IB9Y20

University of Warwick

MSc Finance Examination: April 2019

Behavioural Finance

Instructions

This is a CLOSED book examination.

Time allowed: 2 Hours

Only silent calculators that are provided by the Programme Team are permitted. Electronic devices such as, for example, a mobile phone, tablet, smart watch, fitbit or similar device are not permitted.

Answer **FIVE** questions in total. Answer any **THREE** questions from Section A and any **TWO** questions from Section B. Justify your answers as fully as possible.

Read carefully the instructions on the answer book and make sure the particulars required are entered on each answer book.

Please turn over

PART A (60 marks in total; each question is worth 20 marks)

Question 1

a. Discuss what financial economists mean when they say an individual is rational, and explain how behavioural finance relaxes this assumption. **(5 marks)**

b. Explain what we mean when we say the stock market is informationally efficient, and discuss the three conditions under which informational efficiency arises. **(5 marks)**

c. Investors believe that the earnings of company ABC in the next year (year 1) are normally distributed, with a mean of £100M and variance of 2500. Investors, after observing that ABC changed its CEO, construct a new signal, S, which says that the earnings of ABC in year 1 will be £80M. This signal is also normally distributed, with a variance of 1400. Given the riskiness in ABC's cash-flows, investors require an expected return of 11% to be appropriately compensated for investing in this company. Use Bayes Rule to calculate investor's posterior expectation for ABC's cash flow in year 1, as well as the price of ABC in the current year (year 0). Suppose that an arbitrager, who is fully rational, understands that the signal that the market created (S) under-estimates the cash flows of ABC by £16M. Explain what trade would this arbitrager make, and calculate what *abnormal* return (in %) he can expect to earn in year 1. Assume that the variance of the signal S is correctly calculated by the market. Moreover, assume that the trades of the arbitrager in year 0 do not have any effect on the price of ABC in year 0, and that the expected return of 11% reflects the appropriate rate of return that the investors and the arbitrager should expect to earn to be compensated for investing in ABC.

(10 marks)

(20 marks in total)

Please turn over

Question 2

George's total wealth is worth £5,000. He can invest in one of two risky projects, stock S or bond B. S costs £200, and will be worth £300 with 45% probability, 200 with 35% probability or 100 with 20% probability. Bond B costs £500, and will be worth £515 with 80% probability or £505 with 20% probability. George uses Prospect theory to value risky projects, and his value function is depicted below:

$$v(x) = \begin{cases} x^{0.5} & x \geq 0 \\ -2(-x)^{0.5} & x < 0 \end{cases}$$

a. Assume that George uses as a reference point his current level of wealth, and that he does not engage in probability weighting. Calculate how much each investment is worth to George.

(5 marks)

b. As in part (a), George uses the function above to value risky prospects and his current level of wealth as a reference point. However, now he also engages in probability weighting, using the function shown below (where p indicates the true probability and δ=0.65). Calculate how much each investment is worth to George now.

(5 marks)

$$\pi(p) = \frac{p^{\delta}}{(p^{\delta} + (1-p)^{\delta})^{1/\delta}}$$

c. Now assume that George is an expected utility maximizer, with the utility function $U(W)=W^{0.5}$. Calculate how much each investment is worth to George now.

(5 marks)

d. Discuss the differences in your answers in parts (a), (b) and (c).

(5 marks)

(20 marks in total)

Please turn over

Question 3

a. Describe the phenomenon of overconfidence, and discuss how it can lead to biased learning.

(5 marks)

b. Does overconfidence affect the behavior of sophisticated investors? Discuss, drawing on the findings of Oberlechner and Osler (2010) to support your arguments.

Oberlechner, Thomas, and Carol Osler. "Survival of overconfidence in currency markets."
Journal of Financial and Quantitative Analysis 47.1 (2012): 91-113.

