To Gamble or Not to Gamble:

An empirical research into LSE students' risk-taking behaviour and

their performance on negatively-marked MCQs in EC102 exam

LSE GROUPS Research

Group 1
Boyuan Xu
Kerry Neitzel
Vicky Weize Sun
Susie Choi
Shadman Moin
Areesh Hasani

ABSTRACT

The purpose of this paper is to establish if the use of negative marking in the multiple-choice section of the Economics B (EC102) exam favours students with a particular type of risk-taking behaviour. Previous research suggests that there is a relationship between students' risk behaviour and their performance on negatively-marked multiple choice questions (MCQs) (Lesage, 2013). Given that there are many different ways to use negative marking and many different forms of MCQs, this paper assess whether this applies to the EC102 exam. A survey was conducted to measure participants' risk appetite and a test in the style of multiple choice questions in the EC102 exam. Semi-structured interviews of undergraduate students were also used to gain an insight into their perspectives of negative marking and how it impacts exam performance. Our research draws a similar conclusion that the risk appetite of students does play a role on a student's test performance and the paper will show this using regression models of various different variables.

Keywords: negative marking, MCQs, LSE, EC102 exam, risk appetite

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1. INTRODUCTION

Virtually every student is assessed - a lot of time and effort is spent by students on preparing for and passing examinations (Kastner and Stangl, 2010). This raises the issue of creating fair methods of assessment (Furnham and Chamorro-Premuzic, 2005; The Times Higher Education, 2001). Several assessment formats have been constructed including constructed response exams, multiple choice questions (MCQs), and oral exams. An issue with assessment formats is that while different types of exams are all designed with the aim to measure students' ability or knowledge, their scoring method has a significant impact on the actual reliability of these exams (Kastner and Stangl, 2010).

In recent years, MCQs have become increasingly common and have replaced many constructed response tests, because they allow examiners to test a lot of material in a short time and papers can be marked quickly and accurately using optical mark reading equipment (The Times Higher Education, 2001). On the other hand, Bereby-Meyer et al (2002) note that the guessing of answers in MCQs exams lowers their reliability because it adds random error to the variance of the test scores. Negative marking, which refers to penalising incorrect answers, is a commonly used scoring method for MCQs to reduce guessing. The Times Higher Education (THE) has pointed out in 2001, however, that negative marking "introduces a new, uncontrollable variable - each candidate's confidence in venturing an answer that they are less than 100 per cent certain about. Indeed, some students may possess the knowledge and capability to demonstrate it in real life, but are so apprehensive about the prospect of being penalised in an exam that they adopt a cautious

strategy". This phenomenon points to the gap in existing research about students' risk-taking behaviour and their exam performance with negatively marked MCQs.

In the EC102 Exam at The London School of Economics and Political Science (LSE), MCQs are negatively marked in the way that for a question with multiple correct answers, choosing only one wrong option results in losing all marks for the given question, even if some correct options are also chosen. This scoring method causes subjectively perceived uncertainty when students aren't completely confident what the correct answers to a question are. Because of this, even when students have the same level of knowledge, their scores may differ, depending on their risk taking behaviour. The hypothesis of this paper is that risk averse students score lower than peers with the same level of knowledge and a higher risk appetite, because they chose fewer correct options, out of caution, and hence gain fewer marks. Based on the results gathered from specially designed questionnaires simulating EC102 MCQ exam taken by 57 LSE students as well as interviews with 14 LSE EC102 students, this paper mainly analyses the relationship between LSE students' risk-taking behaviour and their EC102 MCQ exam performance. The result of the analysis is that, counter to the initial hypothesis, risk averse students tend to score better than students with a higher risk appetite.

2. LITERATURE REVIEW

Existing research has provided insights into the effectiveness of MCQs as a measure to assess student learning and into scoring methods of MCQs

Studies have shown that negative marking of MCQ exams has benefits. Firstly, Burton (2004) has pointed out that negative marking can improve test reliability by penalising misinformation and discouraging guessing. In addition, when analysing the effectiveness of negatively marked MCQ on biochemical exams, Bond et al (2013) concluded that negative marking can eliminate potential systemic gender bias in performance dependent on topic, instruction, scoring and difficulty introduced by MCQs. More importantly, they have pointed out that negatively-marked MCQs can actually increase student performance and satisfaction and reduce anxiety. This suggests that negative marking improves the reliability of MCQ exams.

Other studies suggest, however, that negative marking has potentially adverse effects. Firstly, based on their analysis of different MCQ scoring rules and exam performance, Bereby-Meyer et al. (2002) suggest that under some circumstances, negative marking causes students to exhibit different test taking behaviours, depending on their anticipated score. They point out that a higher level of confidence is required to answer a question under negative marking. This is supported by Budescu and Bar-Hillel (1993) who have claimed that, in fact, negative marking disadvantages shy or cautious students, hence, the "number of rights"[1] scoring method may be better to assess candidates. These results further point to the

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[1] The "number of rights" scoring method is that one mark is awarded for each correct answers and no marks are deducted for wrong answers or unanswered questions.

potential relationship between candidates' risk appetite and their test scores for negatively marked MCQs.

Another conclusion drawn about negative marking comes from Lasage (2013). Lasage (2013) recognizes that negative marking for MCQs has induced a trade-off between the prevention of random guessing and the fall in MCQs' reliability due to the impact of factors besides knowledge and ability. Because of this, there is a growing need to calibrate the marking scheme in order to establish a 'fair penalty' in negatively marked MCQs (Holt, 2006).

