Module 1

Internal Control Frameworks

BEC 1

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1 Introduction to COSO

The Committee of Sponsoring Organizations (COSO), an independent private sector initiative, was initially established in the mid-1980s to study the factors that lead to fraudulent financial reporting. The private "sponsoring organizations" include the five major financial professional associations in the United States: the American Accounting Association (AAA), the American Institute of Certified Public Accountants (AICPA), the Financial Executives Institute (FEI), the Institute of Internal Auditors (IIA), and the Institute of Management Accountants (IMA).

In 1992, COSO issued *Internal Control—Integrated Framework* ("the framework") to assist organizations in developing comprehensive assessments of internal control effectiveness.

In 2013, the framework received an update to deal with changes in technology, business models, globalization, outsourcing, and regulatory environment. One significant enhancement to the 2013 update was the formalization of fundamental concepts that were part of the original 1992 framework. Specifically, these fundamental concepts have evolved into 17 principles that have been categorized within the five major internal control components. COSO's framework is widely regarded as an appropriate and comprehensive basis to document the assessment of internal controls over financial reporting.

2 COSO Internal Control Framework

The framework is used by company *management* and its board of directors to obtain an initial understanding of what constitutes an effective system of internal control and to provide insight as to when internal controls are being properly applied within the organization. The framework also provides confidence to external stakeholders that an organization has a system of internal control in place that is conducive to achieving its objectives.

Pass Key

An effective system of internal control requires more than adherence to policies and procedures by management, the board of directors, and the internal auditors. It requires the use of judgment in determining the sufficiency of controls, in applying the proper controls, and in assessing the effectiveness of the system of internal controls. The principles-based approach of the framework supports the emphasis on the importance of management judgment.

2.1 Definition of Internal Control

Internal control is a process that is designed and implemented by an organization's management, board of directors, and other employees to provide reasonable assurance that the organization will achieve its operating, reporting, and compliance objectives.

2.2 Application to Management and Board

The framework assists an entity's management and board of directors in the following areas:

- Effectively applying internal control within the overall organization, on a divisional (operating) unit level or at a functional level.
- Determining the requirements of an effective system of internal control by ascertaining whether the components and principles exist and are functioning properly.
- Allowing judgment and flexibility in the design and implementation of the system of internal control within all operational and functional areas of the organization.
- Identifying and analyzing risks and then developing acceptable actions to mitigate or minimize these risks to an acceptable level.
- Eliminating redundant, ineffective, or inefficient controls.
- Extending internal control application beyond an organization's financial reporting.

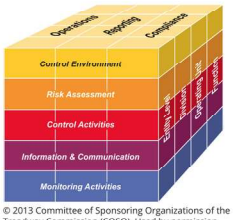
2.3 Application to Stakeholders

The framework also provides value to external stakeholders and other parties that interact with the organization by providing:

- Greater understanding of what constitutes an effective system of internal controls.
- Greater confidence that management will be able to eliminate ineffective, redundant, or inefficient controls.
- Greater confidence that the board has effective oversight of the organization's internal controls.
- Improved confidence that the organization will achieve its stated objectives and will be capable of identifying, analyzing, and responding to risks affecting the organization.

2.4 COSO Cube

The 2013 framework continues to use a cube to depict the relationship between an entity's objectives, integrated internal control components, and organizational structure. The three categories of *objectives* (operations, reporting, and compliance) are shown as columns on the cube, and the five *internal control components* (control environment, risk assessment, control activities, information and communication, and monitoring activities) are depicted as rows. Additionally, the entity's *organizational structure* (entity level, division, operating unit, and function) is shown on the cube as a third dimension.



2.5 Framework Objectives

There are three *categories of objectives* within the framework.

1. **Operations Objectives**

   Operations objectives relate to the effectiveness and efficiency of an entity's operations. This category includes financial and operational performance goals as well as ensuring that the assets of the organization are adequately safeguarded against potential losses.

2. **Reporting Objectives**

   Reporting objectives pertain to the reliability, timeliness, and transparency of an entity's external and internal financial and nonfinancial reporting as established by regulators, accounting standard setters, or the firm's internal policies.

3. **Compliance Objectives**

   Compliance objectives are established to ensure the entity is adhering to all applicable laws and regulations.

2.6 Components of Internal Control (CRIME)

The updated framework retained the original five integrated *components* of internal control, including the control environment, risk assessment, information and communication, monitoring activities, and (existing) control activities. These components and the 17 related fundamental principles are needed to achieve the three *objectives* of internal control.

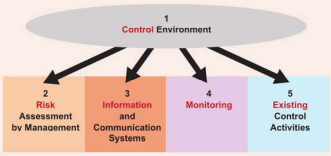
Each of the 17 principles is intended to be suitable to all entities and is presumed to be relevant. However, management may determine that a principle is not relevant to a component.

In addition, the framework introduces 81 points of focus. Some points of focus may not be suitable or relevant, and others may be identified. They are intended to facilitate designing, implementing, and conducting internal control by providing examples. They are not intended to be used as a checklist, and there is no requirement to separately assess whether points of focus are in place.

Pass Key

The COSO framework does not prescribe which controls an entity should implement for effective internal control. Instead, an organization's selection of controls requires management's judgment based on factors unique to the entity.

Illustration 1 Components of Internal Control (CRIME)



Pass Key

Remember that it would be a **CRIME** if you forgot the five components of internal control:

- **Control** Environment
- **Risk** Assessment
- **Information** and Communication
- **Monitoring**
- (**Existing**) Control Activities

2.6.1 Control Environment

The control environment includes the processes, structures, and standards that provide the foundation for an entity to establish a system of internal control. The importance of internal control and expected standards of conduct is established through a "tone at the top" approach taken by the senior management and board of directors of an entity. The five principles related to the control environment are:

1. **Commitment to Ethics and Integrity:** There is a commitment to ethical values and overall integrity throughout the organization. Points of focus include setting the tone at the top, establishing standards of conduct, evaluating adherence to standards of conduct, and addressing deviations in a timely manner.
2. **Board Independence and Oversight:** The board is independent from management and oversees the development and performance of internal control. Points of focus include establishing oversight responsibilities and providing oversight for the system of internal control.
3. **Organizational Structure:** Management establishes an organizational structure. Points of focus include establishing reporting lines, as well as defining, assigning, and limiting authorities and responsibilities that are appropriate to the organization's objectives.

4. **Commitment to Competence:** There is a commitment to hire, develop, and retain competent employees. Other points of focus include evaluating competence and addressing shortcomings in addition to succession planning.
5. **Accountability:** Individuals are held accountable for their internal control responsibilities. Points of focus include establishing performance measures, incentives, and rewards, and evaluating those for ongoing relevance while considering excessive pressures.

2.6.2 Risk Assessment

Risk assessment is an entity's identification and analysis of risks to the achievement of its objectives. The four principles related to risk assessment are:

1. **Specify Objectives:** The organization creates objectives that allow for identification and assessment of the risks related to those objectives. Points of focus include identifying objectives that reflect management's choices while complying with applicable accounting standards, laws, and regulations.
2. **Identify and Analyze Risks:** The organization identifies risks across the entity and analyzes risks in order to determine how the risks should be managed. Points of focus include analyzing internal and external factors, involving appropriate levels of management and determining how to respond to risks.
3. **Consider Potential for Fraud:** The organization considers the potential for fraud in assessing risks. Points of focus include assessing incentives and pressures, opportunities and attitudes, and rationalizations.
4. **Identify and Assess Changes:** The organization identifies and assesses changes that could significantly affect the system of internal control. Points of focus include assessing changes in the external environment, business model, and leadership.

2.6.3 Information and Communication

Information and communication systems support the identification, capture, and exchange of information in a timely and useful manner. The three principles related to information and communications are:

1. **Obtain and Use Information:** The organization obtains or generates and uses relevant, high-quality information to support the functioning of internal control. Points of focus include management identifying and defining information requirements within the internal control component level.
2. **Internally Communicate Information:** The organization internally communicates information necessary to support the functioning of internal controls, including relevant objectives and responsibilities. Points of focus include the flow of information up, down, and across the organization using a variety of methods and channels.
3. **Communicate With External Parties:** The organization communicates with external parties regarding matters that affect the functioning of internal control. Points of focus include management having open, two-way external communication channels using a variety of methods and channels.

2.6.4 Monitoring Activities

Monitoring is the process of assessing the quality of internal control performance over time by assessing the design and operation of controls on a timely basis and taking the necessary corrective actions. The two principles related to monitoring activities are:

1. **Ongoing and/or Separate Evaluations:** The organization selects, develops, and performs ongoing and/or separate evaluations to ascertain whether the components of internal control are present and functioning. One point of focus is to consider establishing baseline understandings.

2. **Communication of Deficiencies:** The organization evaluates and communicates internal control deficiencies in a timely manner to parties responsible for taking corrective action. One point of focus is monitoring corrective actions.

2.6.5 (Existing) Control Activities

Control activities are set forth by an entity's policies and procedures to ensure that the directives initiated by management to mitigate risks are performed.

Control activities may be detective or preventive in nature and may include automated and manual activities (e.g., approvals, reconciliations, verifications). Segregation of duties is usually part of the control activities developed by an organization, and when not practical, management should develop alternative controls. The three principles related to control activities are:

1. **Select and Develop Control Activities:** The organization selects and develops control activities that contribute to the mitigation of risks to acceptable levels. Points of focus include integrating with risk assessment when selecting activities and considering entity-specific factors.
2. **Select and Develop Technology Controls:** The organization selects and develops general control activities over technology to support the achievement of objectives. Points of focus include determining dependencies between the use of technology in business processes and establishing relevant technology infrastructure control activities.
3. **Deployment of Policies and Procedures:** The organization deploys control activities through policies that establish what is expected and procedures that put policies into action. Points of focus include establishing responsibility and accountability for executing policies and procedures and taking corrective action.

Pass Key

The candidate should be familiar with the five components of internal control (in bold) and each of the 17 principles within the components.

Control Environment

- Commitment to ethical values and integrity
- Board independence and oversight
- Organizational structure
- Commitment to competence
- Accountability

Risk Assessment

- Specify objectives
- Identify and analyze risks
- Consider the potential for fraud
- Identify and assess changes

(continued)

(continued)

Information and Communication

- Obtain and use information
- Internally communicate information
- Communicate with external parties

Monitoring Activities

- Ongoing and/or separate evaluations
- Communication of deficiencies

(Existing) Control Activities

- Select and develop control activities
- Select and develop technology controls
- Deploy through policies and procedures

Illustration 2 COSO Application

- **Risk:** Management is unaware of risks that could affect the company.
  - **Component:** Risk assessment.
  - **Principle:** The company identifies risks to achieving its objectives and analyzes risks to determine how the risks should be managed.
  - **Control activity:** Periodic risk assessments are reviewed by management, including internal audit assessments.
- **Risk:** Employees act in an unethical or unlawful manner.
  - **Component:** Control environment.
  - **Principle:** The company demonstrates a commitment to integrity and ethical values.
  - **Control Activity:** A code of conduct or ethics policy exists and includes provisions about conflicts of interest, related party transactions, illegal acts, and the monitoring of the code by management, the audit committee, and board of directors.

7

2.7 Effective Internal Control

2.7.1 General Requirements

The framework indicates that an effective system of internal control provides reasonable assurance that the entity's objectives will be achieved. Under the framework, an effective system of internal control requires:

- All five components and 17 principles that are relevant to be both *present* and *functioning*.
  - **Present (Design):** The term "present" means that the components and relevant principles are included in the design and implementation of the internal control system.
  - **Functioning (Operating Effectively):** The term "functioning" demonstrates that the components and relevant principles are currently operating as designed in the internal control system.
- That all five components operate together as an *integrated* system in order to reduce, to an acceptable level, the risk that the entity will not achieve its objectives.

2.7.2 Specific Requirements

To be considered an effective system of internal control, senior management and the board must have reasonable assurance that the entity:

- Achieves effective and efficient operations when:
  - external threats are considered unlikely to have a significant impact on the achievement of objectives; or
  - the organization can reasonably predict and mitigate the impact of external events to an acceptable level.
- Understands the extent to which operations are managed effectively and efficiently when:
  - external events may have a significant impact on the achievement of objectives; or
  - the organization can reasonably predict and mitigate the impact of external events to an acceptable level.
- Complies with all applicable rules, regulations, external standards, and laws.
- Prepares reports that are in conformity with the entity's reporting objectives and all applicable standards, rules, and regulations.

Pass Key

The framework requires judgment in designing, implementing, and conducting internal control and in assessing the effectiveness of internal control.

2.7.3 Ineffective Internal Control: COSO

Internal control deficiencies are shortcomings in a component or components and relevant principles that reduce the likelihood of an entity achieving its objectives.

Although U.S. GAAS uses the terms "significant deficiency" and "material weakness," the COSO framework uses the term "major deficiency."

A major deficiency represents a material internal control deficiency, or combination of deficiencies, that significantly reduces the likelihood that an organization can achieve its objectives.

When a major deficiency is identified pertaining to the presence and functioning of a component or relevant principle, or with respect to the components operating together in an integrated manner, the entity may not conclude that it has met the requirements for an effective internal control system under the COSO framework.

2.8 Internal Control (Framework) Limitations

Although internal control provides reasonable assurance that a firm will achieve its stated objectives, it does not prevent bad decisions or eliminate all external events that may prevent the achievement of the entity's operational goals. The following are inherent limitations that may exist even in an effective internal control system:

- Breakdowns in internal control due to errors or human failure
- Faulty or biased judgment used in decision making
- Issues relating to the suitability of the entity's objectives
- External events beyond the control of the entity
- Circumvention of controls through collusion
- Management override of internal controls

Question 1 **CPA-06748**

The external auditors for the Horace Company assess the achievement of internal control objectives each year and communicate the assessment to management and the board. Communication by the external auditor illustrates which principle of the information and communication component of the Committee of Sponsoring Organizations' Integrated Framework?

- **a.** Financial Reporting Information
- **b.** Internal Control Information
- **c.** Internal Communication
- **d.** External Communication

Answer Explanation

Question 2 **CPA-06483**

A company that retains a CPA with the appropriate knowledge, skills, and abilities to prepare timely and effective financial reporting is applying the ideas from which principle of effective internal control over financial reporting?

- **a.** Integrity and ethical values
- **b.** Management philosophy and operating style
- **c.** Accountability
- **d.** Financial reporting competencies

Answer Explanation

Module 2

Enterprise Risk Management Frameworks

BEC 1

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1 Introduction to Enterprise Risk Management

According to COSO, "Risk is the possibility that an event will occur and adversely affect the achievement of objectives."

In 2004, COSO issued *Enterprise Risk Management (ERM)—Integrated Framework* ("the framework") to assist organizations in developing a comprehensive response to risk management.

The underlying premise of ERM is that every entity exists to provide value for stakeholders, that all entities face uncertainty (risk), and that management must determine how much uncertainty to accept as it strives to grow stakeholder value.

The intent of ERM is to allow management to effectively deal with uncertainty, evaluate risk acceptance, and build value. Value is maximized when strategy balances risks and returns as well as efficiency and effectiveness in accomplishing objectives.

Each enterprise is unique and has its own individual features. The ERM framework helps identify those features.

2 Definition of ERM

As defined by COSO:

> Enterprise risk management is a process, effected by an entity's board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.

Pass Key

The COSO *Internal Control—Integrated Framework* has many similarities to the COSO *Enterprise Risk Management—Integrated Framework*. Establishing internal controls is a subset of ERM.

3 ERM Themes

The ERM framework encompasses the following themes:

1. **Aligning Risk Appetite and Strategy:** Management considers the entity's risk appetite when setting strategies and objectives and developing mechanisms to manage risks.
2. **Enhancing Risk Response Decisions:** ERM provides a framework that can be used to identify and select an appropriate risk response. Options include avoidance, reduction, sharing, and acceptance.

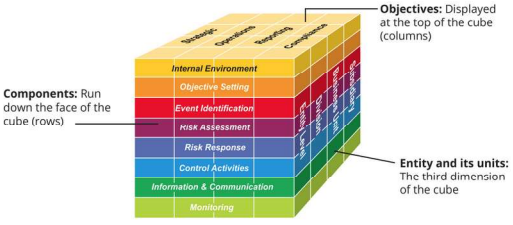
3. **Reducing Operational Surprises and Losses:** ERM devotes time to event identification. Events may be positive (opportunities) or negative (risks). The early identification of events and the establishment of responses to those events reduce surprises and losses or lost opportunities.
4. **Identifying and Managing Multiple and Cross-Enterprise Risks:** The character of risks changes when viewed from an entity-wide perspective through to the division and business unit levels. Applying the framework at each level identifies unique and common risks and helps management identify appropriate responses.
5. **Seizing Opportunities:** Management can better capitalize on opportunities when it knows the entity's strengths and weaknesses and how to use them to maximize profitable opportunities.
6. **Improving Deployment of Capital:** Management can maximize the efficiency and effectiveness of capital investments and enhance capital allocation.

4 Objectives and Enterprise Risk Management Cube

ERM defines enterprise objectives in four categories:

1. **Strategic:** High-level goals designed to achieve the mission.
2. **Operations:** Achievement of objectives through the effective and efficient use of resources.
3. **Reporting:** Achievement of reliable and consistent reporting.
4. **Compliance:** Ensuring compliance with laws and regulations.

Similar to the COSO *Internal Control—Integrated Framework,* the ERM framework uses a cube to provide a visual for ERM. The cube demonstrates the direct relationship between objectives (what an entity strives to achieve) and enterprise risk management components (what is needed to achieve them).



5 Components of Enterprise Risk Management

ERM includes components that are similar to the components of the COSO *Internal Control—Integrated Framework* but are somewhat broader in scope. The components of ERM are supported by key elements. The eight components of ERM are:

1. Internal environment
2. Setting objectives
3. Event identification
4. Assessment of risk
5. Risk response
6. Control activities
7. Information and communication
8. Monitoring

Pass Key

The COSO internal control components are very similar to the ERM framework:

- Control environment → internal environment
- Risk assessment → setting objectives, event identification, assessment of risk and response
- Control activities (same)
- Information and communication (same)
- Monitoring (same)

ERM components are linked and interrelated. They serve as the criteria for determining whether ERM is effective.

Pass Key

Knowing the logical order of the enterprise risk management framework has been a topic of released questions. Memorize the sequence of the components as: **IS EAR AIM**.

- **Internal** environment
- **Setting** objectives
- **Event** identification
- **Assessment** of risk
- **Risk** response
- **Activities** (control)
- **Information** and communication
- **Monitoring**

5.1 Internal Environment

The internal environment component of ERM is similar to the control environment of the *Internal Control—Integrated Framework* and defines the tone of the organization. The internal environment component is supported by the following key elements:

1. **Commitment to Ethical Values and Integrity**
   Adoption and demonstration of high ethical values by management will shape the internal environment.
2. **Board Oversight**
   The appropriate oversight provided by the board of directors establishes an organization-wide tone that recognizes its authority and promotes accountability of management.
3. **Organizational Structure**
   The organizational structure provides the framework to plan, execute, control, and monitor its activities.
4. **Commitment to Competence**
   Management's specification of required competency levels for each job function establishes the organization-wide expectation of individual and thus corporate competence.
5. **Assignment of Authority and Responsibility**
   The degree to which individuals are given appropriate authority to handle their responsibilities and the degree to which they are held accountable influences the internal environment.
6. **Risk Management Philosophy**
   The shared beliefs and attitudes of management that impact the entire organization are defined by the risk management philosophy.
7. **Human Resources Standards**
   The commitment to hiring the most qualified people will influence the internal environment. Minimum educational and work experience requirements, background checks, and the like demonstrate human resource commitment and facilitate individual and corporate accountability for new employee hires.
8. **Risk Appetite**
   The amount of risk an organization will accept in the pursuit of value maximization is defined by risk appetite. Risk appetite factors heavily into balancing strategy with return.

5.2 Objective Setting

Organizations set objectives and then identify the events that may prevent the achievement of those objectives. Objective setting is supported by the following key elements:

1. **Strategic Objectives (Entity Level)**
   The broad, high-level, mission-driven objectives of an organization are its strategic objectives. Strategic objectives are established for a longer corporate time frame, while the related objectives and the selected objectives are more dynamic.
2. **Related Objectives (Activity Level)**
   Strategic objectives are supported by related objectives that help to identify critical success factors at each level of business operation. Related objectives generally fall into the three categories:

- **Operations Objectives**

  Operations objectives include efficiency, effectiveness, and profitability goals that are subject to management discretion or style.

- **Reporting Objectives**

  External and internal reporting objectives are associated with both financial and nonfinancial data. It is paramount that all reporting be done on a timely basis and that all information contained in the individual reports be accurate.

- **Compliance Objectives**

  Compliance objectives include adherence to the laws, rules, and regulations associated with operations, including tax and financial reporting compliance, workplace safety, environmental regulations, and other laws.

Illustration 1 Objectives

Perfume International Company (PIC) produces colognes and fragrances for high-end retail stores and the discount retailer market. The company has three divisions, including men's colognes, women's perfumes, and unisex body fragrances. Over the past five years, senior management has had the following three core *strategic objectives*:

- Expand customer base.
- Reduce cost inefficiencies.
- Maximize profits through new product offerings and further globalization of the company's products.

Current *operating objectives* for the men's cologne division are to successfully integrate its new cost-reduction program. With the recent increase in division R&D, the men's cologne division is expected to introduce two new product offerings in the high-end European market. Further, the division's goal is to increase its operating profit by a minimum of 5 percent from the prior operating year.

The company's *reporting objectives* are to reduce initial compilation errors and to distribute internal financial reports to division managers within five days of each month-end.

PIC's *compliance objectives* are to improve the response time on compliance follow-up issues received from regulatory agencies; file external company tax returns on a more timely basis; and further integrate software programs to more efficiently address ongoing compliance, legal, and regulatory requirements.

