2025 FRM®
Exam Prep

SchweserNotes™
Financial Markets and Products

Part I Book 3

KAPLAN SCHWESER

Book 3: Financial Markets and Products

SchweserNotes™ 2025

FRM Part I

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CONTENTS

STUDY SESSION 10—Options

STUDY SESSION 11—Interest Rates, Fixed-Income Securities, and Swaps

READING 43

Corporate Bonds

READING 44

Mortgages and Mortgage-Backed Securities

READING 45

Interest Rate Futures

Reading 46

Swaps

Readings and Learning Objectives

STUDY SESSION 8

27. Banks

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 1.

After completing this reading, you should be able to:

a. identify the major risks faced by banks and explain how these risks can arise.
b. compare the characteristics and applications of economic capital and regulatory capital.
c. summarize the Basel Committee regulations for regulatory capital and their motivations.
d. explain how deposit insurance gives rise to a moral hazard problem.
e. describe investment banking financing arrangements, including private placement, public offering, best efforts, firm commitment, and Dutch auction approaches.
f. describe the potential conflicts of interest among commercial banking, securities services, and investment banking divisions of a bank, and recommend solutions to these conflict of interest problems.
g. describe the distinctions between the banking book and the trading book of a bank.
h. explain the originate-to-distribute banking model and discuss its benefits and drawbacks.

28. Insurance Companies and Pension Plans

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 2.

After completing this reading, you should be able to:

a. describe the key features of the various categories of insurance companies and identify the risks facing insurance companies.
b. describe the use of mortality tables and calculate the premium payments for a policy holder.
c. differentiate between mortality risk and longevity risk and describe how to hedge these risks.
d. describe defined benefit plans and defined contribution plans and explain the differences between them.
e. compare the various types of life insurance policies.
f. calculate and interpret loss ratio, expense ratio, combined ratio, and operating ratio for a property-casualty insurance company.
g. describe moral hazard and adverse selection risks facing insurance companies, provide examples of each, and describe how to overcome these risks.
h. evaluate the capital requirements for life insurance and property-casualty insurance companies.
i. compare the guaranty system and the regulatory requirements for insurance companies with those for banks.

29. Fund Management

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 3.

After completing this reading, you should be able to:

a. differentiate among open-end mutual funds, closed-end mutual funds, and exchange-traded funds (ETFs).
b. identify and describe potential undesirable trading behaviors at mutual funds.
c. explain the concept of net asset value (NAV) of an open-end mutual fund and how it relates to share price.
d. explain the key differences between hedge funds and mutual funds.
e. calculate the return on a hedge fund investment and explain the incentive fee structure of a hedge fund, including the terms hurdle rate, high-water mark, and clawback.
f. describe various hedge fund strategies including long-short equity, dedicated short, distressed securities, merger arbitrage, convertible arbitrage, fixed income arbitrage, emerging markets, global macro, and managed futures, and identify the risks faced by hedge funds.
g. describe characteristics of mutual fund and hedge fund performance and explain the effect of measurement biases on performance measurement.

30. Introduction to Derivatives

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 4.

After completing this reading, you should be able to:

a. define derivatives, describe the features and uses of derivatives, and compare linear and non-linear derivatives.
b. describe the specifics of exchange-traded and over-the-counter markets, and evaluate the advantages and disadvantages of each.
c. differentiate between options, forwards, and futures contracts.
d. identify and calculate option and forward contract payoffs.
e. differentiate among the broad categories of traders: hedgers, speculators, and arbitrageurs.
f. calculate and compare the payoffs from hedging strategies involving forward contracts and options.
g. calculate and compare the payoffs from speculative strategies involving futures and options.
h. describe arbitrageurs' strategy and calculate an arbitrage payoff.
i. describe some of the risks that can arise from the use of derivatives.

31. Exchanges and OTC Markets

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 5.

After completing this reading, you should be able to:

a. describe how exchanges can be used to alleviate counterparty risk.
b. explain the developments in clearing that reduce risk.
c. define netting and describe a netting process.
d. describe the implementation of a margining process, explain the determinants of and calculate initial and variation margin requirements.
e. describe the process of buying stock on margin without using a CCP and calculate margin requirements.
f. compare exchange-traded and OTC markets and describe their uses.
g. identify risks associated with OTC markets and explain how these risks can be mitigated.
h. describe the role of collateralization in the OTC market and compare it to the margining system.
i. explain the use of special purpose vehicles (SPVs) in the OTC derivatives market.

32. Central Clearing

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 6.

After completing this reading, you should be able to:

a. describe characteristics and mechanics of a central counterparty (CCP).
b. describe the role of CCPs and distinguish between bilateral and centralized clearing.
c. describe advantages and disadvantages of central clearing of OTC derivatives.
d. explain regulatory initiatives for the OTC derivatives market and their impact on central clearing.
e. compare margin requirements in centrally cleared and bilateral markets and explain how margin can mitigate risk.
f. compare netting in bilateral markets vs centrally cleared markets.
g. assess the impact of central clearing on the broader financial markets.
h. identify and explain the types of risks faced by CCPs.
i. identify and distinguish between the risks to clearing members and to non-members.