Comparison across existing studies is difficult because different studies analyse tests from different domains of knowledge, of different lengths, different forms of negative marking and consider different internal variables (e.g. some look at gender, others look at confidence). Our research builds upon the existing studies to analyse the potential impact of negative marking on the MCQ test scores of students with different risk appetite, under the LSE EC102 MCQ exam context.

3. METHODOLOGY

3.1 Interview

Semi-structured interviews with first year students who recently took EC102 exams were used to confirm whether our hypothesis is reflected in students' opinions.

The interviews allowed for the consideration of how factors such as students' preparation for exam, level of difficulty and structure of the exam affect exam performance. Moreover, the interviews were a great opportunity to examine whether, from students' point of view, the current MCQs are appropriate for their purpose.

The results from the interview were examined in conjunction with the survey results. This allowed us to establish if the actual impact on exam performance of negative marking matches the impact perceived by students.

A problem was that students' opinions are susceptible to bias. For instance, worrying about exam results may increase pessimism about the exam. Hence we aimed to prevent interview questions from prompting students to express an opinion that is not their own and approached negative marking from multiple directions including their approach, challenges, exam preparation and guesswork (refer to Appendices 7.2). The response to these questions gave an understanding of the wider framework of education and could be used to explain how the results from the survey and the interviews relate, delving into possible factors that affect student performance.

3.2 Survey

A survey, composed of three quantitative measures, was used to capture students' risk appetite and their performance in MCQ tests in the style of EC102 exam. Firstly, a MCQ test was designed which had relevant features of the MCQ section of the EC102 exam. The test is composed of eight text-based questions, which were taken from papers of the "Thinking Skills Assessment" used by Oxford Admissions, and participants obtain a score in a range from 0 to 48.

Secondly, to measure students' risk taking behaviour we used a so-called "Choice Dilemma Questionnaire" (CDQ) first developed by Kogan and Wallach in 1964. The original CDQ is composed of twelve questions, however, in this case only seven questions were used, as was done by Erker, 2000. Nunnally 1978 has shown that shortening the CDQ to seven questions doesn't hamper its validity. The test delivers an overall score for each participant from 7 to 70, where a lower score indicates risk appetite and a higher score indicates risk averseness.

Thirdly, another method to measure participants' risk appetite in negatively marked MCQ exams was asking participants to indicate on a scale from 0 to 10 at which point they would be willing to choose an answer option for a given question, where 0 indicates that the participant would be willing to make a completely blind guess and 10 indicates that the participant would only choose an option if completely sure what the correct answers are ("Subjective Risk Scale" or SRS).

Comparing the two measures of risk taking behaviour, the CDQ has the benefit that it is a well-established method in psychology. However, its scope is, arguably, too broad to capture participants' specific risk taking behaviour in MCQ exams, whereas the second method is strongly adapted to the case of MCQ exams. Both measures have their own strengths, making them mutually enhancing in capturing participants' true risk-taking behaviour in negatively marked MCQ exams.

Using scores obtained from these two measures as well as the results from the survey model test, it is possible to analyse how the variation in test scores is related to participants' risk taking behaviour. The analysis was carried out using SPSS V21.

The used methodologies face a number of challenges. An assumption made in the research is that the participants' (LSE undergraduates) all have a similar ability to score in the model-test. The assumption is made because it allows to evaluate more clearly the impact of student' risk taking behaviour, by reduces the effect of knowledge on score variation. There are reasons why these assumptions are justified. Firstly, the test is not based on expert knowledge from a specific field. Rather, as is stated by the Cambridge Admissions Testing Service, the test aims to capture "(...) critical thinking skills, including understanding argument and reasoning using everyday language" (Oxford Admissions Testing website). These are skills that are less subject dependent and which, arguably, belong to the abilities of most LSE undergraduates. Nevertheless, differences in ability to score in the test potentially have a distorting effect on the relationship between risk taking behaviour and test performance. A way to reduce this effect is to narrow down the group of participants to people with a more similar background (e.g. only students from one subject, with a

minimum GPA are considered). The trade-off, then, is that the number of responses to the survey would be significantly reduced.

Another challenge regarding the model-test was ensuring that participants display their true risk taking behaviour when taking the test. Students do not perceive that there is any real cost associated with getting the survey answers wrong. Because of this, student might not hesitate to take guesses as they would in the real exam. To instigate students to display their true risk taking behaviour we artificially created a "real cost" for wrong answers, by introducing a ten pound cash prize for the three participants with the best scores in MCQ section of the survey.

4. RESULTS AND DISCUSSION

4.1 Survey Results

The statistical analysis of the collected data from the survey has two main results. Firstly, there seems to be no relationship between test performance in MCQ test in the style of the EC102 exam and students risk taking behaviour, as is measured by the CDQ. This can be seen clearly from the scatterplot of the CDQ scores against the test scores (refer to Fig 4.1.1). The impression from the graph is consolidated by both a very low Coefficient of Determination of only 0.002 and a large p-value (0.736) for the slope of the regression-line. In other words, CDQ scores have virtually no predictive power of test scores and the variance of the test scores is not explained by the CDQ scores.