3. **Selected Objectives**
   Objectives ultimately selected and implemented by the organization must not only support the mission, but should also align with the entity's risk appetite.

4. **Risk Appetite**
   Management establishes the risk appetite of the entity with the oversight of the board of directors. The entity's risk appetite is the benchmark for strategy setting. It is the theoretical balance of willingness to accept risk in order to achieve return and growth. Risk appetite is sometimes expressed as a risk-adjusted shareholder value-added measure. Risk appetite impacts strategy, which in turn impacts resource allocation.

5. **Risk Tolerances**
   An organization's risk tolerance is the accepted level of variation relative to the achievement of objectives. Risk tolerance is measured in the same units as those used to measure the related objective. For example, an airline targets 95 percent for on-time arrivals with 85 to 95 percent determined to be acceptable.

5.3 Event Identification

Events, both negative (risks) and positive (opportunities), should be identified. Event identification is supported by the following key elements:

1. **Events**
   Events are at the core of risk assessment processes. An *event* is an internal or external occurrence that impacts strategy or the achievement of objectives. Events may be either positive or negative and may or may not happen. It is the uncertainty of the event, along with its potential severity or benefit, that drives the risk assessment and response process.

2. **Influencing Factors**
   Event identification recognizes that occurrences can come from anywhere. Events can be external, such as economic (recession), natural (storms), political (change in regulations), technological (new methods of communicating), and social (changes in society). Events might also be internal, such as technology or personnel choices.

3. **Event Identification Techniques**
   Many methods can be used to identify events. Workshops and brainstorming sessions might be useful in some instances. Analytics applied to data, including trend analysis, might also be used. Event identification techniques may include:
   - **Event Inventories:** Lists of potential events common to companies in a particular industry.
   - **Internal Analysis:** Analysis performed by internal staff as part of business planning.
   - **Escalation or Threshold Triggers:** Comparison of activity to predefined criteria may trigger identification of events (e.g., variances from standards).

Illustration 2 Influencing Factors

Construction Materials Inc. manufactures a variety of building materials used by home builders. Given that the company's business revenues are affected by U.S. regional economic conditions, management uses two primary methods to identify a weakness in a region's economic activity.

The first method used is the rolling four-quarter unemployment (%) change subdivided by geographic regions. If a region's unemployment rate increases by 35 basis points (threshold trigger), a study is performed to determine whether production levels should be reduced at the regional manufacturing facility.

The second method used is trend analysis on regional new home construction sales. In order to determine the impact on production levels for a particular region, the company analyzes actual quarterly data versus the prior comparable year's period and the current operating plan. Based on the results of this internal analysis, the company will determine whether production levels should remain constant, increase, or decrease.

4. **Event Interdependencies**
   Events often do not occur in isolation. Events can trigger other events or happen concurrently. For example, changes in interest rates might impact exchange rates, which could change supplier costs or foreign demand.

5. **Event Categories**
   Events might be categorized in any number of ways to ensure comprehensive consideration of potential events.
   - **External**
     - —Economic
     - —Natural environment
     - —Political
     - —Social
     - —Technological
   - **Internal**
     - —Infrastructure (e.g., assets, capital, and other resources)
     - —Personnel
     - —Process
     - —Technology

6. **Distinguishing Risks and Opportunities**
   - *Negative events* that prevent achievement of objectives are *risks*.

Illustration 3 Risk

A fire at one of the company's major plants reduces operating production by 20 percent, resulting in the company's inability to meet its profitability objectives (goals) for the operating year.

   - *Positive events* that promote achievement of objectives are *opportunities*.

Illustration 4 Opportunity

The improvement in local economic conditions has resulted in more demand for the company's products and an expansion of its customer base.

5.4 Risk Assessment

Risks are analyzed in relation to their likelihood and their severity and the anticipated risks that continue even after management has taken action. Risk assessment is supported by the following key elements:

1. **Inherent and Residual Risk**
   - *Inherent risk* is the risk to an organization that exists if management takes no action to change the likelihood or impact of an adverse event.
   - *Residual risk* is the risk to an organization that exists after management takes action to mitigate the adverse impact of the event.
2. **Establishing Likelihood and Impact**
   - Likelihood of an event is the probability that an event might occur.
   - Impact of an event is the consequence of its occurrence. Impact is described in terms of severity or seriousness.
   - In establishing the likelihood and impact of events, managers should use the same time horizon as they would for strategic plans.
3. **Data Sources**
   Data sources are generally drawn from past experience with similar events. Data sources may include relevant economic data trends, historical industry information, or past company (data) experience.
4. **Assessment Techniques**
   Assessment techniques include empirical and intuitive methods such as:
   - **Benchmarking:** The use of data from organizations with similar characteristics.
   - **Probabilistic Models:** The use of a range of events and impacts with likelihood estimated using assumptions.
   - **Non-probabilistic Models:** The use of subjective assumptions to estimate event impact without estimating likelihood.
5. **Event Relationships**
   Management must determine whether individual events correlate or are unrelated. Where potential events are not related, management assesses them individually. But when events are related, management assesses them together.

Illustration 5 Event Relationships

Workers at a production facility declared a strike on Wednesday morning. Late Wednesday afternoon, the facility experienced a power outage in the assembly line section of the building and it lasted two days. Management needs to determine whether the two events are related. Management should consider whether the striking employees or their sympathizers may have sabotaged the equipment. Of course, it is possible the two events are unrelated.

5.5 Risk Response

Management's response to risk must align with the organization's overall risk appetite. Risk response is supported by the following key elements:

1. **Evaluating Possible Responses**
   Management will generally respond to risk in one of four ways.

Response	Definition	Illustration
Avoidance	Management may elect to avoid or terminate risk.	A company with an underperforming product line decides to discontinue the underperforming product line instead of taking steps to improve its performance.
Reduction	Management may elect to reduce or mitigate risk.	A company that has had past inventory shortages may elect to invest in inventory technology to more closely monitor inventory levels and avoid the risk of stockouts.
Sharing	Management may reduce risk by transferring risk.	A company that produces perishable food items decides to buy insurance to cover potential losses from spoilage.
Acceptance	The company may take no action.	XYZ Company produces widgets that are currently in high demand. Instead of expanding its production capacity to accommodate higher order volumes, the company takes no action and is content with the daily production of widgets generated from its sole operating plant.

2. **Selected Responses**
   Management selects a response from the four alternatives above.

3. **Portfolio View**
   Risk should be considered entity wide using a portfolio perspective. Ultimately, entities must review their total residual risk in comparison to risk tolerances. Simply put, once the organization has done all it can do, is the potential return worth the risk?

Illustration 6 Entity View of Total Risk

ABC Company has recently completed its annual strategy planning meeting for the upcoming year. During the meeting management identified three key risk factors (RF), including:

RF No. 1: Aging equipment could lead to expensive repairs and downtime to production equipment.

RF No. 2: A significant increase in shipping costs could erode profit margins. Currently, the company uses its own trucks for transporting all local and regional orders.

RF No. 3: Several of the company's key product inputs (materials) are subject to commodity pricing volatility.

After evaluating these risk factors, management has decided to pursue the following risk responses:

Response to RF No. 1: Management has decided to *accept the risk* associated with the aging equipment and take no action at this time. The rationale used is that the existing machines continue to be functional, there is no money available in next year's operating budget to perform material upgrades on the machines, and the company's five-year strategic plan includes a replacement of all existing production equipment. The company's risk tolerance for production downtime is up to 5 percent of the planned production levels.

Response to RF No. 2: Management will pursue a sharing (transferring) risk strategy by hiring a transportation management company (IEC Inc.), which will provide driver training, accident management, truck repairs and replacement, and other services for a fixed annual fee. If the actual costs are less than the annual fixed fee, IEC benefits; if the actual costs exceed the fixed annual fee, IEC pays the excess. ABC Company now has a completely predictable fixed cost per year.

Response to RF No. 3: ABC will attempt to mitigate this commodity price risk by using a *risk reduction approach* and making further use of hedging vehicles such as futures and forward contracts.

5.6 Control Activities

Control activities are the policies and procedures used to effect management's response to risk. Control activities include the following key elements:

1. **Integration With Risk Response:** Policies and procedures should mirror the actions anticipated by the risk response and should be anticipated to be effective.
2. **Types of Control Activities:** The ERM identifies numerous types of control activities that might be used to fully respond to risk. Management should select a mix of preventive, detective, manual, computer, and management controls. The activities include:
   - **Top-Level Reviews:** Review of major initiatives and budget versus actual performance by senior executive managers.
   - **Direct Function or Activity Management:** Review of performance reports and reconciliations by operating managers to ensure that transactions and other operations are executed as prescribed.
   - **Information Processing:** Use of common information processing controls such as edit checks, batch totals, etc.

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- **Physical Controls:** Assets are kept in physically secure locations. A company's legal documents, including lending agreements, customer contracts, investment documents, and leases, should be kept in a locked, fire-proof vault.
- **Performance Indicators:** An assigned employee or manager should compare financial or operating results to predetermined standards. Any material variances should be investigated by the assigned employee.
- **Segregation of Duties:** There should be adequate segregation of the authorization, record-keeping, and custodial functions to ensure that no one individual can control a transaction from beginning to end and thereby manipulate results.
- **Policies and Procedures:** Control activities usually involve a policy establishing what should be done and procedures to effect the policy.

3. **Controls Over Information Systems**
   - General controls deal with infrastructure, security management, software acquisition, etc.
   - Application controls focus directly on data capture and processing.
4. **Entity-Specific Controls:** Controls that are put in place should be specific to the (control) needs of each entity and be affected by the size and complexity of the organization and its processes.

5.7 Information and Communication

Information and communication include the identification, capture, and communication of information throughout the organization in an effective manner:

1. **Information:** *Information* is needed at all levels of the organization to manage risks.
   - **Strategic and Integrated Systems:** Improved technologies integrate internal and external communications.
   - **Integration With Operations:** Information systems must fully integrate with operations to be effective.
   - **Depth and Timeliness of Information:** Information systems must capture data in the level of detail necessary to make decisions (reduce risk) and in sufficient time to make a difference.
   - **Information Quality:** Effective information generally has the following qualities:
     - —*Appropriate* content as it pertains to the user(s) of the information;
     - —*Timely* production to meet the needs of the function and/or user;
     - —*Current* information that includes periodic updates;
     - —*Accurate* information that includes reviews by independent parties; and
     - —*Accessible* to the users who need the information to carry out their job responsibilities.
2. **Communication**
   - **Internal:** Management provides specific and directed communications that convey the behavioral responsibilities of personnel.
   - **External:** Effective external communication is required to ensure that supplier and customer feedback can provide input to product or service design.
   - **Means of Communication:** Communication can use any number of media (e-mail, formal correspondence, social networking sites, or bulletin boards). Appropriate media is a matter of judgment.

5.8 Monitoring

Monitoring should be used to manage risk. Monitoring includes the following key elements:

1. **Ongoing Monitoring Activities:** Operating or functional support managers provide ongoing monitoring activity to verify the effective operation of controls. These stem from regular management activities, which might involve variance analysis, comparisons of information from disparate sources, and dealing with unexpected occurrences.
2. **Separate Evaluations:** A fresh look at the effectiveness of internal controls can be highly valuable. Internal audit staff or ad hoc teams can conduct the evaluation.
3. **Reporting Deficiencies:** Deficiencies in the operation of risk management procedures are generally reported through the normal chain of command but may require special treatment given the nature and character of the finding.

6 Effectiveness of ERM

Effectiveness is a matter of judgment resulting from an assessment of whether the eight components are present and functioning effectively.

6.1 Elements of Effectiveness

- Each component of enterprise risk management must be present and functioning. The components are the effectiveness criteria.
- For enterprise risk management to be considered effective, no material weakness can be found.

6.2 Significance of Effective Enterprise Risk Management

Management and the board of directors have reasonable assurance that:

- They understand the extent to which the entity's strategic and operating objectives are being achieved.
- Reporting is reliable and applicable laws and regulations are being complied with.

7 Limitations

Enterprise risk management is an outstanding tool, but it is subject to human judgment Limitations of ERM include faulty decisions, simple errors or mistakes, collusion, and management override.

The limitations prevent the board and management from having absolute assurance as to achievement of the entity's objectives.

Illustration 7 Limitations of ERM

A company has established a control mechanism that requires the compliance department to prepare formal written responses to reporting, tax, and environmental compliance issues within five business days of receiving compliance follow-up requests. Although the compliance department has adhered to this control, the CFO has often not signed off on the compliance written correspondence in a timely manner (effectively overriding the control).

Question 1 **CPA-06664**

According to COSO, which of the following components of enterprise risk management addresses an entity's integrity and ethical values?

- **a.** Information and communication
- **b.** Internal environment
- **c.** Risk assessment
- **d.** Control activities

Answer Explanation

Question 2 **CPA-06481**

According to the Committee of Sponsoring Organizations (COSO) of the Treadway Commission, which of the following components of enterprise risk management addresses an entity's reporting deficiencies?

- **a.** Internal environment
- **b.** Event identification
- **c.** Control activities
- **d.** Monitoring

Answer Explanation

Module 3

Sarbanes-Oxley Act of 2002

BEC 1

RT Click to view

1 Introduction to the Sarbanes-Oxley Act of 2002

The Sarbanes-Oxley Act of 2002 has had a profound effect on the financial reporting requirements of public companies. In particular, there are numerous provisions for expanded disclosures by corporations and specific representations required by officers of public companies that must accompany published financial statements. Key provisions of the act related to those disclosures are described in Title III and Title IV of the act. Title VIII and Title IX describe penalties for violating the act. Title XI covers guidelines for rules and punishments concerned with fraudulent corporate activities.

2 Title III (Corporate Responsibility)

The corporate responsibility section of the act relates to the establishment of an audit committee and the representations made by key corporate officers, typically the chief executive officer (CEO) and the chief financial officer (CFO).

2.1 Public Company Audit Committees

- Public companies are responsible for establishing an audit committee that is directly responsible for the appointment, compensation, and oversight of the work of the public accounting firm employed by that public company (also referred to as an issuer).
  - The auditor reports directly to the audit committee.
  - The audit committee is responsible for resolving disputes between the auditor and management.
- Audit committee members are to be members of the issuer's board of directors but are to be otherwise independent. Independence criteria are as follows:
  - Audit committee members may not accept compensation from the issuer for consulting or advisory services.
  - Audit committee members may not be an affiliated person of the issuer. (Affiliation means a person having the ability to influence financial decisions).
- Audit committees must establish procedures to accept reports of complaints regarding audit, accounting, or internal control issues (whistle-blower hotlines).
  - Procedures must accommodate confidential, anonymous reports by employees of the issuer.
  - Procedures must accommodate receipt and retention of complaints as well as a method to address those complaints.

2.2 Corporate Responsibility for Financial Reports

Corporate officials, typically the CEO and CFO, must sign certain representations regarding annual and quarterly reports, including their assertion that:

- They have reviewed the report.
- The report does not contain untrue statements or omit material information.
- The financial statements fairly present in all material respects the financial condition and results of operations of the issuer.
- The CEO and CFO signing the report have assumed responsibility for internal controls, including assertions that:
  - Internal controls have been designed to ensure that material information has been made available.
  - Internal controls have been evaluated for effectiveness as of a date within 90 days prior to the report.
  - Their report includes their conclusions as to the effectiveness of internal controls based on their evaluation.
- The CEO and CFO signing the report assert that they have made the following disclosures to the issuer's auditors and the audit committee:
  - All significant deficiencies and material weaknesses in the design or operation of internal controls which might adversely affect the financial statements.
  - Any fraud (regardless of materiality) that involves management or any other employee with a significant role in internal controls.
- The CEO and CFO signing the report must also represent whether there have been any significant changes to internal controls.

2.3 Improper Influence on the Conduct of Audits

No officer or director, or any person acting under the direction thereof, may take any action that would fraudulently influence, coerce, mislead, or manipulate the auditor in a manner that would make the financial statements materially misleading.

2.4 Forfeiture of Certain Bonuses and Profits

If an issuer is required to prepare an accounting restatement due to material noncompliance with any financial reporting requirement under the securities laws, the CEO and CFO may be required to reimburse the issuer for:

- bonuses or incentive-based or equity-based compensation.
- gains on sale of securities during that 12-month period.

3 Title IV (Enhanced Financial Disclosures)

The enhanced financial disclosures associated with issuer reports include additional details regarding the financial statements, internal controls, and the operations of the audit committee.

3.1 Disclosures in Periodic Reports (Generally Quarterly or Annually)

Financial statement disclosures are intended to ensure that the application of GAAP reflects the economics of the transactions included in the report and that those transactions are transparent to the reader. Enhanced disclosure requirements include the following:

- All material correcting adjustments identified by the auditor should be reflected in the financial statements.
- The financial statements should disclose all material off-balance sheet transactions:
  - Operating leases
  - Contingent obligations
  - Relationships with unconsolidated subsidiaries
- Conformance of pro forma financial statements to the following requirements:
  - No untrue statements
  - No omitted material information
  - Reconciled with GAAP basis financial statements
- Use of special purpose entities (SPEs).

3.2 Conflict of Interest Provisions

Issuers are generally prohibited from making personal loans to directors or executive officers.

- Exceptions apply if the consumer credit loans are made in the ordinary course of business by the issuer.
- Exceptions apply if the terms offered to the officer are generally made available to the public under similar terms and conditions with no preferential treatment.

3.3 Disclosure of Transactions Involving Management and Principal Stockholders

- Disclosures are required for persons who generally have direct or indirect ownership of more than 10 percent of any class of most any equity security. Disclosures are made by filing a statement.
- Statements are filed at the following times:
  - At the time of registration.
  - When the person achieves 10 percent ownership.
  - If there has been a change in ownership.

3.4 Management Assessment of Internal Controls

The assessment of internal controls is commonly referred to as Section 404. Each annual report is required to contain a report that includes the following:

- A statement that management is responsible for establishing and maintaining an adequate internal control structure and procedures for financial reporting.
- An assessment, as of the end of the most recent fiscal year of the issuer, of the effectiveness of the internal control structure and procedures for financial reporting.

The auditor must attest to management's assessment of internal control.

3.5 Certain Exemptions

Investment companies are exempt from this act.

3.6 Code of Ethics for Senior Officers

- Issuers must disclose whether the issuer has adopted a code of conduct for senior officers (e.g., CEO, CFO, controller, and chief accountant). If no code of conduct has been adopted, the issuer must disclose the reasons.
- The code of ethics contemplates standards that promote:
  - Honest and ethical conduct (including handling of conflicts of interest).
  - Full, fair, accurate, and timely disclosures in periodic financial reports.
  - Compliance with laws, rules, and regulations.
- Changes to or waivers from the code must be reported on a Form 8-K.

3.7 Disclosure of Audit Committee Financial Expert

At least one member of the audit committee should be a financial expert. Financial reports of the issuer must disclose the existence of a financial expert on the committee or the reasons why the committee does not have a member who is a financial expert.

- A financial expert qualifies through education, past experience as a public accountant, or past experience as a principal financial officer, controller, or principal accounting officer for an issuer.
- Knowledge of the financial expert should include:
  - Understanding of GAAP.
  - Experience in the preparation or auditing of financial statements for comparable issuers.
  - Application of GAAP.
  - Experience with internal controls.
  - Understanding of audit committee functions.

3.8 Enhanced Review of Periodic Disclosures by Issuers

The Securities and Exchange Commission (SEC) is required to review disclosures made by issuers, including those in Form 10-K, on a regular and systematic basis for the protection of investors. When scheduling reviews, the SEC should consider the following:

- Issuers that have issued material restatements of financial results.
- Issuers that experience significant volatility in their stock prices when compared to other issuers.

- Issuers with the largest market capitalization.
- Emerging companies with disparities in price-to-earning ratios.
- Issuers whose operations significantly affect any material sector of the economy.

4 Title VIII (Corporate and Criminal Fraud Accountability)

4.1 Criminal Penalties for Altering Documents

- Individuals who alter, destroy, mutilate, conceal, cover up, falsify, or make false entry in any record, document, or tangible object with the intent to impede, obstruct, or influence an investigation will be fined. imprisoned for not more than 20 years. or both.
- Auditors of issuers should retain all audit and review workpapers for a period of seven years from the end of the fiscal period in which the audit or review was conducted. Failure to do so will result in a fine, imprisonment for not more than 10 years, or both.

4.2 Statute of Limitations for Securities Fraud

The statute of limitations for securities fraud is no later than the earlier of two years after the discovery of the facts constituting the violation, or five years after the violation.

4.3 Whistle-Blower Protection

An employee who lawfully provides evidence of fraud may not be discharged, demoted, suspended, threatened, harassed, or in any other matter discriminated against for providing such information. An employee who alleges discharge or other discrimination for providing evidence of fraud may file a complaint with the Secretary of Labor and may be provided with compensatory damages, including:

- reinstatement with the same seniority status that the employee would have had;
- back pay with interest; and
- compensation for any special damages as a result of the discrimination including litigation costs, expert witness fees, and reasonable attorney fees.

4.4 Criminal Penalties for Securities Fraud

An individual who knowingly executes, or attempts to execute, securities fraud will be fined, imprisoned not more than 25 years, or both.

5 Title IX (White-Collar Crime Penalty Enhancements)

5.1 Attempt and Conspiracy

An individual who attempts (conspires) to commit any white-collar offense will be subject to the same penalties as those who commit the offense. as predetermined by the United States Sentencing Commission. The penalties for mail and wire fraud were increased from 5 years to 20 years. The penalties for violating ERISA were increased from not more than $5,000 to not more than $100,000 and from not more than 1 year to not more than 10 years for individuals. (Either or both of the fine and the sentence may be imposed.) Fines imposed upon persons who are not individuals cannot exceed $500,000.