STUDY SESSION 9

33. Futures Markets

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 7.

After completing this reading, you should be able to:

a. define and describe the key features and specifications of a futures contract, including the underlying asset, the contract price and size, trading volume, open interest, delivery, and limits.
b. explain the convergence of futures and spot prices.
c. describe the role of an exchange in futures transactions.

d. describe the mechanics of the delivery process and contrast it with cash settlement.
e. describe and compare different trading order types.
f. describe the application of marking to market and hedge accounting for futures.
g. compare and contrast forward and futures contracts.

34. Using Futures for Hedging

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 8.

After completing this reading, you should be able to:

a. define and differentiate between short and long hedges and identify their appropriate uses.
b. describe the arguments for and against hedging and the potential impact of hedging on firm profitability.
c. define and calculate the basis, discuss various sources of basis risk, and explain how basis risks arise when hedging with futures.
d. define cross hedging and calculate and interpret the hedge ratio and hedge effectiveness.
e. calculate the profit and loss on a short or a long hedge.
f. calculate the optimal number of futures contracts needed to hedge an exposure and explain and calculate the "tailing the hedge" adjustment.
g. explain how to use stock index futures contracts to change a stock portfolio's beta.
h. explain how to create a long-term hedge using a stack-and-roll strategy and describe some of the risks that arise from this strategy.

35. Foreign Exchange Markets

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 9.

After completing this reading, you should be able to:

a. explain and describe the mechanics of spot quotes, forward quotes, and futures quotes in the foreign exchange markets; distinguish between bid and ask exchange rates.
b. calculate a bid-ask spread and explain why the bid-ask spread for spot quotes may be different from the bid-ask spread for forward quotes.
c. compare outright (forward) and swap transactions.
d. define, compare, and contrast transaction risk, translation risk, and economic risk.
e. describe examples of transaction, translation, and economic risks and explain how to hedge these risks.
f. describe the rationale for multi-currency hedging using options.
g. identify and explain the factors that determine exchange rates.
h. calculate and explain the effect of an appreciation/depreciation of one currency relative to another.
i. explain the purchasing power parity theorem and use this theorem to calculate the appreciation or depreciation of a foreign currency.
j. describe the relationship between nominal and real interest rates.
k. describe how a non-arbitrage assumption in the foreign exchange markets leads to the interest rate parity theorem and use this theorem to calculate forward foreign exchange rates.
l. differentiate between covered and uncovered interest rate parity conditions.

36. Pricing Financial Forwards and Futures

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 10.

After completing this reading, you should be able to:

a. define and describe financial assets.
b. define short-selling and calculate the net profit of a short sale of a dividend-paying stock.
c. describe the differences between forward and futures contracts and explain the relationship between forward and spot prices.
d. calculate the forward price given the underlying asset's spot price and describe an arbitrage argument between spot and forward prices.
e. differentiate between the forward price and the value of a forward contract.
f. calculate the value of a forward contract on a financial asset that does or does not provide income or yield.
g. explain the relationship between forward and futures prices.
h. calculate the value of a stock index futures contract and explain the concept of index arbitrage.

37. Commodity Forwards and Futures

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 11.

After completing this reading, you should be able to:

a. explain the key differences between commodities and financial assets.
b. define and apply commodity concepts such as storage costs, carry markets, lease rate, and convenience yield.
c. identify factors that impact prices on agricultural commodities, metals, energy, and weather derivatives.
d. explain the formula for pricing commodity forwards.
e. describe an arbitrage transaction in commodity forwards and calculate the potential arbitrage profit.
f. define the lease rate and explain how it determines the no-arbitrage values for commodity forwards and futures.
g. describe the cost of carry model and determine the impact of storage costs and convenience yields on commodity forward prices and no-arbitrage bounds.
h. calculate the forward price of a commodity with storage costs.
i. explain how to create a synthetic commodity position and use it to explain the relationship between the forward price and the expected future spot price.
j. explain the impact of systematic and nonsystematic risk on current futures prices and expected future spot prices.
k. define and interpret normal backwardation and contango.

STUDY SESSION 10

38. Options Markets

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 12.

After completing this reading, you should be able to:

a. describe the various types and uses of options; define moneyness.
b. explain the payoff function and calculate the profit and loss from an options position.
c. explain how dividends and stock splits can impact the terms of a stock option.
d. describe the application of commissions, margin requirements, and exercise procedures to exchange-traded options, and explain the trading characteristics of these options.
e. define and describe warrants, convertible bonds, and employee stock options.

39. Properties of Options

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 13.

After completing this reading, you should be able to:

a. identify the six factors that affect an option's price.
b. identify and calculate upper and lower bounds for option prices on non-dividend and dividend paying stocks.
c. explain put-call parity and apply it to the valuation of European and American stock options, with dividends and without dividends, and express it in terms of forward prices.
d. explain and assess potential rationales for using the early exercise features of American call and put options.

