price x Required Investment Return % = Annual Payment

SAR New Bond Price x 5% = SAR 40

SAR New Bond Price = SAR $\frac{40}{0.05}$ = SAR 800

The above formulas showed that the bond price could drop to SAR 800 for an investor to maintain their 2% above inflation return.

**YOU TRY IT**

Assume a SAR 1,000 fixed-rate bond pays 5% when the inflation rate is 3%. Investors are willing to pay SAR 1,000 to receive a yield, after considering inflation, of 2%. If inflation drops to 2%, what premium (above the face value) would an investor be willing to pay for the fixed rate bond to maintain a 2% post-inflation return?



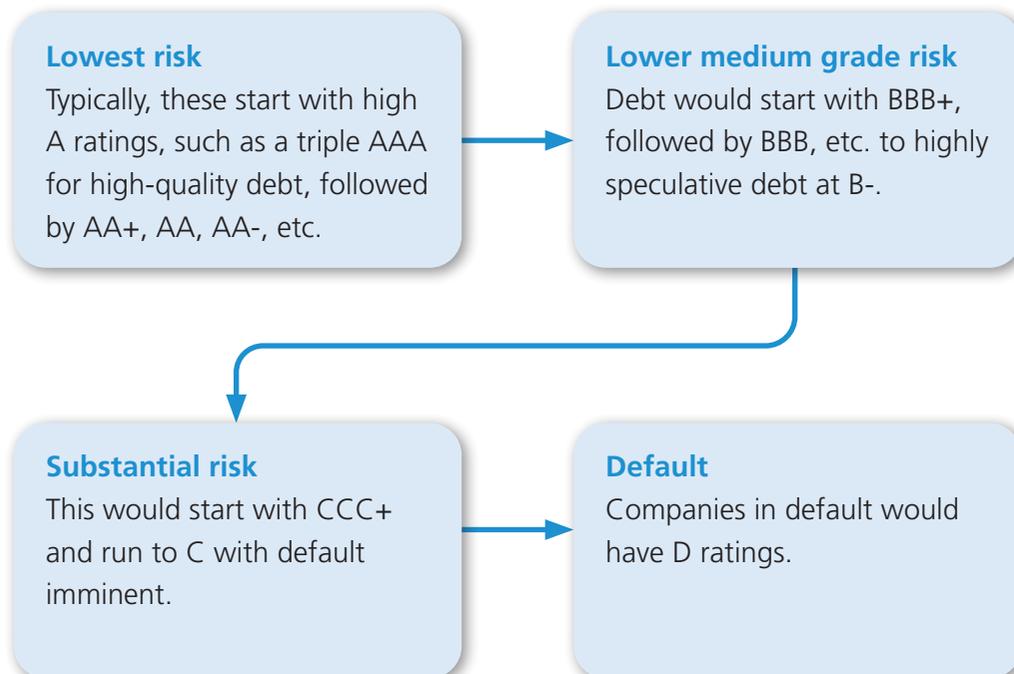
Another characteristic of all debt is risk. This includes the risk that the interest will not be paid, the risk that the principal will not be repaid, the risk that the price of the debt instrument may decline, and the risk that inflation will erode the purchasing power of the interest payments and principal repayment. The riskier a company's ability to pay interest and principal on the debt, the higher the expected return for that debt.

Credit ratings

Measures of the perceived riskiness of a company are determined by credit rating agencies. In Saudi Arabia, **credit ratings** must be assigned by an authorized credit rating agency, which includes agencies incorporated in Saudi Arabia and foreign credit rating agencies. Rating agencies may use different rating systems:

Credit ratings

Classification schemes designed to indicate the risks associated with a particular debt instrument



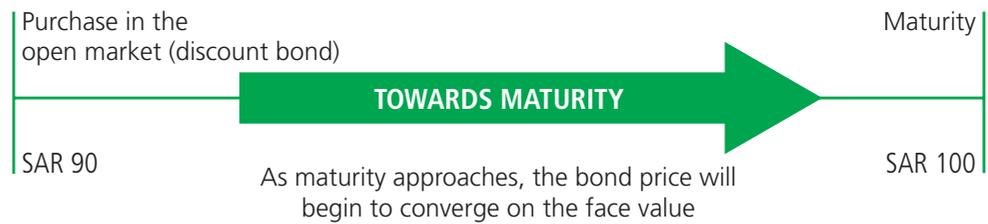
Since the risk of default may be substantial for poor-quality debt, some financial institutions and investors will not purchase debt with a low credit rating.

Fahd knows that if his company issues bonds, and the lenders anticipate inflation, they will demand a higher rate of interest to help protect their purchasing power. In addition, Fahd's company has never issued securities and does not yet have a credit rating. Fahd also knows that if his company sells bonds they could be resold in the open market at a premium or discount.



For his bond investors, one feature of the bond debt that partially compensates for the risk of price fluctuations is that when debt ultimately matures, the principal must be repaid. If the price falls and the debt instrument sells for a discount, the price of the bond must appreciate as it approaches maturity. For on the day it matures, his company must pay the full amount of the principal. Figure 4.4 shows a bond purchased in an open market at a discount (at SAR 90 as an example), and the bond price begins to converge on the face value (SAR 100) as it approaches maturity.

FIGURE 4.4
A discounted bond approaching maturity



4.5b Types of Corporate Bonds

All bonds have some level of risk. Secured bonds are tied to a specific asset that is used as collateral to secure the loan and therefore have less risk for an investor than unsecured bonds. Figure 4.5 outlines types of corporate bonds, their features, and the riskiness for investors.

FIGURE 4.5
Types of Corporate Bonds

- Mortgage bonds**
Bonds secured by a claim on real estate
- Asset-backed securities**
Bonds issued to finance activities that generate income

Types of Bond	Features	Investor Risk
Mortgage Bond	Secured to a specific real estate asset, such as a building.	Less risky
Asset-Backed Securities	Issued to finance activities that generate income. For example, issued to finance the construction of a parking garage secured by the parking fees. If the issuer fails to make the required payments on these secured bonds, the investors can take possession of the specified asset or assets and use them to recoup the money due.	Less risky
Sukuk	Shariah-compliant financial certificates like asset-backed securities. The investor gains partial ownership of an issuer's assets providing a yield based on the annual rate of return for the security until the sukuk maturity date.	Less risky



Convertible bonds

Bonds that may be converted into (exchanged for) stock at the option of the bondholder

Variable interest rate bonds

Long-term debt instruments whose interest payments vary with changes in short-term interest rates or the Consumer Price Index

Zero coupon bonds

Bonds that are initially sold at a discount and on which interest accrues and is paid at maturity

Debentures

Unsecured bonds supported by the general credit of the company

High-yield securities (junk bonds)

Poor-quality debt with high yields and high probability of default

Types of Bond	Features	Investor Risk
Convertible bonds	Allows the holder the option to exchange the bond for a predetermined number of shares of common stock based on a conversion ratio.	Less risky
Variable Interest Rate Bonds	Bond payments vary with changes in the rate of inflation or changes in market interest rates. Also called floating rate notes.	Less risky
Zero Coupon Bonds	Sells for a discount from face value. The discount on the bond is determined by the length of time to maturity and the specified interest to be accrued. At maturity, the investor receives the bond's face value.	Less risky
Debentures	Unsecured bonds are supported by the general credit of the company.	Riskier
High-Yield Securities	Name given to debt of low-quality bonds rated below triple B typically subordinated to the company's other debt. Also called junk bonds.	High Risk



What does a bond with a floating rate protect against?



EXERCISES

Choose the correct answer.

1. Credit ratings for companies are assigned by the Saudi government.
True / False
2. If interest rates increase due to inflation;
 - a. the prices of bonds and preferred stock increase
 - b. the price of bonds increases but the price of preferred stock decreases
 - c. the prices of bonds and preferred stock decline
 - d. the price of bonds decreases but the price of preferred stock increases
3. Convertible bonds allow the holder the option to exchange the bond with a predetermined number of shares of common stocks.
True / False
4. Which of the following bonds is supported by collateral?
 - a. unsecured bonds
 - b. income bonds
 - c. mortgage bonds
 - d. debentures



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4.6 Retiring Debt

Retiring debt

When the borrower repays a debt in full

Retiring debt is when the borrower repays a debt back in full. Fahd knows that any debt issued by his company must ultimately be repaid, and this repayment must occur before the maturity date. When the bond is issued, a method for periodic retirement is usually specified, as very few debt issues are retired in one lump payment at the final maturity date. Instead, part of the issue is systematically retired each year. This systematic retirement may be achieved by issuing the bond in series. In addition, dramatic changes in interest rates may cause a corporation to retire bonds before maturity by repurchasing or by calling the debt.

If interest rates rise and bond prices decline, Fahd's company may retire the debt by repurchasing it. Fahd can repurchase bonds from time to time, and sellers of the bonds may not know that the company is purchasing and retiring the bonds. Fahd's company could also announce the intention to purchase and retire the bonds at a specified price. The bondholders may sell their bonds at the specified price.