5.2 Amendment to Sentencing Guidelines Related to Certain White-Collar Offenses

- The United States Sentencing Commission ("Sentencing Commission") will review and amend, as needed, the Federal Sentencing Guidelines and policy statements to carry out the provisions of the Attempt and Conspiracy Act. This includes ensuring that the sentencing guidelines and policy statements take into account the nature of any offense and that the corresponding penalties are commensurate with the provisions of the act. In the event the Sentencing Commission determines a growing trend of a particular offense, it will review to determine whether any modifications to the Sentencing Guidelines or policy statements are necessary.
- The Sentencing Commission will review any additional aggravating or mitigating circumstances for a particular offense that could justify an exception to the existing sentencing ranges.

5.3 Failure of Corporate Officers to Certify Financial Reports

- Any issuer periodic report which contains financial statements that is filed with the SEC must be accompanied by the following:
  - A written statement that the periodic report fully complies with the Securities Exchange Act of 1934.
  - A written statement that the information contained in the report fairly presents, in all material respects, the financial condition and operating results of the issuer.
  - The written statements above must be signed by the chief executive officer and chief financial officer (or equivalent) of the issuer (who bear responsibility for these statements).
- Any party that certifies the periodic financial report and/or its content knowing that it does not satisfy all the requirements shall be fined and/or imprisoned. Specifically, a party who:
  - *certifies* any statement knowing that it does not comply with all requirements will be fined not more than $1,000,000 and/or imprisoned not more than 10 years; or
  - *willfully* certifies any statement knowing that it does not comply with all requirements will be fined not more than $5,000,0000 and/or imprisoned not more than 20 years.

6 Title XI (Corporate Fraud Accountability)

6.1 Tampering With Record or Impeding an Official Proceeding

Any individual who alters, destroys, or conceals a document (record) with the intent to modify the document and its integrity or the availability of the document in an official proceeding shall be fined and/or subject to not more than a 20-year prison term.

6.2 Temporary Freeze Authority for the SEC

If during an investigation pertaining to potential violations of federal securities laws by an issuer of publicly traded securities (or a director, officer, or employee acting on its behalf) the SEC determines it is likely that the issuer will be required to make penalty payments, the SEC may petition a federal district court to require the issuer to escrow the payments in an interest-bearing account for 45 days.

6.3 Authority of the SEC to Prohibit Persons From Serving as Officers or Directors

For any cease-and-desist proceedings, the SEC may issue an order to conditionally or unconditionally prohibit an individual from serving as an officer or director of the issuer for a stipulated period (or permanently) if that individual has violated securities rules and regulations and the SEC determines that this individual is unfit to serve as an officer or director of an issuer.

6.4 Retaliation Against Informants

Any individual who knowingly takes any harmful action against another person with the intent to retaliate for that person providing truthful information to the SEC regarding a possible federal offense shall be fined and/or imprisoned for not more than 10 years.

Question 1 **CPA-07014**

Which of the following is necessary to be an audit committee financial expert, according to the criteria specified in the Sarbanes-Oxley Act of 2002?

- **a.** A limited understanding of generally accepted auditing standards.
- **b.** Education and experience as a certified financial planner.
- **c.** Experience with internal accounting controls.
- **d.** Experience in the preparation of tax returns.

Answer Explanation

Question 2 **CPA-06491**

Conflict-of-interest provisions of the Sarbanes-Oxley Act of 2002 generally prohibit the directors or executive officers of an issuer from:

- **a.** Owning more than 10 percent of common stock.
- **b.** Owning more than 10 percent of any form of equity.
- **c.** Receiving a personal loan from the issuer not in the ordinary course of business.
- **d.** Receiving perquisite compensation.

Answer Explanation

Module 4

Financial Risk Management: Part 1

BEC 1

RT Click to view

1 Trade-offs Between Risk and Return

1.1 Definitions

Risk and return are a function of both market conditions and the risk preferences of the parties involved.

- **Risk:** May be defined as the chance of financial loss. More formally, the term "risk" may be used interchangeably with the term "uncertainty" to refer to the variability of returns associated with a given asset.
- **Return:** May be defined as the total gain or loss experienced on behalf of the owner of an asset over a given period. Typically, greater risk yields greater returns. The seller of financial securities compensates the buyer of financial securities with increased opportunity for profit by offering a higher rate of return.

1.2 Risk Preferences

Different managers have varying attitudes toward risk. Three basic risk preference behaviors exist:

- **Risk-Indifferent Behavior:** reflects an attitude toward risk in which an increase in the level of risk does not result in an increase in management's required rate of return.
- **Risk-Averse Behavior:** reflects an attitude toward risk in which an increase in the level of risk results in an increase in management's required rate of return. Risk-averse managers require higher expected returns to compensate for greater risk. Most managers are risk-averse.
- **Risk-Seeking Behavior:** reflects an attitude toward risk in which an increase in the level of risk results in a decrease in management's required rate of return. Risk-seeking managers are willing to settle for lower expected returns as the level of risk increases.

2 Types of Risk

Measurements of risk attempt to capture the multiple dimensions of risk. Risk exposures include interest rate, market, default, credit, liquidity, and price risk.

2.1 Interest Rate Risk (or Yield Risk)

Interest rate risk (or yield risk) is often used in the context of financial instruments and represents the exposure of the owner of the instrument to fluctuations in the value of the instrument in response to changes in interest rates.

2

Illustration 1 Interest Rate Risk

Thayer Thermodynamics Inc. owns a five-year, $10,000 Duffy International coupon bond purchased at a discount. Recently, the market rate of interest increased 1 percent, causing the market value of the bond to decline to $9,610. Assuming the bond's carrying value on the financial statements was $9,840 at the time the market rate of interest abruptly increased, Thayer Thermodynamics suffered a $230 market loss in bond value as a result of its exposure to interest rate risk.

2.2 Market/Systematic/Nondiversifiable Risk

The exposure of a security or firm to fluctuations in value as a result of operating within an economy is referred to as *market risk*. Market risk is sometimes referred to as *nondiversifiable risk* because it is a risk inherent in operating within the economy. Nondiversifiable risk is attributable to factors such as war, inflation, international incidents, and political events.

Illustration 2 Market Risk

The prices on publicly traded stocks generally increase and decrease together with overall market activity. Although the prices may not increase or decrease identically, they often move in the same direction. Microsoft Corp. stock, for example, might increase in value on a given day from $37.00 per share to $37.75 per share. This increase in the price of Microsoft's stock is consistent with the overall 2 percent increase in the NASDAQ on that trading day.

2.3 Unsystematic/Firm-Specific/Diversifiable Risk

Diversifiable risk (which is also referred to as *nonmarket, unsystematic,* or *firm-specific risk*) represents the portion of a firm's or industry's risk that is associated with random causes and can be eliminated through diversification. Diversifiable risk is attributable to firm-specific or industry-specific events (e.g., strikes, lawsuits, regulatory actions, or the loss of a key account).

Pass Key

It is important to be able to classify risk into two broad categories:

- **D** **Diversifiable** risk
- **U** Unsystematic risk (nonmarket/firm-specific)
- **N** **Nondiversifiable** risk
- **S** Systematic risk (market)

Remember the mnemonic **DUNS** to keep these risk types and their alternative names clear.

2.4 Credit Risk

Credit risk affects borrowers. Exposure to credit risk includes a company's inability to secure financing or secure favorable credit terms as a result of poor credit ratings. As credit ratings decline, the interest rate demanded by lenders increases, collateral may be required, and other terms are generally less favorable to the borrower.

Illustration 3 Credit Risk

Duffy International seeks to borrow $10,000 for five years, but the company has a history of late payments and displays a high debt-to-income ratio and high debt-to-equity ratio (measurements discussed later). Although market rates of interest are 7 percent, lenders may only loan money to Duffy International at an 8 percent rate, require a lien on the company's inventory as collateral, and insist on shortening the term of the loan to three years. Duffy International's inability to borrow the funds it needs at the market rate of interest and under favorable terms illustrates the company's exposure to credit risk and demonstrates the creditors' attempt to mitigate default risk (see below).

2.5 Default Risk

Default risk affects lenders. Creditors are exposed to default risk to the extent that it is possible that its debtors may not repay the principal or interest due on their indebtedness on a timely basis.

Illustration 4 Default Risk

Thayer Thermodynamics Inc. (TTI) holds $100,000 worth of $1,000 face value bonds recently issued by Duffy International. During the third quarter of the year, Duffy fails to make its quarterly interest payment on its outstanding bond issue. The loss incurred by TTI results from the company's exposure to default risk or the possibility that the debtor will not make its debt service payments as outlined in the bond agreement (indenture).

2.6 Liquidity Risk

Liquidity risk affects lenders (investors). Lenders or investors are exposed to liquidity risk when they desire to sell their security, but cannot do so in a timely manner or when material price concessions have to be made to do so.

Illustration 5 Liquidity Risk

Smithfield Company holds several fixed-income securities of Johnson Manufacturing Company. Due to its current operational needs, Smithfield attempts to sell $250,000 of Johnson's 10-year bonds but is unsuccessful in attracting willing buyers at current market prices. As the company's working capital requirements increase, Smithfield significantly discounts the bonds to obtain the proceeds from the Johnson bond investments. Smithfield is exposed to liquidity risk, as evidenced by its inability to sell the bonds on a timely basis and the need to make concessions to attract willing investors.

2.7 Price Risk

Price Risk represents the exposure that investors have to a decline in the value of their individual securities or portfolios. Factors unique to individual investments and/or portfolios contribute to price risk, which becomes an even greater concern with increased market volatility. Price risk is related to diversifiable (unsystematic) risk.

3 Computation of Return

Return compensates investors and creditors for assumed risk. Return is often stated or measured by interest rates. Interest can be expressed as either a cost (interest expense) to debtors or income (interest income) to investors.

3.1 Stated Interest Rate

- **Definition:** The *stated interest rate* (sometimes referred to as nominal interest rate) represents the rate of interest charged before any adjustment for compounding or market factors.
- **Computation:** The *stated interest rate* is the rate shown in the agreement of indebtedness (e.g., a bond indenture or promissory note).

Example 1 Stated Interest Rate

Facts: A $10,000 promissory note states that payments will be made quarterly at a 10 percent interest rate per annum.

Required: Calculate the stated interest rate. *Hint:* You do not need a calculator.

Solution: Stated rate = 10 percent

3.2 Effective Interest Rate

- **Definition:** The *effective interest rate* represents the actual finance charge associated with a borrowing after reducing loan proceeds for charges and fees related to a loan origination.
- **Computation:** Effective interest rates are computed by dividing the amount of interest paid based on the loan agreement by the net proceeds received.

Example 2 Effective Interest Rate

Facts: A $10,000 promissory note has a stated rate of 10 percent per annum and is due in one year. The bank charges a loan origination fee of $75 and the state in which the loan is made levies a $50 documentary stamp charge. Taxes and fees are taken from loan proceeds.

Required: Compute the effective interest rate.

Solution:

Interest paid (10,000 × 10%)	$ 1,000
Divided by net proceeds (10,000 − 75 − 50)	÷ 9,875
Effective interest rate	10.13%

3.3 Annual Percentage Rate

- **Definition:** The *annual percentage rate* of interest represents a noncompounded version of the effective annual percentage rate described and computed below. The annual percentage rate is the rate required for disclosure by federal regulations.
- **Computation:** Annual percentage rates are computed as the effective periodic interest rate times the number of periods in a year. Annual percentage rate emphasizes the amount paid relative to funds available.

Example 3 Annual Percentage Rate

Facts: A $10,000 promissory note displays a stated rate of 8 percent with interest to be paid semiannually. The bank charges a $75 loan origination fee and a documentary tax of $50 is assessed by the state.

Required: Calculate the annual percentage rate.

Solution:

Step 1: Compute the effective periodic interest rate (as per above)

Interest paid (10,000 × 8% × 6/12)	$ 400
Divided by available funds (10,000 − 75 − 50)	÷ 9,875
Effective periodic interest rate	4.05%

Step 2: Multiply the effective periodic interest rate by the number of periods in a year

Effective periodic interest rate	4.05%
Periods in a year	× 2
Annual percentage rate	8.10%

3.4 Effective Annual Percentage Rate

- **Definition:** The *effective annual percentage rate* represents the stated interest rate adjusted for the number of compounding periods per year. The effective annual percentage rate is abbreviated APR.
- **Computation:** The effective APR is computed as follows:

$$\text{Effective annual interest rate} = [1 + (i/p)]^p - 1$$

i = Stated interest rate

p = Compounding periods per year

Example 4 Effective Annual Percentage Rate

Facts: A note has an 8 percent stated rate of interest compounded semiannually (two times per year).

Required: Compute the effective annual percentage rate or APR.

Solution:

Effective annual interest rate = $[1 + (i/p)]^p - 1$

Effective annual interest rate = $[1 + (0.08/2)]^2 - 1$

Effective annual interest rate = $[1 + (0.04)]^2 - 1$

Effective annual interest rate = $1.0816 - 1$

Effective annual interest rate = 8.16%

3.5 Simple Interest (Amount)

- **Definition:** Simple interest is the amount represented by interest paid only on the original amount of principal without regard to compounding.
- **Computation:** Simple interest is formulated as follows:

$SI = P_0(i)(n)$

P_0 = Original principal

i = Interest rate per time period

n = Number of time periods

Example 5 Simple Interest

Facts: A $10,000 promissory note bears simple interest at 8 percent for two years.

Required: What is the simple interest on this obligation?

Solution:

$SI = P_0(i)(n)$

$SI = \$10{,}000\ (8\%)(2)$

$SI = \$1{,}600$

3.6 Compound Interest (Amount)

- **Definition:** Compound interest is the amount represented by interest earnings or expense that is based on the original principal plus any unpaid interest earnings or expense. Interest earnings or expense, therefore, compounds and yields an amount higher than simple interest.
- **Computation:** Compound interest is computed as a future value as follows:

$FV_n = P_0(1 + i)^n$

P_0 = Original principal

i = Interest rate

n = Number of periods

Example 6 Compound Interest

Facts: A promissory note for $10,000 carries an interest rate of 8 percent for two years, compounded annually.

Required: Compute the maturity value of the promissory note.

Solution:

$FV_n = P_0(1 + i)^n$

$FV_n = \$10{,}000\ (1 + 0.08)^2$

$FV_n = \$10{,}000\ (1.1664)$

$FV_n = \$11{,}664$

3.7 Required Rate of Return

The required rate of return is calculated adding the following risk premiums to the risk-free rate:

- **Maturity Risk Premium (MRP):** Is the compensation that investors demand for exposure to interest rate risk over time. This risk increases with the term to maturity.
- **Purchasing Power Risk or Inflation Premium (IP):** Is the compensation investors require to bear the risk that price levels will change and affect asset values or the purchasing power of invested dollars (e.g., real estate).
- **Liquidity Risk Premium (LP):** Is the additional compensation demanded by lenders (investors) for the risk that an investment security (e.g., junk bonds) cannot be sold on a short notice without making significant price concessions. Liquidity is defined as the ability to quickly convert an asset to cash at fair market value.
- **Default Risk Premium (DRP):** Is the additional compensation demanded by lenders (investors) for bearing the risk that the issuer of the security will fail to pay interest and/or principal due on a timely basis.

Illustration 6 Default Risk Premium

A bank desires to purchase a corporate bond for its investment portfolio. Given the characteristics of the bond issue/issuer and current financial market conditions, a required rate of return of 8 percent is deemed appropriate for the bond issue, as follows:

	Real rate of return	3%
+	Inflation premium (IP)	2%
	Nominal rate of return	5%
+	Risk premium:	
	Interest rate risk (MRP)	
	Liquidity risk (LP)	
	Default risk (DRP)	3%
	Required rate of return	8%

4 Mitigating and Controlling Financial Risk

Business entities must be able to not only identify and assess various financial risks, but also implement strategies to mitigate and control the impact these risks can have on their operations and finances.

4.1 Diversification

Diversifiable risk represents the portion of a single asset's risk that is associated with random causes and can be eliminated through diversification. Diversification is the process of building a portfolio of investments of different and offsetting risks. Although diversification can reduce certain risks, business are exposed to risks that cannot be managed through diversification (i.e., nondiversifiable risks). A diversified investor should be concerned only with nondiversifiable (systematic) risk because, in theory, an investor can create a portfolio of assets that eliminates all (or virtually all) diversifiable risk.

8

4.2 Strategies to Mitigate and Control Specific Financial Risks

Companies use many different strategies to reduce their exposure and vulnerability to the various financial risks.

4.2.1 Mitigating Interest Rate Risk

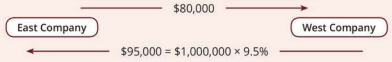
An investor can mitigate interest rate risk by investing in floating rate debt securities, which do not change in value when interest rates change and also generate higher coupon payments when interest rates rise. Derivatives such as forward rate agreements (FRAs) or interest rate swaps, in which the investor pays a fixed interest rate and receives a floating interest rate, can also be used to mitigate interest rate risk.

Illustration 7 Interest Rate Swap

East Company has invested in $1,000,000 of 8 percent fixed rate bonds. East expects interest rates to increase during the next 12 months. On January 1, East Company enters into an interest rate swap with West Company in which East Company agrees to make to West Company a series of future payments equal to the fixed interest rate of 8 percent on the principal amount of $1,000,000. In exchange, West Company agrees to make to East Company a series of future payments equal to a floating interest rate of LIBOR* + 1 percent on the principal amount of $1,000,000.

Underlying:	East Company—8%, and West Company—LIBOR + 1%
Notional amount:	$1,000,000
Initial net investment:	$0 (no cost to enter into the swap contract)
Settlement amount:	East Company—8% × $1,000,000 = $80,000, and West Company—(LIBOR + 1%) × $1,000,000

On the first settlement date, LIBOR was 8.5 percent and the following amounts were exchanged:



Derivatives generally have multiple settlement options. This derivative could be settled in the following ways:

1. East Company could pay $80,000 to West Company, and West Company could pay $95,000 to East Company.
2. West Company could pay $15,000 ($95,000 − $80,000) to East Company. This is a net settlement and is the most likely form of settlement in this example.

*LIBOR (London Interbank Offered Rate) is a benchmark rate that some of the world's leading banks charge each other for short-term loans.

4.2.2 Mitigating Market Risk

Market risk, because it is inherent in the marketplace and overall economy, is not as easy to mitigate. Market risk cannot be mitigated through diversification. One way to control market risk is to invest in derivatives that provide gains to the investor when the market declines. Short selling (selling an investment in the hopes of buying it back at a lower price later) is another strategy that provides returns when the market declines.

Illustration 8 Short Sale

The CFO of Dillon Bank is concerned that falling oil prices may lead to an overall stock market decline in the coming months. In order to protect the bank's investment portfolios against a market decline, the CFO opens several short positions in index funds designed to track the S&P 500. She will earn a profit if the market does decline, as she can buy back the funds at lower prices. However, if the market rises, she will eventually have to buy back the funds at higher prices than the original sale price.

4.2.3 Mitigating Unsystematic Risk

Unsystematic risk can be minimized through diversification. If an investor has a broad portfolio of investments, then an event that has a negative effect on one firm, industry, or investment type would have less of an effect on the value of the portfolio as a whole.

4.2.4 Mitigating Credit Risk

Credit risk is managed through improvements in credit ratings, which are assigned at entity and individual debt levels. When credit ratings are higher, borrowing can occur at more favorable terms (such as lower interest rates). Factors evaluated in determining credit ratings include overall economic outlook, industry conditions, cash flow measures, leverage, capital structure, management strength, historical performance, and financial ratios measuring solvency, liquidity, profitability, etc. Management has various degrees of control over these factors, but awareness of them and understanding of how changes can affect credit ratings are crucial to controlling this risk.

4.2.5 Mitigating Default Risk

Default risk can be mitigated in several ways. As a lender, an entity may choose to lend only to borrowers with low risk of default. Another option is to adjust the interest rates charged to better reflect the risk of each borrower, such that higher-risk borrowers will pay higher interest rates.

Illustration 9 Default Risk

Miller Inc. wants to reduce its default risk and is considering two plans. Miller can either reduce the population of potential customers by extending credit to customers with credit ratings only above a certain threshold, or it can continue extending credit to all customers but charge higher interest rates to borrowers that pose greater risks of not paying back money owed.

4.2.6 Mitigating Liquidity Risk

Liquidity risk is higher for investments that don't have active markets (e.g., forward contracts, limited partnerships). Liquidity risk is mitigated by allocating a greater percentage of capital to investments that trade on active markets, such as equities, corporate bonds, futures contracts, and options.

4.2.7 Mitigating Price Risk

Price risk can be minimized through diversification. Price risk also can be mitigated through short selling or derivatives, such as put options.

Illustration 10 Put Option

Roberts Company owns 10,000 shares of Buy Big Inc. stock. Roberts plans to sell the stock during January and is concerned that the price of the stock will fall below the current price of $75/share. On January 1, Roberts purchased a put option on the stock of Buy Big. The option gives Roberts the right to sell the 10,000 shares of Buy Big stock at $75/share during the next 30 days. Roberts paid a premium of $2/share to enter into the option. Roberts exercises the option when Buy Big stock was selling for $69/share.

Underlying:	$75/share
Notional amount:	10,000 shares of Buy Big stock
Initial net investment:	$2/share × 10,000 shares = $20,000
Settlement amount:	$75/share × 10,000 shares = $750,000

Derivatives generally have multiple settlement options. This derivative could be settled in the following ways:

1. Roberts could deliver 10,000 shares of Buy Big stock to the option writer in exchange for $750,000. Roberts would realize a gain of $60,000 [($75/share exercise price − $69/share market price) × 10,000 shares. The option writer would realize a loss of $60,000 because the option writer must pay $75/share for stock with a market value of $69/share.
2. The option writer could pay Roberts $60,000 to settle the contract. This is a net settlement.