Secondly, the analysis shows that more risk averse participants tend to score better on MCQ tests in the style of the EC102 exam, when risk taking behaviour is measured using the SRS. A scatter-plot of risk scores obtained from the scale against the test score displays a somewhat linear relationship (refer to Fig 4.1.2). This is supported by a p-value of 0.026 for the slope of the regression line (significant at the 5% level) and a Pearson Correlation Coefficient of 0.324 with a p-value of 0.026. However, the coefficient of determination is relatively low (i.e. much of the variance in the test scores is only partially explained by the risk scores. Although this shows that the relationship is rather modest, it is still significant.
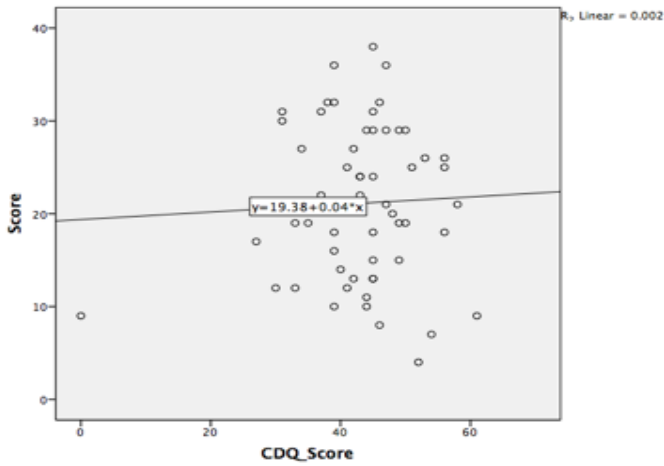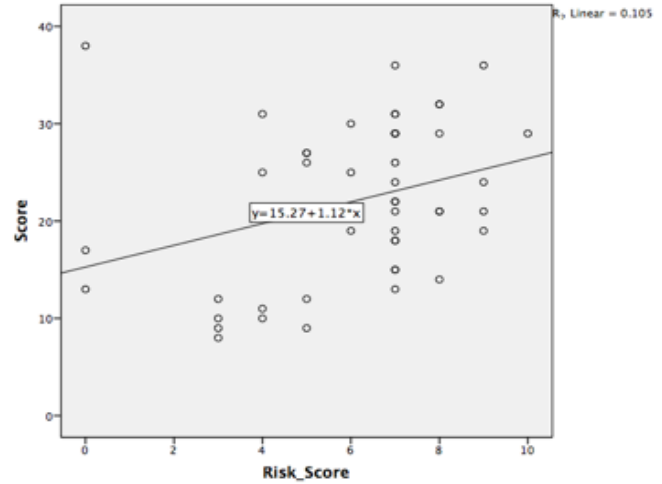
Fig 4.1.1   Fig 4.1.2

4.2 Interview Results

Interviews with 14 LSE students showed that a majority of students (11 out of 14) were unsatisfied with the negative marking structure of MCQs (refer to Appendices 7.2). More importantly, those students who were unsatisfied felt they were disadvantaged because of their risk taking behaviour. Additionally, all students felt they could have improved their exam performance under a standard marking structure. However, it is interesting to note that in some cases students felt satisfied with the negative making with one claiming he "felt well prepared for the exam so I answered all MCQs confidently" (refer to Appendices 7.2). There are a number of potential explanations to this observed discretion which we will attempt to address later on.

4.3 Discussion and Limitations

Both SRS and CDQ measures were designed to gauge the level of risk taking behaviour of our participants in our survey and attempted to emulate the participants' risk taking behaviours in EC102 exam. In this section, we seek to explain how the discrepancy in results could arise, and select the independent variable that we will use to evaluate our hypothesis.

The SRS immediately follows the model test and it has a number of benefits over the CDQ measure. The first one is that the SRS is specifically adapted to the model test. This is exactly the risk taking behaviour that we have tried to capture with our survey, and that is needed to examine the relationship stated by our hypothesis. Moreover, this style of gauging participants' risk appetite by asking self reflecting questions has been used repeatedly in similar studies (Wood R, 1941).

On the other hand, the CDQ has the benefit of being a well-established test for risk appetite, which has also been used in a number of studies regarding risk taking behaviours. Furthermore, it could be argued that students' risk taking behaviour in an exam is better reflected by a test that measures general risk taking behaviour.

After careful consideration, we felt that SRS is more meaningful to evaluate our hypothesis as it is difficult to discredit the SRS risk measure because of its appropriateness and one may argue that the CDQ test is too general in terms of the risk taking behaviour it is trying to capture; we are more concerned with the participants' risk taking behaviour in a particular test rather than other lifestyle

questions. With this in mind, a potential explanation of the relationship observed in our statistical analysis between SRS and test scores may be that individuals who are more risk averse tend to choose more conservatively, resulting in a higher proportion of correct options being selected versus wrong option, leading to a higher score. This is different to our initial hypothesis, which claimed that people who are risk averse tend to stick with the safest options, losing out on potential marks.

There are also a number of key points in the setup of the survey that is worth discussing. A number of factors may have played an influential role in our result which would alter the reliability of our survey. These factors include internal variables such as willingness to answer and disparities in ability to answer, and external variables such as test taking environment. For example a participant who is unwilling to take the survey may not answer all of the questions to the best of his/her ability creating contributing to the spread of our data. As we have mentioned in our methodology section, we have taken a number of approaches to address these issues that we think that could have a meaningful impact, and we are confident in the assumptions we have made due to the precautionary measures we have put in place.

Student interviews demonstrate that the majority of our interviewees felt their risk averse behaviour acted as a disadvantage in the EC102 exam setting and hence would have performed better without negative marking. This is directly contrasted to the SRS result which shows that risk averse participants scored higher in our test. A potential explanation to this apparent contradiction may be that interview results are

based on subjective judgement, which is prone to individual prejudice and natural skepticism about exam structure.

There are three factors that the interviews could have been influenced by, making interview results less reliable. Firstly, students may simply lack in preparation for the exam and wish to blame exam structure for their poor performance. According to interview results, self-perceived preparedness of students who believed to be less influenced by negative marking was higher than that of students who felt more influenced. Secondly, individual's self-perception of risk could be flawed. Students may infer that risk averse individuals are more likely to be disadvantaged by negatively marked exams and fit themselves into such risk appetite group. Lastly, unfamiliarity to multiple choice question structure may make students take conservative approach under exam settings.