40. Trading Strategies

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 14.

After completing this reading, you should be able to:

a. explain the motivation to initiate a covered call or a protective put strategy.
b. describe principal protected notes (PPNs) and explain necessary conditions to create them.
c. describe the use and calculate the payoffs of various spread strategies.
d. describe the use and explain the payoff functions of combination strategies.

41. Exotic Options

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY:

Pearson, 2022. Chapter 15.

After completing this reading, you should be able to:

a. define and contrast exotic derivatives and plain vanilla derivatives.
b. describe some of the reasons that drive the development of exotic derivative products.
c. explain how any derivative can be converted into a zero-cost product.
d. describe how standard American options can be transformed into nonstandard American options.
e. identify and describe the characteristics and payoff structures of the following exotic options: gap, forward start, compound, chooser, barrier, binary, lookback, Asian, exchange, and basket options.
f. describe and contrast volatility swaps and variance swaps.
g. explain the basic premise of static option replication and how it can be applied to hedging exotic options.

STUDY SESSION 11

42. Properties of Interest Rates

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 16.

After completing this reading, you should be able to:

a. describe Treasury rates, LIBOR, Secured Overnight Financing Rate (SOFR), and repo rates, and explain what is meant by the "risk-free" rate.
b. calculate the value of an investment using different compounding frequencies.
c. calculate value of a bond based on coupon and yield.
d. calculate the theoretical price of a bond using spot rates.
e. calculate the Macaulay duration, modified duration, and dollar duration of a bond.
f. evaluate the limitations of duration and explain how convexity addresses some of them.
g. calculate the change in a bond's price given its duration, its convexity, and a change in interest rates.
h. calculate forward interest rates using a set of spot rates.
i. calculate the value of the cash flows using a forward rate agreement (FRA).
j. calculate zero-coupon rates using the bootstrap method.
k. compare and contrast the major theories of the term structure of interest rates.

43. Corporate Bonds

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 17.

After completing this reading, you should be able to:

a. describe features of bond trading and explain the behavior of bond yield.
b. describe a bond indenture and explain the role of the corporate trustee in a bond indenture.
c. define high-yield bonds and describe types of high-yield bond issuers and some of the payment features unique to high-yield bonds.
d. differentiate between credit default risk and credit spread risk.
e. describe event risk and explain what may cause it to manifest in corporate bonds.
f. describe different characteristics of bonds such as issuer, maturity, interest rate, and collateral.
g. describe the mechanisms by which corporate bonds can be retired before maturity.
h. define recovery rate and default rate, and differentiate between an issue default rate and a dollar default rate.
i. evaluate the expected return from a bond investment and identify the components of the bond's expected return.

44. Mortgages and Mortgage-Backed Securities

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 18.

After completing this reading, you should be able to:

a. describe the various types of residential mortgage products.
b. calculate a fixed-rate mortgage payment and its principal and interest components.
c. summarize the securitization process of mortgage-backed securities (MBS), particularly the formation of mortgage pools, including specific pools and to-be-announced (TBAs).

d. calculate the weighted average coupon, weighted average maturity, single monthly mortality rate (SMM), and conditional prepayment rate (CPR) for a mortgage pool.
e. describe the process of trading pass-through agency MBS.
f. explain the mechanics of different types of agency MBS products, including collateralized mortgage obligations (CMOs), interest-only securities (IOs), and principal-only securities (POs).
g. describe a dollar roll transaction and how to value a dollar roll.
h. describe the mortgage prepayment option and factors that affect it; explain prepayment modeling and its four components: refinancing, turnover, defaults, and curtailments.
i. describe the steps in valuing an MBS using Monte Carlo simulation.
j. define Option Adjusted Spread (OAS) and explain its uses and challenges.

45. Interest Rate Futures

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 19.

After completing this reading, you should be able to:

a. identify the most commonly used day count conventions, describe the markets that each one is typically used in, and apply each to an interest calculation.
b. calculate the conversion of a discount rate to a price for a US Treasury bill.
c. differentiate between the clean and dirty price for a US Treasury bond; calculate the accrued interest and dirty price on a US Treasury bond.
d. explain and calculate a US Treasury bond futures contract conversion factor.
e. calculate the cost of delivering a bond into a Treasury bond futures contract.
f. describe the impact of the level and shape of the yield curve on the cheapest-to-deliver Treasury bond decision.
g. calculate the theoretical futures price for a Treasury bond futures contract.
h. calculate the duration-based hedge ratio and create a duration-based hedging strategy using interest rate futures.
i. explain the limitations of using a duration-based hedging strategy.

46. Swaps

Global Association of Risk Professionals. *Financial Markets and Products*. New York, NY: Pearson, 2022. Chapter 20.