Because $20,000 was paid to purchase the put option, Roberts will report a net gain of $40,000 ($60,000 gain − $20,000 premium). If the stock price had remained above $75/share during the 30-day period, Roberts would not have exercised the option and would have sold the stock for the market price.

Question 1 **CPA-05788**

A company has an outstanding one-year bank loan of $500,000 at a stated interest rate of 8 percent. The company is required to maintain a 20 percent compensating balance in its checking account. The company would maintain a zero balance in this account if the requirement did not exist. What is the effective interest rate of the loan?

- **a.** 8 percent
- **b.** 10 percent
- **c.** 20 percent
- **d.** 28 percent

Answer Explanation

RT Click to view

1 Currency Exchange Rate Risk

Within domestic environments, a single currency defines the value of assets, liabilities, and operating transactions. In international settings, the values of assets, liabilities, and operating transactions are established not only in terms of the single currency, but also in relation to other currencies. Exchange rate (FX) risk exists because the relationship between domestic and foreign currencies may be subject to volatility.

1.1 Factors Influencing Exchange Rates

Circumstances that give rise to changes in exchange rates are generally divided between trade-related factors (including differences in inflation, income, and government regulation) and financial factors (including differences in interest rates and restrictions on capital movements between companies).

1.1.1 Trade Factor (Relative Inflation Rates)

When domestic inflation exceeds foreign inflation, holders of domestic currency are motivated to purchase foreign currency to maintain the purchasing power of their money. The increase in demand for foreign currency forces the value of the foreign currency to rise in relation to the domestic currency, thereby changing the rate of exchange between the domestic and foreign currency.

Illustration 1 Relative Inflation Rates

Assume that the U.S. dollar is relatively stable while the Mexican peso is suffering from sudden inflationary pressures. As the Mexican peso buys less in the domestic Mexican economy, Mexicans and their banking institutions seek the safe haven of the U.S. dollar to maintain the purchasing power of their liquid resources. The demand for U.S. dollars created by Mexicans buying them with Mexican pesos makes the U.S. dollar more valuable in terms of the peso and drives up the exchange rate. The U.S. dollar commands more pesos in an exchange of currency.

1.1.2 Trade Factor (Relative Income Levels)

As income increases in one country relative to another, exchange rates change as a result of increased demand for foreign currencies in the country in which income is increasing.

Illustration 2 Relative Income Levels

The income level in the United States increases significantly in the second quarter. Americans flock to Mexico City on vacation to buy piñatas. The increased supply of American dollars seeking to buy pesos to purchase Mexican goods causes the value of the American dollar to fall in relation to a stated number of pesos. The exchange rate is thus affected by relative income levels and the associated demand for foreign currency created by higher domestic income.

1.1.3 Trade Factor (Government Controls)

Various trade and exchange barriers that artificially suppress the natural forces of supply and demand affect exchange rates.

Illustration 3 Government Controls

A tariff on imported piñatas would have the effect of discouraging the purchase of imports, thereby reducing demand for the peso and maintaining the exchange rate.

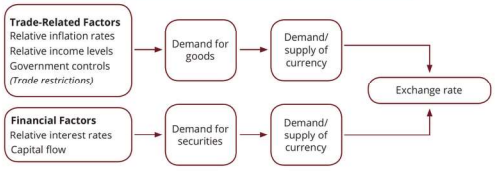
1.1.4 Financial Factors (Relative Interest Rates and Capital Flows)

Interest rates create demand for currencies by motivating either domestic or foreign investments. The forces of supply and demand create changes in the exchange rate as investors seek fixed returns. The effect of interest rates is directly affected by the volume of capital that is allowed to flow between countries.

Illustration 4 Relative Interest Rates and Capital Flows

Assume that returns on institutional investments in Mexico skyrocket in the third quarter while returns on comparable institutional investments remain significantly lower in the United States. U.S. investors find the opportunity to earn high returns with similar risks in Mexican financial institutions irresistible. The demand for pesos increases as American investment increases. The exchange rate changes as the peso commands more U.S dollars.

Summary Chart: Circumstances That Impact Exchange Rates



1.2 Risk Exposure Categories

1.2.1 Transaction Exposure

Exchange rate risk is defined, in part, by *transaction exposure*. Transaction exposure is defined as the potential that an organization could suffer economic loss or experience economic gain upon settlement of individual transactions as a result of changes in the exchange rates. Transaction exposure is generally measured in relation to currency variability or currency correlation. Measurement of transaction exposure is generally done in two steps:

1. Project foreign currency inflows and foreign currency outflows.
2. Estimate the variability (risk) associated with the foreign currency.

Illustration 5 Transaction Exposure

Seattle Import/Export, a U.S. import/export company, imports commodities from Canada that it pays for in Canadian dollars and exports commodities to Canada for which it receives Canadian dollars. If Seattle Import/Export anticipated that it would export C$10,000,000 to Canada over the next year while importing C$8,000,000 over the same period, the net exposure in Canadian dollars is a C$2,000,000 inflow (receivable).

If the current exchange rate is $0.75/C$1, the net exposure in U. S. dollars is $1,500,000 (C$2,000,000 × 0.75). If the rate is anticipated to fluctuate five cents, between $0.70 and $0.80, the total U.S. dollar fluctuation exposure would be expected to be between $1,400,000 and $1,600,000.

1.2.2 Economic Exposure

In addition to transaction exposure, exchange rate risk is defined, in part, by *economic exposure*. Economic exposure is defined as the potential that the present value of an organization's cash flows could increase or decrease as a result of changes in the exchange rates. Economic exposure is generally defined through local currency appreciation or depreciation and is measured in relation to organization earnings and cash flows.

- **Currency Appreciation and Depreciation**

  Currency appreciation (depreciation) refers to the strengthening (weakening) of a currency in relation to other currencies.

  - **Effect of Currency Appreciation**

    As a domestic currency appreciates in value or becomes stronger, it becomes more expensive in terms of a foreign currency. As a currency appreciates, the volume of outflows tends to decline as domestic exports become more expensive. However, the volume of inflows tends to increase as foreign imports become less expensive.

  - **Effect of Currency Depreciation**

    As a domestic currency depreciates in value or becomes weaker, it becomes less expensive in terms of a foreign currency. As a currency depreciates, the volume of outflows tends to rise as domestic exports become less expensive. However, the volume of inflows tends to decline as foreign imports become more expensive.

  The economic exposure created by domestic currency appreciation or depreciation with respect to a foreign currency depends on the net inflow or outflow of foreign currency.

1.2.3 Translation Exposure

In addition to the transaction and economic exposures, exchange rate risk is defined in part by *translation exposure*. Translation exposure is the risk that assets, liabilities, equity, or income of a consolidated organization that includes foreign subsidiaries will change as a result of changes in exchange rates. Translation exposure is generally defined by the degree of foreign involvement, the location of foreign subsidiaries, and the accounting methods used and measured in relation to the effect on the organization's earnings or comprehensive income.

- **Degree of Foreign Involvement**: Translation exposure increases as the proportion of foreign involvement by subsidiaries increases.

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Illustration 6 Translation Risk

Domestic International Inc. has no foreign subsidiaries but is deeply involved in exporting to neighboring countries. Global International Inc. has 12 foreign subsidiaries which, combined, make up 65 percent of consolidated revenues. Domestic International has less translation exposure than Global International because it has no foreign subsidiaries. Domestic's international business does expose the company to exchange rate risks, however, in terms of both transaction and economic exposure.

Because of Global International's extensive foreign operations, the parent company has significant exposure to foreign currency translation exposure, and depending on the entity's export/import activity, Global International may also be exposed to foreign exchange transaction and economic risks.

- **Locations of Foreign Investments:** Measurements of financial results of foreign investments frequently occur in the foreign currency in which the investee company operates. The exposure of the parent company to translation risk is affected by the stability of the foreign currency in comparison to the parent's domestic currency. The more stable the exchange rate, the lower the translation risk. The more volatile the exchange rate, the higher the translation risk.

2 Mitigating and Controlling Transaction Exposure

Businesses have various methods of managing the transaction exposure associated with exchange rate risks. The use of financial instruments and hedging attempts to mitigate the effect of exchange rate fluctuations on individual transactions. The following discussion analyzes hedging as it relates to foreign currency transactions.

2.1 Measuring Specific Net Transaction Exposure

Net transaction exposure is the amount of gain or loss that might result from either a favorable or an unfavorable settlement of a transaction.

2.1.1 Selective Hedging

Hedging is a financial risk management technique in which an organization, seeking to mitigate the risk of fluctuations in value, acquires a financial instrument that behaves in the opposite manner from the hedged item. In effect, hedging is a process of reducing the uncertainty of the future value of a transaction or position (e.g., asset, liability, income) by actively engaging in various derivative investments.

Illustration 7 Hedging

Worldwide Sweet Peaches buys shipping crates for its product from Mexico. The company incurs liabilities denominated in pesos that it satisfies in pesos bought with U.S. dollars at the time of transaction settlement. The company incurs a significant liability in pesos at a spot rate of $0.10. Worldwide management expects that the peso will strengthen to $0.20 by the time the bill is due and thereby double its cost. To mitigate this perceived transaction risk, the company decides to hedge its position by locking in the current peso spot rate of $0.10.

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2.1.2 Identifying Net Transaction Exposure

Consolidated entities consider their net transaction exposure prior to considering hedge strategies. Net transaction exposure considers the effect of transaction exposure on the entity taken as a whole rather than on individual subsidiaries. Although exchange rate issues might adversely affect one subsidiary, they might favorably affect another. The net transaction exposure is the aggregate exposure associated with a particular foreign currency for a particular time and is computed as follows:

1. Accumulate the inflows and outflows of foreign currencies by subsidiary.
2. Consolidate the effects on the subsidiary by currency type.
3. Compute the net effect in total.

2.1.3 Adjusting Invoice Policies

International companies may hedge transactions without complex instruments by timing the payment for imports with the collection from exports.

2.2 Mitigating Transaction Exposure: Futures Hedge

A *futures hedge* entitles its holder to either purchase or sell a particular number of currency units of an identified currency for a negotiated price on a stated date. Futures hedges are denominated in standard amounts and tend to be used for smaller transactions.

2.2.1 Accounts Payable Application

- Accounts payable denominated in a foreign currency represents a potential transaction exposure to exchange rate risk in the event that the *domestic currency weakens* in relation to the foreign currency. Should the domestic currency weaken relative to the foreign currency, more domestic currency will be required to purchase the foreign currency, thereby increasing the company's cost of settling the liability. If management does not hedge this liability exposure, the company will incur a foreign exchange transaction loss.

- A *futures hedge contract* to buy the foreign currency at a specific price at the time the account payable is due will mitigate the risk of a weakening domestic currency.

Illustration 8 Futures Contract

Worldwide Sweet Peaches buys crates from Mexico. On the date that Worldwide Sweet Peaches buys crates and incurs a significant liability in pesos, the spot rate is $0.10. Because the company fears that the peso will strengthen to $0.20 by the time the bill is due in 30 days, the company enters into a futures contract that will allow it to purchase the pesos needed to pay the liability for $0.10 per peso in 30 days.

2.2.2 Accounts Receivable Application

- Accounts receivable denominated in a foreign currency represent a potential transaction exposure to exchange rate risk in the event that the *domestic currency strengthens* in relation to the foreign currency. Should the domestic currency strengthen, less domestic currency (than originally anticipated from the sale that created the receivable) can be purchased with the foreign currency received. An exchange loss will result.
- A *futures hedge contract to sell* the foreign currency received in satisfaction of the receivable at a specific price at the time the accounts receivable is due will mitigate the risk of a strengthening domestic currency.

Illustration 9 Futures Hedge Contract

Running Apparel International, a U.S.-based retailer, has international retail operations in several countries, including significant business in Japan. Company management expects that the Japanese retail operations will generate and liquidate a significant amount of its accounts receivables in 30 days. Although the current $/¥ spot rate is $1/¥98.02, company management expects the $/¥ spot rate to be $1/¥102.09 in 30 days. To mitigate this expected foreign exchange loss caused by the appreciation of the U.S. dollar (relative to the Japanese yen), the company enters into a futures contract to sell yen at the current spot rate ($1/¥98.02) in 30 days, thereby locking in the current value of these foreign receivables.

2.3 Mitigating Transaction Exposure: Forward Hedge

A *forward hedge* is similar to a futures hedge in that it entitles its holder to either purchase or sell currency units of an identified currency for a negotiated price at a future point. Although futures hedges tend to be used for smaller transactions, forward hedges are contracts between businesses and commercial banks and normally are larger transactions. Although a futures hedge might hedge a particular transaction, a forward hedge would anticipate a company's needs to either buy or sell a foreign currency at a particular point.

2.3.1 Accounts Payable Application

- Accounts payable denominated in a foreign currency represent a potential transaction exposure to exchange rate risk in the event that the *foreign currency strengthens*.
- A *forward hedge contract to buy* the foreign currency at a specific price at the time accounts payable are due for an entire subsidiary will mitigate the risk of a weakening domestic currency.

2.3.2 Accounts Receivable Application

- Accounts receivable denominated in a foreign currency represent a potential transaction exposure to exchange rate risk in the event that the *domestic currency strengthens*.
- A *forward hedge contract to sell* the foreign currency received in satisfaction of the receivables at a specific price at the time the accounts receivable are due or on the monthly cycle of a particular subsidiary will mitigate the risk of a strengthening domestic currency.

2.4 Mitigating Transaction Exposure: Money Market Hedge

A *money market hedge* uses international money markets to plan to meet future currency requirements. A money market hedge uses domestic currency to purchase a foreign currency at current spot rates and invest them in securities timed to mature at the same time as related payables.

2.4.1 Money Market Hedge: Payables (Excess Cash)

Firms with excess cash use money market hedges to lock in the exchange rate associated with the foreign currency needed to satisfy payables when they come due. Money market hedges for payables satisfaction include the following steps:

1. Determine the amount of the payable.
2. Determine the amount of interest that can be earned prior to settling the payable.
3. Discount the amount of the payable to the net investment required.
4. Purchase the amount of foreign currency equal to the net investment required and deposit the proceeds in the appropriate money market vehicle.

Illustration 10 Money Market Hedge: Payables (Excess Cash)

Duffy's Discount Piñatas has a payable due to its Mexican suppliers in the amount of 1,000,000 pesos in 90 days. The current exchange rate is $0.08 per peso and Mexican interest rates are 16 percent. Duffy has $100,000 in excess cash and elects to use a money market hedge to mitigate transaction exposure to exchange rate risk. Duffy performs the following steps:

1. Determine the required investment in pesos at Mexican interest rates: 1,000,000 / 1.04 = 961,538.

   (**Note:** A 16 percent annual interest rate for 90 days is equal to approximately 4 percent).
2. Purchase 961,538 pesos with $76,923 (961,538 pesos × 0.08).
3. Invest pesos at Mexican interest rates and satisfy payables upon maturity of the investment.

Duffy has secured the satisfaction of its current $80,000 payable for $76,923.

2.4.2 Money Market Hedge: Payables (Borrowed Funds)

Firms that do not have excess cash follow the same basic procedure for a money market hedge on payables, except that they first borrow funds domestically and invest them internationally to satisfy the payable denominated in a foreign currency.

Illustration 11 Money Market Hedge: Payables (Borrowed Funds)

Duffy's Discount Piñatas has a payable due to its Mexican suppliers in the amount of 1,000,000 pesos in 90 days. The current exchange rate is $0.08 per peso, Mexican interest rates are 16 percent, and U.S. interest rates are 6 percent. Duffy computes that it must borrow $76,923 to use a money market hedge to mitigate transaction exposure to exchange rate risk consistent with the first money market hedge example, but has no excess cash. Duffy borrows the needed amount for 90 days in the United States.

Duffy has secured the satisfaction of its current $80,000 payable for $78,077 (76,923 × 1.015 or 6% for 90 days).

2.4.3 Money Market Hedge: Receivables

A money market hedge used for receivables denominated in foreign currencies effectively involves factoring receivables with foreign bank loans. Foreign currency amounts are borrowed in discounted amounts that are repaid in the ultimate maturity value of the receivable denominated in the foreign currency. Borrowed foreign currency amounts are converted into the domestic currency.

Illustration 12 Money Market Hedge: Receivables

Duffy's Discount Piñatas has a receivable from a Mexican customer in the amount of 1,000,000 pesos due in 90 days. The current exchange rate is $0.08 per peso and Mexican interest rates are 16 percent. Duffy needs available cash and cannot wait to receive $80,000 in 90 days. Because Duffy needs the money now, the company elects to use a money market hedge technique to expedite collection and mitigate any transaction exposure to exchange rate risk.

Duffy computes that it can borrow 961,538 pesos and convert them to $76,923 consistent with the first money market hedge example. Duffy borrows the pesos from Mexican financial institutions.

Duffy will be able to meet whatever its current cash requirements are in the United States with the $76.923. and when the 90-day discounted note for 961.538 pesos matures for 1,000,000 pesos, Duffy will satisfy it with the collections from the foreign accounts receivable.

2.5 Mitigating Transaction Exposure: Currency Option Hedges

Currency option hedges use the same principles as forward hedge contracts and money market hedge transactions. However, instead of requiring a commitment to a transaction, the currency option hedge gives the business the option of executing the option contract or purely settling its originally negotiated transaction without the benefit of the hedge, depending on which result is most favorable.

2.5.1 Currency Option Hedges: Payables

A call option (an option to buy) is the currency option hedge used to mitigate the transaction exposure associated with exchange rate risk for payables.

- Similar to a futures contract or forward contract, the business plans to buy a foreign currency at a low rate in anticipation of the foreign currency strengthening in comparison to the domestic currency in order to ensure that it can settle its liability at the predicted value.

- The business has the option (not the obligation) to purchase the security at the option (strike or exercise) price. The business evaluates the relationship between the option price and the exchange rate at the settlement date. Generally, if the option price is less than the exchange rate at the time of settlement, the business will exercise its option. If the option price is more than the exchange rate at the time of settlement, the business will allow the option to expire. Although option premiums are used to compute any net savings associated with option transactions, they are a sunk cost and are irrelevant to the decision to exercise the options.

Example 1 Currency Option Hedge: Payables

Facts: Gearty International owes its Mexican supplier 1,000,000 pesos due in 30 days. Although the peso is currently exchanged for the U.S. dollar at $0.08, the company is fearful that the Mexican peso will strengthen in comparison to the dollar before the settlement to as much as $0.10. Gearty International pays a $0.005 option premium to secure a call option to buy 1,000,000 pesos in 30 days for $0.08/peso.

Required: Compute Gearty's net savings, assuming that Gearty is correct in its assessment of international exchange rates and the exchange rate at the time of the settlement (the spot rate) increases as predicted.

Solution:

Spot Rate at Settlement	Option Price	Premium	Total Option	Settlement Cost for 1,000,000 Pesos
$0.10	–	–	–	$100,000
–	$0.08	$0.005	$0.085	(85,000)
Net savings				$ 15,000

Gearty's consideration for the option, the $0.005 option premium, is $5,000 and is paid regardless of whether the option is exercised. The gross savings of $20,000 [(0.10 – 0.08) × 1,000,000 pesos] is reduced by the $5,000 option premium to reflect a $15,000 net savings. Because the option premium is a sunk cost, it does not affect the company's decision to exercise the call option.

Facts: Same as above

Required: Calculate Gearty's loss, assuming that Gearty is incorrect in its assessment of international exchange rates, the exchange rates stay constant at $0.08, and the company allows its option to expire.

Solution:

Spot Rate at Settlement	Option Price	Premium	Total Option	Settlement Cost for 1,000,000 Pesos
$0.08	–	–	–	$80,000
–	$0.08	$0.005	$0.085	(85,000)
Loss				$ (5,000)

Exercising the option is actually equal to simply settling the transaction at the spot rate. Gearty will likely buy pesos at the spot rate regardless of the loss associated with the premium.

2.5.2 Currency Option Hedges: Receivables

A put option (an option to sell) is the currency option hedge used to mitigate the transaction exposure associated with exchange rate risk for receivables.

- Similar to a futures contract or forward contract, the business plans to sell a foreign currency at a higher rate, in anticipation of the foreign currency weakening in comparison to the domestic currency, to ensure that it can capitalize on receivable collections at a stable or predicted value.
- The business has the option (not the obligation) to sell the collected amount of the foreign currency from the receivable at the option (strike or exercise) price. The business evaluates the relationship between the option price and the exchange rate at the settlement date. Generally, if the option price is more than the exchange rate at the time of settlement, the business will exercise its put option. If the put option price is less than the exchange rate at the time of settlement, the business will allow the put option to expire. Although premiums are used to compute any net preserved value associated with option transactions, they are a sunk cost and irrelevant to the decision to exercise the options.

Example 2 Currency Options Hedge: Receivables

Facts: Gearty International is owed 1,000,000 pesos due in 30 days from its Mexican customer. Although the peso is currently exchanged for the U.S. dollar at $0.08, the company is fearful that the Mexican peso will weaken in comparison to the dollar before the settlement to as little as $0.06. Gearty International pays a $0.005 put premium to secure a put option to sell 1,000,000 pesos in 30 days for $0.08.

Required: Compute the net preserved value assuming that Gearty is correct in its assessment of international exchange rates and the exchange rate at the time of the settlement (the spot rate) decreases.

Solution:

Spot Rate at Settlement	Option Price	Premium	Total Option	Settlement Cost for 1,000,000 Pesos
$0.06	–	–	–	$(60,000)
–	$0.08	$0.005	$0.075	75,000
Net preserved value				$ 15,000

Gearty's consideration for the put option, the $0.005 put premium, is $5,000 and is paid regardless of whether the put option is exercised. The gross value "preserved" of $20.000 [(0.08 – 0.06) × 1,000,000 pesos] is reduced by the $5,000 put premium paid to reflect a net $15,000 preserved receivable value. Because the put premium is a sunk cost, it is not included in the decision to exercise the option.

