

Homework 2

Due October 3, 2017

Homework will be collected at the end of the lecture on the day it is due. Submissions in any other time or manner will be ignored. The maximum score is 100. Unprofessionally looking papers or unnamed or unstapled sheets or improperly labelled questions or bad handwriting will result to a penalty up to 50% at the discretion of the grader. Plagiarism will be prosecuted and perpetrators will be in big trouble.

1. A and B consider a transaction concerning a single good. B treats A's valuation, v , as a random variable uniformly distributed on $[v_L, v_H]$. A treats B's cost, c as a random variable uniformly distributed on $[c_L, c_H]$. Consider that the non-empty set $[c, v] \in [c_L, c_H] \cap [v_L, v_H]$ and that B has all bargaining power. B makes a take-it-or-leave-it offer to A.

(a) What kind of information asymmetry does this transaction exhibit? [10p]

(b) What could be inferred about the efficiency of the trade outcome? [10p]

(c) What price, p , will B offer? [10p]

*[Note: The entirety of this task was **precisely** laid out in lecture 3 – I literally asked and answered all of the above questions]*

2. Rickie is taking a test in the course "Sub-atomic Psychological History of Organic Art II". He assesses his chances in this test as: receiving a 20 with 50% probability; a 40 with 25%; a 60 with 25%. Rickie is risk neutral and cares to maximize his grade in this course. However, any grade below 40 gives Rickie utility equal to a grade of zero. Rickie has no ethical constraints and considers the alternative of cheating in this test. In case of cheating the probabilities of receiving 40 and 60 double. Yet, if Rickie is caught cheating, he is going to receive zero for the test. The probability of a cheating student to be caught in this particular test is p .

(a) Come up with a course that has a funnier title than the above. [5p]

(b) Is there an informational asymmetry in this situation? Explain. [5p]

(c) Evaluate the incentive compatibility of cheating as a function of p . [10p]

(d) Evaluate the incentive compatibility of cheating as a function of p if the penalty for cheating was $-\infty$. [5p]

3. A project is run by a manager with utility $U = w^{1/2} - e$, where w stands for the manager's compensation. The manager can exert full effort ($e = 1$) or shirk ($e = 0$). If the manager exerts full effort the project will succeed with probability 50%. If the manager shirks, the project will fail with probability 60%. The manager's reservation utility is 4. The residual claimant for this project cannot observe e and aims to maximize profit from the project.

(a) Does this problem satisfy stochastic dominance? Explain. [10p]

(b) What is the optimal contract? [15p]

(c) Calculate the value of information. That is, how much it costs to the residual claimant the fact that cannot observe e . [15p]

4. An industry with constant economies of scale has initially 3 incumbent firms. How many firms will this industry have if 2 more firms enter? Explain. [10p]