After completing this reading, you should be able to:

a. explain the mechanics of a plain vanilla interest rate swap and calculate its cash flows.
b. explain how a plain vanilla interest rate swap can be used to transform an asset or a liability and calculate the resulting cash flows.
c. explain the role of financial intermediaries in the swaps market.
d. describe the role of confirmation in a swap transaction.
e. describe the comparative advantage argument for the existence of interest rate swaps and evaluate some of the criticisms of this argument.
f. explain how the discount rates in a plain vanilla interest rate swap are calculated.
g. calculate the value of a plain vanilla interest rate swap based on two simultaneous bond positions.
h. calculate the value of a plain vanilla interest rate swap from a sequence of FRAs.
i. explain how a currency swap can be used to transform an asset or a liability and calculate the resulting cash flows.
j. calculate the value of a currency swap based on two simultaneous bond positions.
k. calculate the value of a currency swap based on a sequence of forward exchange rates.
l. identify and describe other types of swaps, including commodity, volatility, credit default, and exotic swaps.
m. describe the credit risk exposure in a swap position.

The following is a review of the Financial Markets and Products principles designed to address the learning objectives set forth by GARP®. Cross-reference to GARP FRM Part I Financial Markets and Products, Chapter 1.

READING 27

BANKS

Study Session 8

EXAM FOCUS

This reading introduces a number of concepts about banks that are developed more fully elsewhere in the FRM curriculum. For the exam, focus on understanding the major types of risk a bank faces and how they are addressed, both by banks themselves and by bank regulators. Be prepared to explain the differences between commercial banking and investment banking as well as the conflicts that exist in an organization that performs both of these services. Also, understand the distinctions between the lending and trading operations of a bank. Finally, be able to describe the implications of banks originating loans and distributing them to other parties.

MODULE 27.1: BANKS

When we speak of banks, we include financial institutions that provide a variety of services. Banks can be categorized by the functions they perform and the customers they serve.

Commercial banks are those that take deposits and make loans. Commercial banks include **retail banks**, which primarily serve individuals and small businesses, and **wholesale banks**, which primarily serve corporate and institutional customers.

Investment banks are those that assist in raising capital for their customers (e.g., by managing the issuance of debt and equity securities) and advising them on corporate finance matters such as mergers and restructurings.

Whether a bank or bank holding company engages in both commercial banking and investment banking or must only do one or the other depends on the regulations where it does business.

Major Risks Faced by Banks

LO 27.a: Identify the major risks faced by banks and explain how these risks can arise.

The main risks faced by a bank include credit risk, market risk, and operational risk.

Credit risk refers to the risk that borrowers do not repay their loans or that counterparties to contracts such as derivatives may default on their obligations when the contract has negative value to the counterparty (and positive value to the bank). The bank's trading of derivatives also introduces market risk since the derivatives contract is dependent on the price of the underlying asset. Regarding loans, the interest rate charged by banks on loans takes into account the expected losses; for example, assuming a 2% differential in average interest rate charged and cost of funds, expected losses of 0.6% would leave 1.4% remaining for operating costs and profit.

Market risk refers to the risk of losses from a bank's trading activities, such as declines in the value of securities the bank owns. Specific examples of market risk factors include changes in interest rates, exchange rates, and stock prices. Banks allow their larger investors to trade in a variety of financial contracts where the bank acts as a market maker. In those instances, the bank has controlled (but not zero) exposures to market risk factors.

Operational risk refers to the possibility of losses arising from external events (e.g., cyberattacks or physical asset damage) or failures of a bank's internal controls (e.g., employee defalcation, business interruption, IT failures, and human error). Operationally, banks are most exposed to legal, compliance, and cyber risks.

Economic Capital vs. Regulatory Capital

LO 27.b: Compare the characteristics and applications of economic capital and regulatory capital.

To mitigate the risk of bank failures caused by losses on loans or trading assets, banks must be funded by adequate sources of capital. Equity capital is needed to shield against possible losses and to maintain solvency. Banks may also issue long-term debt (debt capital) to bolster their capital. This debt is subordinated to the claims of depositors if a bank faces financial distress.

Equity capital can be thought of as going concern capital since it is meant to cover losses when the bank continues to operate as a business. In contrast, debt capital can be thought as gone concern capital since it is meant to cover losses only once the bank ceases to operate as a business.

Banks and their regulators may have different views about how much capital is sufficient in light of the risks a bank faces. **Regulatory capital** refers to the minimum amount required and is determined by bank regulators.

Economic capital refers to the amount of capital that a bank believes is adequate based on its own risk models. Both regulatory and economic capital refer to funds that are set aside to be used to cover unexpected losses. The amount of required capital will correspond to the amount of potential losses.

Basel Committee Regulations

LO 27.c: Summarize the Basel Committee regulations for regulatory capital and their motivations.

The Basel Committee regulations began as capital requirements to account for loan and derivatives contracts defaults (i.e., credit risk only). Over time, the capital requirements evolved and added amounts for market risk and operational risk.

