

BEE2027

UNIVERSITY OF EXETER
BUSINESS SCHOOL

FINAL EXAM

FINANCIAL MARKETS AND DECISIONS I

MODULE CONVENOR: JULIAN NEIRA

DURATION: 90 MINUTES

MAY 2018

The exam consists of four questions. Answer all questions.

Materials to be supplied: None.

Materials to be supplied on request: Scrap paper.

Approved calculators are permitted.

This is a closed note paper.

1. (25 points) Suppose that you just turned 25 years of age and you are considering whether to save for retirement. You want to calculate the savings you will have built up by the age of 65, when you plan to retire. The annual interest rate is 5%. For all questions draw a timeline and assume that payments occur at the end of the year.
 - (a) (5 points) Suppose that you save £2,000 per year towards retirement for 40 years. What is the (present) value of your savings at age 25?
 - (b) (5 points) What is the (future) value of your savings in part (a) at retirement?
 - (c) (5 points) Suppose now you do not save anything until you turn 30, and then start saving £2,000 per year towards retirement for 35 years. What is the value of your savings at retirement?
 - (d) (10 points) Suppose that you expect to live until age 85, and you want to consume your retirement savings in equal annual installments. How much will your annual retirement income be in parts (b) and (c) above? Hint: Calculate the annual payment of a fund with present value equal to your savings at age 65, whose payments stop after 20 years.

2. (25 points) Elon is a millionaire, and also a risk averter who tries to maximise the expected value of $\ln(w)$, where w is his wealth. Elon has £400,000 in safe assets and he also owns a rocket worth £300,000. Elon is planning to launch his rocket into space. After launching, the rocket will explode with probability 0.5, and will land back safely on earth with probability 0.5.
 - (a) (5 points) Calculate Elon's expected utility if he doesn't buy rocket insurance.
 - (b) (5 points) Calculate the certainty equivalent of the lottery he faces if he doesn't buy rocket insurance.
 - (c) (5 points) Suppose that Elon can buy £K worth of insurance at a cost of 0.6K. How much insurance will Elon buy?
 - (d) (5 points) Elon has a competitor Johnny, who is also a millionaire and also has a rocket he is planning to launch into space. Johnny has utility function for consumption in the two states of nature $u(c_E, c_{NE}) = c_E^\pi c_{NE}^{1-\pi}$, where c_E is consumption if an explosion occurs and c_{NE} is consumption in case of no explosion. The probability that the rocket will explode is also $\pi = 0.5$. Johnny's wealth is exactly the same income as Elon and has access to the same insurance price as Elon does. What much insurance will Johnny purchase? (Hint: The problem you are trying to solve is $\max u(c_E, c_{NE}) = c_E^\pi c_{NE}^{1-\pi}$ subject to the budget constraint).
 - (e) (5 points) In which ways are Elon and Johnny's preferences similar? In which ways are Elon and Johnny's preferences different?

3. (25 points) Suppose you observe the following situation:

State of Economy	Probability of State	Return of Stock A	Return of Stock B
Bust	.20	-.08	-.05
Normal	.60	.13	.14
Boom	.20	.48	.29

- (a) (5 points) Calculate the expected return on each stock
 - (b) (5 points) Assuming the capital asset pricing model holds and stock A's beta is greater than stock B's beta by .40, what is the expected market risk premium?
 - (c) (5 points) Suppose the risk-free rate is 5%. What is the beta of stock A? What is the beta of stock B? Interpret the value of each beta.
 - (d) (10 points) Plot stock A and stock B on the security market line. Plot stock A and stock B on the capital market line. Be sure to label everything in both of your plots (including the market portfolio and the risk free asset).
4. (25 points) Please answer the following questions in a paragraph or less.
- (a) (5 points) What is an efficient market, according to the Efficient Markets Hypothesis?
 - (b) (5 points) What is the relationship between perfect and (informationally) efficient markets?
 - (c) (5 points) Discuss the challenges in testing for the validity of the Efficient Markets Hypothesis.
 - (d) (10 points) Discuss the arguments in favour and against the Efficient Markets Hypothesis.