5. CONCLUSION

In conclusion, the results of the questionnaire have highlighted that during the MCQ test in style with LSE EC102 MCQ exam, while there is no significant correlation between LSE students' test scores and CDQ measurement of their risk aversion, there is a negative relationship between test scores and subjective measurement of their risk appetite.

However, we acknowledge that the survey designed may not be fully comparable to the actual LSE EC102 exam due to several internal factors such as test takers' thinking skills and the level of attention paid while completing the survey, and external factors such as survey-taking environment.

Nevertheless, this research still contributes towards fairer assessment of learning for LSE EC102 students and potential improvement of the learning experiences. Further research could be conducted to identify an optimal way to calibrate the marking scheme in order to establish a 'fair penalty' in MCQ exams, which balances the benefits and problems of negative marking.

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7. APPENDICES

7.1 Research Survey

<u>Section A</u>

Instruction: Choose the correct answers, no explanation needed. For each question, there might be more than one correct answer. All correct answers get proportionate points. For example, if there is only one correct answer to a question, the correct answer gets 6/1=6 points; if there are two correct answers to a question, each correct answer gets 6/2=3 points; if there are three correct answers to a question, each gets 6/3=2 points; if there are four correct answers to a question, each gets 6/4=1.5 points; and so on. If one or more wrong answers to a question are chosen, 0 points are given for the whole question no matter how many correct answers are also chosen. * Please take no more than 16mins for this section, to ensure the accuracy of the test results and to be eligible for the prizes.

Q1. The Funding of the BBC through a universal licensing system is considered by many to be outdated and unfair. There seem to be only a limited number of options available for the continued funding of the BBC. Firstly, the current funding system could be continued. Secondly, the BBC could be funded by tax money. Thirdly, it could raise funds as a commercial company through advertisements and sponsorships. Tax funding may raise questions about the BBC's independence from the government and commercial funding may raise questions about its' independence from sponsors and companies they advertise for.

Which of the following could be drawn as conclusions from the article?

    a.   There is no alternative to the licence fee
    b.   The independence of the BBC is inevitably at risk
    c. Although not perfect, the licence fee is the best option
    d.   Commercial advertising will damage the revenue prospects of the commercial broadcasters
    e. None of the options is flawless

Q2. Police in Bahia recently ended their strike over low pay, which lasted 12 days and saw the homicide rate double. During that time some politicians accused some police officers of causing panic by encouraging looting while on strike. Now the strike has ended and they have offered an amnesty against the punishment of any striking police officer as long as they didn't commit any crimes during the strike. For their part, the police officers received a 6.5 percent pay rise and have complained that they were played off against the public and ended their strike so they could properly police the Salvador carnival. The government contest this and say their decision to stop salary payments to officers on strike is what made the police return to work.

Which of the following could be drawn as conclusions from the article?

a. The police will half the homicide rate in Bahia now that they are back
b. The Salvador carnival will be policed by a full-strength police force on improved pay
c. The government had to threaten to cut of police pay to get them back to work
d. The strike coincided with a rise in crime
e. The police and the government disagree what caused the strike to end

Q3. We need to accept flooding as a regular occurrence in the UK. Statistics show that days of 'extreme rain' (very heavy rainfall) have become more common since 1960, moving from one in a hundred days on average in the 1960s to one in seventy days in 2015. The apparent trend mirrors increase in extreme rain seen in other parts of the world. Countries such as India and China expect and prepare for this, but in the UK we have to change our thinking and plan our infrastructure to cope with it. The damage caused to homes and businesses as well as the risk of injury and death through flooding are very significant. Scientists say that, as the world has warmed by 0.7 °C, the atmosphere is able to hold 4% more moisture, which means more potential rain.

Which one of the following best expresses the main conclusion of the argument in the above passage?

a. The UK has been underprepared for the effects of flooding.
b. The UK could learn from countries such as India and China about flood defences.
c. Global warming could be halted if there was political will.
d. The UK must plan its infrastructure to deal with a high risk of flooding.
e. The world temperature will continue to rise in the future.

Q4. This essay is of far higher standard as can expected from undergraduate students. Either the student is exceptionally intelligent or knowledgeable, or she has copied the essay from the internet. Her previous essays have given no indication that she is more intelligent or knowledgeable than average students. She must be guilty of plagiarism.

Which of the following display parallel reasoning?

a. When my daughter washes up without asking she either wants something or she feels guilty. Today, she washed up without asking, but she doesn't feel guilty, so she want's something.
b. The Prime Minister has admitted that a member of the Cabinet has been taking bribes. Either he has his own reasons for getting rid of the colleague or he knows that the evidence is too strong for him being able to deny it.
c. My husband has given me a lovely bouquet of flowers. He must be feeling guilty about something, because he only gives me flowers to celebrate special occasions or when he feels guilty, and this is no special occasion.
d. The grass is moist in the garden. Either it has rained, or someone watered the plants. It hasn't rained for three days. Someone must have watered the plants.

e.   My husband has given me a lovely bouquet of flowers. He only gives me flowers when he is feeling guilty about something or to celebrate a special occasion.

Q5. Some of the great sea-mammals, such as the sperm whale, have brains many times larger than ours. It is a fact of evolution that organs do not grow or remain large unless they are used; if they are not used they shrink or even disappear. It must be concluded therefore that the sperm whale makes intelligent use of the vast brain it possesses, perhaps at thought levels well beyond our understanding.

