

FINANCIAL MARKETS AND PRODUCTS

PART I EXAM WEIGHT | 30% (FMP)

This area focuses on financial products and the markets in which they trade, more specifically, the following knowledge areas:

- Structures and functions of financial institutions
- Structure and mechanics of over-the-counter (OTC) and exchange markets
- Structure, mechanics and valuation of forwards, futures, swaps, and options
- Hedging with derivatives
- Interest rates and measures of interest rate sensitivity
- Foreign exchange risk
- Corporate bonds
- Mortgage-backed securities

The readings that you should focus on for this section and the specific learning objectives to achieve with each reading are:

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

Chapter 1. Banks [FMP-1]

After completing this reading, you should be able to:

- Identify the major risks faced by banks and explain how these risks can arise.
- Distinguish between economic capital and regulatory capital.
- Summarize the Basel committee regulations for regulatory capital and their motivations.
- Explain how deposit insurance gives rise to a moral hazard problem.
- Describe investment banking financing arrangements, including private placement, public offering, best efforts, firm commitment, and Dutch auction approaches.
- 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.
- Describe the distinctions between the banking book and the trading book of a bank.
- Explain the originate-to-distribute banking model and discuss its benefits and drawbacks.

Chapter 2. Insurance Companies and Pension Plans [FMP-2]

After completing this reading, you should be able to:

- Describe the key features of the various categories of insurance companies and identify the risks facing insurance companies.
- Describe the use of mortality tables and calculate the premium payments for a policy holder.
- Distinguish between mortality risk and longevity risk and describe how to hedge these risks.
- Describe defined benefit plans and defined contribution plans and explain the differences between them.
- Compare the various types of life insurance policies.

- Calculate and interpret loss ratio, expense ratio, combined ratio, and operating ratio for a property-casualty insurance company.
- Describe moral hazard and adverse selection risks facing insurance companies, provide examples of each, and describe how to overcome these risks.
- Evaluate the capital requirements for life insurance and property-casualty insurance companies.
- Compare the guaranty system and the regulatory requirements for insurance companies with those for banks.

Chapter 3. Fund Management [FMP-3]

After completing this reading, you should be able to:

- Differentiate among open-end mutual funds, closed-end mutual funds, and exchange-traded funds (ETFs).
- Identify and describe potential undesirable trading behaviors at mutual funds.
- Explain the concept of net asset value (NAV) of an open-end mutual fund and how it relates to share price.
- Explain the key differences between hedge funds and mutual funds.
- 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.
- 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.
- Describe characteristics of mutual fund and hedge fund performance and explain the effect of measurement biases on performance measurement.

Chapter 4. Introduction to Derivatives [FMP-4]

After completing this reading, you should be able to:

- Define derivatives, describe the features and uses of derivatives, and compare linear and non-linear derivatives.
- Describe the specifics of exchange-traded and over-the-counter markets, and evaluate the advantages and disadvantages of each.
- Differentiate between options, forwards, and futures contracts.
- Identify and calculate option and forward contract payoffs.
- Differentiate among the broad categories of traders: hedgers, speculators, and arbitrageurs.
- Calculate and compare the payoffs from hedging strategies involving forward contracts and options.
- Calculate and compare the payoffs from speculative strategies involving futures and options.
- Describe arbitrageurs' strategy and calculate an arbitrage payoff.
- Describe some of the risks that can arise from the use of derivatives.

Chapter 5. Exchanges and OTC Markets [FMP-5]

After completing this reading, you should be able to:

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

Chapter 6. Central Clearing [FMP-6]

After completing this reading, you should be able to:

- Provide examples of the mechanics of a central counterparty (CCP).
- Describe the role of CCPs and distinguish between bilateral and centralized clearing.
- Describe advantages and disadvantages of central clearing of OTC derivatives.
- Explain regulatory initiatives for the OTC derivatives market and their impact on central clearing.
- Compare margin requirements in centrally cleared and bilateral markets and explain how margin can mitigate risk.
- Compare netting in bilateral markets vs centrally cleared markets.
- Assess the impact of central clearing on the broader financial markets.
- Identify and explain the types of risks faced by CCPs.
- Identify and distinguish between the risks to clearing members and to non-members.

