STUDY SESSION

14

Derivatives

This study session introduces key valuation concepts and models for forward commitments (forwards, futures, swaps) and contingent claims (options). Option coverage includes the "Greeks," which measure the effects on value of small changes in underlying asset value, time, volatility, and the risk-free rate.

READING ASSIGNMENTS

Reading 37	Pricing and Valuation of Forward Commitments by Robert E. Brooks, PhD, CFA, and Barbara Valbuzzi, CFA
Reading 38	Valuation of Contingent Claims by Robert E. Brooks, PhD, CFA, and David Maurice Gentle, MEc, BSc, CFA

LEARNING OUTCOMES

READING 37. PRICING AND VALUATION OF FORWARD COMMITMENTS

The candidate should be able to:

a describe and compare how equity, interest rate, fixed-income, and currency forward and futures contracts are priced and valued;

b calculate and interpret the no-arbitrage value of equity, interest rate, fixed-income, and currency forward and futures contracts;

c describe and compare how interest rate, currency, and equity swaps are priced and valued;

d calculate and interpret the no-arbitrage value of interest rate, currency, and equity swaps.

READING 38. VALUATION OF CONTINGENT CLAIMS

The candidate should be able to:

a describe and interpret the binomial option valuation model and its component terms;

b calculate the no-arbitrage values of European and American options using a two-period binomial model;

c identify an arbitrage opportunity involving options and describe the related arbitrage;

d calculate and interpret the value of an interest rate option using a two-period binomial model;

e describe how the value of a European option can be analyzed as the present value of the option's expected payoff at expiration;

f identify assumptions of the Black–Scholes–Merton option valuation model;

g interpret the components of the Black–Scholes–Merton model as applied to call options in terms of a leveraged position in the underlying;

h describe how the Black–Scholes–Merton model is used to value European options on equities and currencies;

i describe how the Black model is used to value European options on futures;

j describe how the Black model is used to value European interest rate options and European swaptions;

k interpret each of the option Greeks;

l describe how a delta hedge is executed;

m describe the role of gamma risk in options trading;

n define implied volatility and explain how it is used in options trading.