

LEARNING OBJECTIVES,
SUMMARY OVERVIEW,
AND PROBLEMS

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DERIVATIVE MARKETS AND INSTRUMENTS

LEARNING OUTCOMES

After completing this chapter, you will be able to do the following:

- define a derivative and distinguish between exchange-traded and over-the-counter derivatives;
- contrast forward commitments with contingent claims;
- define forward contracts, futures contracts, options (calls and puts), swaps, and credit derivatives and compare their basic characteristics;
- describe purposes of, and controversies related to, derivative markets;
- explain arbitrage and the role it plays in determining prices and promoting market efficiency.

SUMMARY OVERVIEW

This first reading on derivatives introduces you to the basic characteristics of derivatives, including the following points:

- A derivative is a financial instrument that derives its performance from the performance of an underlying asset.
- The underlying asset, called the underlying, trades in the cash or spot markets and its price is called the cash or spot price.
- Derivatives consist of two general classes: forward commitments and contingent claims.
- Derivatives can be created as standardized instruments on derivatives exchanges or as customized instruments in the over-the-counter market.
- Exchange-traded derivatives are standardized, highly regulated, and transparent transactions that are guaranteed against default through the clearinghouse of the derivatives exchange.

- Over-the-counter derivatives are customized, flexible, and more private and less regulated than exchange-traded derivatives, but are subject to a greater risk of default.
- A forward contract is an over-the-counter derivative contract in which two parties agree that one party, the buyer, will purchase an underlying asset from the other party, the seller, at a later date and at a fixed price they agree upon when the contract is signed.
- A futures contract is similar to a forward contract but is a standardized derivative contract created and traded on a futures exchange. In the contract, two parties agree that one party, the buyer, will purchase an underlying asset from the other party, the seller, at a later date and at a price agreed on by the two parties when the contract is initiated. In addition, there is a daily settling of gains and losses and a credit guarantee by the futures exchange through its clearinghouse.
- A swap is an over-the-counter derivative contract in which two parties agree to exchange a series of cash flows whereby one party pays a variable series that will be determined by an underlying asset or rate and the other party pays either a variable series determined by a different underlying asset or rate or a fixed series.
- An option is a derivative contract in which one party, the buyer, pays a sum of money to the other party, the seller or writer, and receives the right to either buy or sell an underlying asset at a fixed price either on a specific expiration date or at any time prior to the expiration date.
- A call is an option that provides the right to buy the underlying.
- A put is an option that provides the right to sell the underlying.
- Credit derivatives are a class of derivative contracts between two parties, the credit protection buyer and the credit protection seller, in which the latter provides protection to the former against a specific credit loss.
- A credit default swap is the most widely used credit derivative. It is a derivative contract between two parties, a credit protection buyer and a credit protection seller, in which the buyer makes a series of payments to the seller and receives a promise of compensation for credit losses resulting from the default of a third party.
- An asset-backed security is a derivative contract in which a portfolio of debt instruments is assembled and claims are issued on the portfolio in the form of tranches, which have different priorities of claims on the payments made by the debt securities such that prepayments or credit losses are allocated to the most-junior tranches first and the most-senior tranches last.
- Derivatives can be combined with other derivatives or underlying assets to form hybrids.
- Derivatives are issued on equities, fixed-income securities, interest rates, currencies, commodities, credit, and a variety of such diverse underlyings as weather, electricity, and disaster claims.
- Derivatives facilitate the transfer of risk, enable the creation of strategies and payoffs not otherwise possible with spot assets, provide information about the spot market, offer lower transaction costs, reduce the amount of capital required, are easier than the underlyings to go short, and improve the efficiency of spot markets.
- Derivatives are sometimes criticized for being a form of legalized gambling and for leading to destabilizing speculation, although these points can generally be refuted.
- Derivatives are typically priced by forming a hedge involving the underlying asset and a derivative such that the combination must pay the risk-free rate and do so for only one derivative price.
- Derivatives pricing relies heavily on the principle of storage, meaning the ability to hold or store the underlying asset. Storage can incur costs but can also generate cash, such as dividends and interest.

- Arbitrage is the condition that two equivalent assets or derivatives or combinations of assets and derivatives sell for different prices, leading to an opportunity to buy at the low price and sell at the high price, thereby earning a risk-free profit without committing any capital.
- The combined actions of arbitrageurs bring about a convergence of prices. Hence, arbitrage leads to the law of one price: Transactions that produce equivalent results must sell for equivalent prices.

PROBLEMS

1. A derivative is *best* described as a financial instrument that derives its performance by:
 - A. passing through the returns of the underlying.
 - B. replicating the performance of the underlying.
 - C. transforming the performance of the underlying.
2. Compared with exchange-traded derivatives, over-the-counter derivatives would *most likely* be described as:
 - A. standardized.
 - B. less transparent.
 - C. more transparent.
3. Exchange-traded derivatives are:
 - A. largely unregulated.
 - B. traded through an informal network.
 - C. guaranteed by a clearinghouse against default.
4. Which of the following derivatives is classified as a contingent claim?
 - A. Futures contracts
 - B. Interest rate swaps
 - C. Credit default swaps
5. In contrast to contingent claims, forward commitments provide the:
 - A. right to buy or sell the underlying asset in the future.
 - B. obligation to buy or sell the underlying asset in the future.
 - C. promise to provide credit protection in the event of default.
6. Which of the following derivatives provide payoffs that are non-linearly related to the payoffs of the underlying?
 - A. Options
 - B. Forwards
 - C. Interest rate swaps
7. An interest rate swap is a derivative contract in which:
 - A. two parties agree to exchange a series of cash flows.
 - B. the credit seller provides protection to the credit buyer.
 - C. the buyer has the right to purchase the underlying from the seller.
8. Forward commitments subject to default are:
 - A. forwards and futures.
 - B. futures and interest rate swaps.
 - C. interest rate swaps and forwards.

9. Which of the following derivatives is *least likely* to have a value of zero at initiation of the contract?
 - A. Futures
 - B. Options
 - C. Forwards
10. A credit derivative is a derivative contract in which the:
 - A. clearinghouse provides a credit guarantee to both the buyer and the seller.
 - B. seller provides protection to the buyer against the credit risk of a third party.
 - C. the buyer and seller provide a performance bond at initiation of the contract.
11. Compared with the underlying spot market, derivative markets are *more likely* to have:
 - A. greater liquidity.
 - B. higher transaction costs.
 - C. higher capital requirements.
12. Which of the following characteristics is *least likely* to be a benefit associated with using derivatives?
 - A. More effective management of risk
 - B. Payoffs similar to those associated with the underlying
 - C. Greater opportunities to go short compared with the spot market
13. Which of the following is *most likely* to be a destabilizing consequence of speculation using derivatives?
 - A. Increased defaults by speculators and creditors
 - B. Market price swings resulting from arbitrage activities
 - C. The creation of trading strategies that result in asymmetric performance
14. The law of one price is *best* described as:
 - A. the true fundamental value of an asset.
 - B. earning a risk-free profit without committing any capital.
 - C. two assets that will produce the same cash flows in the future must sell for equivalent prices.
15. Arbitrage opportunities exist when:
 - A. two identical assets or derivatives sell for different prices.
 - B. combinations of the underlying asset and a derivative earn the risk-free rate.
 - C. arbitrageurs simultaneously buy takeover targets and sell takeover acquirers.