Chapter 7. Futures Markets [FMP-7]

After completing this reading, you should be able to:

- 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.
- Explain the convergence of futures and spot prices.
- Describe the role of an exchange in futures transactions.
- Explain the differences between a normal and an inverted futures market.
- Describe the mechanics of the delivery process and contrast it with cash settlement.
- Describe and compare different trading order types.
- Describe the application of marking to market and hedge accounting for futures.
- Compare and contrast forward and futures contracts.

Chapter 8. Using Futures for Hedging [FMP-8]

After completing this reading, you should be able to:

- Define and differentiate between short and long hedges and identify their appropriate uses.
- Describe the arguments for and against hedging and the potential impact of hedging on firm profitability.
- Define and calculate the basis, discuss various sources of basis risk, and explain how basis risks arise when hedging with futures.
- Define cross hedging and compute and interpret the hedge ratio and hedge effectiveness.
- Calculate the profit and loss on a short or a long hedge.
- Compute the optimal number of futures contracts needed to hedge an exposure and explain and calculate the “tailing the hedge” adjustment.
- Explain how to use stock index futures contracts to change a stock portfolio’s beta.
- 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.

Chapter 9. Foreign Exchange Markets [FMP-9]

After completing this reading, you should be able to:

- 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.
- 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.
- Compare outright (forward) and swap transactions.

- Define, compare, and contrast transaction risk, translation risk, and economic risk.
- Describe examples of transaction, translation, and economic risks and explain how to hedge these risks.
- Describe the rationale for multi-currency hedging using options.
- Identify and explain the factors that determine exchange rates.
- Calculate and explain the effect of an appreciation/depreciation of one currency relative to another.
- Explain the purchasing power parity theorem and use this theorem to calculate the appreciation or depreciation of a foreign currency.
- Describe the relationship between nominal and real interest rates.
- 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.
- Distinguish between covered and uncovered interest rate parity conditions.

Chapter 10. Pricing Financial Forwards and Futures [FMP-10]

After completing this reading, you should be able to:

- Define and describe financial assets.
- Define short-selling and calculate the net profit of a short sale of a dividend-paying stock.
- Describe the differences between forward and futures contracts and explain the relationship between forward and spot prices.
- Calculate the forward price given the underlying asset's spot price and describe an arbitrage argument between spot and forward prices.
- Distinguish between the forward price and the value of a forward contract.
- Calculate the value of a forward contract on a financial asset that does or does not provide income or yield.
- Explain the relationship between forward and futures prices.
- Calculate the value of a stock index futures contract and explain the concept of index arbitrage.

Chapter 11. Commodity Forwards and Futures [FMP-11]

After completing this reading, you should be able to:

- Explain the key differences between commodities and financial assets.
- Define and apply commodity concepts such as storage costs, carry markets, lease rate, and convenience yield.
- Identify factors that impact prices on agricultural commodities, metals, energy, and weather derivatives.
- Explain the formula for pricing commodity forwards.
- Describe an arbitrage transaction in commodity forwards and compute the potential arbitrage profit.
- Define the lease rate and explain how it determines the no-arbitrage values for commodity forwards and futures.
- Describe the cost of carry model and determine the impact of storage costs and convenience yields on commodity forward prices and no-arbitrage bounds.
- Compute the forward price of a commodity with storage costs.
- 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.
- Explain the impact of systematic and nonsystematic risk on current futures prices and expected future spot prices.
- Define and interpret normal backwardation and contango.

Chapter 12. Options Markets [FMP-12]

After completing this reading, you should be able to:

- Describe the various types and uses of options, define moneyness.
- Explain the payoff function and calculate the profit and loss from an options position.
- Explain how dividends and stock splits can impact the terms of a stock option.

- Describe the application of commissions, margin requirements, and exercise procedures to exchange-traded options, and explain the trading characteristics of these options.
- Define and describe warrants, convertible bonds, and employee stock options.

Chapter 13. Properties of Options [FMP-13]

After completing this reading, you should be able to:

- Identify the six factors that affect an option's price.
- Identify and compute upper and lower bounds for option prices on non-dividend and dividend paying stocks.
- 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.
- Explain and assess potential rationales for using the early exercise features of American call and put options.

Chapter 14. Trading Strategies [FMP-14]

After completing this reading, you should be able to:

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

Chapter 15. Exotic Options [FMP-15]

After completing this reading, you should be able to:

- Define and contrast exotic derivatives and plain vanilla derivatives.
- Describe some of the reasons that drive the development of exotic derivative products.
- Explain how any derivative can be converted into a zero-cost product.
- Describe how standard American options can be transformed into nonstandard American options.
- 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.
- Describe and contrast volatility swaps and variance swaps.
- Explain the basic premise of static option replication and how it can be applied to hedging exotic options.