Models are used to compute regulatory capital, specifically standardized models developed by the Basel Committee and internals models developed by the banks. After the credit crisis of 2007 to 2009, the Basel Committee has allowed less use of bank internal models. As of now, all three risks (credit, market, and operational) must be computed using a standardized model. However, if a bank is approved by its national regulator, then it may use an internal model for market and credit risks only. The internal models calculate a required capital amount based on the greater of the capital computed by the internal model, and 72.5% of the capital computed by the standardized model. Note that the 72.5% is a figure that will apply by 2027.

The credit crisis of 2007 to 2009 highlighted that many of the problems arose due to a liquidity shortage as opposed to a capital shortage. As a result, the Basel Committee introduced two liquidity ratio requirements. The **liquidity coverage ratio (LCR)** is meant to ensure that banks have enough funding sources to remain viable for 30 days in the event of minor financial stress periods. The **net stable funding ratio (NSFR)** attempts to control the maturity mismatches between the bank's assets and liabilities.

Deposit Insurance and Moral Hazard

LO 27.d: Explain how deposit insurance gives rise to a moral hazard problem.

To increase public confidence in the banking system and prevent runs on banks, most countries have established systems of **deposit insurance**. Typically, a depositor's funds are guaranteed up to some maximum amount if a bank fails. These systems are funded by insurance premiums paid by banks.

Like other forms of insurance, deposit insurance brings an element of **moral hazard**. Moral hazard is the observed phenomenon that insured parties take greater risks than they would normally take if they were not insured. In the banking context, with deposit insurance in place, the moral hazard arises when depositors pay less attention to banks' financial health than they otherwise would. This allows banks to offer higher interest rates on deposits and make higher-risk loans with the funds they attract. Losses on such loans contributed to increased bank failures in the United States in the 1980s and 2000s.

One way of mitigating moral hazard is by making insurance premiums risk-based. For example, in recent years, poorly capitalized banks have been required to pay higher deposit insurance premiums than well-capitalized banks.

Investment Banking Financing Arrangements

LO 27.e: Describe investment banking financing arrangements, including private placement, public offering, best efforts, firm commitment, and Dutch auction approaches.

When an investment bank arranges a securities issuance for a customer, it may try to place the entire issue with a particular buyer or group of buyers or sell the issue in the public market.

In a **private placement**, securities are sold directly to qualified investors with substantial wealth and investment knowledge. The investment bank earns fee income for arranging a private placement.

If the securities are sold to the investing public at large, the issuance is referred to as a **public offering**. Investment banks have two methods of assisting with a public offering. With a **firm commitment**, the investment bank agrees to purchase the entire issue at a price that is negotiated between the issuer and bank. The investment bank earns income by selling the issue to the public at a spread above the price it paid the issuer. An investment bank can also agree to distribute an issue on a **best efforts** basis rather than agreeing to purchase the whole issue, which is less risky for the bank. If only part of the issue can be sold, the bank is not obligated to buy the unsold portion. As with a private placement, the investment bank earns fee income for its services.

First-time issues of stock by firms whose shares are not currently publicly traded are called **initial public offerings (IPOs)**. Since the shares are not yet traded, it is challenging to determine a reasonable post-IPO share price. An investment bank can assist in determining an IPO price by analyzing the value of the issuer.

An IPO price may also be discovered through a **Dutch auction** process. A Dutch auction begins with a price greater than what any bidder will pay, and this price is reduced until a bidder agrees to pay it. Bidders may specify how many units they will purchase when accepting a price. The price continues to be reduced until bidders have accepted all the shares that the seller wants to sell. The price at which the last of the shares can be sold becomes the price paid by all successful bidders. Assuming all potential bidders participate, that price is the equilibrium price where demand and supply intersect.

Potential Conflicts of Interest

LO 27.f: Describe the potential conflicts of interest among commercial banking, securities services, and investment banking divisions of a bank, and recommend solutions to these conflict of interest problems.

If a bank or a bank holding company provides commercial banking, investment banking, and securities services, several conflicts of interest may arise. For example, an investment banking division that is trying to sell newly issued stocks or bonds might want the securities division to sell these to their clients. The investment bankers may press the securities division's financial analysts to maintain buy recommendations, or

press its financial advisors to allocate these stocks and bonds to customer accounts. Such pressure may interfere with analysts' independence and objectivity or conflict with advisors' duties to clients.

Another clear conflict of interest among banking departments involves material nonpublic information. A commercial banking or investment banking division may acquire nonpublic information about a company when negotiating a loan or arranging a securities issuance. Other parts of the banking company, such as its trading desk, may benefit unfairly if they gain access to this information.

Because of these inherent conflicts, most bank regulators require some degree of separation among commercial banking, securities services, and investment banking. In some cases, they have prohibited firms from engaging in more than one of these activities, as was true in the United States when the Glass-Steagall Act was in force. Where banking firms are permitted to have commercial banking, securities, and investment banking units, the firms must implement **Chinese walls**, which are internal controls to prevent information from being shared among these units.

Banking Book vs. Trading Book

LO 27.g: Describe the distinctions between the banking book and the trading book of a bank.