EXAMPLE

If the bonds are selling at a discount, Fahd's company has an advantage in retiring debt. If a SAR 1,000 bond is currently selling for SAR 800, Fahd's company reduces its debt by SAR 1,000 with only a SAR 800 outlay in cash. There is a SAR 200 saving from purchasing and retiring the debt at a discount. This gain is classified as income for the firm's stockholders.

Fahd knows that this strategy may appear to be a desirable means to retire debt; however, using money to repurchase debt is an investment decision just like buying plant and equipment. If the firm repurchases the debt, it cannot use the money for other purposes. Fahd needs to determine which is the better use of the money—purchasing other income-earning assets or retiring the debt.

4.6a Calling the Debt

Some bonds have a **call feature**, which permits the issuer to redeem the bond prior to maturity. If interest rates fall after a bond has been issued, it

Call feature

Right of a debtor to retire (call) a bond prior to maturity



may be advantageous for the company to issue a new bond at the lower interest rate. The proceeds can then be used to retire the older bond with the higher interest rate. The company “calls” the older bond and retires it. This refunding hurts the bondholders, who lose the higher-yielding instruments. To protect these creditors, a call feature usually has a call penalty, such as a year’s interest.

EXAMPLE

If the initial issue had a 9% interest rate, the company would have to pay SAR 1,090 to retire SAR 1,000 worth of debt. While such a call penalty does protect bondholders, a company can still refinance if interest rates decline enough to justify paying the call penalty.

4.6b Government Securities

In addition to corporations, governments issue a variety of debt instruments to raise capital from individuals, firms, and other governments with funds to invest. The general features of these securities are essentially the same as corporate debt; they pay interest and must be retired at some specified time in the future. If the securities are callable, the debt is often issued in series so that a specified series periodically matures. Governments issue securities that range from short-term to long-term. These securities emphasize short- to intermediate-term financing, primarily because interest rates on short-term debt are usually less than on long-term debt.

1. **Notes:** government securities that mature within 10 years or less.
2. **Bonds:** securities that mature in more than 10 years.
3. **Treasury bill:** matures in less than one year.

The Saudi Arabian National Debt Management Center (NDMC) has the role to secure the Kingdom’s financing needs at a fair cost and with acceptable levels of risk. The NDMC:

- works to secure the Kingdom’s financing needs at the best possible costs through short-, medium-, and long-term issuance of securities;



- develops an annual borrowing plan for Saudi Arabia to address debt management guidelines, risk management, the calendar for local sukuk issuances, and debt issuance guidelines; and
- structures its borrowing activities to issue securities both domestically and internationally.

Sukuks are issued for the domestic market. International financing is through sukuk and medium-term notes offered in dollars and Euros.

Government securities are among the safest investments and are rated by the same rating agencies use for corporate securities. There are ways in which an investor can lose when investing in these securities. Changes in the current rate of interest cause security prices to fluctuate. An investor could purchase government security and its market price could decline. There is also the risk associated with exchange rates. The NDMC evaluates the exchange risk of its international debt issues. The Saudi Riyal is tied to the U.S. Dollar, so there is minimal exchange risk there. However, the value of the Euro to the Riyal floats with exchange markets. If the Euro increases in strength, it will take more Riyal to pay back a Euro denominated loan. If the Euro decreases in strength, it will take less Riyal to pay back the loans.

Fahd knows that the yield rates on risk-free government securities impact the expected returns on company securities since their risk is normally higher. He watches the rates offered by the Saudi government treasury bills to determine the return his company will need to offer for its securities.

4.6c National Debt

National debt

The total outstanding obligations of a country

National debt, also called government debt, federal debt, or public debt, is the total outstanding obligations of a country. Countries borrow funds to cover deficits between national income from taxes and other sources, and national expenditures. Countries may also borrow to invest in their development, such as building infrastructure.

The total debt is less important than its proportion to the country's gross domestic product (GDP), as determined by the debt-to-GDP ratio. In Saudi Arabia, the NDMC monitors the debt-to-GDP ratio. In 2020, the ratio was at 32.4% and was expected to drop to 25.9% by 2022. Other countries can have very high debt-to-GDP ratios. In 2020, Greece's ratio



was over 225% and the United States' ratio was 119%. High levels of the debt-to-GDP ratio could indicate financial risk, resulting in higher borrowing costs for the country.

EXERCISES

Choose the correct answer.

1. Many bonds have a call feature, which permits the firm to retire the bonds prior to maturity.
True / False
2. If interest rates rise after a bond has been issued, it may be advantageous for the company to call the bond.
True / False
3. Bonds may be retired prior to maturity by (1) repurchases, (2) new issue, (3) a call feature:
 - a. 1 and 2
 - b. 1 and 3
 - c. 2 and 3
 - d. 1, 2, and 3
4. The call feature permits the issuer to redeem a bond prior to maturity.
True / False
5. The total debt is less important than its proportion to the country's gross domestic product (GDP).
True / False



Summary



Fahd must evaluate multiple alternatives to develop a funding strategy for his company. Stock represents ownership (equity) in a corporation. Common stockholders are the residual owners and have the final claim on a corporation's earnings and assets after the company's obligations to creditors and preferred stockholders have been met. Common stockholders have the right to vote their shares and elect the company's board of directors. Once a corporation has generated earnings, the earnings are either distributed or retained. The retention of earnings is an important source of funds for corporations and increases the stockholders' investment in the company. Retained earnings may be used to finance future growth or to retire existing debt.

Many corporations distribute a part of their earnings as cash dividends. Some corporations pay share dividends, which increase the number of shares but do not decrease the company's assets. Stock splits alter the number of outstanding shares and, like share dividends, do not affect the company's assets, liabilities, or earning capacity. Stock splits and share dividends affect the price of the stock in proportion to the number of shares issued. Corporations can elect to repurchase shares as an alternative to distributing cash dividends. If current stockholders want to retain their ownership in the company, they may choose not to sell their stock.

On the other hand, preferred stock is more like bonds than common stock. As preferred stock:

1. pays a fixed dividend that may accumulate if it is not paid;
2. is perpetual, in which case the company never has to retire it; and
3. may be callable.

Other issues including bonds, however, have mandatory repayment of the principal at a specified date. The dividends paid to preferred stockholders are distributions from earnings. Unlike interest payments to bondholders, preferred dividends are not tax-deductible expenses. The lack of tax deductibility reduces the attractiveness of preferred stock to issuers.

Since preferred stock pays a fixed dividend, its valuation is the same as a bond. Higher interest rates cause the prices of preferred stocks to fall, but lower interest rates cause their prices to rise. Analysis of a preferred stock is based upon the company's ability to cover (that is, pay) the dividend.

A corporation may issue a variety of bonds, ranging from secured mortgage bonds to unsecured debentures. The terms of each bond issue include the coupon rate of interest and the maturity date. The risks associated with investing in bonds include defaulting on interest and principal repayments, increased interest rates that decrease the current market value of the bond, and the loss of purchasing power through inflation. Bonds may also be callable, which permits the



issuer to pay off the entire issue prior to maturity. If interest rates rise and cause a bond's price to fall, it would be more advantageous for the issuer to repurchase the bonds than to call and retire them at par.

Governments, as well as corporations, issue bonds. The general features and risks associated with investing in government bonds are the same as with corporate bonds. The rate of return on government securities is dependent upon the perceived risk of the bonds, including the debt-to-GDP ratio.

Problems



1. Describe the features of common stock.

2. Explain the impact of retaining earnings versus paying cash dividends on a corporation's balance sheet.

3. Identify the important dates for the distribution of a cash dividend.

4. Compare the impact of a cash dividend, stock dividend, and stock split on a company's balance sheet.



CHAPTER 4 Stocks and Bonds

5. List the features of preferred stock.

6. Describe the general characteristics of bonds.

7. Explain the relationship between changes in interest rates and the price of preferred stocks and bonds.

8. List the types of corporate bonds.

9. Explain how a country's debt-to-GDP ratio could influence the borrowing costs for the country.



10. SCC wants to issue new bonds. SCC's credit rating has changed from AA to AA+. How will this impact the expected return by investors for this new bond issue?

Exercises



1. Saudi Construction Corporation (SCC) earns SAR 9 per share, sells for SAR 90, and pays a SAR 6 per share dividend. SCC has the following balance sheet:

All Numbers in SAR (million)	
Balance Sheet	Start of Year
Assets	150
Liabilities and Equity	
Debt	60
Owner's Equity	
Share Capital	X
Retained Earnings	40
	150

- a. What is the amount of share capital for SCC?
-
-
- b. What is the payout ratio for SCC?
-
-
- c. The stock is split two for one. What will be the new price of the stock?
-
-
- d. What will be the price of SCC's stock when dividends are paid?
-
-



CHAPTER 4 Stocks and Bonds

- e. Next year, SCC plans to use all of its annual profits to pay cash dividends. How will this change retained earnings?

2. Saudi Construction Corporation (SCC) has issued a SAR 1,000 fixed rate bond paying 3.5% when the inflation rate is 2.5%. If inflation rises to 3.5%, what is the discount an investor would be willing to pay for the fixed rate bond to maintain a 1% post-inflation return?

