



KABARAK UNIVERSITY
UNIVERSITY EXAMINATIONS
2009/2010 ACADEMIC YEAR
FOR THE DEGREE OF BACHELOR OF
COMMERCE

COURSE CODE: FNCE 423

COURSE TITLE: OPTIONS AND FUTURES MARKETS

STREAM: YIS2

DAY: THURSDAY

TIME: 3.00 – 5.00P.M.

DATE: 12/08/2010

INSTRUCTIONS

1. Question ONE is compulsory
2. Answer any other THREE questions from the rest of the questions
3. Begin a new question on a new page

Note:

Black-Scholes Model:

$$C_0 = S_0 N(d_1) - E e^{-rt} N(d_2)$$

Where :

$$d_1 = \{ \ln(S/E) + (r + \frac{1}{2}\sigma^2)t \} / \sqrt{\sigma^2 t}$$

$$d_2 = d_1 - \sqrt{\sigma^2 t}$$

And

$$P_0 = C_0 - S_0 + E e^{-rt}$$

Attached: Cumulative probabilities of the Standard Normal Distribution Function

PLEASE TURN OVER

QUESTION ONE

- a) Explain how the exercise price and the stock price affect the value of a call option **(4 marks)**
- b) Assume that the price of Kenya Airways Ltd stock today is shs. 60. The exercise price of the call option on this stock is shs 55 with a value of shs 10. There are 140 days left before expiration. The risk free rate continuously compounded is 10 percent and the variance of the company per year is 0.08.

Required

- (i) Calculate the value of the call and advice a trader who believes in Black Scholes option pricing model **(12 marks)**
- (ii) If the value of the put option in the above scenario is shs. 2, advice an investor in the short position **(4 marks)**
- c) Discuss the limitations of Black-Scholes option pricing model **(5 marks)**

QUESTION TWO

- a) Discuss why an investor may opt for forward contracts rather than futures contracts **(6 marks)**
- b) With relevant examples, differentiate between commodity derivatives and financial derivatives **(4 marks)**
- c) Show how traders would react if an arbitrage opportunity existed in a market and explain the factors that would cause such opportunities to disappear **(5 marks)**

QUESTION THREE

Discuss the following types of futures pointing out why investors use them:

- a) Stock index futures **(5 marks)**
- b) Interest rate futures **(5 marks)**
- c) Currency futures **(5 marks)**

QUESTION FOUR

In the S & P 500 index, a 90-day futures contract has a stock that pays dividends of \$ 3 on the 40th day. The current stock price is \$ 150 and the risk free interest rate (continuously compounded) is 8% p.a.

Required

- (i) If the futures contract is \$ 155, calculate the futures value and advice an investor in the short position (7½ marks)
- (ii) If the company pays \$ 1 as dividends in the above stock, and that the futures contract is \$ 150, calculate the futures value and advice an investor in the long position (7½ marks)

QUESTION FIVE

- a) Explain the necessity for interest rate swaps (5 marks)
- b) Orieko and Ofuwa are investors who entered into an interest swap with a tenor of five years. The notional principal amount agreed upon was shs. 3,500,000. Orieko was the pay fixed counterparty and agreed to pay a fixed rate of 12.5% to Ofuwa. Ofuwa on the other hand, agreed to pay a floating rate of LIBOR to Orieko. At the time the swap agreement was negotiated, the LIBOR rate was at 10.75%.

Required

- (i) If LIBOR during the years 1, 2, 3, 4 and 5 was 10.50%, 11.25%, 13.25%, 12.75% and 13% respectively, prepare cash flows for a plain vanilla interest rate swap in the above scenario (8 marks)
- (ii) Calculate the total gains/losses for each of the investors during the tenor of the swap (2marks)