Distinctions between banking book and trading book are required when computing regulatory capital.

The **banking book** refers to assets and liabilities that are meant to be held to maturity. For example, it would include loans made, which are the primary assets of a commercial bank. In calculating regulatory capital, credit risk capital calculations apply to the banking book.

The **trading book** refers to assets and liabilities related to a bank's trading activities. Unlike other assets and liabilities, trading book items are marked to market daily. In calculating regulatory capital, market risk capital computations apply to the trading book, which often result in lower capital requirements than the banking book.

In general, the default classification for a given financial instrument is the banking book. However, if a bank dedicates a desk to trade a given instrument, then it would likely be classified in the trading book.

Originate-to-Distribute Model

LO 27.h: Explain the originate-to-distribute banking model and discuss its benefits and drawbacks.

In contrast to a bank making loans and keeping them as assets, the **originate-to-distribute model** involves making loans and selling them to other parties. Many mortgage lenders in the United States operate on the originate-to-distribute model. Government agencies such as Ginnie Mae (GNMA), Fannie Mae (FNMA), and Freddie

Mac (FHLMC) purchase mortgage loans from banks and issue securities backed by the cash flows from these mortgages.

The benefit of the originate-to-distribute model is that it increases liquidity in the sectors of the lending market where it is used. In addition to the residential mortgage market, this model has been applied in other areas such as student loans, credit card balances, and commercial loans and mortgages. For the banks that originate the loans, selling them to other parties is a way of freeing up capital with which they can meet regulatory requirements or make new loans.

A drawback of this model is that, in some cases, it has led banks to loosen lending standards. This was one of the factors that led to the credit crisis in the United States from 2007 to 2009.

MODULE QUIZ 27.1

1. The minimum level of capital a bank needs to maintain, according to its own estimates, models, and risk assessments, is best described as its:
   A. equity capital.
   B. financial capital.
   C. economic capital.
   D. regulatory capital.

2. Which of the following actions in the banking system is most likely intended to address the problem of moral hazard?
   A. Deposit insurers charge risk-based premiums.
   B. Banks increase loans to higher-risk borrowers.
   C. Governments implement deposit insurance programs.
   D. Banks increase the interest rates they offer to depositors.

3. An investment bank is most likely to earn a trading profit from buying and selling securities if it arranges a:
   A. Dutch auction.
   B. private placement.
   C. best efforts offering.
   D. firm commitment offering.

4. The purpose of a Chinese wall in banking is to:
   A. prevent a bank failure from endangering other banks.
   B. prevent a bank's departments from sharing information.
   C. restrict companies from offering both banking and securities services.
   D. restrict companies from engaging in both commercial and investment banking.

5. A drawback of the originate-to-distribute banking model is that it has led to:
   A. too little liquidity in certain sectors.
   B. too much liquidity in certain sectors.
   C. looser credit standards in certain sectors.
   D. tighter credit standards in certain sectors.

KEY CONCEPTS

LO 27.a

The major risks faced by a bank include the following.

- Credit risk from defaults on loans or by counterparties.
- Market risk from declines in the value of trading book assets.
- Operational risk from external events or failure of internal controls.

LO 27.b

To mitigate the risk of bank failures caused by losses on loans or trading assets, banks must be funded by adequate sources of capital. Banks and their regulators may have different views about how much capital is sufficient in light of the risks a bank faces.

LO 27.c

Regulatory capital is the amount of capital that regulators require a bank to hold. Economic capital is the amount of capital a bank believes it needs to hold based on its own models.

LO 27.d

Deposit insurance exists to increase public trust in the banking system. However, it gives rise to moral hazard by decreasing the attention depositors pay to a bank's financial health and increasing the level of risk a bank is willing to take when its depositors are insured.

LO 27.e

In a private placement, securities are sold directly to qualified investors. In a public offering, securities are sold to the investing public.

When assisting a securities issuer on a best-efforts basis, an investment bank sells as much of the issue to the public as it can. In a firm commitment, an investment bank buys an entire issue of securities from the issuer for one price and resells the securities to the public for a higher price. A Dutch auction process may be used to determine a price for an initial public offering.

LO 27.f

Within a firm that provides commercial banking, investment banking, and securities services, inherent conflicts of interest exist. Information may be acquired in a commercial banking or investment banking transaction that would give the other units an unfair advantage. An investment bank's task of selling newly issued stocks and bonds may conflict with a securities unit's duties to act in the best interests of its clients and recommend trading actions independently.

Bank regulators generally require commercial banking, investment banking, and securities activities to be kept separate, either by preventing firms from engaging in more than one of these activities or by requiring Chinese walls between these units of a bank.

LO 27.g

The banking book refers to a bank's assets and liabilities to be held to maturity (e.g., loans made by a bank for a specific term). The trading book refers to assets and liabilities related to a bank's trading activities. Regulatory capital requirements are generally higher for the banking book than for the trading book.