3. Why might SCC consider issuing bonds instead of preferred stock?

ASSESSMENT QUESTIONS

Choose the correct answer.

1. The owners of a corporation elect the board of directors.
True / False
2. Which of the following is equity: 1. investments, 2. additional paid-in capital, 3. retained earnings?
 - a. 1 and 2
 - b. 1 and 3
 - c. 2 and 3
 - d. 1, 2, and 3
3. A cash dividend reduces the firm's ability to increase assets.
True / False



4. Financial transaction costs are costs involved in buying or selling in financial transactions.
True / False
5. Stock repurchases:
 - a. increase per share earnings.
 - b. decrease per share earnings.
 - c. increase liabilities.
 - d. decrease liabilities.
6. Preferred stock shares are often purchased by investment firms rather than individuals.
True / False
7. The document stating the terms of a bond is the indenture.
True / False
8. Treasury bills are short-term debt issued for less than one year.
True / False
9. Government securities: 1. pay interest, 2. must be retired at some specified time in the future, 3. may be callable.
 - a. 1 and 2
 - b. 1 and 3
 - c. 2 and 3
 - d. 1, 2, and 3



Key Terms



Term	Definition
Acquisition	The purchase of the corporation by another company
Articles of association or articles of incorporation	Bylaws, or procedures, for the operation of a joint stock company
Asset-backed securities	Bonds issued to finance activities that generate income
Board of directors	Body elected by and responsible to stockholders to set policy and hire management to run a corporation
Call feature	Right of a debtor to retire (call) a bond prior to maturity
Cash dividends	Distribution from earnings paid in the form of cash to shareholders
Common stock	Security representing ownership in a corporation; common stock owners have a final claim on the firm's assets and earnings after the firm has met its obligations to creditors and preferred stockholders
Convertible bonds	Bonds that may be converted into (exchanged for) stock at the option of the bondholder
Coupon	The interest rate received by the bondholder
Credit ratings	Classification schemes designed to indicate the risks associated with a particular debt instrument
Current yield	The rate of return on a bond investment
Date of record	Day on which an investor must own stock in order to receive the dividend payment
Debentures	Unsecured bonds supported by the general credit of the company
Default	Failure to meet the terms specified in the indenture of a debt issue
Dilution	Reduction in earnings per share as the result of issuing additional shares
Ex dividend	Stock purchases exclusive of any dividend payment
Financial transaction costs	Costs involved in buying or selling in financial transactions
High-yield securities (junk bonds)	Poor-quality debt with high yields and high probability of default
Indenture	Document specifying the terms of a debt issue
Maturity date	The day on which the debt must be repaid
Mortgage bonds	Bonds secured by a claim on real estate
National debt	The total outstanding obligations of a country
Pay date or distribution date	Day on which a dividend is paid to stockholders
Payout ratio	Ratio of dividends to earnings per share
Preemptive rights	Right of current stockholders to maintain their proportionate ownership in the firm



Key Terms



Term	Definition
Preferred stock	Class of stock (equity) that has a claim prior to common stock on the firm's earnings and assets
Principal	The amount owed
Prospectus	Document that provides information about an investment such as a stock or mutual fund
Retained earnings	Accumulated profit after dividends
Retiring debt	When a borrower pays a debt back in full
Residual claim	A claim to a share of earnings after a debt has been settled
Share dividends	Dividends paid to stockholders in a form of stocks, often in place of a dividend paid in cash
Stock split	Recapitalization achieved by changing the number of shares outstanding
Tradable rights	Right holders to subscribe to new shares listed during a capital increase, such as the sale of new stock shares.
Treasury shares	Shares held by the company for use as employee shares
Variable interest rate bonds	Long-term debt instruments whose interest payments vary with changes in short-term interest rates or the Consumer Price Index
Yield	The return on a stock expressed as dividend per share divided by the current share price
Zero coupon bonds	Bonds that are initially sold at a discount and on which interest accrues and is paid at maturity

Key Formulas



Price of stock after the split = Stock's price before the split x Reciprocal of the terms of the split.

$$\text{Payout ratio} = \frac{\text{Dividend per share}}{\text{Earnings per share}}$$

$$\text{New bond price after inflation SAR} = \frac{\text{Annual payment SAR}}{\text{Required investment return \%}}$$



MINI CASE**MINI CASE 4.1: Company Stock Issues**

A successful medium-sized roast chicken restaurant is planning on expanding to multiple cities in Saudi Arabia. This will require new capital to purchase assets such as buildings, equipment, and restaurant inventory. The owners of the business believe that they will become profitable four years after their expansion. The business has existed as a joint stock company for five years and has a board of directors. Current investors are the only people holding stock in the company, but the business is now planning to issue common stock to the public to fund the expansion.

Task

1. Describe the implications for the company of issuing common stock to the public.

2. Make a recommendation for or against paying dividends to common stockholders over the next four years.

3. When the company is profitable after expansion, evaluate the advantages and disadvantages of issuing cash dividends versus share dividends.



MINI CASE**MINI CASE 4.2: Preferred vs Common Stock**

A friend of yours, Ziad, is looking to obtain additional personal income from investing in stock. He has evaluated a number of companies and is considering two options. The first is to purchase common stock from a business that has paid regular dividends over the last five years. He is also considering purchasing preferred stock in a different company. He has come to you for advice on these two options.

Task

1. Provide Ziad with the advantages and disadvantages for an investor in purchasing common stock.

2. Provide Ziad with the advantages and disadvantages for an investor in purchasing preferred stock.

3. Justify a recommendation you would give to Ziad.



MINI CASE**MINI CASE 4.3: Bonds**

A large Saudi retailer management team is debating if they should reduce short-term and medium-term bank debt with the issuance of bonds. The retailer is a joint stock company. It has multiple locations and owns its buildings. The retailer's credit rating is BBB+. Some members of management believe that inflation will increase in the future.

Task

1. Outline for management the advantages and disadvantages of issuing bonds.

2. Describe the different types of bonds the company could issue. What does a rating of BBB+ mean?

3. Outline the advantages of retiring or calling the issued bonds.



Case Study: Sources of Funding

The chief executive officer (CEO) of a telecommunication company, Fatimah, wants to be a strong participant in meeting the Saudi Vision 2030 goal of providing high-speed 5G broadband coverage in Saudi Arabia's rural zones. Fatimah's joint stock company will need to set up new cellular broadcast towers and mobile hotspots in remote areas. This will require new sources of funding for the company. Fatimah is working with her chief financial officer, Saad, on developing a funding plan to present to the company's board of directors.

The board wants to ensure that current stockholders have the opportunity to maintain their percentages of voting shares. Saudi banks are potential investors, but Fatimah is concerned that current shareholders could lose control of the company if banks become major shareholders. Fatimah's company has been profitable and has paid dividends on a regular semi-annual cycle. This has resulted in a high stock price compared to other telecommunication companies. The company has a strong credit rating from both Saudi and international rating agencies, but this expansion into rural areas of Saudi Arabia does increase risk for the company.

Saad has identified several alternatives for funding this expansion. These include:

1. Suspending dividend payments to increase the retained earnings in the company to fund expansion.
2. Issuing additional shares of common stock.
3. Issuing shares of preferred stock.
4. Issuing bonds.
5. Issuing sukuk where investors become partial owners of the new equipment to be deployed in the rural expansion.
6. Developing callback and/or convertible strategies for security issues.

Fatimah says to Saad, "Thank you for the alternative funding ideas. Obviously, we will need some combination of these various sources. Given the directives from the board, please develop a list of the advantages and disadvantages of each of these strategies. We can then identify our strategy and work on a communication plan for the board and our current shareholders."

Saad replies, "I will do that right now. We need to keep in mind that this expansion will increase the overall risk exposure for our firm. This may give us an ability to negotiate with the banks for their investing options."



Study Questions

1. Combine any two of the six given sources, and explain the advantages and disadvantages of your combination.

2. What is your funding recommendation for Fatimah's company regarding your chosen combination?

3. How could the risk of this new expansion impact Fatimah's funding plans?

Online Activity

Go to the Saudi exchange (Tadawul) website. Search for "telecommunication companies". For one telecommunication company, identify dividend policies, if any. View the balance sheet statement to identify the amount of the company's shareholder's equity and if this has increased or decreased over time.



CHAPTER 5

Cost of Capital



Learning Outcomes

Once you have completed this chapter, you should be able to:

1. Identify the components of a company's capital structure.
2. Describe factors that affect the cost of debt, the cost of preferred stock, and the cost of common stock.
3. Calculate the weighted-average cost of capital.
4. Determine the optimal capital structure of a company.
5. Describe the characteristics of all debt instruments.