Which of the following would, if true, weaken the argument?

   a. Humans have developed intelligence despite having smaller brains than whales.
   b.   Whales lack the ability to communicate in language.
   c.   Large brains may have uses that do not involve intelligence.
   d. There is no correlation between the size of the body parts of sperm whale and its brain intelligence.
   e.   Whale intelligence may be of a kind that humans do not recognise.

Q6. Many people suffer from depression in modern society. This can be alleviated through drugs such as Prozac, which alter the chemical balance of the brain. However, the individual can undergo psychotherapy, which involves talking through problems with a sympathetic and skilled fellow human being with a view to putting the subject in a more positive frame of mind. Depressed individuals who do not like the idea of their brain chemistry being altered should therefore choose psychotherapy.

Which option(s) of the following is(are) an underlying assumption(s) of the above argument?

   a.   Psychotherapy is more effective than drugs in treating depression.
   b.   Alternative medicine is preferable to conventional medicine.
   c.   Psychotherapy cannot be combined with drug treatments.
   d. Depression is caused by the pace of modern life.
   e.   Psychotherapy does not alter the individual's brain chemistry

Q7. The United States attempts to reduce the supply of illegal drugs by intercepting shipments and eradicating illegal crops. Despite these efforts, illegal drugs are still readily available, because growers, for example those in Colombia, move to different areas and plant smaller plots that are harder to find. So more effort should be made to reduce demand. This does not simply mean reducing the total number of people using illegal drugs. Because the important task is to cut consumption by heavy users, drug-dependent criminals in the country's jails should be treated for their addiction. In this way drug-related social problems can be reduced.

Which of the following most strengthen the argument above?

a. Treating drug addicts in jail is effective at reducing their likelihood to commit crimes after their release.
b. Statistics show that many crops of illegal drugs in Colombia have been eradicated.
c. Most of the drug users in US jails do not want treatment for their drug addiction.
d. Heavy drug users are responsible for committing most of the drug-related crime.
e. The majority of the US public are in favour of rehabilitating prisoners who are drug users.

Q8. Mrs Jackson said that, if Mrs List were promoted, she would resign and we definitely do not want to lose Mrs Jackson. However, we are not going to promote Mrs List: we are going to offer the promotion to Mr Wade. Therefore Mrs Jackson will not resign.

Which of the following is(are) the best statement(s) of the flaw in the argument?

a. It overlooks the possibility that Mrs Jackson threatened to resign because she wanted the promotion herself and would resign if anyone else gets promoted.
b. It does not explain why it is so important to keep Mrs Jackson.
c. It overlooks the possibility that Mrs Jackson might resign even if Mrs List is not promoted.
d. It overlooks the possibility that Mrs Jackson would not have resigned even if Mrs List had been promoted.
e. It overlooks the possibility that Mrs Jackson might resign if Mr Wade is promoted.

Answer for Section A:

Q1.	c, e
Q2.	b, d, e
Q3.	d
Q4.	a, c, d
Q5.	c, d
Q6.	e
Q7.	a, d
Q8.	a, c, e

Section B

Please indicate at which point you would answer a question, where 0 stands for "I would make a completely blind guess" and 10 stands for "I would only answer one if absolutely certain"

<u>Section C</u>

Instruction: In the following pages you will find a series of situations that are likely to occur in everyday life. The central person in each situation is faced with a choice between two alternative courses of action, which we might call X and Y. Alternative X is more desirable and attractive than alternative Y, but the probabllity of attaining X is less than that of attaining Y. For each situation on the following pages you will be asked to indicate the minimum probability of success you would demand before recommending that the more attractive and desirable alternative X be chosen. Read each situation carefully before giving your judgement. Try to place yourself in the position of the central person in each of the situations. There are twelve situations in all. Please do not omit any of them.

1.   Mr A, an electrical engineer, who is married and has one child, has been working for a large electronics corporation since graduating from college five years ago. He is assured a lifetime jb with modest, though adequate, salary, and liberal pension benefits upon retirement. On the other hand, it is very unlikely that his salary will increse much more before he retires. While attending a convention, Mr. A is offered a job with a small, newly founded company which has a highly uncertain future. The new job would pay more to start and would offer the possibility of a share ownership if the company survived the competition of the larger firms.

Imagine that you are advising Mr. A. Listed below are several probabilities or odds of the new company's proving financially sound.

PLEASE CHECK THE LOWEST PROBABILITY THAT YOU WOULD CONSIDER ACCEPTABLE TO MAKE IT WORTHWHILE FOR MR. A TO TAKE THE NEW JOB

   a.   The chances are 1 in 10 that the company will prove financially sound
   b.   The chances are 3 in 10 that the company will prove financially sound
   c.   The chances are 5 in 10 that the company will prove financially sound
   d.   The chances are 7 in 10 that the company will prove financially sound
   e.   The chances are 9 in 10 that the company will prove financially sound
   f.   Please place a check here if you think Mr. A should not take the new job no matter what the probabilities.

2.   Mr. B, a 45-year old accountant, has recently been informed by his physician that he has developed a serious heart ailment. This disease would be sufficiently serious to force Mr. B to change many of his strongest life habits – reducing his workload, drastically changing his diet, giving up favorite leisure-time pursuits. The physician suggests that a delicate ,medical operation could be attempted, which, if successful, would completely relieve the heart ailment. But its success cannot be assured and, in fact, the operation might prove fatal.

Imagine you are advising Mr. B. Listed below are several probabilities that the operation will prove successful.