(continued)

(continued)

Facts: Same as above

Required: Calculate Gearty's loss, assuming that Gearty is incorrect in its assessment of international exchange rates, the exchange rates stay constant at $0.08, and Gearty allows the put option to expire.

Solution:

Spot Rate at Settlement	Option Price	Premium	Total Option	Settlement Cost for 1,000,000 Pesos
$0.08	–	–	–	$(80,000)
–	$0.08	$0.005	$0.075	75,000
Loss				$ (5,000)

Exercising the put option would actually be equal to simply settling the transaction at the spot rate when the receivables are received. Gearty will likely sell pesos at the spot rate regardless of the loss associated with the premium.

2.6 Mitigating Transaction Exposure: Long-Term Transactions

The following hedge transactions are used to mitigate exchange rate risk presented by transaction exposure.

2.6.1 Long-Term Forward Contracts

Mechanically, *long-term forward contracts* deal with the same issues as any other forward contracts. Long-term forward contracts are set up to stabilize transaction exposure over long periods. Long-term purchase contracts may be hedged with long-term forward contracts.

2.6.2 Currency Swaps

Transaction exposure associated with exchange rate risk for longer-term transactions can be mitigated with *currency swaps*.

- **Two Firms**

  Two firms with coincidental needs for international currencies may agree to swap currencies collected in a future period at a specified exchange rate. The two entities essentially swap their currencies in an exchange negotiation completed years in advance of their receipt of the currencies.

- **Financial Intermediaries**

  Typically, financial intermediaries are contacted to broker or to match firms with currency needs.

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Example 3 Currency Swap

Facts: In order to hedge its future raw material purchases for its operations, in Poland, a U.S. manufacturing firm (U.S. counterparty) agrees to enter into a currency swap with a Polish multinational firm (foreign counterparty) whereby the U.S. counterparty agrees to provide the following quarterly notional amounts in U.S. dollars to the foreign counterparty in exchange for the following quarterly notional amounts in Polish zlotys.

Quarter End	U.S. Counterparty Receives	Foreign Counterparty Receives
1	1,500,000 zloty	500,000 USD
2	900,000 zloty	300,000 USD
3	750,000 zloty	250,000 USD
4	1,800,000 zloty	600,000 USD

Assume that the exchange rates are 3.25 zloty/1.0 USD and 2.85 zloty/1.0 USD at the end of quarter 1 and quarter 2, respectively.

Required: Calculate the U.S. manufacturing firm's foreign currency gain or loss recorded at the end of the first and second quarters on the currency swap.

Solution: The U.S. manufacturing firm (U.S. counterparty) entered into a fixed notional amount currency swap with a foreign counterparty when the exchange rates were 3.0 zloty/1.0 USD. Because the contractual quarterly payments made in U.S. dollars to the Polish firm are fixed at that exchange rate throughout the swap, any movement up or down of these two exchange rates will result in a foreign currency gain or loss.

In the first quarter, the U.S. dollar appreciates versus the Polish zloty, so the U.S. counterparty incurs a foreign currency loss as follows:

0.25 × 500,000 = 125,000 USD loss

In the event the U.S. firm chose not to enter into the currency swap, investing 500,000 USD at the end of the first quarter would have provided 1,625,000 zloty (3.25 zloty/1.0 USD × 500,000 USD).

In the second quarter, the U.S. dollar depreciates versus the Polish zloty, resulting in the following (foreign-exchange) gain for the U.S. counterparty (relative to the 3.0 zloty/1.0 USD transaction exchange rate).

0.15 × 300,000 = 45,000 USD gain

In the event the U.S. firm chose not to enter into the currency swap, investing 300,000 USD at the end of the second quarter would have provided 855,000 zloty (2.85 zloty/1.0 USD × 300,000 USD).

- **Parallel Loan**

  Two firms may mitigate their transaction exposure to long-term exchange rate loss by exchanging or swapping their domestic currencies for a foreign currency and simultaneously agreeing to re-exchange or repurchase their domestic currency at a later date.

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2.7 Mitigating Transaction Exposure: Alternative Hedging Techniques

The following hedge transactions are used to mitigate exchange rate risk presented by transaction exposure.

2.7.1 Leading and Lagging

Leading and lagging represent transactions between subsidiaries or a subsidiary and a parent. The entity that is owed may bill in advance if the exchange rate warrants (leading) or possibly wait until the exchange rate is favorable before settling (lagging).

2.7.2 Cross-Hedging

The technique known as *cross-hedging* involves hedging one instrument's risk with a different instrument by taking a position in a related derivatives contract. This is often done when there is no derivatives contract for the instrument being hedged, or when a suitable derivatives contract exists but the market is highly illiquid.

2.7.3 Currency Diversification

The simplest hedge for long-term transactions is to diversify foreign currency holdings over time. A substantial decline in the value of one currency would not affect the overall dollar value of the firm if the currency represented only one of many foreign currencies.

3 Mitigating and Controlling Economic and Translation Exposure

Businesses have various methods of managing the economic and translation exposure associated with exchange rate risks. Generally, the use of organization-wide solutions related to the entity itself and related reporting requirements are included in the approach.

3.1 Assessing Economic Exposure

Economic exposure is defined by the degree to which cash flows of the business can be affected by fluctuations in exchange rates. The extent to which revenues and expenses are denominated in different currencies could seriously affect the profitability of an organization and represents economic exposure.

Illustration 13 Economic Exposure

Pete's Primo Piñatas manufactures piñatas in Mexico. The company's expenses paid to local suppliers are denominated in the peso. The company exports nearly 80 percent of its product to the United States and receives revenues denominated in U.S. dollars from upscale Mexican theme-party planners. If the peso were to strengthen in relation to the dollar, then import revenues could be significantly less than domestic expenses. Pete's Primo Piñatas would suffer economic losses as a result of its economic exposure to exchange rate risk.

3.2 Techniques for Economic Exposure Mitigation

Economic exposures typically relate to organization-wide issues and can usually only be mitigated with organization-wide approaches that involve restructuring and adjustments to the business plan.

3.2.1 Restructuring

Economic exposure to currency fluctuations can be mitigated by restructuring the sources of income and expense to the consolidated entity.

- **Decreases in Sales**

  A company fearful of a depreciating foreign currency used by a foreign subsidiary may elect to reduce foreign sales to preserve cash flows.

- **Increases in Expenses**

  A company anticipating a depreciating foreign currency may elect to increase reliance on those suppliers to take advantage of paying for raw materials or supplies with cheaper currency.

3.2.2 Characteristics of Restructuring and Economic Exposure

Restructuring tends to be more difficult than ordinary hedges. Economic exposures to exchange rate fluctuations are viewed as more difficult to manage than transaction exposures.

Question 1 **CPA-05860**

If the dollar price of the euro rises, which of the following will occur?

- **a.** The dollar depreciates against the euro.
- **b.** The euro depreciates against the dollar.
- **c.** The euro will buy fewer European goods.
- **d.** The euro will buy fewer U.S. goods.

Answer Explanation

Question 2 **CPA-05590**

What is the effect when a foreign competitor's currency becomes weaker compared with the U.S. dollar?

- **a.** The foreign company will have an advantage in the U.S. market.
- **b.** The foreign company will be disadvantaged in the U.S. market.
- **c.** The fluctuation in the foreign currency's exchange rate has *no* effect on the U.S. company's sales or cost of goods sold.
- **d.** It is better for the U.S. company when the value of the U.S. dollar strengthens.

Answer Explanation

Question 3 **CPA-05767**

Platinum Co. has a receivable due in 30 days for 30,000 euros. The treasurer is concerned that the value of the euro relative to the dollar will drop before the payment is received. What should Platinum do to reduce this risk?

- **a.** Buy 30,000 euros now.
- **b.** Enter into an interest rate swap contract for 30 days.
- **c.** Enter into a forward contract to sell 30,000 euros in 30 days.
- **d.** Platinum cannot effectively reduce this risk.

Answer Explanation

Module 1

Capital Structure: Part 1

BEC 2

RT Click to view

1 Capital Structure Components

An entity's capital structure is the mix of debt (long-term and short-term) and equity (common and preferred) used to finance operations and growth.

1.1 Debt Financing

Entities use various forms of short-term and long-term debt in their capital structures. Common forms of short-term debt include short-term notes payable, commercial paper, and line-of-credit arrangements. Long-term debt may include long-term notes payable, debentures, bonds, and capital leases.

1.1.1 Commercial Paper

Commercial paper is an unsecured, short-term debt instrument issued by a corporation. Commercial paper matures in 270 days or less (the threshold above which commercial paper must be registered with the SEC) and typically matures in 30 days. The proceeds from commercial paper must be used to finance current assets such as account receivable or inventory, or to meet short-term obligations.

1.1.2 Debentures

A debenture represents an unsecured obligation of the issuing company. In the event of default, the holder of a debenture has the status of a general creditor. Risks associated with debentures may be mitigated by a negative-pledge clause that stops a company from pledging assets to additional debt.

1.1.3 Subordinated Debentures

A subordinated debenture is a bond issue that is unsecured and ranks behind senior creditors in the event of an issuer liquidation. Subordinated debentures command higher interest rates than debentures to allow for additional risk.

1.1.4 Income Bonds

Income bonds represent securities that pay interest only upon achievement of target income levels. Income bonds represent a risky bond that typically only is used in reorganizations.

1.1.5 Junk Bonds

Junk bonds are characterized by high default risk and high return. Junk bonds are classified as "noninvestment grade" bonds by the major credit rating agencies given their more likely default on principal and/or interest payments by the issuer. Junk bonds are frequently used to raise capital for acquisitions and leveraged buyouts.

Illustration 1 Junk Bonds

Rust Belt Industries is looking to close its machinery plant in the small town of Oxidation, Ohio. The company is the only major employer in Oxidation. To preserve their way of life, employees have decided to buy the company from its current owners. The group of employees completed a leveraged buyout of the owners by issuing noninvestment grade (junk) bonds.

1.1.6 Mortgage Bonds

A mortgage is a loan that is secured by residential or commercial real property. Mortgages are usually pooled together and issued as mortgage bonds, with bondholders protected from default by a lien on the pooled real property assets. A distinguishing feature of mortgage bonds is that trustees act on behalf of bondholders to foreclose on mortgage assets in the event of default.

1.1.7 Leasing

A lease represents a contractual agreement in which the owner of an asset, the lessor, allows another party, the lessee, to use the property (asset) in exchange for periodic lease payments.

- **Operating Lease**

  Operating leases are those instances in which a property is rented over an insignificant portion of the asset's useful life with no obligation (or opportunity) to assume ownership of the property. Operating leases are considered off-balance sheet financing for the lessee, as there is no balance sheet effect with the periodic rent payments reflected as rent expense on the income statement. Companies that use operating leases (versus capital leases) will have stronger financial ratios because liabilities are lower (debt off-balance sheet) and, in the early years of the lease, rent expense is lower than the combined depreciation expense and interest expense reported under a capital lease.

- **Capital Lease**

  Capital (or finance leases per IFRS) are analogous to a lessee buying an asset and financing it with debt. The lessee records the present value of the minimum lease payments as an asset on its balance sheet as well as the corresponding current and long-term lease obligations. Instead of recording rent expense on the income statement, the lessee records both depreciation expense and interest expense under a capital lease. Generally, (lessee) firms that desire to report higher periodic operating cash flows prefer using capital leases over operating leases because the principal portion of the capital lease payment is reported as a financing cash outflow, while the entire (rent) payment under an operating lease is reported as an operating cash outflow. In order to classify a lease as a capital lease, a lessee must meet one of the following four criteria:

  - **Ownership** transfer at the end of lease
  - **Written** option for bargain purchase
  - **Ninety** (90) percent of lease property FV ≤ PV of lease payments
  - **Seventy-five** (75) percent or more of the asset's economic life is committed in the lease term

  If none of the above criteria are met, the lessee must treat the lease as an operating lease.

Illustration 2 Leasing

Phillips Manufacturing Company is working on its strategic plan for the upcoming year. Due to increased product demand, the company must expand its manufacturing by either constructing a new building or leasing an existing manufacturing facility for the next five years.

Management carefully weighs both options and recommends leasing the facility using an operating lease based on the following factors:

1. There are tax advantages offered by leasing, given Phillips' existing marginal tax rates;
2. The company has high financial leverage. and an operating lease structure will be used to keep additional debt off-balance sheet;
3. The use of an operating lease will improve the company's return on invested capital ratios; and
4. Local real estate prices have been highly volatile. Leasing provides additional flexibility, allowing management to reassess the lease-versus-buy decision and the level of product demand in five years.

1.2 Equity Financing

Equity financing involves the issuance of equity (stock) securities that represent different forms of ownership of the company. A distinguishing feature of equity securities is the rights of shareholders to a firm's assets in a bankruptcy (liquidation) are less than that of both secured and unsecured bondholders.

1.2.1 Preferred Stock

Preferred stock is a hybrid equity security that has features similar to both debt and equity. Preferred shares offer or require a fixed dividend payment to their holders, which is similar to coupon payments made on debt instruments. They are like equity because the timing of the dividend payment is at the discretion of the board of directors (not mandatory) and the dividend payments are not tax deductible. Preferred shares may have the following features and uses:

- **Cumulative Dividends**

  A cumulative provision on preferred stock may require that (unpaid) *dividends in arrears* on preferred stock from a prior period be paid prior to the distribution of common stock dividends.

- **Participating Feature**

  Preferred shares may participate in declared dividends along with common shareholders to the extent that undistributed dividends exist after satisfying both preferred dividend requirements and common shareholder requirements at the preferred dividend rate.

- **Voting Rights**

  In rare circumstances, preferred shares are given voting rights. Usually these situations are associated with dividends in arrears for significant periods.

1.2.2 Common Stock

Common stock represents the basic equity ownership security of a corporation. Common stock includes voting rights with optional dividend payments by the issuer. Most common stock is issued with a stated par value. When the common stock is issued at a given market price, the proceeds received by the issuer are separated between the common stock account (i.e., par value times the number of shares issued) and the additional paid-in capital account. A negative feature of common equity is that common shareholders have the lowest claim to a firm's assets in a liquidation.

Pass Key

The following table summarizes some of the general characteristics of debt and equity financing:

	Debt	Equity
Flexibility	No	Yes
Tax deductibility	Yes	No
EPS dilution	No	Yes
Increased financial risk	Yes	No
Security issuance costs	Low	High
Investor return	Fixed	Variable

2 Weighted Average Cost of Capital

The *weighted average cost of capital* (WACC) serves as a major link between the long-term investment decisions associated with a corporation's capital structure and the wealth of a corporation's owners. The weighted average cost of capital is the average cost of all forms of financing used by a company. WACC is often used internally as a hurdle rate for capital investment decisions. The theoretical optimal capital structure is the mix of financing instruments that produces the lowest WACC.

Pass Key

The value of a firm can be computed as the present value of the cash flow it produces, discounted by the costs of capital used to finance it. The mixture of debt and equity financing that produces the lowest WACC maximizes the value of the firm.

2.1 Computing the Weighted Average Cost of Capital (WACC)

The *weighted average cost of capital* (WACC) is the average cost of debt and equity financing associated with a firm's existing assets and operations.

2.1.1 Formula

The weighted average cost of capital is determined by weighting the cost of each specific type of capital by its proportion to the firm's total capital structure.

$$\text{WACC} = \begin{array}{c}\text{Cost of equity multiplied}\\ \text{by the percentage equity}\\ \text{in capital structure}\end{array} + \begin{array}{c}\text{Weighted average cost of debt}\\ \text{multiplied by the percentage}\\ \text{debt in capital structure}\end{array}$$

- The percentage equity and percentage debt in the capital structure is calculated using the market values of the outstanding debt and equity, if market values are available.

Example 1 Calculating WACC

Facts: Assume that the cost of equity capital for XYZ Company is 17.8 percent. Also assume a weighted average interest rate of 10 percent and a targeted capital structure composed of 75 percent equity and 25 percent debt. Finally, assume a tax rate of 30 percent.

Required: Compute XYZ's WACC.

Solution:

1. Cost of debt (after tax):

= Interest rate × (1 − Tax rate)
= 10% × (1 − 30%)
= 10% × 70%
= 7%

2. WACC = (17.8% × 75%) + (7% × 25%) = 15.1%

If XYZ is using its WACC as the hurdle rate, then it should invest in any project that will yield a return higher than 15.1 percent.

2.1.2 Individual Capital Components

Individual capital components include both long-term and short-term elements of a firm's permanent financing mix.

- **Long-Term Elements:** *Long-term elements* include long-term debt, preferred stock, common stock, and retained earnings.
- **Short-Term Elements:** *Short-term elements* may include short-term interest-bearing debt (e.g., notes payable). Other forms of current liabilities (e.g., accounts payables and accruals) are rarely, if ever, included in the cost-of-capital estimate, because they generally represent interest-free capital.
- **After-Tax Cash Flows:** In evaluating the cost of the components of capital structure, *after-tax cash flows* are the most relevant. The cost of debt is computed on an after-tax basis because interest expense is tax deductible.

2.2 Weighted Average Cost of Debt

The relevant cost of *long-term debt* is the after-tax cost of raising long-term funds through borrowing. Sources of long-term debt generally include issuance of bonds or long-term loans. Debt costs are generally stated as the interest rate of the various debt instruments. In some cases, debt costs are stated according to basis points above U.S. Treasury bond rates (where 1 basis point is equal to one-hundredth of 1 percent, or 0.01 percent). The weighted average interest rate is calculated by dividing a company's total interest obligations on an annual basis by the debt outstanding:

$$\text{Weighted average interest rate} = \frac{\text{Effective annual interest payments}}{\text{Debt outstanding}}$$

2.2.1 Pretax Cost of Debt

The *pretax cost of debt* represents the cost of debt before considering the tax shielding effects of the debt.

2.2.2 After-Tax Cost of Debt

Because interest on debt is tax deductible, the tax savings reduces the actual cost of debt. The formula for computing the after-tax cost of debt is:

$$\text{After-tax cost of debt} = \text{Pretax cost of debt} \times (1 - \text{Tax rate})$$

Example 2 After-Tax Cost of Long-Term Debt

Facts: Assume that the long-term debt component of the weighted average cost of capital for a firm includes a pretax cost of debt of 12.5 percent and a 30 percent tax rate.

Required: Compute the after-tax cost of long-term debt.

Solution:

$$\begin{aligned}\text{After-tax cost of long-term debt} &= \text{Pretax cost of debt} \times (1 - \text{Tax rate}) \\ &= 0.125 \times (1 - 0.30) \\ &= 0.125 \times 0.7 \\ &= 0.0875 = 8.75\%\end{aligned}$$

Although the pretax interest rate is 12.5 percent, the after-tax interest rate, after considering the deductibility of the interest expense, is 8.75 percent. Note that if the tax rate increased to 40 percent, the cost of debt would decrease to 7.5 percent [12.5% × (1 − 0.40)].

Pass Key

- Debt carries the lowest cost of capital and the interest is tax deductible.
- The higher the tax rate, the more incentive exists to use debt financing.

2.3 Cost of Preferred Stock

The cost of preferred stock is the dividends paid to preferred stockholders. After-tax considerations are irrelevant with equity securities because dividends are not tax deductible.

2.3.1 Formula

$$\text{Cost of preferred stock} = \frac{\text{Preferred stock dividends}}{\text{Net proceeds of preferred stock}}$$

2.3.2 Preferred Stock Dividends

Preferred stock dividends can be stated as a dollar amount or a percentage. For example, 5 percent preferred stock pays an annual dividend of 5 percent of par value, if dividends are declared by the corporation.

2.3.3 Net Proceeds of Preferred Stocks

The net proceeds from a preferred stock issuance can be calculated as the proceeds net of flotation costs (i.e., issuance costs).

Example 3 Cost of Preferred Stock

Facts: Assume that the preferred stock component of the weighted average cost of capital for a firm is 10 percent, $100 par value preferred stock that was issued at par value with a flotation cost of $5 per share.

Required: Compute the cost of preferred stock.

Solution:

Preferred stock dividend = Dividend percentage times par value = 10% × $100 = $10

Cost of preferred stock = Dividends / Net proceeds
= $10 / ($100 − $5)
= $10 / $95
= 0.1053 = 10.53%

2.4 Cost of Retained Earnings

The cost of equity capital obtained through retained earnings is equal to the rate of return required by the firm's common stockholders. A firm should earn at least as much on any earnings retained and reinvested in the business as stockholders could have earned on alternative investments of equivalent risk. As mentioned above, after-tax considerations are irrelevant to equity securities because dividends are not tax deductible. Arriving at the components of the formula for the cost of retained earnings can be difficult and potentially subjective.

2.4.1 Three Common Methods of Computing the Cost of Retained Earnings

1. Capital asset pricing model (CAPM)
2. Discounted cash flow (DCF)
3. Bond yield plus risk premium (BYRP)

2.4.2 The Capital Asset Pricing Model (CAPM)

- **Key Assumptions**
  - The cost of retained earnings is equal to the risk-free rate plus a risk premium.
  - The market risk premium is equal to the systematic (nondiversifiable) risks associated with the overall stock market.
  - The beta coefficient is a numerical representation of the volatility (risk) of the stock relative to the volatility of the overall market. A beta equal to 1 means the stock is as volatile as the market, and a beta greater (less) than 1 means the stock is more (less) volatile than the market.
  - The risk premium is the stock's beta coefficient multiplied by the market risk premium.
  - The market risk premium is the market rate of return minus the risk-free rate.
- **Cost of Retained Earnings Formula (CAPM)**

$$\begin{aligned}\text{Cost of retained earnings} &= \text{Risk-free rate} + \text{Risk premium}\\ &= \text{Risk-free rate} + (\text{Beta} \times \text{Market risk premium})\\ &= \text{Risk-free rate} + [\text{Beta} \times (\text{Market return} - \text{Risk-free rate})]\end{aligned}$$

Example 4 Capital Asset Pricing Model

Facts: Assume that a firm's beta is 1.25, the risk-free rate is 8.75 percent, and the market rate of return is 14.25 percent.