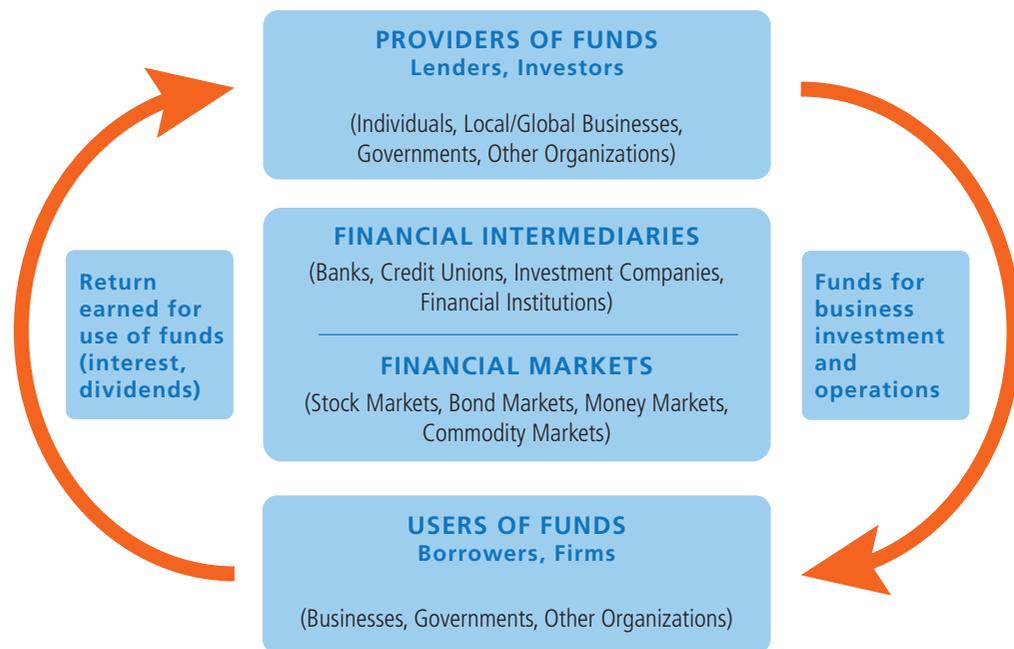
The process for making investment decisions by the financial manager of a company is similar to you selecting a personal stock investment. They either compare the present value of future cash inflows with the current cost of the investment or they compare the investment's expected return with the required return.

Investing in equipment, a building, or other capital item requires an estimate of the cost of funds to finance the purchase of the asset. That amount is referred to as the cost of capital and depends on the cost of the various sources of funds. A firm may borrow from a variety of sources and may issue preferred and common stock to raise funds. As shown in Figure 5.1, the financial market environment brings together providers and users of capital funds for the purpose of obtaining financing for company business activities.

Lenders and stockholders expect to earn a return for the funds they provide. Creditors require interest payments, and stockholders want dividends and price appreciation. All sources of funds have a cost, so the question becomes: What is the best combination of debt and equity financing



FIGURE 5.1
The Financial Market
Environment



that *minimizes* the firm's cost of capital? That combination is called the firm's *optimal capital structure*.

This chapter is concerned with the determination of the cost of capital and the firm's optimal capital structure. Companies use cost of capital to select various competing uses for the firm's capital. This chapter begins with the costs of the various components in the firm's capital structure. This is followed by a discussion of the weighted cost of capital and the determination of the optimal capital structure. Once this capital structure has been determined, it should be maintained, as it generates the lowest cost of funds while maximizing the stock value of the company.



What process does the financial manager use for making investment decisions?



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5.1 Cost of Capital Components

When a company uses the money of others for its business activities, stockholders and creditors are paid for the use of these funds. **Cost of capital**, also called the *required rate of return*, is the rate required by lenders and investors who are letting the company use their money. The three main sources of money used by a company are:

1. debt;
2. preferred stock (a type of equity); and
3. common stock (another type of equity).

Cost of capital

Also called *required rate of return*, this is the rate required by lenders and investors who are letting the company use their money.

Cost of debt

The rate of return required by creditors

5.1a Cost of Debt

Borrowing is a common practice among organizations. Bonds, loans, and other types of debt are major funding sources. **Cost of debt** is the rate of return required by creditors. This percentage is the rate that lenders expect to receive when allowing someone to use their money. Common benefits associated with using debt include:

- The company is using the money of others, allowing the business to keep its funds available for other uses.
- The risk for creditors is lower since the borrower is legally obliged to repay the debt so they are more likely to get their money back compared to other types of financial backing.
- The cost of capital is lower than other funding sources because of the lower risk for lenders (creditors).
- Interest payments on debt are tax deductible as a business expense.

The after-tax cost of debt (k_d) depends on the interest rate (i), and the tax rate (t). This can be expressed as:

$$k_d = i(1 - t)$$

EXAMPLE

If the interest rate is 7.6% and the tax rate is 35%, the after-tax cost of debt is:

$$0.076 (1 - 0.35) = 0.0494 = 4.94\%$$





What are some of the advantages of a company using debt to fund their activities?



YOU TRY IT

A 10% cost of debt with a 20% tax rate would result in an after-tax cost of capital of _____ %.

In addition to the tax rate, the cost of debt for a company is also influenced by these factors:

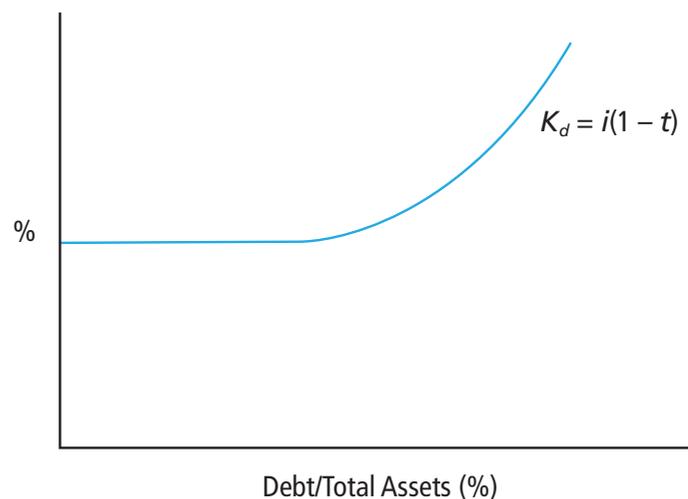
- **The current cost of borrowing.** A company may have outstanding debt that was issued in the past. Due to changing economic conditions, the interest rate on that debt is probably higher or lower than current rates. In determining the current cost of the debt, the current interest rate is used.
- **The length of the borrowing term.** Short-term debt will usually have a lower interest rate than long-term debt. If a company issues long-term debt, the rate is usually higher than short-term financing due to the uncertainty over time in the future. However, the use of



long-term debt avoids the risk associated with refinancing short-term debt.

- **The riskiness of the firm.** The risk is related to the nature of the business (business risk) and to the use of debt (financial risk). The more the firm uses debt financing, the greater the potential will be for it to fail to meet its debt obligations. This increase in the risk of default means that as the firm's use of financial leverage increases, the interest rate on borrowed money will increase. This is illustrated by the line k_d in Figure 5.2. Initially, the cost of debt may be stable, as the firm uses more debt without increasing risk for the creditors. However, as the use of debt increases, the cost of debt starts to rise because creditors demand more interest due to an increased risk of loss.

FIGURE 5.2
Cost of Debt



5.1b Cost of Preferred Stock

The required rate of return for stockholders is not as easily determined as it is for creditors. The cost of debt is usually set by the rate charged for borrowing funds. In contrast, **cost of equity** is the required return of the owners in a company. This amount is the percentage company owners expect to earn based on the money they have invested in the company. Two types of equity are used by corporations:

1. preferred stock; and
2. common stock.

Cost of equity

The required return company owners expect to earn based on the money they have invested in the company



The value of preferred stock depends on the dividend and the yield required to prompt investors to buy the shares. The valuation of preferred stock can be expressed as:

$$P_p = \frac{D_p}{k_p}$$

P_p is the price of the preferred stock, D_p is the dividend paid by the preferred stock, and k_p is the return required by investors. This equation may be rearranged to isolate the yield or the firm's cost of preferred stock with these two steps:

1. $P_p \times k_p = D_p$
2. $k_p = \frac{D_p}{P_p}$

Cost of preferred stock

The relationship between the preferred stock dividend and the market price

As a result, the **cost of preferred stock** is the relationship between the dividend and the price that investors are willing to pay for the stock.

EXAMPLE

If the preferred stock pays a SAR 1.00 dividend and sells for SAR 12, the cost of the preferred stock to the firm is:

$$k_p = \frac{\text{SAR } 1.00}{\text{SAR } 12.00} = 0.0833 = 8.33\%$$

The 8.33% is the cost of capital for preferred stock in this situation.

For a company, the cost of capital for preferred stock is higher than the cost of debt. This difference is the result of interest on debt being tax deductible; the *interest is tax deductible while the preferred dividend payments are not*.



YOU TRY IT

What would be the cost of preferred stock for a situation with a market price of SAR 78 and a dividend of SAR 6?



Cost of common stock

The return required by investors to buy the firm's common stock, viewed as an opportunity cost

5.1c Cost of Common Stock

The **cost of common stock** is the return required by investors to buy the firm's common stock. This cost of common equity is an opportunity cost: it is the return that investors could earn on comparable, alternative uses for their money. This cost applies both to existing shares and to new shares issued by the firm.

Since the cost of common stock is an *opportunity cost*, there is no identifiable expense such as interest that the financial manager may use to determine the cost of these funds. However, the financial manager knows that the *cost of common stock exceeds the cost of debt*.