LO 27.h

The originate-to-distribute model involves banks making loans and selling them to other parties, many of which pool the loans and issue securities backed by their cash flows. This model frees up capital for the originating banks and may increase liquidity in sectors of the loan market. However, it has also led to decreased lending standards and lower credit quality of the loans sold.

ANSWER KEY FOR MODULE QUIZ

Module Quiz 27.1

1. **C** Economic capital refers to a bank's own assessment of the minimum level of capital it needs to maintain. Economic capital is often less than regulatory capital, which is the minimum level a bank must maintain to comply with capital adequacy regulations. (LO 27.b)

2. **A** Charging risk-based premiums is a measure intended to address the problem of moral hazard, which exists when insured parties take greater risks than they would take in the absence of insurance. (LO 27.d)

3. **D** With a firm commitment offering, an investment bank buys an entire issue of securities from the issuer and attempts to sell them to the public at a higher price. In a private placement or a best efforts offering, an investment bank earns fee income rather than trading income. A Dutch auction is a method of price discovery for an initial public offering that does not involve buying and reselling shares. (LO 27.e)

4. **B** Chinese walls are internal controls to prevent a banking company's commercial banking, securities, and investment banking operations from sharing information. (LO 27.f)

5. **C** One drawback to the originate-to-distribute model is that it has led to looser credit standards in certain sectors, such as residential mortgages. A benefit of the model is that it has increased liquidity in certain sectors. (LO 27.h)

The following is a review of the Financial Markets and Products principles designed to address the learning objectives set forth by GARP®. Cross-reference to GARP FRM Part I Financial Markets and Products, Chapter 2.

READING 28

INSURANCE COMPANIES AND PENSION PLANS

Study Session 8

EXAM FOCUS

The focus of this reading is primarily on concepts related to life insurance and nonlife (property and casualty) insurance, such as moral hazard, adverse selection, mortality risk, and longevity risk. For the exam, be able to apply mortality tables to perform life expectancy computations and breakeven premium computations for life insurance companies, and be able to compute ratios relevant to property and casualty insurance companies. In addition, understand the risks facing insurance companies and be able to discuss specific ways to mitigate them.

MODULE 28.1: INSURANCE COMPANIES AND PENSION PLANS

LO 28.a: Describe the key features of the various categories of insurance companies and identify the risks facing insurance companies.

LO 28.e: Compare the various types of life insurance policies.

Insurance companies protect policyholders from specific loss events in exchange for the payment of periodic premiums. Three categories of insurance companies include life insurance, property and casualty (nonlife) insurance, and health insurance.

Life Insurance

Life insurance companies usually provide long-term coverage and make a specified payment to the policyholder's beneficiaries upon the natural death (i.e., certain event) of the policyholder during the policy term. Coverage is also available for accidental death (i.e., uncertain event).

Term (temporary) **life insurance** provides a specified amount of insurance coverage for a fixed period. No payments are made to the policyholder's beneficiaries if the policyholder survives the term of the policy; therefore, payment is not certain. Payment is only made if the policyholder dies during the policy term. The use of mortality tables to calculate breakeven premiums is discussed later. **Endowment life insurance** is a subset of term insurance that has a payout at the stated contract maturity. If the

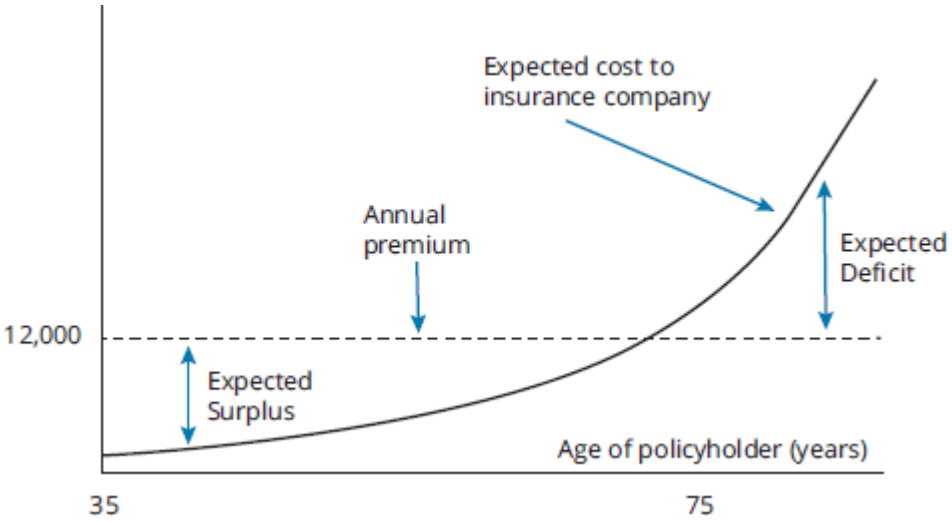
policyholder dies before maturity, then there will be a payout at death. A with-profits endowment policy involves a higher payout assuming the insurance company's underlying investments perform well. A unit-linked endowment policy involves the policyholder choosing an investment and having the payout amount linked to the performance of the investment.