Required: Compute the cost of retained earnings using the capital asset pricing model (CAPM).

Solution: Cost of retained earnings using the capital asset pricing model (CAPM):

$$\begin{aligned}\text{Cost of retained earnings} &= \text{Risk-free rate} + \text{Risk premium}\\ &= 0.0875 + [1.25 \times (0.1425 - 0.0875)]\\ &= 0.0875 + [1.25 \times 0.0550]\\ &= 0.0875 + 0.0688\\ &= 0.1563 = 15.63\%\end{aligned}$$

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2.4.3 Discounted Cash Flow (DCF)

- **Key Assumptions**
  - Stocks are normally in equilibrium relative to risk and return.
  - The estimated expected rate of return will yield an estimated required rate of return.
  - The expected growth rate may be based on projections of past growth rates, a retention growth model, or analysts' forecasts.
- **Formula**

$$\text{Cost of retained earnings} = \frac{D_1}{P_o} + g$$

Where:

P_0 = Current market value or price of the outstanding common stock

D_1 = The dividend per share expected at the end of one year

g = The constant rate of growth in dividends

Example 5 Discounted Cash Flow

Facts: Assume that a firm is a constant growth firm that just paid an annual common stock dividend of $2.00, has a dividend growth rate of 7.5 percent, and a current market price for common stock of $25.25 per share.

Required: Compute the cost of retained earnings using the discounted cash flow (DCF) method.

Solution: Compute the dividend per share expected at the end of the year as follows:

$D_1 = D_0 \times (1 + g)$

$D_1 = \$2.00 \times (1 + 0.075)$

$D_1 = \$2.00 \times 1.075$

$D_1 = \$2.15$

Cost of retained earnings using the discounted cash flow (DCF) method:

Cost of retained earnings $= (D_1 / P_0) + g$

$= (\$2.15 / \$25.25) + 0.075$

$= 0.0851 + 0.075$

$= 0.1601 = 16.01\%$

2.4.4 The Bond Yield Plus Risk Premium (BYRP)

- **Key Assumptions**
  - Equity and debt security values are comparable before taxes.
  - Risks are associated with both the individual firm and the state of the economy. Risk premiums depend on nondiversifiable risk.
  - Risk estimation can be derived by using a market analysts' survey approach or by subtracting the yield on an average (A-rated) corporate long-term bond from an estimate of the return on the equity market.

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Formula

Cost of retained earnings = Pretax cost of long-term debt + Market risk premium

Example 6 Bond Yield Plus Risk Premium

Facts: Assume that a firm has estimated its market risk premium at 4.5 percent and has determined that the yield to maturity on its own bonds is 11.34 percent.

Required: Compute the cost of retained earnings using the bond yield plus risk premium (BYRP) method.

Solution: Cost of retained earnings using the bond yield plus risk premium method:

$$\begin{aligned}\text{Cost of retained earnings} &= \text{Firm's own bond yield} + \text{Market risk premium}\\ &= 0.1134 + 0.045\\ &= 0.1584 = 15.84\%\end{aligned}$$

2.4.5 Comparison of the CAPM, DCF, and BYRP Methods

Each method is a valid method of calculating the cost of retained earnings.

The average of the three cost amounts could be used as the estimate of the cost of retained earnings if there is sufficient consistency in the results of the three methods.

Example 7 Cost of Retained Earnings

Facts: The cost of retained earnings under:

$$\begin{aligned}\text{CAPM method} &= 15.63\%\\ \text{DCF method} &= 16.01\%\\ \text{BYRP method} &= 15.84\%\end{aligned}$$

Required: Compute the average cost of retained earnings.

Solution: Average cost of retained earnings:

$$\begin{aligned}\text{Average} &= \frac{(\text{CAPM} + \text{DCF} + \text{BYRP})}{3}\\ &= \frac{(15.63\% + 16.01\% + 15.84\%)}{3}\\ &= 15.83\%\end{aligned}$$

Question 1 **CPA-03385**

DQZ Telecom is considering a project for the coming year, which will cost $50 million. DQZ plans to use the following combination of debt and equity to finance the investment.

- Issue $15 million of 20-year bonds at a price of 101, with a coupon rate of 8 percent, and flotation costs of 2 percent of par.
- Use $35 million of funds generated from (retained) earnings.

The equity market is expected to earn 12 percent. U.S. Treasury bonds are currently yielding 5 percent. The beta coefficient for DQZ is estimated to be 0.60. DQZ is subject to an effective corporate income tax rate of 40 percent. Assume that the after-tax cost of debt is 7 percent and the cost of equity is 12 percent. Determine the weighted average cost of capital.

- **a.** 10.50 percent
- **b.** 8.50 percent
- **c.** 9.50 percent
- **d.** 6.30 percent

Answer Explanation

Question 2 **CPA-03420**

Using the capital asset pricing model (CAPM), the required rate of return for a firm with a beta of 1.25 when the market return is 14 percent and the risk-free rate of 6 percent is:

- **a.** 14 percent.
- **b.** 7.5 percent.
- **c.** 17.5 percent.
- **d.** 16 percent.

Answer Explanation

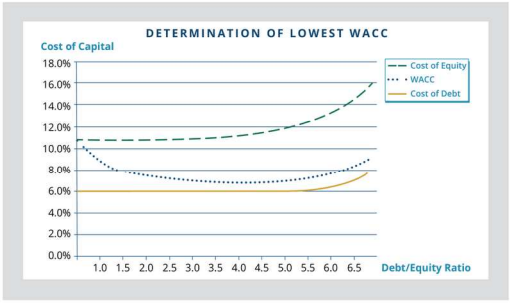
RT Click to view

1 Optimal Capital Structure

The *optimal cost of capital* is the ratio of debt to equity that produces the lowest WACC. Required rates of return demanded by debt and equity holders fluctuate as the ratio of debt to equity changes. At some point as debt to equity increases, leverage becomes more pronounced and debtors will demand a greater return for the high level of default risk. In addition, equity holders also will require a greater return due to the negative effect of high leverage on their potential future cash flows.

1.1 Determination of Lowest WACC

The following graph displays an example of the cost of using equity financing, the cost of using debt financing, and the resulting WACC as debt and equity conditions change. In this example, the firm achieves its lowest WACC when its debt-to-equity ratio is at 4.0.



1.2 Application to Capital Budgeting

Generally, new projects are funded by sources of capital that maintain the optimum capital structure (ratio of debt to equity) and meet or exceed the hurdle rate implied by its cost. The historic weighted average cost of capital may not be appropriate for use as a discount rate for a new capital project unless the project carries the same risk as the corporation and results in identical leveraging characteristics. Appropriate application of the weighted average cost of capital as a hurdle rate for capital projects involves use of the weighted average cost of each additional new dollar of capital raised at the margin as that capital need arises.

2 Asset Structure

While a firm's capital structure relates to the debt and equity components of its balance sheet, the asset structure relates to the composition of assets on its balance sheet. Specifically, asset structure describes the dollar amounts in each line on the balance sheet and the proportions of the assets that are classified as current and long-term.

2.1 Current Assets

Current assets are expected to provide economic benefits to the company within the 12-month period following the balance sheet date. Examples of current assets include:

- Cash and cash equivalents
- Inventory
- Accounts receivable
- Notes receivable
- Prepaid expenses
- Marketable security investments classified as trading

2.2 Non-current Assets

Non-current assets represent probable economic benefits that will extend beyond the next 12 months. Examples of non-current assets include:

- Long-term investments
- Property, plant, and equipment
- Intangible assets
- Deferred tax assets

2.3 Influence of Capital Structure

An entity's asset structure is influenced by and influences its capital structure. Debt and equity issuances may be used to fund long-term assets such as building construction and the acquisition of other companies. When a company issues new debt or equity, it receives an immediate cash infusion that boosts current assets. With debt in the capital structure, cash (or other current assets that can easily be converted to cash) are needed to fund interest and principal payments when they come due. With equity, the company may choose to pay dividends, which require cash payments (typically each quarter).

3 Loan Covenants and Capital Structure

Lenders use debt covenants to protect their interests by limiting or prohibiting the actions of borrowers that might negatively affect the position of the lenders. An entity's capital structure influences the extent to which it is subjected to loan covenants. If a borrower's capital structure is heavily weighted toward equity, its financial leverage will be low and its fixed obligations associated with debt will be relatively minimal. In these situations, loan covenants may not be particularly stringent or difficult to maintain because there is less risk that the borrower will be unable to make its interest and principal payments. However, when a borrower has a significant amount of outstanding debt relative to equity, loan covenants will typically increase and become more stringent because there is more risk for the lender.

4 Growth and Profitability

Investors, creditors/lenders, and individuals who do business with a company want to see sustainable growth and profitability over time; this provides assurance that the company will meet its obligations and provide a positive return on investment for its stakeholders. Both growth and profitability are affected by an entity's capital structure.

4.1 Growth Rate

The growth rate associated with a company's earnings is a key component of financial valuation. A company's annual earnings are allocated between dividend payments to shareholders and retained earnings. The percentage that is retained is multiplied by the company's return on equity (ROE) to produce the growth rate.

Growth rate (g) = Retention ratio (rr) × Return on equity (ROE)

Example 1 Growth Rate

Facts: A company calculates return on equity of 7.5 percent in the current year.

Required: Calculate the expected growth rate if the company follows a policy of paying out 40 percent of all earnings as dividends.

Solution: The growth rate is 4.5 percent, which is equal to the ROE of 7.5 percent multiplied by the retention ratio of 60 percent. (If the dividend payout ratio is 40 percent the retention ratio is equal to 1 − 40 percent, or 60 percent).

4.1.1 Influence of Capital Structure

An entity's capital structure influences its growth rate. The retention ratio is influenced by the level of equity. Dividends paid to shareholders increase the dividend payout ratio and decrease the retention ratio and the overall growth rate. Return on equity is affected by an entity's net income (which is reduced by interest expense associated with a company's debt) and the amount of equity (relative to debt) in a firm's capital structure. Lower net income and/or higher equity decrease the growth rate.

4.2 Profitability

A key financial measure of success for a company is profitability. Measures of profitability include return on investment (ROI), return on assets (ROA), and return on equity (ROE). All else being equal, a higher profitability ratio (over time for a single company or relative to its peers when comparing companies) is desirable.

$$\text{Return on investment (ROI)} = \frac{\text{Net income}}{\text{Invested capital}}$$

$$\text{Return on assets (ROA)} = \frac{\text{Net income}}{\text{Assets}}$$

$$\text{Return on equity (ROE)} = \frac{\text{Net income}}{\text{Shareholders' equity}}$$

4.2.1 Influence of Capital Structure

ROI, ROA, and ROE measure profitability after accounting for capital structure decisions. Net income is the bottom line of the income statement after both interest expense and taxes are taken into account. The higher an entity's debt, the greater the impact of interest expense on net income. Dividend payments affect these ratios in the sense that dividend payments reduce assets and retained earnings (equity).

5 Leverage and Risk

Leverage affects the variability of company profits and, therefore, affects the risk assumed (and return required) by creditors and owners. Leverage is a significant consideration as a factor in designing capital structure. Financial managers must consider both operating leverage and financial leverage.

5.1 Operating Leverage

5.1.1 Definition

Operating leverage is the degree to which a company uses fixed operating costs rather than variable operating costs. Capital-intensive industries often have high operating leverage. Labor-intensive industries generally have low operating leverage.

5.1.2 Implications

A company with high operating leverage must produce sufficient sales revenue to cover its high fixed-operating costs. High operating leverage is beneficial when sales revenue is high. High contribution margin indicates high operating leverage.

A company with high operating leverage will have greater risk but greater possible returns. There is risk because the variability of profits is greater with higher operating leverage.

When sales decline, a company with high operating leverage may struggle to cover its fixed costs. However, beyond the breakeven point, a company with higher fixed costs will retain a higher percentage of additional revenues as operating income (earnings before interest and taxes or EBIT).

Illustration 1 Operating Leverage

When Pat Jones compared his company's operating leverage with a competitor's operating leverage, Jones found that his company experienced a 21 percent increase in EBIT as a result of a 5 percent increase in sales, while the competitor experienced a 10 percent increase in EBIT as a result of a 5 percent increase in sales. Jones' company has higher operating leverage than the competitor. which implies that fixed costs constitute a higher proportion of his company's total costs compared with the competitor. As a result, Jones' company will need to generate more revenue to cover its fixed costs, but will be highly profitable once those fixed costs are met.

Illustration 2 High Operating Leverage

Nursing homes and hospitals are required to meet minimum staffing levels to maintain bed capacity. Salaries represent a fixed cost of maintaining capacity and result in higher operating leverage.

Illustration 3 Low Operating Leverage

Big box retailers have high variable operating costs in their cost of goods sold and part-time labor pool, resulting in low operating leverage

5.2 Financial Leverage

5

5.2.1 Definition

When making financing decisions, a firm can choose to issue debt or equity. When debt is issued, the firm generally must pay fixed interest costs. Equity issuances do not result in an increase in fixed costs because dividend payments are not required. Financial leverage is the degree to which a company uses debt rather than equity to finance the company.

5.2.2 Implications

A company that issues debt must produce sufficient operating income (EBIT) to cover its fixed interest costs. However, once fixed interest costs are covered, additional EBIT will go straight to net income and earnings per share. A higher degree of financial leverage implies that a relatively small change in earnings before interest and taxes (increase or decrease) will have a greater effect on profits and shareholder value. Another benefit of financial leverage is that interest costs are tax deductible, whereas dividends are not.

Companies that are highly leveraged may be at risk of bankruptcy if they are unable to make payments on their debt. They also may be unable to find new lenders in the future.

Illustration 4 Financial Leverage

If a firm with significant debt experiences a 42 percent increase in EPS as a result of a 21 percent increase in EBIT, the firm has more than enough operating income to cover its fixed interest costs. As a result, EPS has been magnified. If the firm had issued equity rather than debt, EPS most likely would have decreased because the number of shares outstanding would have increased. The higher a firm's financial leverage, the greater its potential profitability (but also the greater its risk).

Illustration 5 Financial Leverage

Jax Company issues new common equity to obtain cash for the purchase of new equipment for $1,000,000. Jax is not using financial leverage, and has no fixed financing costs associated with this transaction. Jax may or may not pay dividends to the new stockholders.

Max Company borrows $900,000 and uses its own cash of $100,000 to buy equipment. Max is using financial leverage, and now must pay fixed interest costs annually.

In the next year, the economy enters recession, and profits do not materialize for Jax or Max as each had expected. Max must pay the fixed interest cost on the loan, which further erodes its already tight cash flow. Jax has no interest expense and protects its cash by not declaring a dividend.

In future years, as sales improve, Max Company will benefit from financial leverage because interest is a fixed charge and is tax deductible. Additional earnings in excess of the interest charges will go straight to EPS. Jax, however, has no such guarantee because dividends are not fixed and shareholders may require larger returns. In addition, Jax has more shares of stock outstanding, which dilutes EPS.

6 Impact of Capital Structure on Financial Ratios

An entity's solvency, or ability to meet its long-term obligations, is affected by the amount of debt in its capital structure. Solvency can be measured using ratios such as debt to total capital, debt to equity, and debt to assets. The times interest earned ratio measures the company's ability to meet its interest obligations on long-term debt.

6.1 Debt-to-Total-Capital Ratio

$$\text{Debt-to-total-capital ratio} = \frac{\text{Total debt}}{\text{Total capital*}}$$

*Total capital = Debt + Equity = Total assets

- **Interpretation:** The debt-to-total-capital ratio provides indications related to an organization's long-term debt-paying ability. The lower the ratio, the greater the level of solvency and the greater the presumed ability to pay debts. The debt-to-total-capital ratio is alternatively expressed as the debt-to-assets ratio.

- **Variations:** Some analysts adjust the debt-to-total capital ratio to exclude certain items from the denominator (such as reserves, deferred taxes, minority shareholder interests, and redeemable preferred stock) as a basis for refining the amount truly available to liquidate debt.

6.2 Debt-to-Equity Ratio

Although comprehensive ratios provide insights into the overall solvency, relationships between the elements of capital structure provide more refined views of solvency.

$$\text{Debt-to-equity ratio} = \frac{\text{Total debt}}{\text{Total shareholders' equity}}$$

- **Interpretation:** The debt-to-equity ratio relates the two major categories of capital structure to each other and indicates the degree of leverage used. The lower the ratio, the lower the risk involved.
- **Variations:** Some analysts use the reciprocal of this ratio (total shareholders' equity to total debt) to measure the amount of equity backing up every dollar of debt. Another alternative version of this ratio uses only long-term debt in the numerator to purely compare only the long-term elements of capital structure.

6.3 Times Interest Earned Ratio

The times interest earned ratio shows the number of times the interest charges are covered by net operating income.

$$\text{Times interest earned ratio} = \frac{\text{Earnings before interest and taxes (EBIT)}}{\text{Interest expense}}$$

- **Interpretation:** The times interest earned ratio measures the ability of the company to pay its interest charges as they come due. It is a measure of long-term solvency.

Question 1 **CPA-03431**

Sylvan Corporation has the following capital structure:

Debenture bonds	$10,000,000
Preferred equity	1,000,000
Common equity	39,000,000

The financial leverage of Sylvan Corp. would increase as a result of:

- **a.** Issuing common stock and using the proceeds to retire preferred stock.
- **b.** Issuing common stock and using the proceeds to retire debenture bonds.
- **c.** Financing its future investments with a higher percentage of bonds.
- **d.** Financing its future investments with a higher percentage of equity funds.

Answer Explanation

Module 3 Working Capital Metrics

BEC 2

RT Click to view

1 Working Capital

Working capital policy and working capital management involve managing cash so that a company can meet its short-term obligations, and include all aspects of the administration of current assets (CA) and current liabilities (CL). The goal of working capital management is shareholder wealth maximization. The optimal mix of current assets and current liabilities depends on the nature of the business and the industry and requires offsetting the benefit of CA and CL against the probability of technical insolvency.

1.1 Definition of Net Working Capital

Net working capital is defined as the difference between current assets (CA) and current liabilities (CL).

1.2 Balancing Profitability and Risk

Working capital must be financed either with long-term or short-term debt or with stockholders' equity. Adequate working capital reserves mitigate risk, and thereby increase profitability. Less working capital increases risk by exposing a company to the likelihood of a possible failure to meet current obligations and potentially reducing a firm's ability to obtain additional short-term financing.

1.3 Analysis of Working Capital

Working capital metrics should be evaluated regularly. A ratio on its own will have some value, but significant value lies in examining ratio trends and making comparisons for both a single entity across time and comparisons to industry/peers at a point in time. Ratios provide quantitative support for understanding and explaining trends and changes in financial and business operations.

2 Working Capital Ratios

2.1 Current Ratio

2.1.1 Formula

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

2.1.2 Interpretation

The net amount of working capital (CA minus CL) measures the amount by which current assets exceed current liabilities, and the current ratio (CA divided by CL) measures the number of times current assets exceed current liabilities and is a way of measuring short-term solvency. This ratio demonstrates a firm's ability to generate cash to meet its short-term obligations.

2.1.3 Analysis

In general, a higher current ratio is better. The current ratio is generally considered to be the best single indicator of a company's ability to meet short-term obligations. The current ratio measures liquidity at a point in time, but it is not indicative of future cash flows.

- **Deteriorating Current Ratio**

  A decline in the current ratio, which implies a reduced ability to generate cash, can be attributable to increases in short-term debt, decreases in current assets, or a combination of both.

- **Improving Current Ratio**

  An increase or improvement in the current ratio implies an increased ability to pay off current liabilities and may be attributable to using long-term borrowing to repay short-term debt (in cases in which a firm lacks cash to reduce current debts).

2.1.4 Limitations of the Current Ratio (and Other Liquidity Ratios)

Unless short-term liquidity is a relevant issue, the current ratio is not necessarily the best measure of the health of a business.

Illustration 1 Current Ratio

A restaurant might have low CA (e.g., accounts receivable and inventory) relative to CL (e.g., accounts payable and payroll obligations), but might otherwise be healthy in terms of increasing cash flows, growing reputation, good location, and limited long-term debt obligations.

A bookstore might have a high CA (e.g., inventory) relative to CL (e.g., accounts payable), but might otherwise be unhealthy in terms of diminishing cash flows, poor location, increased competition from Internet vendors, and low inventory turnover.

2.2 Quick (Acid-Test) Ratio

2.2.1 Formula

$$\text{Quick ratio} = \frac{\text{Cash + Marketable securities + Receivables}}{\text{Current liabilities}}$$

Some analysts elect to include prepaid assets in the numerator of the quick ratio, but it is more conservative to exclude such items.

2.2.2 Interpretation

The quick ratio is a more rigorous test of liquidity than the current ratio because inventory and prepaids are excluded from current assets. Inventory is the least liquid of current assets. The ability to meet current obligations without liquidating inventory is important.

2.2.3 Analysis

The higher the quick ratio (or acid-test ratio), the better.

2.3 Cash Ratio

2.3.1 Formula

$$\text{Cash ratio} = \frac{\text{Cash + Cash equivalents}}{\text{Current liabilities}}$$

2.3.2 Interpretation

The cash ratio (also called the "cash coverage ratio") is the most conservative of the liquidity ratios. It measures the cash and cash equivalents a company has available to cover its short-term debts. All other current assets, such as inventory, marketable securities, and receivables, are excluded from the calculation.