PLEASE CHECK THE LOWEST PROBABILITY THAT YOU WOULD CONSIDER ACCEPTABLE FOR THE OPERATION TO BE PERFORMED

      a.   Place a check here if you think the operation should not be performed no matter what the probabilities
      b.   The chances are 1 in 10 that the operation will be a success
      c.   The chances are 3 in 10 that the operation will be a success
      d.   The chances are 5 in 10 that the operation will be a success
      e.   The chances are 7 in 10 that the operation will be a success
      f.   The chances are 9 in 10 that the operation will be a success

3.   Mr. C is a married man has a steady job that pays him about 35,000 Pounds a year. He can easily afford the necessities of life but few of the luxuries. Mr. C's father, who died recently, carried a 23,000 Pound life insurance policy. Mr.C would like to invest this money in stocks. He is well aware of the secure "blue-chip" stocks and bonds that would approximately pay 6% on his investment. On the other hand, Mr.C heard that the stocks of a relatively unknown company might double their value if a new product currently in production is favourably received by the public. However, if the product is unfavourably received the stocks would decline in value.

Imagine that you are advising Mr. C. Listed below are several probabilities that Company X stocks will double their value.

PLEASE CHECK THE LOWEST PROBABILITY THAT YOU WOULD CONSIDER ACCEPTABLE FOR MR. C TO INVEST IN COMPANY X.

      a.   The chances are 1 in 10 that the stocks will double their value
      b.   The chances are 3 in 10 that the stocks will double their value
      c.   The chances are 5 in 10 that the stocks will double their value
      d.   The chances are 7 in 10 that the stocks will double their value
      e.   The chances are 9 in 10 that the stocks will double their value
      f.   Please place a check here if you think Mr. C should not invest in Company X stocks, no matter what the probabilities

4.   Mr. D is the captain of college X's football team. College X is playing its traditional rival, college Y, in the final game season. The game is final seconds, and Mr. D's team college X, is behind the score. College C has time to run one more play. Mr. D, the captain, must decide whether it would be best to settle for a tie score with a play which would be almost certain to work, or on the other hand, should try a more complicated and risky play which could bring victory if it succeeded, but defeat if not.

Imagine that you are advising Mr. D. Listed below are several probabilities that the risky play will work.

PLEASE CHECK THE LOWEST PROBABILITY THAT YOU WOULD
CONSIDER ACCEPTABLE FOR THE RISKY PLAY TO BE ATTEMPTED

   a.   Place a check here, if you think Mr. D should not attempt the risky play
        no matter what the probabilities
   b.   The chances are 1 in 10 that the risky play will work
   c.   The chances are 3 in 10 that the risky play will work
   d.   The chances are 5 in 10 that the risky play will work
   e.   The chances are 7 in 10 that the risky play will work
   f.   The chances are 9 in 10 that the risky play will work

5.   Mr. E is the president of the light metals corporation in the United States. The
     Corporation is quite prosperous, and has strongly considered the possibilities
     of business expansion by building an additional plant in a new location. The
     choice is between building another plant in the U.S., where there would be a
     moderate return on the initial investment, or building the plant in a foreign
     country. Lower labor cost and easier access to raw materials would mean
     much higher return on the initial investment. On the other hand, there is a
     history of political instability and revolution in the foreign country under
     consideration. In fact, the leader of a small minority party is committed to
     nationalizing, that is, taking over all foreign investments.

*Imagine that you are advising Mr. E. Listed below are several probabilities of
continued political stability in the foreign country under consideration.*

PLEASE CHECK THE LOWEST PROBABILITY THAT YOU WOULD
CONSIDER ACCEPTABLE FOR MR. E'S CORPORATION TO BUILD A PLANT
IN THE FOREIGN COUNTRY.

a.   The chances are 1 in 10 that the foreign country will remain politically stable
b.   The chances are 3 in 10 that the foreign country will remain politically stable
c.   The chances are 5 in 10 that the foreign country will remain politically stable
d.   The chances are 7 in 10 that the foreign country will remain politically stable
e.   The chances are 9 in 10 that the foreign country will remain politically stable
f.   Please place a check here if you think Mr. E should not build a plant in the
      foreign country, no matter what the probabilities.

6.   Mr. F is currently a college senior who is very eager to pursue graduate
     study in chemistry leading to the Doctor of Philosophy degree. He has been
     accepted by both universities X and Y. University X has a worldwide
     reputation for excellence in chemistry. While a degree from university X
     would signify outstanding training in this field, the standards are so very
     rigorous that only a fraction of the degree candidates actually receive a
     degree. University Y, on the other hand, has much less of a reputation in
     chemistry, but almost everyone admitted is awarded the Doctor of Philosophy
     degree, though the degree has much less prestige than the corresponding
     degree from university X.

Imagine you are advising mister F. Listed below are several probabilities that mr. F would be awarded the degree at university X, the one with the greater prestige.

PLEASE CHECK THE LOWEST PROBABILITY THAT YOU WOULD CONSIDER ACCEPTABLE TO MAKE IT WORTHWHILE FOR MR. F TO ENROLL IN UNIVERSITY X.

- a.   Please check here if you think that Mr. F should not enroll in University X, no matter what the probabilities
- b.   The chances are 1 in 10 that Mr. F would receive a degree from university X
- c.   The chances are 3 in 10 that Mr. F would receive a degree from university X
- d.   The chances are 5 in 10 that Mr. F would receive a degree from university X
- e.   The chances are 7 in 10 that Mr. F would receive a degree from university X
- f.   The chances are 9 in 10 that Mr. F would receive a degree from university X

7.   Mr. G, a competent chess player, is participating in a national chess tournament. In an early match he draws the top-favoured players in the tournament as his opponent. Mr. G has been given a relatively low ranking in view of his performance in previous tournaments. During the course of this play with the top-favoured man, Mr. G notes the possibilities of a deceptive though risky maneuver which might bring him a quick victory. At the same time, if the attempted maneuver should fail, Mr. G would be left in an exposed position and defeat would almost certainly follow.

