UNIVERSITI SAINS MALAYSIA

Second Semester Examination
Academic Session 1994/95

April 1995

AKU612 - INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT

Time : [3 hours]

INSTRUCTION :

Please make sure that this examination paper consists of **SIX (6)** printed pages before you begin.

This paper comprises **SIX (6)** questions. Answer only **FIVE (5)** questions.

Question 1

(a) (i) Define mathematically the equation for the profit from a put. Draw the payoff diagram for a long position in a put option.

(ii) Explain how a covered call or a protective put protects a long position in a stock.

[5 marks]

(b) What are the five variables found in the Black-Scholes option pricing model and what is the effect of each variable on the option price?

[5 marks]

(c) The time to expiration is 90 days, the exercise price is $90 and the stock price is $100. The standard deviation is .8 and the continuously compounded risk - free rate is 9 per cent. Using the Black - Scholes option pricing model, calculate the theoretical value of

(i) a put and
(ii) a call

[5 marks]

...2/-

(d) The following information is given :

Exercise Price	Call Price	Put Price
$60	$12	$4

Instead of buying 100 shares of Jones Corporation common stock with a closing price of $65 on 31st. November, Mr Smith decides to buy a Jones Corporation option instead. What are Mr. Smith's profits and rates of return if

(i) he buys a call with an exercise price of $60 and the stock ends up at $70?

(ii) he buys a put with an exercise price of $60 and the stock ends up at $40?

[5 marks]

Question 2

(a) Define basis risk, cost of carry and cross hedging. [5 marks]

(b) What are the characteristics of the interest rate futures contracts and the stock index futures contracts?

[5 marks]

(c)

SPOT	
Jul 15	A harvest of 20,000 bushels of corn is expected in late August. The farmer is worried that the price of corn in early September will not be high enough to cover production costs.
Sep 5	The spot price of the corn is $3.20. The corn can be sold for 20,000 (3.20) = $64,000.

Required :

Specify the hedging strategy for this forecasted crop using futures contracts to lock in the effective price of $3.30 at which the crop to be harvested in the future will be sold. [Additional information : Each corn futures contract covers 5,000 bushels. The sale price per bushel for the corn futures contract is $3.40. The spot price converges to $3.21, approximately the futures price on 5 September]

[5 marks]

...3/-

(d) Describe a hedge for a long position in Treasury bonds to hedge an unexpected increase in interest rates.

[5 marks]

Question 3

(a) Discuss the assumptions and the advantages of technical analysis.

[5 marks]

(b) Explain the following:

(i) Contrary opinion rules
(ii) Breadth of market measures
(iii) The Dow Theory
(iv) Support and resistance levels
(v) Point and figure charts.

[15 marks]

Question 4

Discuss the methods for:

(a) Estimating the future earnings per share for the stock market series and

(b) Estimating the expected earnings multiplier.

[20 marks]

Question 5

(a) Discuss the forecasting of interest rates based on the premise that interest rates are the price for loanable funds.

[5 marks]

(b) What are the fundamental factors that determine interest rates?

[5 marks]

(c) Discuss the term structure of interest rates.

[5 marks]

(d) Define the major categories of yield spreads.

[5 marks]

...4/-

Question 6

"The Capital Asset Pricing Model (CAPM) postulates a linear relationship between expected return and beta".

Discuss this statement and compare CAPM with the Markowitz mean-variance portfolio theory.

[20 marks]

...5/-

Appendix A

List of Formulas

1. $$c(t) = S(t)\,N(d_1) - Xe^{-r(T-t)}\,N(d_2)$$

2. $$p(t) = Xe^{-r(T-t)}\,(1-N(d_2)) - S(t)\,[1-N(d_1)]$$

3. $$(1+R_{t\,n}) = [(1+R_{t\,1})(1+r_{t+1\,1})\ldots(1+r_{t+n-1\,1})]^{1/N}$$

4. $$r_{t+n\,1t} = \frac{(1+R_{t\,n+1})^{n+1}}{(1+R_{t\,n})^{n}} - 1$$

5. $$r_{t+n\,jt} = \sqrt[n+j]{\frac{(1+R_{t\,n+j})^{n+j}}{(1+R_{t\,n})^{n}}} - 1$$

6. $$(1+R_{t\,n}) = [(1+R_{t\,1})(1+r_{t+1\,1}+L_2)\ldots(1+r_{t+N-1\,1}+L_n)]^{1/N}$$

7. $$E(R_i) = RFR + \beta_i[E(R_m) - RFR]$$

APPENDIX D STANDARD NORMAL PROBABILITIES

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5219	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8860	.8888	.8907	.8925	.8943	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990

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