No tax advantage is associated with equity because dividends are paid in after-tax SAR (that is, dividends are not tax deductible), while interest is paid in before-tax SAR (that is, interest is a tax-deductible expense). In addition, common stock represents ownership and, therefore, is a riskier security than a debt obligation. Although the firm is legally obligated to pay interest and meet the terms of the debt agreement, there is no legal obligation for the firm to pay dividends.

To determine the opportunity cost for the cost of capital for common stock, three methods are often used:

1. With equity riskier than debt for the investor, an estimate for the cost of equity could start with the interest rate paid to the debtholders and add a risk premium. This method can be noted as follows:

$$k_e = i + \text{Risk premium}$$

In this notation, k_e is the cost of equity and i is the interest rate for new debt. The risk premium is then added to the interest rate. Although the financial manager knows the interest rate, the amount of the risk premium is unsure. Selecting the rate for the risk premium could be an informed estimate based on various economic, company, and market factors.

2. A second approach to determine the cost of equity is the capital asset pricing model (CAPM). As discussed in Chapter 3, CAPM is used to determine the return on equity as follows:

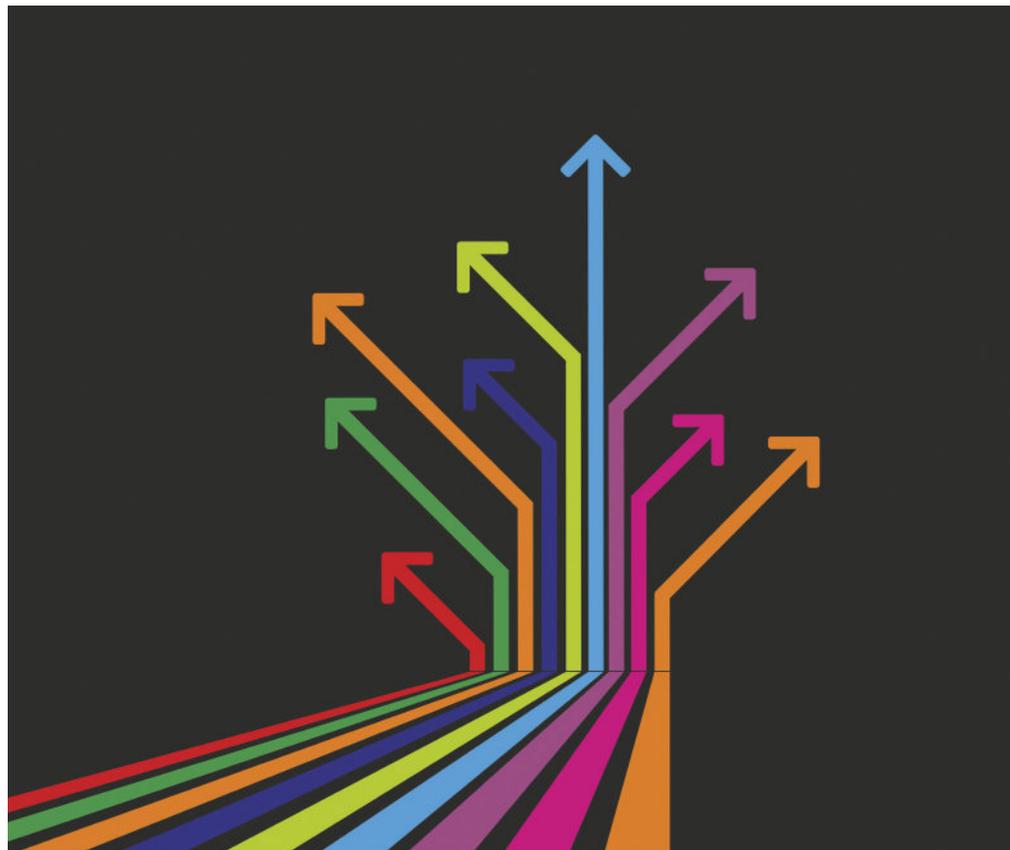


$$k_e = r_f + (r_m - r_f) \beta$$

With this method, the cost of equity depends on the risk-free rate of interest (r_f) plus a risk premium. The risk premium depends on:

- the difference between the return on the market as a whole (r_m) and the risk-free rate (r_f); and
- the firm's beta coefficient, which measures the systematic risk associated with the firm.

This required return is the return necessary to convince investors to buy the stock, so it may be viewed as the firm's cost of equity. CAPM is usually viewed as more valid than using the interest rate and adding a risk premium since it more precisely specifies the risk premium associated with investing in the stock.



Why is the cost of common stock considered to be an opportunity cost?

3. A third approach defines the cost of equity based on an investor's expected return. This is the expected dividend yield plus expected growth. D_0 represents the current dividend, while g is the expected



growth rate, which is estimated by managers based on recent trends and future expectations. For example, a dividend of SAR 5 with a 10% growth rate would result in an expected dividend of SAR 5.5. With this *dividend growth-rate model*, the return on common stock (r) can be expressed as:

$$r = \text{Dividend yield} + \text{Growth rate}$$

$$r = \frac{D_0(1 + g)}{P} + g$$

As with the CAPM approach, the financial manager has to make this model operational. Although the current dividend and the price of the stock are known, estimates must be made for the future capital gains.

Each of these three approaches have some basic similarities. The interest rate plus risk premium method and the CAPM method are comparable. However, the CAPM specifies more clearly the risk premium in terms of the return on a risk-free security, the return on the market, and the systematic risk associated with the individual firm.

The CAPM method and the expected return method are identical if it is assumed that financial markets are in equilibrium. If that assumption holds, the required return found using the CAPM would also be the investors' expected return determined by using the expected dividend yield plus the expected capital gain. For example, if the expected return exceeded the required return, investors would drive up the price of the stock, causing the expected return to fall. If the expected return were less than the required return, the opposite would occur. Investors would seek to sell the shares, which would drive down their price and increase the yield. These changes will cease when the market is in equilibrium and the required return is equal to the expected return.

The same argument may be expressed in terms of a stock's valuation and its price. If the price of the stock is less than the valuation, investors bid up the price. If the price exceeds the valuation, investors seek to sell, which drives down the price.

The incentive for stock prices to cease changing occurs when the price and the valuation are equal. Thus, if the equity markets are in equilibrium, a stock's price must equal its valuation, and the required return equals the expected return.



If the equity markets are in equilibrium, the stock's price may be substituted for its value in the dividend-growth model ($V = P$):

$$P = \frac{D_0(1 + g)}{k_e - g}$$

By rearranging terms, the required return is:

$$k_e - g = \frac{D_0(1 + g)}{P}$$

$$k_e = \frac{D_0(1 + g)}{P} + g$$

In this form, the required return is the sum of the dividend yield plus the capital gain. This is identical to the investor's return and may be used as the cost of common equity. This equation expresses the cost of equity under the assumption that the firm does not have to issue new shares. The cost of equity is the cost of retained earnings.

If a firm were to issue additional shares, it would receive an amount less than the market price of the stock because of **flotation costs**, which are the expenses associated with selling new stock. To adjust for this expense, the flotation costs (F) must be subtracted from the price of the stock to obtain the net proceeds to the firm. This cost of new shares (k_{ne}) is expressed as:

$$k_{ne} = \frac{D_0(1 + g)}{P - F} + g$$

The greater the flotation costs, the smaller the amount obtained from the sale of each new share will be, resulting in a higher cost of the equity. Risk partially depends both on the nature of the business (business risk) and the financial decisions of management (financial risk). The relationship between financial risk and the cost of equity is illustrated in Figure 5.3, which relates the cost of equity (k_e) to the firm's use of financial leverage (debt). The same relationship between the cost of debt and the firm's use of financial leverage was shown in Figure 5.2. Both the cost of equity and the cost of debt may be initially stable, but eventually starts to rise as the firm uses more financial leverage and becomes riskier.

Flotation costs

Expenses associated with selling new stock



EXAMPLE

A firm's earnings are growing at 7%. The common stock is currently paying SAR 0.935 a share, and this dividend will grow annually at 7% so that the year's dividends will be SAR 1 = SAR 0.935 (1 + 0.07). If the common stock is selling for SAR 25, the firm's cost of common stock is:

$$k_e = \frac{\text{SAR } 0.935 (1 + 0.07)}{\text{SAR } 25} + 0.07$$

$$k_e = \frac{\text{SAR } 1}{\text{SAR } 25} + 0.07$$

$$= 0.04 + 0.07 = 0.11 = 11\%$$

This tells management that investors currently require an 11% return on the stock investment. That return consists of a 4% dividend yield and the 7% growth. Failure on the part of management to achieve this return for the common stockholders will result in a decline in the price of the common stock.