Imagine that you are advising Mr. G. Listed below are several probabilities that Mr. G's deceptive play would succeed.

PLEASE CHECK THE LOWEST PROBABILITY THAT YOU WOULD CONSIDER ACCEPTABLE FOR THE RISKY PLAY TO BE ATTEMPTED

- a.   The chances are 1 in 10 that the play would succeed
- b.   The chances are 3 in 10 that the play would succeed
- c.   The chances are 5 in 10 that the play would succeed
- d.   The chances are 7 in 10 that the play would succeed
- e.   The chances are 9 in 10 that the play would succeed
- f.   Please check here if you think Mr.G should not attempt the risky play, no matter what the probabilities.

7.2 Interview Scripts from First year EC102 Students

7.2.1 Interview with Yuvraj, 1st Year

1. Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous)?
Yes

2. How prepared did you feel for taking the ec102 paper? From 1-10 with 10 being very prepared
Lent Term: 5. Summer Term: 9

3. Were there challenges you encountered (Questions that you were uncertain about answering given all the preparation you had previously done)
Faced only in LT as game theory, the essay questions topic in LT, was a weak point for me.

4. Did your strategy for multiple choice questions involve guesswork- if so how many questions required guess work and what did you do in those situations?
LT: For questions 6 to 10. ST: Only for question 10.

5. How did you cope with the negative marking on the multiple-choice questions?
LT: Made me take fewer risks (risk averse). ST: Had little to no effect while attempting the questions.

6. Do you think you may have been able to perform better without the negative marking on the multiple-choice questions?
LT: Definitely. ST: Possibly expecting a similar result.

7. How satisfied are you with the ec102 format- if unsatisfied what would you think requires changing?
I enjoy the division between micro and macro as it allowed me to focus on certain topics in further detail. However, the difference in teaching methods of the lecturers took a while to adapt. With respect to the exam format, I think it was nice, and much better than the previous format of combining both micro and macro for one examination.

8. Do you think you were disadvantaged by the negative marking of ec102 MCQs because of your risk taking behaviour?
Yes. Made me risk averse and take fewer risks.

9. Anything else you would like to say with respect to the ec102 exam?
Nothing else.

7.2.2 Interview with Dinkar, 1st Year
1. Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous)
Yeah

2. How prepared did you feel for taking the ec102 paper? from 1-10 with 10 being very prepared
I felt about 7-8, but once I looked at that paper it fell to 4-5

3. Were there challenges you encountered (Questions that you were uncertain about answering given all the preparation you had previously done)
The multiple choice questions were my biggest challenge because if you get one wrong then you lose all your 6 marks so every question becomes a strategy. Also since there's negative marking its so hard to know what the examiner actually wants so the content is easy but the actual structure of the paper is tough. So if I was not 100% sure it would be a challenge to me because I wasn't sure whether to take the gamble or not.

4. Did your strategy for multiple choice questions involve guesswork- if so how many questions required guess work and what did you do in those situations?
There was no guess work, I basically had a reason for selecting my answers but only for two questions where I was uncertain I took the gamble and for the rest I played it safe and ignored the answer I was uncertain about.

5. How did you cope with the negative marking on the multiple choice questions?
I had a conservative strategy, may not have performed as well as i thought

6. Do you think you may have been able to perform better without the negative marking on the multiple choice questions?
100% yes

7. How satisfied are you with the ec102 format- if unsatisfied what would you think requires changing?
I would like to change the negative marking of the multiple choice, other than that I am happy

8. Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour?
Yes.

9. Anything else you would like to say With respect to the ec102 exam?
No that's it

7.2.3 Interview Luke 1st Year
1.Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes I do

2. How prepared did you feel for taking the ec102 paper? from a scale of 1-10 with 10 being most prepared

Lent term: 9, Summer term: 8

3. Were there challenges you encountered (Questions that you were uncertain about answering given all the preparation you had previously done)

Multiple choice questions, Partly because of that and also some choices were a bit ambiguous

4. Did your strategy for multiple choice questions involve guesswork- if so how many questions required guess work and what did you do in those situations?

I answered all the questions.

That's cool but in answers you weren't sure about what you do in those situations?

Only choose the answer that I am sure about which is less risky

5. How did you cope with the negative marking on the multiple choice questions?

I had a more conservative strategy and didn't select answers I was uncertain about

6. Do you think you may have been able to perform better without the negative marking on the multiple choice questions?

Absolutely

7. How satisfied are you with the ec102 format- if unsatisfied what would you think requires changing?

I reckon that I am satisfied with the syllabus, I wish they could keep the lent term exam and summer exam (50% + 50%), generally I am pleased with EC102

8. Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour?

No I don't feel that I am

9. Anything else you would like to say With respect to the EC102 exam?
Not really

7.2.4 Interview with Fatima, 1st year

1. Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes

2. How prepared did you feel for taking the ec102 paper? From 1-10 with 10 being very prepared

Depends, micro i was like 3, macro it was like 7

3. Were there challenges you encountered (Questions that you were uncertain about answering given all the preparation you had previously done)

Well for micro I had not covered the syllabus; had not seen lectures but merely gone through the lecture slides which was insufficient obviously so I found the multiple choice questions very nitty gritty. However, I had covered game theory from the book so I was able to attempt the long answer questions for macro; multiple choice was very hard because they were tiny details: some of which i had forgotten. I found myself repeating answers in the long questions; which is obviously not a good sign so the questions were not well written in my opinion

4. Did your strategy for multiple choice questions involve guesswork- if so how many questions required guess work and what did you do in those situations?

