Derivatives

LEARNING OUTCOMES

Pricing and Valuation of Forward Commitments

The candidate should be able to:

- describe how equity forwards and futures are priced, and calculate and interpret their no-arbitrage value
- describe the carry arbitrage model without underlying cashflows and with underlying cashflows
- describe how interest rate forwards and futures are priced, and calculate and interpret their no-arbitrage value
- describe how fixed-income forwards and futures are priced, and calculate and interpret their no-arbitrage value
- describe how interest rate swaps are priced, and calculate and interpret their no-arbitrage value
- describe how currency swaps are priced, and calculate and interpret their no-arbitrage value
- describe how equity swaps are priced, and calculate and interpret their no-arbitrage value

Valuation of Contingent Claims

The candidate should be able to:

- describe and interpret the binomial option valuation model and its component terms
- describe how the value of a European option can be analyzed as the present value of the option's expected payoff at expiration
identify an arbitrage opportunity involving options and describe the related arbitrage

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

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

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

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

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

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

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

interpret each of the option Greeks

describe how a delta hedge is executed

describe the role of gamma risk in options trading

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