If the firm has exhausted its retained earnings and must issue new stock, the cost of common stock must rise to cover the flotation costs. If these costs are SAR 1 a share, the firm nets SAR 24 per share, and the cost of equity is:

$$k_{ne} = \frac{\text{SAR } 0.935 (1 + 0.07)}{\text{SAR } 25 - 1} + 0.07$$

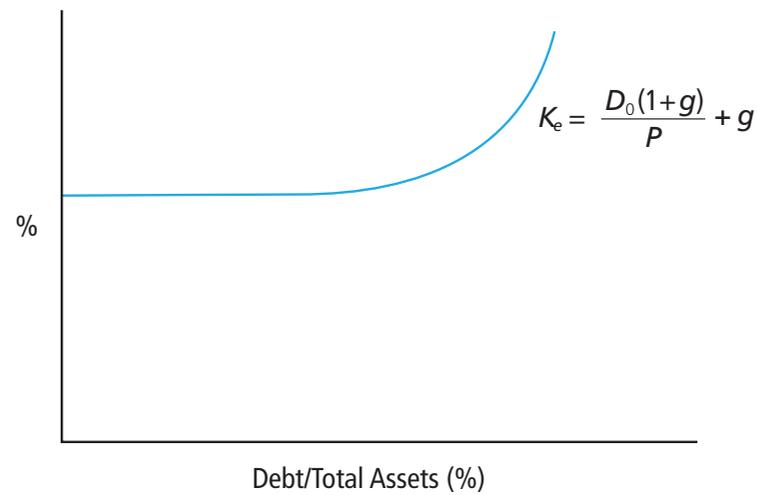
$$k_{ne} = \frac{1}{24} + 0.07$$

$$= 0.0417 + 0.07 = 11.17\%$$

The cost of equity is now higher. The firm must earn 11.17% to cover the flotation costs and investors' required return. Flotation costs are a cash outflow that occurs when new securities are issued, which raises the cost of a new issue of securities.



FIGURE 5.3
Cost of Equity



YOU TRY IT

Calculate the risk premium using CAPM with these amounts: beta 1.15, risk-free rate 4%, average market rate 8%.

EXERCISES

Choose the correct answer.

1. Dividends paid on preferred stock are tax deductible.
True / False
2. The return required by investors viewed as an opportunity cost refers to the:
 - a. cost of common stock.
 - b. cost of debt.
 - c. cost of preferred stock.
 - d. average weighted cost.



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5.2 A Weighted-Average Cost of Capital

Nearly every company uses a combination of debt and equity to finance the organization's assets. This mixture of funding sources is the **capital structure**, which is the amount of debt and equity used by a company to finance its business activities.

The capital structure of the company is used to calculate the **weighted-average cost of capital**. This is a weighted average of the costs of debt, preferred stock, and common stock. The weights depend on the proportion of the firm's assets financed by each source. Management should determine the optimal combination of the various sources to minimize the weighted-average cost of funds and maximize the value of the firm. Determining the firm's optimal capital structure requires understanding of how the weighted-average cost of funds is derived.

The weighted-average cost of capital is calculated by multiplying the proportions of debt and equity times the capital cost for each.

Capital structure

The amount of debt and equity used by a company to finance its business activities

Weighted-average cost of capital

The weighted average of the costs of debt, preferred stock, and common stock

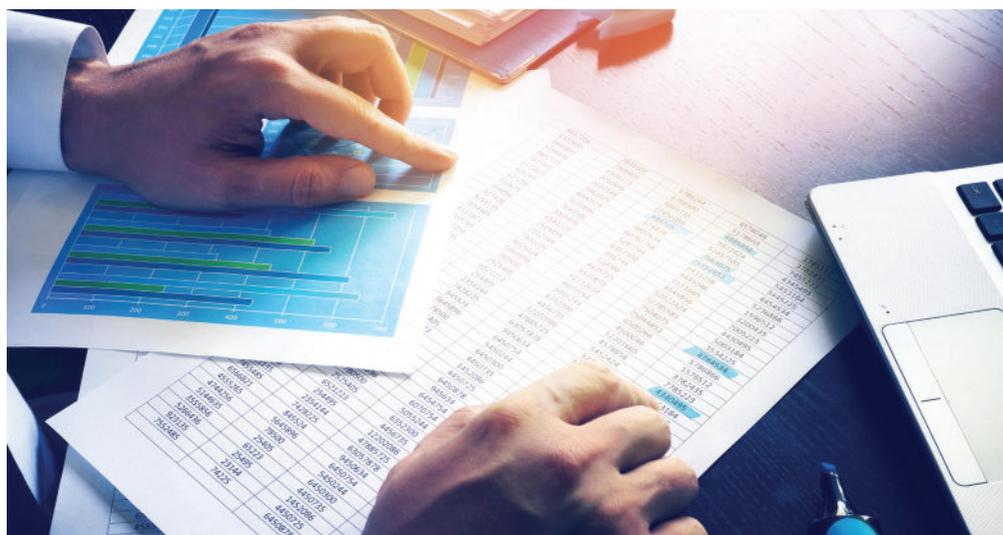
EXAMPLE

If a company with no preferred stock has 30% debt at a cost of 8% and 70% equity at a cost of 10%, the weighted-average cost of capital would be:

$$\begin{aligned}
 &= (\text{Percent Debt} \times \text{Cost of Debt}) + (\text{Percent Equity} \times \text{Cost of Equity}) \\
 &= (0.30 \times 0.08) + (0.70 \times 0.10) \\
 &= 0.024 + 0.07 = 0.094 = 9.4\%
 \end{aligned}$$

You might think that the weighted-average cost of capital declines as a company takes on more debt. This is true, but only up to a certain portion of debt. As more debt is used, risk increases to create a higher cost of both debt and equity, resulting in a higher weighted-average cost of capital. Every organization attempts to minimize its cost of capital. This will occur when an appropriate combination of debt and equity is used. The exact combination will vary for every company and changes as risk (from increased use of debt) and interest rates change. Managers continually analyze various economic and company factors to arrive at the optimal capital structure.





How might a financial manager try to minimize the cost of capital?

Management has calculated that the current cost of each type of financing is:

Cost of debt	5.20%
Cost of preferred stock	8.96%
Cost of common stock (retained earnings)	11.00%

The proportion (the weights) of the firm's assets financed by each type of financing is:

Debt	40%
Preferred stock	10%
Common stock (retained earnings)	50%

Note that the total of the proportions should add up to 100%. To find the cost of capital, multiply the proportion of each component of the optimal capital structure by its respective costs and add the results. For this firm that yields:

	Cost × Weight = Weighted Cost
Debt	5.20% × 0.40 = 2.080%
Preferred Stock	8.96% × 0.10 = 0.896%
Common Stock	11.00% × 0.50 = 5.500%
	Cost of capital = 8.476%



The process of determining the cost of funds is:

$$k = w_1k_d + w_2k_p + w_3k_e$$

The equation states that the cost of capital (k) is a weighted average in which the costs of debt (k_d), preferred stock (k_p), and equity (k_e) are weighted by the extent to which they are used (that is, w_1 , w_2 , and w_3 , respectively). These weights, along with the cost of each source, then determine the overall cost of funds. In the above illustration, the cost of capital is:

$$k = (0.4)5.20 + (0.1)8.96 + (0.5)11.00 = 0.08476 = 8.476\%$$

For this firm, the weighted-average cost of capital is 8.476%. The firm must earn at least 8.476% on its business activities to justify using these sources of financing.



YOU TRY IT

What would be the weighted-average cost of capital in this situation?

debt: 30%	common: 60%	preferred: 10%
cost of debt: 7%	cost of common stock: 11%	cost of preferred: 9.5%

EXERCISES

Choose the correct answer.

- A firm entirely financed by common stock with no debt has a weighted-average cost of capital equal to the cost of equity.
True / False
- In the weighted-average formula, the least expensive financing source will be the:
 - cost of debt.
 - cost of preferred stock.
 - cost of common stock.
 - risk premium.



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5.3 The Optimal Capital Structure

One of the most important managerial decisions is how much debt and how much equity to use to finance company operations. Some debt (with a lower cost of capital than equity) is beneficial to a company, but too much debt can result in difficulties. While the cost of debt is lower than the cost of equity, as an organization takes on more debt, its risk increases. More debt increases the likelihood of a company missing debt payments and going bankrupt.

What is the best combination of debt and equity financing? The best combination of financing sources is known as the **optimal capital structure**. An appropriate balance between the amount of debt and equity results in a low cost of capital and a maximum market value.

The optimal capital structure takes advantage of financial leverage without increasing financial risks too much. In effect, it minimizes the overall cost of finance to the firm. To determine the optimal capital structure, first establish the cost of each financing source and then determine which combination of these sources minimizes the overall cost. This minimum weighted-average cost of capital is used to evaluate investment opportunities. The selection of investments requires knowledge of the firm's cost of capital because an investment must earn a return sufficient to cover the cost of the funds used to acquire the asset. By varying the mix of sources of capital and recalculating the weighted averages, the optimal capital structure is determined.

Optimal capital structure

The combination of debt and equity that results in the lowest cost of capital and a maximum market value



How would a financial manager determine the optimal capital structure?

The previous section illustrated the determination of the firm's weighted cost of capital. In that illustration, the cost of debt was less than



the cost of equity because debt is less risky to the investor and the borrower may deduct interest payments to determine taxable income.

