UNIVERSITY OF ESSEX

FINAL YEAR EXAMINATIONS 2008

EC371-3-AU ECONOMIC ANALYSIS OF ASSET PRICES

Time allowed: 2 hours.

Section A: Answer any TEN questions

Section A contains TWELVE questions.

Section B: Answer ONE question.

Section B contains THREE questions.

Each section is worth 50% of the marks: 5% per question in Section A, and 50% per question in Section B.

Candidates are allowed to bring into the examination room:
calculators (hand held, containing no textual information).

Please do not leave your seat unless you are given permission by an invigilator.

Do not communicate in any way with any other candidate in the examination room.

Do not open the question paper until told to do so.

All answers must be written in the answer book(s) provided.

All rough work must be written in the answer book(s) provided. A line should be drawn through any rough work to indicate to the examiner that it is not part of the work to be marked.

At the end of the examination, remain seated until your answer book(s) have been collected and you have been told you may leave.

Section A Answer TEN questions.

1. An asset will pay a dividend of \$11 at date $t+1$ at which date its market value will be \$77 (with certainty). The risk-free interest rate between t and $t+1$ equals 10%. Calculate the asset price at t, assuming markets are frictionless.

2. Explain, using an example, the meaning of 'buying shares on margin'.

3. What is meant by the 'Efficient Markets Hypothesis' for stock market prices?

4. Describe, with an example, how an 'anomaly' can be used in testing asset market efficiency.

5. State and briefly interpret the 'First Mutual Fund Theorem' in mean-variance analysis (when all assets are risky).

6. Explain, using an example, the meaning of 'Risk Adjusted Performance' for an asset.

7. The expected rate of return on an asset is given by $\mu_j = 12\%$, while the risk-free interest rate is $r_0 = 4\%$. The asset's standard deviation of return is $\sigma_j = 0.6$, while for the market portfolio $\sigma_M = 0.4$. The correlation between the asset's return and the market return is: $\rho_{jM} = 0.8$. Define and calculate the beta-coefficient, β_j, for asset j.

8. Define and interpret the 'Capital Market Line' in the Capital Asset Pricing Model.

9. Formally define an 'arbitrage opportunity' when asset returns are uncertain.

10. State and interpret the prediction of the Arbitrage Pricing Theory (APT) for a one-factor model of asset returns.

11. What is a 'Ponzi scheme'?

12. Explain what is meant by a 'quote driven' (or 'dealer') form of market organisation.

Section B Answer one question.

13. Answer *both* parts (a) and (b) of this question.

    (a) "A capital market is said to be efficient if it fully and correctly reflects all relevant information in determining security prices." (*New Palgrave Dictionary of Money and Finance*)

        (i) [20 marks] Describe a procedure for assessing the informational efficiency of a capital market in the context of this statement.

        (ii) [10 marks] What are the difficulties and potential pitfalls in applying the procedure you have described?

    (b) [20 marks] How would you assess the claim that "stock prices are too volatile for compatibility with asset market efficiency"?

14. In an economy with only two possible states of the world and three assets, the payoffs for the assets in each state and the market prices of the assets are given by:

	Asset A	Asset B	Asset C
State 1	7	12	2
State 2	5	0	10
Price	p_A	6	4

    Answer *all* parts (a) – (d) of this question.

    (a) [20 marks] Define the terms *arbitrage portfolio*, *arbitrage opportunity* and the *arbitrage principle*. Hence, using the information above, obtain the price p_A that satisfies the arbitrage principle.

    (b) [10 marks] Define the term *state prices*. What is their relationship to the arbitrage principle? Obtain the state prices using the information above.

    (c) [15 marks] In the context of the arbitrage principle, define the terms *Risk Neutral Valuation Relationship* (RNVR) and *martingale probabilities*. Obtain the martingale probabilities and show that the RNVR is satisfied using the information above. Comment on the interpretation of the martingale probabilities.

    (d) [5 marks] Suppose a fourth asset, D, with payoffs, 6 and 20 in states 1 and 2, respectively, is observed to have a market price $p_D = 8$. What inferences could you make in the context of the above information?

15. Answer *all* parts (a), (b) and (c) of this question.

    (a) [17 marks] Explain briefly the *Expected Utility Hypothesis* in the context of portfolio selection.

    (b) [17 marks] What is the *Fundamental Valuation Relationship* (FVR)? Explain how it can be obtained. What is the purpose of the FVR in portfolio theory?

    (c) [16 marks] Outline the *Equity Premium Puzzle*, being careful to identify the role of the FVR in the puzzle.

End of Paper

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