(5 marks)

c. Under which conditions would a rational investor trade? Is there any evidence that trading volume in financial markets is excessive? Discuss this issue, describing in detail the findings of academic studies to support your arguments. In your answer, explain in detail the tests and results found by these studies. **(10 marks)**

(20 marks in total)

Question 4

a. Explain how the heuristic of *respresentativeness* can influence the formation of expectations in the presence of new information, discussing the findings from one experimental study to support your arguments. **(5 marks)**

b. Describe the puzzle surrounding dividend invitations and omissions, and discuss how it can be explained by biased expectations due to decision heuristics. **(5 marks)**

c. Describe the anomaly in stock markets referred to as the *value premium*. Discuss whether representativeness can provide an explanation for this anomaly, using findings from academic studies to support your arguments. In your answer, explain in detail the tests and results found by these studies. **(10 marks)**

(20 marks in total)

Please turn over

Question 5

a. Can the mood of a person at the time of a decision bias her expectations about future events? Discuss, drawing on evidence from one experimental study to support your arguments. **(5 marks)**

b. Can events that influence emotions but are exogenous to the economy influence stock returns? Discuss, drawing on the findings from two academic studies to support your arguments. **(5 marks)**

c. Can investor sentiment distort the risk-return in relationship predicted by neoclassical asset pricing theories? Discuss this issue, using evidence from academic studies to support your arguments. In your answer, explain in detail the tests and results found by these studies. **(10 marks)**

(20 marks in total)

END OF PART A

Please turn over

PART B (40 marks in total; each question is worth 20 marks)

Question 6

a. Suppose that a two-period economy is populated by identical risk-neutral investors. In this economy all stock prices equal the expected value of company earnings in quarter 1. Investors calculate that the earnings of company FCB in quarter 1 could take three possible values: In state 1 they could be £1M, in state 2 £10M and in state 3 £15M. Investors, however, face ambiguity about the probabilities of these states, and believe that three different probability distributions are possible: (**A:** $\pi_1=0.65$, $\pi_2=0.26$ and $\pi_3=0.09$); (**B:** $\pi_1=0.58$, $\pi_2=0.23$ and $\pi_3=0.19$); (**C:** $\pi_1=0.43$, $\pi_2=0.17$ and $\pi_3=0.40$). Assume that investors are ambiguity averse and use the max-min expected utility model (MMEU) to evaluate ambiguous assets. What price would FCB have in this market in the current quarter (quarter 0)? Without doing any calculations, discuss how your previous answer would change if investors in this economy are ambiguity neutral. **(5 marks)**

b. Suppose now that investors calculate expectations using the Choquet integral, where the capacities for each state are $v(\{1\})=v(\{2\})=v(\{3\})=0.2$, and $v(\{1,2\})=v(\{1,3\})=v(\{2,3\})=0.4$ and $v(\{1,2,3\})=1$. What would the price of FCB be in quarter 0 be in this case? **(5 marks)**

c. Describe the Ellsberg paradox, and highlight how such choices contradict rational decision making. Can such choices provide an explanation for the equity premium and limited participation puzzles? Discuss this issue, drawing on evidence from academic studies to support your arguments. In your answer, explain in detail the tests and results found by these studies. **(10 marks)**

(20 marks in total)

Please turn over

Question 7

a. Describe the notion of noise trader risk, and discuss how such risk can explain asset pricing anomalies related to closed-end fund discounts. **(5 marks)**

b. Describe the mispricing that existed when 3Com span-off its subsidiary Palm. With reference to the study by Lamont and Thaler (2003), discuss the role played by limits to arbitrage in this situation.

   Lamont, Owen A., and Richard H. Thaler. "Can the market add and subtract? Mispricing in tech stock carve-outs." *Journal of Political Economy* 111.2 (2003): 227-268. **(5 marks)**

c. "The trades of arbitragers *always* make stock markets more efficient". Discuss this statement, using evidence from academic studies to support your arguments. In your answer, explain in detail the tests and results found by these studies. **(10 marks)**

(20 marks in total)

Question 8

a. Discuss whether rational managers operating in inefficient markets have *catering incentives* when trying to choose policies that maximize the market value of their firms. Provide one example of catering in the stock market, using findings from academic studies to support your arguments. **(5 marks)**

b. Discuss how rational managers operating in inefficient markets may have incentives to exploit market mispricings, and whether such incentives can explain the long-run, post-event return performance of companies who engage in share repurchases and seasoned equity offerings. **(5 marks)**

c. How does the stock market tend to react when a company announces that it will engage in mergers and acquisitions and buy another company? Discuss whether this is a puzzle from a neoclassical point of view, and whether theories of irrational managers can provide an explanation. In your answer draw on the findings from academic studies to support your arguments, explaining in detail the tests and results found by these studies. **(10 marks)**

(20 marks in total)

END OF PART B

END OF PAPER