Chapter 16. Properties of Interest Rates [FMP-16]

After completing this reading, you should be able to:

- Describe Treasury rates, LIBOR, Secured Overnight Financing Rate (SOFR), and repo rates, and explain what is meant by the "risk-free" rate.
- Calculate the value of an investment using different compounding frequencies.
- Convert interest rates based on different compounding frequencies.
- Calculate the theoretical price of a bond using spot rates.
- Calculate the Macaulay duration, modified duration, and dollar duration of a bond.
- Evaluate the limitations of duration and explain how convexity addresses some of them.
- Calculate the change in a bond's price given its duration, its convexity, and a change in interest rates.
- Derive forward interest rates from a set of spot rates.
- Derive the value of the cash flows from a forward rate agreement (FRA).
- Calculate zero-coupon rates using the bootstrap method.
- Compare and contrast the major theories of the term structure of interest rates.

Chapter 17. Corporate Bonds [FMP-17]

After completing this reading, you should be able to:

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

Chapter 18. Mortgages and Mortgage-Backed Securities [FMP-18]

After completing this reading, you should be able to:

- Describe the various types of residential mortgage products.
- Calculate a fixed-rate mortgage payment and its principal and interest components.
- Summarize the securitization process of mortgage-backed securities (MBS), particularly the formation of mortgage pools, including specific pools and to-be-announced (TBAs).
- Calculate the weighted average coupon, weighted average maturity, single monthly mortality rate (SMM), and conditional prepayment rate (CPR) for a mortgage pool.
- Describe the process of trading pass-through agency MBS.
- Explain the mechanics of different types of agency MBS products, including collateralized mortgage obligations (CMOs), interest-only securities (IOs), and principal-only securities (POs).
- Describe a dollar roll transaction and how to value a dollar roll.
- Describe the mortgage prepayment option and factors that affect it; explain prepayment modeling and its four components: refinancing, turnover, defaults, and curtailments.
- Describe the steps in valuing an MBS using Monte Carlo simulation.
- Define Option-Adjusted Spread (OAS) and explain its uses and challenges.

Chapter 19. Interest Rate Futures [FMP-19]

After completing this reading, you should be able to:

- 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.
- Calculate the conversion of a discount rate to a price for a U.S. Treasury bill.
- Differentiate between the clean and dirty price for a U.S. Treasury bond; calculate the accrued interest and dirty price on a U.S. Treasury bond.
- Explain and calculate a U.S. Treasury bond futures contract conversion factor.
- Calculate the cost of delivering a bond into a Treasury bond futures contract.
- Describe the impact of the level and shape of the yield curve on the cheapest-to-deliver Treasury bond decision.
- Calculate the theoretical futures price for a Treasury bond futures contract.
- Calculate the final contract price on a Eurodollar futures contract and compare Eurodollar futures to FRAs.
- Describe and compute the Eurodollar futures contract convexity adjustment.
- Calculate the duration-based hedge ratio and create a duration-based hedging strategy using interest rate futures.
- Explain the limitations of using a duration-based hedging strategy.

Chapter 20. Swaps [FMP–20]

After completing this reading, you should be able to:

- Explain the mechanics of a plain vanilla interest rate swap and compute its cash flows.
- Explain how a plain vanilla interest rate swap can be used to transform an asset or a liability and calculate the resulting cash flows.
- Explain the role of financial intermediaries in the swaps market.
- Describe the role of the confirmation in a swap transaction.
- Describe the comparative advantage argument for the existence of interest rate swaps and evaluate some of the criticisms of this argument.
- Explain how the discount rates in a plain vanilla interest rate swap are computed.
- Calculate the value of a plain vanilla interest rate swap based on two simultaneous bond positions.
- Calculate the value of a plain vanilla interest rate swap from a sequence of FRAs.
- Explain how a currency swap can be used to transform an asset or liability and calculate the resulting cash flows.
- Calculate the value of a currency swap based on two simultaneous bond positions.
- Calculate the value of a currency swap based on a sequence of forward exchange rates.
- Identify and describe other types of swaps, including commodity, volatility, credit default, and exotic swaps.
- Describe the credit risk exposure in a swap position.