At least 60% of MCQs were guesswork and it was elimination strategy, and ended up picking what was most likely, where i was unsure of several answers i just chose the most likely so i could get a few marks as opposed to none.

5. How did you cope with the negative marking on the multiple choice questions?

Where I was unsure of several answers I just chose the most likely answer so I could get a few marks as opposed to none

6. Do you think you may have been able to perform better without the negative marking on the multiple choice questions?

Definitely

7. How satisfied are you with the ec102 format – if you were unsatisfied what would you think requires changing?

Very unhappy, I think it's unnecessarily harsh. Make more written responses, getting us to explain the concepts with points given to the depth of knowledge and quality of examples used instead of negatively marked MCQs that weigh 60%.

8. Do you think you were disadvantaged by the negative marking of ec102 MCQs because of your risk taking behaviour?

Yes! It made me take less risks.

9. Anything else you would like to say with respect to ec102 exam?

Nothing else really

7.2.5 Interview with Abdullah, 1st year

1. Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous-informed beforehand)

Yeah

2. How prepared did you feel for taking the ec102 paper? From 1-10 with 10 being very prepared

Lent term: 8, summer term: 9

3. Were there challenges you encountered (Questions that you were uncertain about answering given all the preparation you had previously done

The paper was straightforward but there were some 'tricks' in the mcqs that did not really test knowledge or expertise in the subject, but rather tested memory and only a short term view on the subject. For example, in one mcq, the question asked why governments help R&D. I and many others believe that positive externalities was an answer to this question even though in our lecture notes it is written that basic research in universities has positive externalities and not R&D.

Yes, patents actually isolate the innovation to the particular firm but in the long term after some years, the patent ceases to exist and other firms can also get the new innovation. From a simple exam perspective, positive externalities might be wrong for R&D but I answered the question thinking about a long term view of helping R&D. Thus, I believe penalising a student on such questions and awarding 0 out of 6 marks on questions like these when a student's logic and understanding is correct is extremely detrimental to their results. Even though the lecture notes explicitly do not state something, logic and reasoning, and thinking about all aspects of the question, not only short term, may lead to an may lead to an answer not directly stated in the lecture notes.

4. Did your strategy for multiple choice questions involve guesswork- if so how many questions required guess work and what did you do in those situations?

Yes and 1

5. How did you cope with the negative marking on the multiple choice questions?

By preparing more and not taking many risks

6. Do you think you may have been able to perform better without the negative marking on the multiple choice questions?

yes

7. How satisfied are you with the ec102 format- if unsatisfied what would you think requires changing?

Unsatisfied- Change the marking method for mcqs and award points based on correct answers

8. Do you think you were disadvantaged by the negative marking of ec102 MCQs because of your risk taking behaviour?

yes

9. Anything else you would like to say With respect to the ec102 exam?

Test critical thinking skills and application of economics more than just memory

7. 2. 6 Interview with Bhavya, 1st Year

1. Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes

2. How prepared did you feel for taking the ec102 paper? From 1-10 with 10 being very prepared

Lent: 7, summer: 6

3. Were there challenges you encountered (Questions that you were uncertain about answering given all the preparation you had previously done)

I found the multiple choice questions tricky since one mistake would lead to a loss of a large number of marks.

4. Did your strategy for multiple choice questions involve guesswork- if so how many questions required guess work and what did you do in those situations?

No, my strategy for the multiple choice questions did not involve guess work.

5. How did you cope with the negative marking on the multiple choice questions?

I only chose options I was sure about

6. Do you think you may have been able to perform better without the negative marking on the multiple choice questions?

Yes

7. How satisfied are you with the ec102 format- if unsatisfied what would you think requires changing?

I am not satisfied with the format for the multiple choice questions. I would prefer if one multiple choice question weighed lesser marks or if there were marks given for correct options chosen. I am fine with the format for the long answer questions.

8. Do you think you were disadvantaged by the negative marking of ec102 MCQs because of your risk taking behaviour?

Yes, definitely I felt very disadvantaged because it made me risk averse.

9. Anything else you would like to say with respect to the EC102 exam?

The exam covers a few topics while we cover a large number of topics in the lectures. I would prefer if the exams were more broad-based, giving students who were unable to study/understand one topic a chance to perform well on the exam.

7.2.7 Interview with Shashank, 1st Year

1. Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes

2. Do you think you were disadvantaged by the negative marking of ec102 MCQs because of your risk taking behaviour?

No, I felt that I had prepared well for the exam so I answered all MCQs confidently.

7.2.8 Interview with Timothy, 1st Year

1.Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes

2. Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour?

Yes in that case, I would definitely say that I was put at a disadvantage because of my risk taking behaviour

7.2.9 Interview with Shalini, 1st year

1.Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes

2. Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour?

No, as I am not risk averse

7.2.10 Interview with Odelia, 1st Year

1.Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yeah

2. Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour?

Ohh Yesss!

7.2.11 Interview with Alya, 1st Year

1.Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes

2.Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour?

Yes

7.2.12 Interview with Jun, 1st Year

1.Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes.

2..Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour?

Yes I felt risk averse.

7.2.13 Interview with Shagaana, 1st Year

1. Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes.

2. Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour

Yes, definitely I tried to minimise risk taking.

7.2.14 Interview Joy, 1st Year

1.Do you give your permission/consent to participate in an LSE groups research (given that any data collected would purely be confidential and anonymous- informed beforehand)

Yes.

2. Do you think you were disadvantaged by the negative marking of EC102 MCQs because of your risk taking behaviour

Yes.