2.3.3 Analysis

As is the case with the current ratio and the quick ratio, a higher cash ratio is better as it implies a greater ability to fund short-term debt obligations. While having a higher cash ratio demonstrates liquidity, excess idle cash may result in foregone opportunities to earn higher investment returns and enhance the growth of a company.

2.4 Cash Conversion Cycle

2.4.1 Formula

$$\text{Cash conversion cycle} = \text{Inventory conversion period} + \text{Receivables collection period} - \text{Payables deferral period}$$

2.4.2 Interpretation

The cash conversion cycle (sometimes called net operating cycle) is the length of time from the date of the initial expenditure for production to the date cash is collected from the customers offset by the length of time it takes to pay vendors for the initial expenditures.

2.4.3 Elements of the Cash Conversion Cycle Formula

The elements of the cash conversion cycle can most easily be calculated using the related turnover ratios.

- **Inventory Conversion Period**

  The inventory turnover ratio (the number of times a year inventory is sold) and the inventory conversion period (the average number of days inventory is held before it is sold) are measures of the effectiveness of an entity's inventory management. The inventory conversion period measures the degree to which resources have been devoted to inventory to support sales.

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

$$\text{Inventory conversion period} = \frac{365}{\text{Inventory turnover}}$$

- **Receivables Collection Period**

The accounts receivable turnover ratio and the receivables collection period are measures of the effectiveness of a company's credit policy. The accounts receivable turnover ratio measures the number of times receivables are collected over an accounting period (typically one year). The receivables collection period measures the number of days after a typical credit sale is made until the firm receives payment:

$$\text{Accounts receivable turnover} = \frac{\text{Credit sales}}{\text{Average accounts receivable}}$$

$$\text{Receivables collection period} = \text{Days sales outstanding (DSO)} = \frac{365}{\text{Accounts receivable turnover}}$$

- **Payables Deferral Period**

The accounts payable turnover ratio (the number of times a year a company pays its suppliers) and the accounts payable deferral period (the average number of days it takes for a company to pay its suppliers) are measures of the effectiveness of a company's attempt to delay payment to creditors.

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$$\text{Accounts payable turnover} = \frac{\text{Cost of goods sold}}{\text{Average accounts payable}}$$

$$\text{Accounts payable deferral period} = \frac{365}{\text{Accounts payable turnover}}$$

Example 1 Cash Conversion Cycle

Facts: ABC Computers has annual sales of $36 million. On average, the company carries $5 million in inventory, $3 million in accounts receivable, and $3 million in accounts payable.

Required: If the annual cost of goods sold for ABC is $27 million, what is the length of the cash conversion cycle for the firm?

Solution: Inventory conversion period:

$$\text{Inventory turnover} = \frac{\$27{,}000{,}000}{\$5{,}000{,}000} = 5.4\text{x}$$

$$\text{Inventory conversion period} = \frac{365}{5.4} = 67.6 \text{ days}$$

Receivables collection period:

$$\text{AR turnover} = \frac{\$36{,}000{,}000}{\$3{,}000{,}000} = 12\text{x}$$

$$\text{Receivables collection period} = \frac{365}{12} = 30.4 \text{ days}$$

Payables deferral period:

$$\text{AP turnover} = \frac{\$27{,}000{,}000}{\$3{,}000{,}000} = 9\text{x}$$

$$\text{Payables deferral period} = \frac{365}{9} = 40.6 \text{ days}$$

$$\text{Cash conversion cycle} = 67.6 \text{ days} + 30.4 \text{ days} - 40.6 \text{ days} = 57.4 \text{ days}$$

2.4.4 Analysis

A company should minimize the amount of time it takes to convert inventory to cash while maximizing the amount of time it takes to pay vendors. Therefore, the lower the cash conversion cycle, the better. Each component of the cash conversion cycle should be analyzed individually.

- **Inventory Conversion Period**

  A company is doing well when it quickly converts inventory into sales. A long inventory conversion period could mean that inventory becomes obsolete and ultimately a sunk cost to the entity. If the inventory conversion period is too short, the company may not have enough inventory on hand to support potential sales.

- **Receivables Collection Period**

  A short receivables collection period is ideal, although a company may lose sales if its credit or collection policies are too strict. A long receivables collection period indicates that the company is struggling to collect from its customers.

- **Payables Deferral Period**

  A company conserves cash by delaying payment to vendors for purchases on credit. Too short of a period presents the risk of not fully utilizing cash to the advantage of the company. Too long of a period may cause the company's relationship with its vendors to deteriorate.

2.5 Working Capital Turnover

2.5.1 Formula

$$\text{Working capital turnover} = \frac{\text{Sales}}{\text{Average working capital}}$$

Average working capital is the beginning-of-period plus end-of-period working capital divided by 2.

2.5.2 Interpretation

Working capital turnover is a measure of how effective a company is at generating sales based on funds used in operations.

2.5.3 Analysis

A higher working capital turnover ratio implies that a company is doing a relatively good job converting its working capital into sales. Too low of a ratio implies too much money is invested in current assets such as receivables and inventory relative to the amount of sales a company is generating from that capital. Too high of a ratio implies that there may not be enough capital in place to continue to support operations and sales.

Question 1 **CPA-03528**

Which one of the following would increase the working capital of a firm?

- **a.** Cash collection of accounts receivable.
- **b.** Refinancing of accounts payable with a two-year note payable.
- **c.** Cash payment of accounts payable.
- **d.** Payment of a 30-year mortgage payable with cash.

Answer Explanation

Question 2 **CPA-03456**

Which of the following transactions would increase the current ratio and decrease net profit?

- **a.** A federal income tax payment due from the previous year is paid.
- **b.** A long-term bond is retired before maturity at a discount.
- **c.** A dividend is paid.
- **d.** Vacant land is sold for less than the net book value.

Answer Explanation

Module 4

Working Capital Management: Part 1

BEC 2

RT Click to view

1 Inventory Management

Inventory may represent the most significant current noncash resource of an organization. Inventory typically is most significant in businesses that involve the sale or manufacture of goods.

1.1 Types of Inventory

Inventory may be classified as raw materials, work-in-process, and finished goods.

- **Raw Materials:** Inventory held for use in the production process.
- **Work-in-Process:** Inventory in production but incomplete.
- **Finished Goods:** Production inventory that is complete and ready for sale.

1.2 Inventory Valuation

1.2.1 Lower of Cost, Market, or Net Realizable Value

Inventory is generally accounted for at cost, which is the price paid to acquire an asset. When the value of the inventory falls below original cost, the inventory must be restated to the lower of market value or net realizable value. Inventory costed using LIFO or the retail inventory method is measured at the lower of cost or market value. Inventory costed using other methods is measured at the lower of cost or net realizable value.

1.2.2 Market Value

Market value represents the median value of the item's replacement cost, the market ceiling, and the market floor.

- **Replacement Cost:** Replacement cost is equal to the cost to purchase the inventory on the valuation date.
- **Market Ceiling:** The market ceiling is the net selling price less the costs to complete and dispose of the inventory.
- **Market Floor:** The market floor is equal to the market ceiling less a normal profit margin.

1.2.3 Net Realizable Value

Net realizable value is equal to the net selling price less costs to complete and dispose. This is also known as the market ceiling.

Example 1 Lower of Cost or Market

Facts: Six months ago, Duffy Inc. purchased inventory for $55 per unit. The current replacement cost is $48 per unit, while the net selling price less costs to complete (net realizable value) is $51 and the normal profit margin is $5.

Required: Determine the value of the inventory on the balance sheet if the inventory is costed using LIFO and FIFO.

Solution: Under LIFO, the inventory is valued at the lower of cost or market:

Cost = $55
Market = $48

Market is the median value of the replacement cost ($48), market ceiling ($51), and market floor ($46 = $51 − $5).

The value of the inventory per unit on the balance sheet will be $48.

Under FIFO, the inventory is valued at the lower of cost and net realizable value:

Cost = $55
Net realizable value = $51

The value of the inventory per unit on the balance sheet will be $51.

1.3 Periodic vs. Perpetual Inventory Systems

1.3.1 Periodic Inventory System

In a periodic inventory system, inventory quantities are determined by physical counts performed at least annually. Inventory units are valued at the end of the accounting period and actual cost of goods sold for the period is determined after each physical inventory by calculating the difference between beginning inventory plus purchases less ending inventory.

1.3.2 Perpetual Inventory System

With a perpetual inventory system, the inventory balance is updated for each purchase and each sale, and is always current. Cost of goods sold is determined and recorded with each sale.

1.4 Cost Flow Assumptions

Inventory valuation depends on the inventory system employed and the cost flow assumption chosen by an entity.

1.4.1 Specific Identification Method

Under specific identification, the cost of each item in inventory is uniquely identified to that item. The cost follows the physical flow of the item in and out of inventory to cost of goods sold.

1.4.2 First In, First Out (FIFO) Method

Under FIFO, the first costs inventoried are the first costs transferred to cost of goods sold. Ending inventory on the balance sheet includes the most recently incurred costs and therefore approximates replacement cost. The periodic and perpetual inventory systems can be used with FIFO.

1.4.3 Last In, First Out (LIFO) Method

Under LIFO, the last costs inventoried are the first costs transferred to cost of goods sold. The ending inventory balance typically does not approximate replacement cost because ending inventory includes the oldest inventory. The periodic and perpetual inventory systems can be used with LIFO.

1.4.4 Weighted Average Method

The weighted average method calculates an average cost per item at the end of the period by dividing the total costs of inventory available by the total number of units of inventory available. This average cost is used for both the ending inventory balance and cost of goods sold. The weighted average method works with a periodic inventory system.

1.4.5 Moving Average Method

The moving average method computes the weighted average cost of the inventory after each purchase by dividing the total cost of inventory available after each purchase (inventory plus current purchase) by the total units available after each purchase. The moving average method requires the perpetual inventory system.

Illustration 1 Cost Flow Assumptions

If a company chooses to use FIFO, the oldest costs inventoried are included in the cost of goods sold, leaving more recent purchases in the ending inventory balance on the balance sheet. When prices are falling, the older costs are the more expensive costs. Therefore, the cost of goods sold will be higher under FIFO and net income will be lower. In terms of working capital, current assets will be lower because inventory on the balance sheet will include the more recently purchased lower price inventory. As a result, working capital will be lower.

2 Inventory Management Strategies

2.1 Factors Influencing Inventory Levels

Inventory depends on the accuracy of sales forecasts. Lack of inventory can result in lost sales, and excessive inventory can result in burdensome carrying costs, including:

- Storage costs
- Insurance costs
- Opportunity costs of inventory investment
- Lost inventory due to obsolescence or spoilage

Pass Key

The lower the carrying costs of inventory, the more inventory companies are willing to carry.

2.2 Optimal Levels of Inventory

Numerous factors affect the optimal level of inventory, including the usage rate of inventory per period of time, cost per unit of inventory, cost of placing orders for inventory, and the time required to receive inventory. Concepts related to the determination of the optimal level of inventory include:

- Inventory turnover
- Safety stock
- Reorder point
- Economic order quantity
- Materials requirements planning

2.3 Safety Stock

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Many companies maintain safety stock to ensure that manufacturing or customer supply requirements are met. The determination of safety stock depends on the following factors:

- Reliability of sales forecasts
- Possibility of customer dissatisfaction resulting from back orders
- Stockout costs (the cost of running out of inventory), including loss of income, the cost of restoring goodwill with customers, and the cost of expedited shipping to meet customer demand.
- Lead time (the time that elapses from the placement to the receipt of an order)
- Seasonal demands on inventory

2.4 Reorder Point

The reorder point is the inventory level at which a company should order or manufacture additional inventory to meet demand and to avert incurring stockout costs. The reorder point can be calculated using the following formula:

Reorder point = Safety stock + (Lead time × Sales during lead time)

Example 2 Reorder Point

Facts: Worldwide Widgets sells 8,000 widgets per year, manufactures widgets in groups of 1,500, and requires five weeks of lead time for widget production. Worldwide also maintains an absolute minimum safety stock of 1,200 widgets.

Required: Assuming a 50-week year and constant demand, compute Worldwide's reorder point for widgets.

Solution:

Worldwide sells an average of 160 widgets per week (8,000 widgets per year / 50 weeks).

Reorder point = Safety stock + (Lead time × Sales during lead time)

Reorder point = 1,200 widgets + (5 weeks × 160 widgets per week) = 2,000 widgets

Worldwide will manufacture additional widgets when its inventory of widgets falls to 2,000 units.

2.5 Economic Order Quantity

When managing inventory, there is a trade-off between carrying costs (the costs of holding inventory) and ordering costs (the costs of ordering additional inventory). For example, if the order quantity is small then carrying costs are low, but inventory must be ordered more frequently to meet demand, which increases ordering costs.

Ordering costs typically represent the costs of labor associated with order placement. The costs are driven by order frequency (rather than quantity per order) and they include the costs of entering the purchase order, processing the receipt of the inventory, inspecting the inventory to ensure that the goods received (typically a sample) are acceptable, and processing of the vendor invoice and consequent payment.

The *economic order quantity* (EOQ) inventory model attempts to minimize total ordering and carrying costs. The model can be applied to the management of any exchangeable good.

2.5.1 Assumptions

EOQ assumes that demand is known and is constant throughout the year, so EOQ does not consider stockout costs, nor does it account for costs of safety stock. EOQ also assumes that carrying costs per unit and ordering costs per unit are fixed.

2.5.2 The EOQ Equation and Equation Components

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$$E = \sqrt{\frac{2SO}{C}}$$

- Order size (**EOQ**)
- Annual **Sales** (in units)
- Cost per Purchase **Order**
- Annual **Carrying** cost per unit

Example 3 EOQ

Facts: Maximus Company incurs carrying costs of $50 a month and each order costs the firm $5,625.

Required: Calculate Maximus' economic order quantity if Maximus goes through 100 units of inventory monthly.

Solution:

$$E = \sqrt{\frac{2SO}{C}}$$

$$E = \sqrt{\frac{2 \times 100 \times \$5{,}625}{\$50}}$$

$$E = 150 \text{ units}$$

When Maximus orders inventory, it should order 150 units to minimize total ordering costs and carrying costs.

Note: Although the formula calls for annual sales and carrying costs, using monthly sales in the numerator and monthly carrying costs in the denominator will produce the same result.

2.6 Other Inventory Management Issues

2.6.1 Just-in-Time Inventory Models

The *just-in-time (JIT) inventory model* was developed to reduce the lag time between inventory arrival and inventory use. JIT ties delivery of components to the speed of the assembly line. JIT reduces the need of manufacturers to carry large inventories, but requires a considerable degree of coordination between manufacturer and supplier. The benefits of JIT implementation include tying production scheduling with demand, more efficient flow of goods between warehouses and production, reduced setup time, and greater employee efficiencies.

2.6.2 Kanban Inventory Control

Kanban inventory control techniques give visual signals that a component required in production must be replenished. This technique prevents oversupply or interruption of the entire manufacturing process as the result of lacking a component.

2.6.3 Computerized Inventory Control

Computerized inventory control operates by establishing real-time communication links between the cashier and the stock room. Every purchase is recognized instantaneously by the inventory database, as is every product return. Computers are programmed to alert inventory managers as to reorder requirements. In some cases, company databases interface directly with supplier software to allow for instantaneous reorders, thereby removing the human element.

3 Supply Chain Management/Integrated Supply Chain Management (ISCM)

Integrated supply chain management (ISCM) exists when a firm and the entire supply chain (suppliers, producers, distributors, retailers, customers, and service providers) are able to reasonably predict the expected demand of consumers for a product and then plan accordingly to meet that demand. Integrated supply chain management is a collaborative effort between buyers and sellers.

3.1 Goal Is to Understand Needs and Preferences of Customers

The goal of ISCM is to better understand the needs and preferences of customers and cultivate the relationship with them. If the actual demand of the customer is met and excess supply does not exist in the market, the firm will be able to minimize costs all along the supply chain (e.g., raw materials, production, packaging, shipping, etc.).

3.2 Supply Chain Operations Reference (SCOR) Model

The SCOR model was developed by the Supply Chain Council, which attempted to create a generic model for supply chain analysis. The SCOR model assists a firm in mapping out its true supply chain and then configuring it to best fit the needs of the firm. There are four key management processes or core activities pertaining to SCOR: plan, source, make, and deliver.

3.2.1 Plan

The process of planning consists of developing a way to properly balance demand and supply within the goals and objectives of the firm and prepare for the necessary infrastructure. According to the Supply Chain Council, examples of activities associated with "plan" are:

- Determining the demand requirements
- Assessing the ability of the suppliers to supply resources
- Planning the inventory levels

- Planning the distribution of inventory
- Planning for the purchase of raw materials
- Assessing capacity concerns and capabilities
- Identifying viable distribution channels
- Configuring the supply chain
- Managing the product's life cycle
- Making make/buy decisions

3.2.2 Source

Once demand has been planned, it is necessary to procure the resources required to meet it and to manage the infrastructure that exists for the sources. According to the Supply Chain Council, this process deals with the following types of activities:

- Selecting vendors
- Obtaining vendor feedback and certification
- Overseeing and obtaining proper vendor contracts
- Collecting and processing vendor payments
- Ordering, inspecting, and storing inputs to the production process
- Overseeing the quality assurance process
- Assessing vendor performance

3.2.3 Make

The "make" process encompasses all the activities that turn the raw materials into finished products that are produced to meet a planned demand. According to the Supply Chain Council, the process includes the following types of activities:

- Managing the production process
- Implementing changes in engineering
- Requesting products for use in the production process
- Manufacturing the product
- Testing the product
- Packaging the product
- Releasing inventory for shipment
- Maintaining the production equipment and the facilities
- Performing quality assurance measures
- Scheduling production runs
- Analyzing capacity availability

3.2.4 Deliver

The "deliver" process encompasses all the activities of getting the finished product into the hands of the ultimate consumers to meet their planned demand. According to the Supply Chain Council, this process includes the following types of activities:

- Managing of orders (e.g., provide quotes, grant credit, enter orders, etc.)
- Forecasting
- Pricing

- Managing transportation (e.g., freight, import/export issues, truck coordination, etc.)
- Managing accounts receivable and collections
- Shipping of products
- Labeling of products
- Scheduling installation of products
- Delivering the inventory according to channel distribution rules

Illustration 2 Supply Chain Operations Reference (SCOR) Model

Steel Products Inc. (SPI) manufactures custom steel rolls and standardized cut steel sheets. Despite its relatively small size, the company uses the SCOR model to assist in its supply chain management. Key features of SPI's SCOR model are as follows:

Plan: Prior to each new operating year, the plant manager estimates specific demand for SPI's steel products. The manager then estimates year-end inventory levels for each of SPI's standardized products. Once this is determined, the manager develops a plan to purchase the generic steel inputs.

Source: The next step is for the plant manager to select the vendors for purchasing the steel inputs used for the upcoming year's production. The steel is ordered from the vendors and then stored in the receiving section of the main plant. As part of the receiving supervisor's responsibilities, he is required to inspect the quality of each of the steel shipments and assess the dependability of each vendor.

Make: The plant manager, along with an outside consultant, assesses the current year's production process to determine whether any production changes should be made for the current year. At the start of the new operating year, the company manufactures its steel products from customer orders received. As new orders are obtained from the sales department, the plant manager schedules the weekly production runs.

Deliver: Once the steel orders are completed, they are priced using a combination of market intelligence and production cost inputs. The products are then shipped using the company's semitrailer trucks for regional orders and a national trucking company for longer-distance deliveries.

3.3 Benefits of Implementing Supply Chain Management

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Examples of benefits derived from implementing supply chain management include:

- Reduced costs in inventory management
- Reduced costs in warehousing
- Optimization of the distribution network and facility locations
- Enhanced revenues
- Improved service times
- Strategic shipment consolidation
- Reduced cost in packaging
- Improved delivery times

- Cross-docking (the minimization of handling and storage costs while receiving and processing of goods in the shortest time possible)
- Identification of inefficiencies in supply chain activities
- Integration of suppliers
- Management of suppliers

4 Accounts Payable Management

4.1 Trade Credit

Trade credit (or accounts payable) generally provides the largest source of short-term credit for small firms. Trade credit represents the purchases of goods and services as part of usual and customary business transactions for which payment is made 30 to 45 days after acquisition.

4.2 Accruals

Accruals represent routine transactions that remain unpaid at the end of an accounting period (e.g., wages payable and taxes payable) purely as a result of transaction timing. Accruals are another common form of short-term credit.

4.3 Discounts

Although extension of payments under trade credit arrangements can be very effective in preserving cash balances and financing current operations, the effective annual interest cost can be extremely high if discounts are offered and foregone as part of this working capital management strategy.

4.3.1 Calculating Payment Discounts

The formula for calculating the annual cost (APR) of a quick payment discount (assuming a 360-day year) follows:

$$\text{APR of quick payment discount} = \frac{360}{\text{Pay period} - \text{Discount period}} \times \frac{\text{Discount}}{100 - \text{Discount \%}}$$

Example 4 Payment Discounts (APR)

Facts: Terranova Company's main vendor offers a quick payment discount of 1/10, net 30 to its customers.

Required: Assuming a 360-day year, calculate the annual cost to Terranova of not taking advantage of the discount.

Solution:

$$\frac{360}{30 - 10} \times \frac{1\%}{100\% - 1\%} = \frac{360}{20} \times \frac{1\%}{99\%} = 18.2\%$$

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4.3.2 Factors Affecting Discount Policy

As shown in the previous example, there can be a high cost associated with a customer not taking advantage of a discount offered by the vendor. The decision whether or not to pay early and take the discount depends on several factors, including whether:

- The company has the cash on hand to pay that particular vendor early.
- The company wants to preserve its cash position for other purposes (investments, projects, maintaining a reserve, etc.).
- There is potential to negotiate even more favorable terms with vendors, including greater discounts or longer discount periods.

