



May Examination Period 2024

ECN226: Capital Markets 1

Duration: 2 hours

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**Answer ALL questions.
Partial credit will be awarded, so please show all work.**

Non-programmable calculators are permitted in this examination. Please state on your answer book the name and type of machine used. Complete all rough workings in the answer book and cross through any work that is not to be assessed.

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Examiner: Dr Dennis Iweze

Question 1

Consider a risky portfolio with two possible end-of-year cash flow outcomes: £70,000 or £200,000, each with a probability of 0.5. The alternative risk-free investment in short-term U.K. government gilts pays 2% per annum.

- a) If you require a risk premium of 8%, how much will you be willing to pay for the portfolio
[5 marks]
- b) Now suppose that you require a risk premium of 12%. What price are you willing to pay?
[5 marks]
- c) Comparing your answers to (a) and (b), what can you conclude about the relationship between the required risk premium on a portfolio and the price at which the portfolio will sell?
[5 marks]

[Total 15 marks]

Question 2

- a) Draw the indifference curve in the expected return-standard deviation plane corresponding to a utility level of 0.02 for an investor with a risk aversion coefficient of 3.
(Hint: Increase the standard deviation by increments of 0.05, ranging from 0 to 0.25, and calculate the corresponding expected rates of return to achieve a utility level of 0.02. Afterwards, plot the points derived from the expected return and standard deviation.)
[15 marks]
- b) Now, on the same graph as part a, draw the indifference curve corresponding to a utility level of 0.02 for an investor with risk aversion coefficient $A = 4$. Comparing your answer here to part a, what would you conclude?
(Note: The mark you score in this part will be primarily based on your conclusions not your drawing.)
[10 marks]

[Total 25 marks]

Question 3

- a) You are an investment manager and are considering investing in three mutual funds. The first is a stock fund, the second is a long-term bond fund, and the third is a money market fund that provides a safe return of 8%. The features of the risky funds are reported in Table 1:

Table 1:		
	Expected Return	Standard Deviation
Stock fund (S)	20%	30%
Bond Fund (B)	12%	15%

The correlation between the risky fund returns is 0.10.

What are the investment proportions in the minimum-variance portfolio of the two risky funds, and what are the expected value and standard deviation of its rate of return?

[15 marks]

- b) Suppose that there are many stocks in the securities market and that the characteristics of stocks A and B are as reported in Table 2:

Table 2:

Stock	Expected Return	Standard Deviation
A	10%	5%
B	15%	10%

The correlation coefficient of the returns of Stock A and Stock B is -1.

Suppose that it is possible to borrow at the risk-free rate, r_f . What must be the value of the risk-free rate? (Hint: Think about constructing a risk-free portfolio from stocks A and B)

[10 marks]

- c) For the following statement, answer True or False and provide a rationale for your choice:
The standard deviation of the portfolio is always equal to the weighted average of the standard deviations of the assets in the portfolio

[5 marks]

[Total 30 marks]

Question 4

Are the following statements about the CAPM true or false? Explain.

- a) Stocks with a beta of zero offer an expected rate of return of zero.

[10 marks]

- b) The CAPM implies that investors require a higher return to hold highly volatile securities.

[10 marks]

- c) You can construct a portfolio with beta of 0.75 by investing 0.75 of the investment budget in T-bills and the remainder in the market portfolio.

[10 marks]

[Total 30 marks]

End of Paper