If debt costs less than equity, couldn't management reduce the firm's cost of capital by substituting less expensive debt for more costly equity? As is often the answer: "It depends!" As management *initially* substitutes cheaper debt, the cost of capital declines. However, as debt finances a larger proportion of the firm's assets, becoming more financially leveraged, the costs of both debt and equity rise. Management needs to determine the ideal combination of debt and equity financing that minimizes the firm's cost of capital.

This trade-off between debt and equity must be understood by corporate executives. A company should maintain a wise debt level based on its cash flow, interest payments, and ratio of debt to capital. Debt financing can lower the overall cost of capital, which will increase the return on shareowner equity.

The process for determining the optimal capital structure is illustrated in Figure 5.4.

FIGURE 5.4
Determination of the
Optimal Capital Structure

Proportion of Debt Financing	Cost of Debt	Cost of Equity	Weighted Cost
0%	4%	10.0%	10.00%
10	4	10.0	09.40
20	4	10.0	08.80
30	4	10.0	08.20
40	4	10.5	07.90
50	5	11.5	08.25
60	6	13.0	08.80
70	8	15.0	10.10
80	10	18.0	11.60
90	15	22.0	15.7

- The first column in the table presents the proportion of debt financing.
- The second and third columns give the after-tax cost of debt and the cost of equity, respectively. To simplify this example, the firm has no preferred stock. The cost of debt is less than the cost of equity, and both are initially constant over a range of debt ratios. The cost of both debt and equity starts to rise as the firm becomes more leveraged.



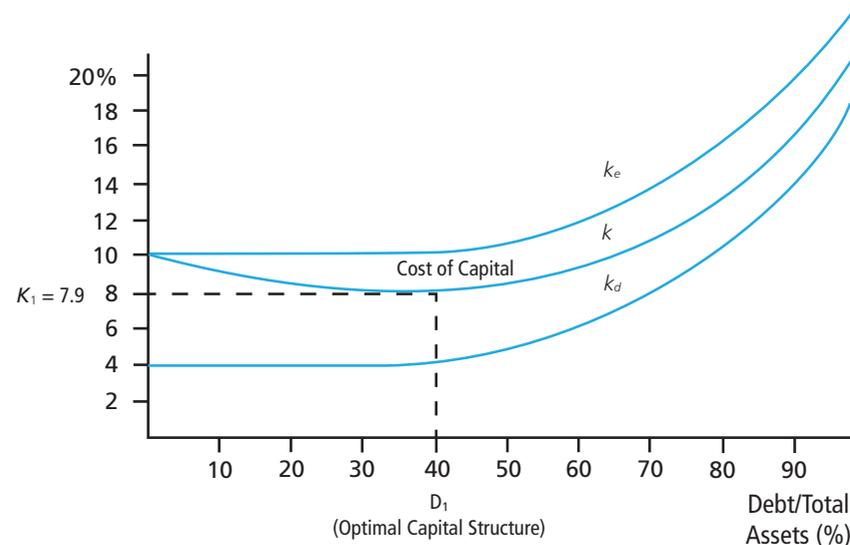
- The fourth column presents the weighted-average cost of capital, based on the cost of debt and the cost of equity, weighted by the proportion of assets financed by each.

If the firm is entirely financed by equity, the weighted-average cost of capital is the cost of equity. When the firm begins to substitute the less expensive debt financing for equity financing, the weighted-average cost of capital is lower. As the use of debt increases, the weighted-average cost of capital initially declines. However, this decline does not continue indefinitely as the firm substitutes additional cheaper debt. Eventually, both the cost of debt and the cost of equity begin to increase because creditors and investors believe that more financial leverage increases the riskiness of the firm.

At first, small increases in the cost of debt and equity will not be great enough to deter the decline in the weighted cost of capital. However, as the costs continue to increase, the average cost of capital reaches a minimum and then starts to increase. In Figure 5.4, this optimal capital structure occurs at 40% debt (40% debt financing to 60% equity financing). As additional debt is used, the costs of both debt and equity rise sufficiently so that the cost of capital increases.

This determination of the optimal capital structure is also illustrated by Figure 5.5, which plots the cost of debt (k_d), the cost of equity (k_e), and the weighted-average cost of capital (k) from Figure 5.4. As the graph shows, when the use of debt increases, the weighted-average cost of capital initially declines, reaches a minimum at debt of 40% ($D_1 = 40\%$ and $k_1 = 7.9\%$), and then starts to increase.

FIGURE 5.5
Cost of Capital



The optimal capital structure is reached at the minimum point on the weighted-average cost of capital line. The financial manager should plan to use this combination of financing because it involves the lowest cost of funds.

This minimum cost of capital should be used to assess potential investments. As the firm expands with additional equipment and buildings, funding sources must also expand. These additional sources should maintain the firm's optimal capital structure. However, if additional investments increase the riskiness of the firm, then the cost of the additional funds will increase. In that case, the cost of the marginal (additional) funds will exceed the firm's weighted-average cost of capital.

For many companies, the optimal capital structure is a range of debt financing. In the example in Figures 5.4 and 5.5, the weighted-average cost of capital has little variation for debt financing in the 30% to 50% range. This indicates that the positive impact of debt financing in lowering the firm's cost of capital is achieved when 30% of the firm's assets are debt financed. Additional use of debt has little impact on the cost of capital until more than 50% of the assets are debt financed. As a result, the optimal capital structure may be viewed as a range of debt-to-equity financing and not just a specific combination of debt to equity.

EXERCISES

Choose the correct answer.

1. The optimal capital structure will often result in minimizing the value of the firm.
True / False
2. The optimal capital structure for most companies is in the range of _____ % debt financing.
 - a. 0
 - b. 30–50
 - c. 70–80
 - d. 100



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5.4 Other Capital Structure Issues

The determination of a company's cost of funds and optimal capital structure influences nearly every aspect of business and financial decisions. In addition to the previous discussion, these factors should be considered:

1. To determine the cost of capital, the financial manager must know all the component costs (debt, preferred stock, and common stock). The estimate for the cost of equity requires information not easily observable, such as the future dividend growth rate, the beta coefficient of the company, as well as other items. Inaccurate estimates will produce an inappropriate measure of the cost of equity.
2. Financial managers need to know how the market will value the shares after the financing decision is made. While this is very difficult to know, a financial manager makes the decision in an expectation of the market treating the shares in a particular way. For example, an extensive use of debt financing can result in unexpected lower stock prices.
3. An optimal capital structure is expected to maximize the value of a firm's stock. That may be valid for publicly held companies, but most businesses are not publicly traded. Even though most privately held firms are small, the determining cost of capital is still important for planning new investments in equipment and other capital projects. The financial managers of small, private firms will usually not know the current value of their firm's equity.

EXERCISES

Choose the correct answer.

1. Knowing how changes in financing will affect stock prices is usually very uncertain.
True / False
2. A maximized stock value usually occurs when:

<ol style="list-style-type: none"> a. increased debt financing is used. b. decreased debt financing is used. 	<ol style="list-style-type: none"> c. the optimal capital structure is achieved. d. tax rates are increasing.
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Summary



All assets are financed using two main sources of capital: debt and equity. If the firm uses debt financing or preferred stock financing, it is financially leveraged. If the firm uses financial leverage, it increases risk, which may increase the cost of the components of the firm's capital structure.

One component of the capital structure—the cost of debt—depends on the interest rate that must be paid, and the tax saving associated with interest payments. Another component—the cost of preferred stock—depends on the dividend that is paid and the net proceeds from the sale of the preferred stock. The third component, the cost of common equity, depends on whether the firm uses retained earnings or issues new shares of stock. New equity is more expensive because of the flotation costs associated with the sale of the new shares.

The cost of common stock is an opportunity cost, as it is the return necessary to convince investors to buy the stock. This cost may be determined by adding an equity premium to the interest rate paid to creditors (bondholders). An alternative approach to determine the cost of common stock is with the capital asset pricing model, which incorporates the return on a risk-free security, the return on the market, and the systematic (market) risk associated with the stock. A third approach uses the expected dividend yield and expected growth to determine the cost of common stock.

Management's task is to determine the best combination of debt and equity financing, that is, to determine the firm's optimal capital structure. That structure takes advantage of financial leverage without overly increasing risk. That combination of debt and equity financing minimizes the overall cost of capital and maximizes the common stock value. Once the optimal capital structure has been determined, the combination of debt and equity should be maintained.

Problems



1. Describe the benefits of debt financing.

2. Explain why the cost of capital for preferred stock will usually be lower than the cost of capital for common stock.



3. What actions might be taken to estimate the risk premium for determining the cost of capital for common stock?

4. How does the weighted-average cost of capital change with additional debt?

5. Describe a situation in which a company might decide to avoid additional debt.

6. When a company takes on additional debt, how might that be viewed by stockholders?

7. Why is the optimal capital structure considered a range of debt-to-equity proportions rather than a specific combination of debt to equity?



8. If a company was planning to expand its business activities into an additional region of the world, would you recommend the use of debt or equity financing? Explain your answer.

9. Since inflation can influence the risk associated with cost of capital, describe how higher prices might affect the required rate of return of an investor.