4.4 Use of Electronic Funds Transfer

The electronic movement of funds from one institution to another is called electronic funds transfer, or EFT. Electronic funds transfer can be used to ensure timely payment.

4.5 Optimal Vendor Payment Schedule

Companies need to find an optimal balance between conserving cash and ensuring that vendors are paid in a timely manner. If a company is a regular buyer and/or a large volume buyer from a particular vendor, it may be able to negotiate more favorable terms in order to either take advantage of discounts or extend payment periods. If, for example, the discount period is 10 days, a company will want to pay on the 10th day. If the overall payment is due in 30 days and the discount is not taken, the company should pay on the 30th day. Setting up automatic payments to pay vendors at the end of the payment period is ideal, as it allows the company to conserve cash as long as it can and still pay in a timely manner.

Illustration 3 Optimal Vendor Payment Schedule

Riggs Corp. pays for gas and electricity costs from Lancor, with monthly payments due on the 12th of each month. Rather than issuing paper checks from its Accounts Payable department, Riggs sets up the payments in its automated bill-pay system such that the amount due is automatically wired from Riggs' bank to Lancor on the morning of the 12th. Setting up the payments in this manner allows Riggs to conserve cash and meet the payment deadline without worrying about remembering to issue checks.

4.6 Methods to Delay Disbursements

4.6.1 Defer Payments

Postponing payment of accounts payable provides a spontaneous source of credit to which management can resort if the company is confronted with a short-term cash shortage. Communications to creditors that payments will arrive later than usual serve to mitigate possible damage to credit ratings.

4.6.2 Line of Credit

Establishing a line of credit with a bank serves to slow down payments. A line of credit extends the company's trade credit by paying off the company's trade accounts with borrowed funds and allowing the company a longer period to pay back that loan to the bank.

Question 1 **CPA-03458**

Garo Company, a retail store, is considering foregoing sales discounts in order to delay using its cash. Supplier credit terms are 2/10, net 30. Assuming a 360-day year, what is the annual cost of credit if the cash discount is *not* taken and Garo pays net 30?

- **a.** 24.0 percent
- **b.** 24.5 percent
- **c.** 36.0 percent
- **d.** 36.7 percent

Answer Explanation

Question 2 **CPA-06627**

An increase in which of the following should cause management to reduce the average inventory?

- **a.** The cost of placing an order.
- **b.** The cost of carrying inventory.
- **c.** The annual demand for the product.
- **d.** The lead time needed to acquire inventory.

Answer Explanation

Module 5

Working Capital Management: Part 2

BEC 2

RT Click to view

1 Cash and Credit Management

1.1 Management of Cash and Cash Equivalents

Factors influencing the levels of cash include the volume of collections and their timing, the volume of disbursements and their timing, and the degree to which idle cash is invested in marketable securities.

Businesses use various techniques to maximize cash balances, including managing float, synchronizing cash inflows and outflows, speeding collections and deposits, and mitigating risks with overdraft systems or compensating balances.

1.1.1 Motives for Holding Cash

Companies hold cash to make routine payments for business transactions, to repay loans and other financing costs, to maintain compensating balances for banks, to prepare for future uncertainties, and to prepare for future opportunities. Motives for holding cash include:

- **Transaction Motive:** A company may hold cash to meet payments arising from the ordinary course of business.
- **Speculative Motive:** Cash may be needed to take advantage of temporary opportunities.
- **Precautionary Motive:** It is important to have enough cash on hand to maintain a safety cushion to meet unexpected needs.

1.1.2 Disadvantages of High Cash Levels

Maintaining high levels of cash can be a disadvantage because of:

- The "negative arbitrage" effect (i.e., interest obligations exceed interest income from cash reserves).
- Increased attractiveness as a takeover target.
- Investor dissatisfaction with allocation of assets (i.e., failure to pay dividends).

1.1.3 Primary Methods of Increasing Cash Levels (Reducing the Operating Cycle)

Either speeding up cash inflows or slowing down cash outflows increases cash balances. Improved rates of cash collection are generally achieved through faster accounts receivable collections. Reduced cash outflows are often achieved through delayed (or deferred) disbursements. The combination of current cash inflows and current cash outflows related to a business is called the operating cycle. The objective of financial managers is to shorten the operating cycle.

1.2 Management of Accounts Receivable

1.2.1 Credit Policy

Credit policy is one of the major determinants of demand for a firm's products or services, along with price, product quality, and advertising. The credit policy of a company is typically established by a committee of senior company executives. Credit policy variables include:

1. **Credit Period:** Credit period is the length of time buyers are given to pay for their purchases. A commonly used credit period is 30 days. If the credit period is too long, the company may experience cash shortages. A credit period that is too short may damage relationships with customers and negatively affect future sales.
2. **Credit Standards:** Credit standards refer to the required financial strength of credit customers. Extending credit to only financially strong customers minimizes uncollectible receivables, but also limits potential sales. Extending credit to a broader base of customers increases sales, but adds risk in that a greater percentage of receivables are likely to be written off.
3. **Collection Policy:** Collection policy is measured by its stringency or laxity in collecting delinquent accounts. This is also a balancing act between wanting to collect cash owed quickly versus maintaining positive relationships with customers.
4. **Discounts:** Discounts include the discount percentage and period. Offering discounts to customers who pay early may result in faster receivables collection, depending on the terms of the discount and the customer's own cash needs and capacity to pay early.

1.2.2 Accounts Receivable Ratios

Financial ratios can be used to evaluate the effectiveness of an entity's credit policy. The list below represents common metrics used to evaluate AR collections.

- **Accounts Receivable Turnover (ART):** The number of times (per year, typically) a company is converting its receivables into cash.

$$\text{ART} = \frac{\text{Credit sales}}{\text{Average accounts receivable}}$$

- **Days Sales Outstanding (DSO):** A key component of the cash conversion cycle, the DSO represents how many days on average it takes a company to convert its credit sales into cash.

$$\text{DSO} = \left(\frac{\text{Average accounts receivable}}{\text{Credit sales}}\right) \times \text{Number of days in the period}$$

1.2.3 Methods to Speed Collections

- **Customer Screening and Credit Policy:** A company can choose to extend credit to more responsible customers. who are more likely to pay bills promptly.
- **Prompt Billing:** Timely billing of charges to credit customers ultimately serves to speed collections.
- **Payment Discounts:** Offering payment discounts may influence customers to pay faster and can result in improved cash collections. Discounts foregone represent a higher cost to the customer than a bank loan for similar financing.

- **Expedite Deposits:** Financial managers not only must collect credit sales in a timely manner, but also must ensure that funds are deposited and credited to their account quickly. The following techniques reduce the time during which payments received by a firm remain uncollected (not yet credited as cash in the bank).
  - **Electronic Funds Transfer:** The electronic movement of funds from one institution to another is called electronic funds transfer, or EFT. Electronic funds transfer and credit cards ensure timely payment. Having funds sent electronically to a company's bank account facilitates immediate collection rather than waiting for checks to be deposited.
  - **Lockbox Systems:** Lockbox systems expedite cash inflows by having a bank receive payments from a company's customers directly via mailboxes to which the bank has access. Payments that arrive in these mailboxes are deposited into the company's account immediately.
- **Concentration Banking:** Concentration banking is characterized by the designation of a single bank as a central depository. Advantages of concentration banking include:
  - Improved controls over inflows and outflows of cash
  - Reduced idle balances
  - Improved effectiveness for investments

1.2.4 Factoring

Factoring accounts receivable entails turning over the collection of accounts receivable to a third-party factor in exchange for a discounted short-term loan. Cash is collected from the factor immediately rather than from the customer according to the credit terms.

Example 1 Factoring

Facts: Radon Technologies enters into an agreement with a firm that will factor the company's accounts receivable. The factor agrees to buy the company's receivables, which average $50,000 a month, and have an average collection period of 30 days. The factor will advance up to 80 percent of the face value of receivables at an annual rate of 12 percent and charge a fee of 2 percent on all receivables purchased. The controller of the company estimates that the company would save $10,000 in collection expenses over the year. Fees and interest are not deducted in advance. Assuming a 360-day year, what is the annual cost of financing?

Required: Assuming a 360-day year, compute the annual cost of financing.

Solution:

	AR	× Fee	× (Days in year / Days in period)	Subtotals
AR submitted	$ 50,000	2%	360 / 30	$ 12,000
Amount withheld (20%)	(10,000)			
Amount subject to interest	$ 40,000	12% / 12	360 / 30	4,800
Cost to company				16,800
Less expense saved (due to outsourced collections)				(10,000)
Net cost				$ 6,800

Net cost/average amount advanced = $6,800 / $40,000 = 17% (APR)

2 Corporate Banking Arrangements

Debt involves risk, but it also provides management with the funds needed for operations and growth. One source of debt is borrowing from banks and other lending institutions that offer various forms of credit to companies.

2.1 Letter of Credit

A letter of credit represents a third-party guarantee, generally by a bank, of financial obligations incurred by the company. Letters of credit represent an external credit enhancement used by a company issuing otherwise unsecured debt to enhance its credit or can be required by a creditor to ensure payment.

Illustration 1 Letter of Credit

WUTFUN Toy Company is stocking up for its year-end inventory requirements and seeks to issue commercial paper to its suppliers upon delivery of stock. Toy wholesalers expect weak sales and are reluctant to accept unsecured debt. WUTFUN arranges for a letter of credit to guarantee payment of its indebtedness in order to ensure delivery of inventory.

2.2 Line of Credit

A line of credit represents a revolving loan with a bank, or group of banks, that is up to a specific dollar maximum amount for a defined term and is renewable upon the maturity date. Any outstanding balances under the line of credit reduce the future availability of funds that may be drawn by the company under that line. Lines of credit that are drawn represent a loan from the bank(s).

A company may also have a seasonal revolving credit facility that allows additional capital availability for a limited time period. Seasonal revolving credit facilities are used by companies during periods of high working capital needs.

Illustration 2 Line of Credit

Lacey's Stores Inc. is a soft goods general retailer. Through the first six months of the current operating year, the company has been able to cover its operating costs and working capital needs through its internal cash flow generation and the issuance of commercial paper. As the summer season begins to wind down, the retailer is planning a significant buildup of retail inventory for the upcoming holiday season. In order to obtain the necessary capital for this working capital expansion, the retailer draws down 80 percent of the availability under its master revolving line of credit facility. Several months later, Lacey's uses its seasonal revolving line of credit to cover its additional retail inventory needs. As the holiday season ends, the retailer pays down all outstanding balances under the master revolving credit facility and seasonal revolving line of credit (which is subsequently terminated at operating year-end).

2.3 Borrowing Capacity

A company's borrowing capacity, or borrowing limit, represents the amount of money in the form of credit or loans that a given lender, such as a bank, is willing to extend/lend to the company. Financial strength and stability (often summarized in the form of a credit rating) are key factors in this determination, as is the collateral a borrower has available to pledge toward the borrowed amount. In the event the borrower defaults on its obligation, the collateral is in place to protect the lender. Another key factor is the income level (and stability) of the borrower, as this will ultimately be the source of repayments to the lender.

Both lenders and borrowers have to manage their risk, and the borrowing capacity is protection for both sides such that the borrower does not take on more debt than it can reasonably manage and ultimately pay back. If a lender thinks that the borrower has no capacity to take on debt, the borrowing capacity is zero and no money will be lent.

2.4 Debt Covenants

Creditors use debt covenants in lending agreements to protect their interests by limiting or prohibiting the actions of debtors that might negatively affect the positions of the creditors. Covenants contained in a lending agreement may be positive or negative. A positive covenant may include the requirement that the issuer provides quarterly financial reporting (information) to the investors; a negative covenant may involve a restriction on asset sales for a stipulated time frame. When issuing debt instruments, company management should consider the potential effect of debt covenants on a firm's solvency, as highly restrictive covenants could hinder the company's basic operating decisions.

2.4.1 Common Debt Covenants

Debt covenants vary widely. Debt covenants may be positive (specifying something the borrower will do) or negative (specifying something the borrower will not do). Common debt covenants include:

- Limitations on issuing additional debt
- Restrictions on the payment of dividends
- Limitations on the disposal of certain assets
- Limitations on how the borrowed money can be used
- Minimum working capital requirements
- Maintenance of specific financial ratios, including:
  - Maximum debt-to-total-capital ratio (debt ratio)
  - Maximum debt-to-EBITDA ratio (cash flow coverage)
  - Minimum interest coverage ratio (times interest earned)
- Providing monthly, quarterly, or annual financial statements to bondholders (lenders)

2.4.2 Violation of Debt Covenants

When debt covenants are violated, the debtor is in technical default and the creditor can demand repayment of the entire principal. Most of the time, concessions are negotiated and real default, as opposed to technical default, is avoided. Concessions can result in the violated covenant(s) being waived temporarily or permanently. Concessions also can result in a change in the interest rate or other terms of the debt.

3 Financing Decisions and Working Capital

Companies use a mix of short-term and long-term financing to meet their capital requirements. Short-term and long-term financing have different advantages and disadvantages, and different effects on working capital.

3.1 Short-Term Financing

3.1.1 Characteristics

Short-term financing is generally classified as current and will mature within one year.

- **Rates:** Rates associated with short-term financing tend to be lower than long-term rates and presume greater liquidity on the part of the organization using short-term financing.
- **Effect on Working Capital:** Short-term financing is classified as a current liability and decreases working capital. The extent to which an organization uses short-term financing is dependent on both the amount of current assets it maintains and the risk tolerance of management. Shorter-term financing strategies require current asset levels to be sufficient to meet short-term obligations.

3.1.2 Advantages

- **Increased Profitability:** Rapid conversion of operating cycle components (e.g., inventory, receivables) into cash in order to meet short-term obligations carries the potential of increased profitability (and improved liquidity).
- **Decreased Financing Cost:** Short-term interest rates are generally lower than long-term interest rates given the shorter duration of the financing instruments.

3.1.3 Disadvantages

- **Increased Interest Rate Risk:** Interest rates may abruptly change, and given shorter maturities, may require greater financing charges than anticipated on future refinancing.
- **Decreased Capital Availability:** Lender evaluation of creditworthiness may change and thereby make financing impossible or less favorable by virtue of increased rates and/or less favorable terms.

3.2 Long-Term Financing

3.2.1 Characteristics

Long-term financing is generally classified as non-current and will mature after one year.

- **Rates:** Rates associated with long-term financing tend to be higher than short-term rates and presume less liquidity on the part of the organization using long-term financing.
- **Effect on Working Capital:** Long-term financing is classified as non-current and is not included in the calculation of working capital. However, dividend, interest, and principal repayments all require cash, which can reduce working capital over time. The extent to which an organization uses long-term financing is dependent on both the amount of current assets it maintains and the risk tolerance of management. Long-term financing increases financial leverage.

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3.2.2 Advantages

- **Decreased Interest Rate Risk:** For the borrower, long-term financing locks in an interest rate over a long period, thereby reducing the exposure to fluctuations in rates.
- **Increased Capital Availability:** Securing long-term debt guarantees financing over a long period and reduces the company's exposure to any risk that refinancing might be denied or modified with less favorable terms.

3.2.3 Disadvantages

- **Decreased Profitability:** Higher financing costs reduce profitability.
- **Increased Financing Costs:** Long-term debt generally carries a higher interest rate given the longer duration of the financing instruments.
  - **Interest Rate Risk: Lender's Perspective**

    For the lenders, a higher interest rate is charged for longer-term debt because the likelihood that interest rates will change over the period of the loan increases as the term of the loan increases. Higher financing charges compensate the lender for increased interest rate risk. Therefore, the lenders recognize their exposure to interest rate risk with long-term financing and charge a premium to the borrower in the form of higher rates.
  - **Interest Rate Risk: Borrower's Perspective**

    The borrowers, on the other hand, lock themselves into a long-term interest rate to reduce their exposure to interest rate risk, and pay a premium to do so.

Question 1 **CPA-05315**

What would be the primary reason for a company to agree to a debt covenant limiting the percentage of its long-term debt?

- **a.** To cause the price of the company's stock to rise.
- **b.** To lower the company's bond rating.
- **c.** To reduce the risk for existing bondholders.
- **d.** To reduce the coupon rate on the bonds being sold.

Answer Explanation

Click to view RT

1 Security Valuation

1.1 Absolute Value Models

Absolute value models assign an intrinsic value to an asset based on the present value of its future cash flows. Estimates of cash flows are derived and discounted based on interest rates applicable to the level of risk and required return associated with the asset and its projected cash flows.

1.1.1 Annuities

An annuity is a series of equal cash flows to be received over a number of periods. The traditional approach to asset valuation is the annuity present value formula, which divides future cash flows by a rate of return in order to determine the value of the annuity in today's dollars.

- **Calculating the Present Value of an Annuity**

$$\text{Annuity present value} = C \times (1 - \text{Present value factor}/r)$$
$$= C \times (1 - [1/(1+r)^t]/r)$$

Terms are defined as follows:

C = Amount of annuity (equal future cash flows)
r = Rate of return
t = Number of years

- **Assumptions:** Key assumptions implied by the variables of the formula include:
  - **Recurring Amount of the Annuity:** The amount of the periodic annuity must be specified (e.g., $10,000 per year).
  - **Appropriate Discount Rate:** Assumptions must specify the discount rate (e.g., the company requires a 15 percent return per year).
  - **Duration of the Annuity:** Assumptions must specify how long the annuity will continue (e.g., 2 years, 10 years, or even perpetuity, etc.).
  - **Timing of the Annuity:** An annuity may be received or paid in any number of ways. Assumptions must specify if the annuity payment occurs monthly, quarterly, annually, etc. The assumptions also must specify whether the annuity occurs at the beginning or the end of the period. The formula above assumes that annuity payments are made at the end of each period.

1.1.2 Perpetuities (Zero Growth Stock)

When the periodic cash flows paid by an annuity last forever, the annuity is called a perpetuity or perpetual annuity. The traditional annuity formula for perpetual cash flow streams is simplified, because no duration is known. When a company is expected to pay the same dividend each period, the perpetuity formula can be used to determine the value of the company's stock. This is the method used to value preferred stock.

- **Per-Share Valuation**

Present value of a perpetuity = Stock value per share = P = D/R

Terms are defined as follows:

P = Stock price
D = Dividend
R = Required return

- **Assumptions**
  - The assumptions must specify the dividend (and assume that it will never change).
  - The assumptions must specify the required return.

Example 1 Perpetuities

Facts: Baker Corporation pays a constant annual dividend per share of $5 per year. Able wants to invest in Baker and earn a 20 percent return.

Required: Calculate the value of Baker's stock.

Solution:

P = D/R
P = $5/20%
P = $25

Able should pay $25 for a share of Baker.

1.1.3 Constant (Gordon) Growth Dividend Discount Model (DDM)

The dividend discount model (DDM) assumes that dividend payments are the cash flows of an equity security and that the intrinsic value of the company's stock is the present value of the expected future dividends. If dividends are assumed to grow at a constant rate, the constant (Gordon) growth DDM can be used to determine the value of the company's stock.

- **Per-Share Valuation With Assumed Growth**
  - **Value (Price) of Equity Formula**

$$P_t = D_{(t+1)} / (R - G)$$

Terms are defined as follows:

P_t	=	Current price (price at period "t")
$D_{(t+1)}$	=	Dividend one year after period "t"
R	=	Required return
G	=	(Sustainable) Growth rate

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The candidate may be given the dividend at time = 0 or D_0. To determine D_1, the numerator of the formula becomes: $D_0(1 + G)$

  - **Determining the Required Rate of Return (R)**

The capital asset pricing model (CAPM) is often used to determine the required return for the DDM model as follows:

$$R_{ce} = R_f + \beta_i[(E(R_m) - R_f]$$

Where:

R_{ce}	=	Required rate of return on the (common) equity security
R_f	=	Risk-free rate of return
β_i	=	Beta on the security
$E(R_m)$	=	Expected return on market (portfolio)

Under the CAPM formula, the $[E(R_m) - R_i]$ term is also known as the equity risk premium.

- **Assumptions**
  - The assumptions must specify (or allow for the calculation of) dividends one year beyond the year in which you are determining the price.
  - The assumptions must include a required return.
  - The assumptions must include a constant growth rate of dividends.
  - The formula implies that the stock price will grow at the same rate as the dividend, in perpetuity.
  - The formula assumes that the required rate of return is greater than the dividend growth rate. If this relationship does not hold true, the formula will not work.

Example 2 Dividend Discount Model

Facts: Baker Corporation pays a current dividend per share of $5 per year and is projected to grow at 4 percent per year. Able wants to invest in Baker and earn a 20 percent return.

Required: Calculate the value of Baker's stock today.

Solution:

$P_t = D_{(t+1)}/(R - G)$
$D_{(t+1)} = \$5 \times 1.04$
$D_{(t+1)} = \$5.20$
$P_t = \$5.20/(0.20 - 0.04)$
$P_t = \$5.20/(0.16)$
$P_t = \$32.50$

The intrinsic value of Baker's stock today is $32.50.

Example 3 Dividend Discount Model

Facts: Baker Corporation pays a current dividend per share of $5 per year and is projected to grow at 4 percent per year. Able wants to invest in Baker and earn a 20 percent return.

Required: Calculate the amount that Able will pay for Baker's stock three years from today.

Solution:

$P_t = D_{(t+1)}/(R - G)$
$D_{(t+1)} = \$5 \times 1.04 \times 1.04 \times 1.04 \times 1.04$, or
$D_{(t+1)} = \$5 \times (1.04)^4$
$D_{(t+1)} = \$5 \times 1.1698586$
$D_{(t+1)} = \$5.85$
$P_t = D_{(t+1)}/(R - G)$
$P_t = (\$5.85)/(0.20 - 0.04)$
$P_t = \$5.85/(0.16)$
$P_t = \$36.56$

In order to value Baker in three years, the dividend to be paid in the fourth year is required. Able should pay $36.56 for Baker in three years.