

## STUDY SESSION

# 15

## Risk Management Applications of Derivatives

**T**his study session addresses risk management strategies using forwards and futures, option strategies, floors and caps, and swaps. These derivatives can be used for a variety of risk management purposes, including modification of portfolio duration and beta, implementation of changes in asset allocation, and creation of cash market instruments. A growing number of security types now have embedded derivatives, and portfolio managers must be able to account for the effects of derivatives on the return/risk profile of the security and the portfolio. After completing this study session, the candidate will better understand advantages and disadvantages of derivative strategies, including the difficulties in creating and maintaining a dynamic hedge.

### READING ASSIGNMENTS

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|-------------------|--|
| <b>Reading 26</b> | Risk Management Applications of Forward and Futures Strategies<br>by Don M. Chance, PhD, CFA |
| <b>Reading 27</b> | Risk Management Applications of Option Strategies<br>by Don M. Chance, PhD, CFA              |
| <b>Reading 28</b> | Risk Management Applications of Swap Strategies<br>by Don M. Chance, PhD, CFA                |

**LEARNING OUTCOMES****READING 26. RISK MANAGEMENT APPLICATIONS OF FORWARD AND FUTURES STRATEGIES**

The candidate should be able to:

- a** demonstrate the use of equity futures contracts to achieve a target beta for a stock portfolio and calculate and interpret the number of futures contracts required;
- b** construct a synthetic stock index fund using cash and stock index futures (equitizing cash);
- c** explain the use of stock index futures to convert a long stock position into synthetic cash;
- d** demonstrate the use of equity and bond futures to adjust the allocation of a portfolio between equity and debt;
- e** demonstrate the use of futures to adjust the allocation of a portfolio across equity sectors and to gain exposure to an asset class in advance of actually committing funds to the asset class;
- f** explain exchange rate risk and demonstrate the use of forward contracts to reduce the risk associated with a future receipt or payment in a foreign currency;
- g** explain the limitations to hedging the exchange rate risk of a foreign market portfolio and discuss feasible strategies for managing such risk.

**READING 27. RISK MANAGEMENT APPLICATIONS OF OPTION STRATEGIES**

The candidate should be able to:

- a** compare the use of covered calls and protective puts to manage risk exposure to individual securities;
- b** calculate and interpret the value at expiration, profit, maximum profit, maximum loss, breakeven underlying price at expiration, and general shape of the graph for the following option strategies: bull spread, bear spread, butterfly spread, collar, straddle, box spread;
- c** calculate the effective annual rate for a given interest rate outcome when a borrower (lender) manages the risk of an anticipated loan using an interest rate call (put) option;
- d** calculate the payoffs for a series of interest rate outcomes when a floating rate loan is combined with 1) an interest rate cap, 2) an interest rate floor, or 3) an interest rate collar;
- e** explain why and how a dealer delta hedges an option position, why delta changes, and how the dealer adjusts to maintain the delta hedge;
- f** interpret the gamma of a delta-hedged portfolio and explain how gamma changes as in-the-money and out-of-the-money options move toward expiration.

## READING 28. RISK MANAGEMENT APPLICATIONS OF SWAP STRATEGIES

The candidate should be able to:

- a** demonstrate how an interest rate swap can be used to convert a floating-rate (fixed-rate) loan to a fixed-rate (floating-rate) loan;
- b** calculate and interpret the duration of an interest rate swap;
- c** explain the effect of an interest rate swap on an entity's cash flow risk;
- d** determine the notional principal value needed on an interest rate swap to achieve a desired level of duration in a fixed-income portfolio;
- e** explain how a company can generate savings by issuing a loan or bond in its own currency and using a currency swap to convert the obligation into another currency;
- f** demonstrate how a firm can use a currency swap to convert a series of foreign cash receipts into domestic cash receipts;
- g** explain how equity swaps can be used to diversify a concentrated equity portfolio, provide international diversification to a domestic portfolio, and alter portfolio allocations to stocks and bonds;
- h** demonstrate the use of an interest rate swaption 1) to change the payment pattern of an anticipated future loan and 2) to terminate a swap.