



AFRICAN ECONOMIC RESEARCH CONSORTIUM
Collaborative MA Programme in Economics for Anglophone Africa
(Except Nigeria)

JOINT FACILITY FOR ELECTIVES (JFE) 2011
JUNE – SEPTEMBER
CORPORATE FINANCE AND INVESTMENT I

First Semester: Final Examination

Duration: 3 Hours

Date: Tuesday, August 2, 2011

INSTRUCTIONS:

1. Answer **ANY FOUR (4)** questions.
2. All questions carry equal marks.

Question 1

- (a) With reference to different type of investors in the market, conceptualize “certainty equivalent rate” of a portfolio. (6 marks)
- (b) (i) By using examples, explain and differentiate between *annuity* and *perpetuity*. (4 marks)
(ii) Suppose you are given a perpetuity C that grows annually by a rate of growth g and the provided discount rate is r . Show that valuation of your growing perpetuity gives a PV that is equal to $C/(r - g)$. (8 marks)
- (c) A present value (PV) of a stock can be defined as: (i) a PV of the sum of values of dividends plus the next period’s stock price; and (ii) a PV of values of all future dividends. None of these definitions is wrong. Explain (7 marks)

Question 2

- (a) Discuss sources of long-term financing of the firm. (6 marks)
- (b) Assume a case of an economy where inflation is rising and interest rates have kept increasing. Suppose you are provided with four consecutive periods’ spot rates of interest as follows:
 $r_1 = 3\%$; $r_2 = 5\%$; and $r_3 = 6\%$; and $r_4 = 8\%$.
 - (i) Compute two periods forward rate of interest for a loan to be repaid in period 4. (4 marks)
 - (ii) Briefly explain the difference between a forward rate of interest and a future spot rate of interest? (3 marks)



- (iii) Assume a lender currently accepts 6% interest on 1-year loan provided today, but because inflation is expected to rise next year, she intends to accept 9.5% interest on the same maturity loan to be provided a year from today. Assuming further that you believe in *pure-expectations hypothesis* of the term structure of interest rates; find the expected future spot rate. (5 marks)
- (c) How does capital asset pricing model (CAPM) differ from arbitrage asset pricing theory (APT)? (7 marks)

Question 3

- (a) What do you understand by efficient and inefficient investment strategies under the mean-variance analysis? (6 marks)
- (b) Suppose a 3-month (91-days) maturity Treasury bill of face value \$44,000 is issued at \$41,800; and the investor is sure that she can rollover the T-bill at least through a period of 12 months.
- What is the rate of return to investment in this T-bill opportunity over its maturity period? (1.5 marks)
 - What is the annualized effective interest rate of her investment? (3 marks)
 - Calculate the bank discount rate of this investment. (3 marks)
 - How do answers in (ii) and (iii) differ, and why? (1.5 marks)
- (c) A short-term financing policy of the firm can be flexible or restrictive. Explain and clearly illustrate these two types of financing policies. (7 marks)
- (d) Briefly explain what you understand by “marking to market” in futures option transactions. (3 marks)

Question 4

- (a) Compare and differentiate between security market line (SML) and capital market (CML). (8 marks)
- (b) Let S_T denote security price in the market at time T , which is an agreed expiration date of contracts in the call & put derivatives market. Let X denote strike prices of these derivatives. In hedging strategies, buying a call option and writing a put option simultaneously provides the same payoff just like buying a put option and writing a call option. Further, the same symmetry exists in strategies where holding a portfolio of a call option and an underlying risk free asset (bond) that matures at time T (with discount rate, r_f) provides just the same payoff as holding a portfolio comprising a put option and an underlying stock security. Suppose price of a call option is defined as C and price of a put option as P , while the cost of the stock security is denoted, S_0 . Using this information, clearly explain and illustrate *put-call parity theorem*. (10 marks)
- (c) In the economy where financial market is developed, stock and bond market indices are important in a number of ways. Explain (7 marks)



Question 5

- (a) (i) What is the essence of using one-factor model in APT? And giving the reason, what do you think is the appropriate factor to use? (4 marks)
- (ii) Is the one-factor model approach applicable in analyzing assets' returns in developing countries? Give reason. (2 marks)
- (b) During the next investment period Mr. Robinson is aware, but uncertain, about three possible scenarios of economic performance namely: boom, normal or recession. He wants to invest in three assets shown in the table below, which has information about expected returns of each asset and the respective scenarios probabilities. Compute mean and variance of his portfolio with the following proportions of the assets: stock 1 (20%) and stock 2 (50%) and stock 3 (30%). (9.5 marks)

Scenario	Probability (pr)	Stock 1	Stock 2	Stock 3
Boom	0.3	0.13	0.10	0.08
Normal	0.5	0.07	0.09	0.06
Recession	0.2	0.05	0.03	0.04

- (c) Suppose REXONA Co. Ltd. wants to borrow and the best interest it can get in the bank given its risk is 9.0% fixed, or a six-month LIBOR + 100 basis points floating. Suppose also that at the same time EXPRESS Distributors Ltd. wants to borrow and the best interest it can get in the bank given its risk is 8% fixed, or a six-month LIBOR + 60 basis points floating. If REXONA contacts EXPRESS and negotiate for interest rates swap with a proposal that REXONA has to borrow floating, and that it has to pay EXPRESS a fix rate of 8.2%; explain and show clearly how this swap strategy proposal could help these companies reduce their respective costs of borrowing if implemented. (9.5 marks)

Question 6

- (a) Briefly explain and distinguish between "goal of the firm" and "goal of the management" in business entities. In your undertaking, highlight the problem and cost involved in pursuit of these goals. (5 marks)
- (b) Suppose the term structure of interest rates of a bond with par value \$2,500 is as follows:

Maturity (years)	1	2	3	4	5
Spot rate (%)	4	6	7.5	8.5	9

- (i) Draw a yield curve from the presented table. (2 marks)
- (ii) Assume a 2-year 5% coupon bond of the same value (\$2,500) was issued; use the available information to ascertain its market price. (4 marks)
- (iii) Given this information, what is the yield to maturity of this 2-year 5% coupon bond? (3 marks)



- (c) You are provided with the following investment information of Nairobi Dairy Ltd (NDL), which currently sells milk in the city. NDL intends to establish an extension company named "Packets Master Co." for production of milk packets. Investment cost is estimated to be \$120,000. The envisaged lifetime period of this project is 6 years, after which it will be obsolete, and will either have to be rebuilt or scraped off. A forecast of cash flows of the Packets Master Co. over its life time is as follows, respectively: \$100,000; \$113,000; \$115,000; \$150,000; \$98,000; and \$40,000. Note that NDL uses a straight line depreciation method for its property. If projected respective expenses of the Packets Master Co. are: \$50,000; \$40,000; \$22,000; \$105,000; \$65,000; and \$20,000, while corporate income tax is going to be 30% for the first 3 years, and thereafter 25%:
- (i) Compute average accounting return (AAR) of the NDL extension project. *(8 marks)*
 - (ii) Do you think that NDL would choose this project if its decision criterion is an AAR = 30% or above? Give reason. *(1 marks)*
 - (iii) What are the drawbacks of using AAR as compared to NPV in investment projects appraisal? *(2 marks)*