Employers on behalf of their employees usually arrange **group life insurance**. It involves the pooling of risks for a large number of individuals. Because medical examinations are often not required for group insurance, there will be some good risks and some bad risks taken by the insurance company.

Whole (permanent) **life insurance** provides a specified amount of insurance coverage for the life of the policyholder so payment will occur upon death, but there is uncertainty as to the timing. For both term and whole life insurance, it is most common for premiums and the amount of coverage to be fixed for the entire period in question.

In analyzing the relationship between the cost of one year of life insurance and whole life insurance premiums, assume a 30-year-old male purchases a $2 million whole life policy with an annual premium of $12,000. Based on mortality tables (as shown in LO 28.b), the probability of death within the year of a 30-year-old male is 0.001467, so the premium for one year of insurance should be $2,934. The excess of $9,066 is a surplus premium that is not required to cover the risk of a payout and is therefore invested by the insurance company for the policyholder. The process continues year after year while the cost of a one-year policy increases as the policyholder ages. Later in the policyholder's life, the one-year policy cost will exceed the annual premium ($12,000). From an overall perspective, the surplus in the earlier years is offset by the deficit in the later years. This concept is illustrated graphically in Figure 28.1.

Figure 28.1: Whole Life Insurance Policy Surplus and Deficit



Some variations of whole life insurance include variable life insurance whereby the final payout may be increased if the underlying investments outperform and universal life insurance whereby the premium may be reduced in exchange for a reduced final payout.

Annuity contracts are the opposite of life insurance contracts. In general, an initial lump sum payment is made by the annuitant to the insurance company in return for a stream of future payments from the insurance company to the annuitant for the remainder of life. Some annuities begin immediately while others start an agreed-upon number of years later (e.g., deferred annuities). Some deferred annuities have a guaranteed minimum amount of payments. The funds invested in the annuity will earn investment income; the total amount of the principal and income less the total payments made to the annuitant is equal to the accumulation value. Depending on the terms of the contract, the accumulation value may be withdrawn prematurely but likely with penalties.

Property and Casualty (P&C) Insurance

P&C insurance companies usually provide annual and renewable coverage against loss events. The premiums may increase or decrease based on any changes in estimates of expected payout. **Property insurance** covers property losses such as fire and theft. The risks can be managed in some instances because the expected payouts on claims can be estimated with a high degree of confidence if many policies are written on thousands of independent events (e.g., automobile insurance). However, property insurers may be subject to catastrophe risks arising from many large claims due to natural disasters, or they may benefit if there are no natural disasters, hence, the all-or-nothing nature of catastrophe risks. Such risks could be managed using geographical, seismographic, and meteorological information to determine the probability and severity of catastrophic events. **Casualty** (liability) **insurance** covers third-party liability for injuries sustained while on a policyholder's premises or caused by the policyholder's use of a vehicle, for example.

In general, for P&C insurance companies, property damage claims from natural disasters and liability insurance claims are subject to fluctuating payouts and are very challenging to predict.

Health Insurance

Health insurance companies provide coverage to policyholders for medical services that are not covered under a publicly funded health care system. Policyholders pay ongoing premiums and the insurance company will make payments for events such as necessary hospital treatment or prescription medication. Premiums may increase due to general increases in health care costs (similar to automobile insurance), but they typically will not increase due to the worsening of the policyholder's health (similar to life insurance). In some cases, insurance coverage may not be denied to individuals with preexisting (but unknown) medical conditions.

Risks Facing Insurance Companies

Major risks facing insurance companies include the following:

- *Insufficient funds to satisfy policyholders' claims.* The liability computations often provide a significant cushion, but it is always possible to have a sudden surge of

payouts in a short time (e.g., mortality risk and catastrophe risk) or payouts that continue for longer than expected (e.g., longevity risk).

- *Poor return (market risk) on investments.* Insurance companies often invest in fixed-income securities and if defaults suddenly increase, insurance companies will incur losses. Diversification of investments by industry sector and geography can help mitigate such losses.
- *Credit risk.* By transacting with banks and reinsurance companies, insurance companies face credit risk if the counterparty defaults on its obligations.
- *Operational risk.* Similar to banks, an insurance company faces losses due to failure of its systems and procedures or from external events outside the company's control (e.g., computer failure and human error).

Mortality Tables

LO 28.b: Describe the use of mortality tables and calculate the premium payments for a policy holder.

An excerpt from mortality tables estimated by the U.S. Social Security Administration for 2013 is provided in Figure 28.2.

As an example, examine the row for a male aged 40. The second column indicates that the probability of a 40-year-old male dying within the next year is 0.002092 (or 0.2092%). The third column indicates that the probability of a male surviving to age 40 is 0.95908 (or 95.908%). The fourth column indicates that a 40-year-old male has a remaining life expectancy of 38.53 years so that, on average, he will live to age 78.53. The remaining three columns show the same estimates for a female, and they appear slightly better than for a male.