Exercises



1. Calculate the after-tax cost of debt based on an interest rate of 6% with a 30% tax rate.

2. What would be the cost of capital for preferred stock with a market price of SAR 45 and a dividend of SAR 2.70?

3. A company plans to issue additional preferred stock. If they plan a preferred cost of capital of 9% and the current market price is SAR 90, what dividend amount will need to be paid?

4. Calculate the risk premium using CAPM with these amounts:
beta 1.15 risk-free rate 4% average market rate 8%.



CHAPTER 5 Cost of Capital

5. Using the dividend growth equation, what would be the cost of equity based on these amounts?

dividend: SAR 2 growth rate: 6% market price: SAR 42

6. Based on these amounts, what would be the weighted-average cost of capital?

Proportions:

debt: 35% common: 50% preferred: 15%

Costs of capital:

cost of debt: 7% cost of common stock: 10% cost of preferred: 8.5%

7. A company has this capital structure:

SAR 120 million debt	cost of debt: 8%
SAR 24 million preferred stock	preferred stock cost of capital: 11%
SAR 96 million common stock	common stock cost of capital: 13%

- a. Calculate the capital structure proportions of debt, preferred stock, and common stock.

- b. Use the proportions from (a) to calculate the weighted-average cost of capital.



ASSESSMENT QUESTIONS

Choose the correct answer.

1. Cost of capital is also considered the required rate of return of the lenders and investors.
True / False
2. Common stockholders require a risk premium in addition to the basic return of bondholders.
True / False
3. Which cost of capital has the benefit of a tax deduction?
 - a. cost of debt.
 - b. cost of preferred stock.
 - c. cost of common stock.
 - d. average-weighted cost.
4. The cost of preferred stock is determined by dividing the dividend by the:
 - a. growth rate.
 - b. tax rate.
 - c. beta coefficient.
 - d. market price.
5. Which of these methods is not commonly used to determine the cost of equity?
 - a. Capital asset pricing model.
 - b. Adding a risk premium.
 - c. Current tax rate.
 - d. Dividend growth rate model.
6. Capital structure is the amount of debt and equity used by a company to finance its business activities.
True / False
7. As a company's capital structure goes from no debt to some debt, the weighted-average cost of capital will:
 - a. remain constant.
 - b. rise.
 - c. decline.
 - d. be uncertain.
8. The optimal capital structure is the appropriate blend of debt and equity financing.
True / False



9. At the optimal capital structure:
- a. the value of the company is minimized.
 - b. the value of the company is maximized.
 - c. the weighted-average cost of capital is equal to the cost of debt.
 - d. the amount paid in taxes is rising.
10. Determining the cost of equity is easier than determining the cost of debt.
True / False

Key Terms



Term	Definition
Capital structure	The amount of debt and equity used by a company to finance its business activities.
Cost of capital	Also called <i>required rate of return</i> , this is the rate required by lenders and investors who are letting the company use their money.
Cost of common stock	The return required by investors to buy the firm's common stock, viewed as an <i>opportunity cost</i> .
Cost of debt	The rate of return required by creditors.
Cost of equity	The required return company owners expect to earn based on the money they have invested in the company.
Cost of preferred stock	The relationship between the preferred stock dividend and the market price.
Flotation costs	Expenses associated with selling new stock
Optimal capital structure	The combination of debt and equity that results in the lowest cost of capital and maximum market value.
Weighted-average cost of capital	The weighted-average of the costs of debt, preferred stock, and common stock.

Key Formulas



Cost of debt $k_d = i(1 - t)$

Cost of preferred stock $k_p = \frac{D_p}{P_p}$

Cost of common stock—risk premium $k_e = i + \text{Risk premium}$



Cost of common stock—CAPM

$$k_e = r_f + (r_m - r_f)\beta$$

Cost of common stock
—dividend growth model

$$k_e = \frac{D_0(1 + g)}{P} + g$$

Cost of new shares

$$k_{ne} = \frac{D_0(1 + g)}{P - F} + g$$

Weighted-average cost of capital

$$k = w_1k_d + w_2k_p + w_3k_e$$



MINI CASE**MINI CASE 5.1: Cost of Capital for Debt**

Borrowing allows a company to use the money of others with a lower cost of capital because of the lower risk for lenders than the expected return of stockholders. In addition, interest payments on debt are tax deductible as a business expense. Despite these benefits, debt increases the risk for stockholders since creditors are entitled to interest payments and repayment before any dividends are paid.

As a telecommunications company plans to expand into new regional markets, the managers are trying to decide whether to use debt or issue additional stock. They realize that in addition to the tax benefits of debt, the following must also be considered:

- *The current interest rate for borrowing for a telecommunications company.*
- *The length of the borrowing term. Short-term debt will usually have a lower interest rate than long-term debt.*
- *The riskiness of the firm should be evaluated based on the business risk for a telecommunications company and the current debt level of the company.*

Task

1. What factors should the company consider before taking on additional debt?

2. How might the additional debt affect the cost of capital for the company?



MINI CASE**MINI CASE 5.2: Cost of Capital for Common Stock**

Malika plans to buy shares of common stock in a retailing company. Evaluating the opportunity cost for an expected return of this investment, she will also consider other possible investments. The required return for an investor of common stock might be determined using one of three methods:

1. *This approach starts with the interest rate paid on debt and adds a risk premium, which is estimated based on uncertainty related to economic, company, and market factors.*
2. *A second approach is the capital asset pricing model (CAPM) with the risk premium influenced by the firm's beta coefficient, which measures the systematic (undiversifiable) risk.*
3. *A third approach takes in to account the expected dividend yield plus expected growth.*

Task

1. Why is the required return for a common stock investment viewed as an opportunity cost?

2. Which of the three methods would provide Malika with the best approach to determine her required rate of return for the potential retailing company stock investment? Explain your choice.



MINI CASE**MINI CASE 5.3: Weighted Average Cost of Capital**

Layla is the financial manager for a construction company. Current plans include determining the company's cost of capital for upcoming building projects. This process involves calculating a cost of equity and the weighted average cost of capital for the company. Layla needs to take actions using the following data provided by the company's analysts.

Task

- Using the Dividend-Growth Model formula, calculate the k_e based on these amounts:

Dividend	SAR 5
Growth rate	4%
Current stock price	SAR 80

- Calculate the weighted-average cost of capital based on the k_e from (a) along with a k_d of 7% and these capital structure proportions:

Debt	30%
Equity	70%

- What additional actions might Layla consider in the future to reduce the cost of capital for the company?



Case Study: Cost of Capital for Expanded Global Business Activities

Companies are continually planning for new equipment, new products, new markets, and expansion strategies. These actions require funding, either through debt or equity. Managers must decide how to best finance new and expanded business activities. At the foundation of these decisions is a company's cost of capital.

A food and beverage company developed a planning format for identifying its cost of capital. This process involves two steps. Step one, a framework involves consideration of quantitative and qualitative factors in relation to: (1) the company situation, (2) the country/market situation, and (3) the proposed business project. This is a summary of the factors the company studies when selecting a cost of capital:

Cost of Capital Factors	(1) Current Company Situation	(2) Country (Market) situation	(3) Proposed Project Situation
Quantitative Factors	<ul style="list-style-type: none"> • bond yield • stock yield • debt level 	<ul style="list-style-type: none"> • inflation rate • bond yields • GDP, per capita income growth 	<ul style="list-style-type: none"> • start-up costs • certainty of cash flows • funding availability and rates
Qualitative Factors	<ul style="list-style-type: none"> • past success • managers • current markets 	<ul style="list-style-type: none"> • infrastructure • government regulations • geographic factors 	<ul style="list-style-type: none"> • facility, technology availability • market potential for product

In step two, in addition to the quantitative and qualitative factors, the company uses these guidelines to determine a specific cost of capital when planning a project or product in an existing or new market:

Cost of Capital Analysis	Home Country of Company	New Market industrialized country	New Market developing economy
Existing Project (or product)	Base rate	Base plus 1–3%	Base plus 2–5%
New Project (or product)	Base plus 1–3%	Base plus 2–5%	Base plus 4–6%

When using this table, the company starts with a base rate – its current cost of capital. This amount is adjusted for the type of project (existing or new) and the market setting of the project (home country, industrialized country, or developing economy).



CHAPTER 5 Cost of Capital

The food and beverage company is planning to expand beyond its home country of Saudi Arabia. Various projects under review include production in another country and plans to sell its products outside its home country.

Study Questions

1. For the planned business expansion, would you recommend that the Saudi company develop a new product for a new market in: (a) an industrialized country, or (b) a country with a developing economy? Explain your choice.

2. Explain how one or more quantitative and qualitative factors might affect the cost of capital for the food and beverage company.

3. Starting with a base cost of capital in Saudi Arabia of 4% and using the guidelines in the "Cost of Capital Analysis" table, choose a cost of capital for the project you recommended in Item 1 (above). Explain the factors that influenced your decision for the cost of capital you selected.

Online Activity

Research online methods used by Saudi companies to determine the cost of capital for financing new business activities. Describe the process used and the current cost of capital for various companies.



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