

BANKING AND FINANCIAL INTERMEDIATION

EXERCISE SET 1: SEPTEMBER 20, 2017

LOGISTICS:

The exercise report must be EITHER sent electronically on the course website OR placed in the course box on the fifth floor of LSK building (course box is under the name of *CHOI, Katy*) by 1:00 PM *sharp* on Wednesday (September 20). Please make sure that your name and student number are included on the report that is submitted.

STUDENT HONOR CODE:

Collaboration between individuals is prohibited; this means that all work must be done by you.

FORMATTING:

- The absolute maximum length for any answer is 5 pages.
- Be brief and to the point: use a “.22-caliber rifle” instead of “10-gauge shotgun” in your answers.
- In numerical problems, you must also show all relevant work, not just the final answers.
- The questions require you to think rather than copy text from the course material.
- The answers may be handwritten, but a computer printout is better because poor appearance will make your report difficult to understand and grade.
- Please highlight your final answer when possible.
- In the problems, every player is risk neutral unless otherwise stated.

PROBLEM 1

1p

Suppose there are two investment opportunities. The first project yields 1 dollar next year for each dollar invested. The second project yields either nothing or 3 dollars with equal probability for each dollar invested. You have 100 dollars. You will invest all your wealth in these projects and then consume everything you will get (denote by X) next year. How will you allocate your wealth over these two investment opportunities if your utility function is $\ln X$?

PROBLEM 2

1p

Consider the game below. Which values of X and Y make (U, R) the unique equilibrium? Select all the correct choices.

	L	R
U	3, Y	5, 10
D	X , 6	-2, 4

- a) $X=11, Y=8$
- b) $X=0, Y=6$
- c) $X=5, Y=4$
- d) $X=1, Y=11$
- e) None of the above

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PROBLEM 3

1p

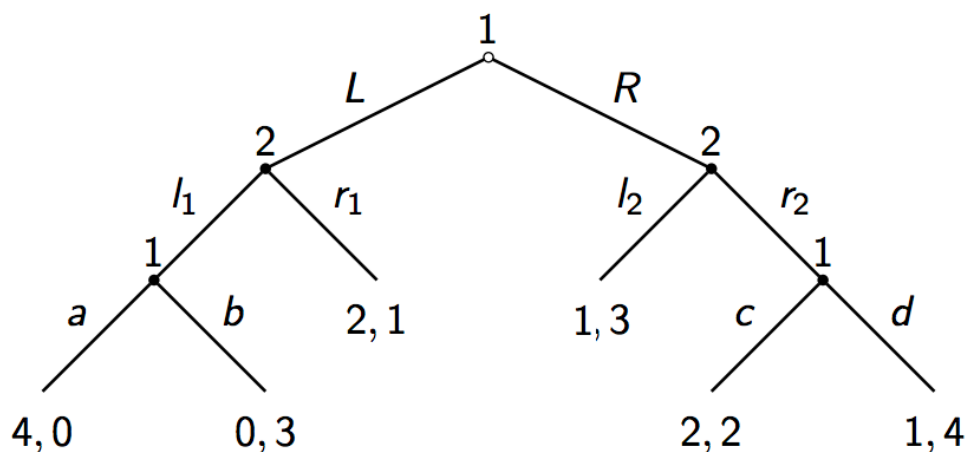
Find all equilibria of the game below:

	a	b	c	d
I	1,1	2,2	1,0	3,3
II	2,2	5,3	3,4	2,0
III	3,4	1,0	0,2	1,4
IV	4,3	3,5	2,3	4,2

PROBLEM 4

1p

Consider the game below. Numbers at the top of each node represent player 1 and 2. First, player 1 moves and selects between L and R. Then, game continuous with player 2's move. Find the subgame perfect equilibrium of the game.



PROBLEM 5

1p

A banker has just opened a bank and collected 1,000 dollars from depositors. Assume that the bank doesn't have any equity. The (net) interest rate on deposits is 20%. Because the bank is new, it does not have any assets on its balance sheet other than 1,000 dollars cash. The banker has three investment opportunities: the first project yields 1.1 dollars next year for each dollar invested. The second project yields either nothing or 2 dollars with equal probability for each dollar invested. The third project yields nothing, 1 dollar, or 4 dollars with probabilities $\frac{3}{5}, \frac{1}{5}, \frac{1}{5}$. In which project will the banker invest?

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PROBLEM 6

2p

Read the *optimal effort for the course* on slide 23 in Lecture notes 2. How many hours each student will study (*i.e.*, what is X^*)?

Hint: Students are identical. Therefore, their solutions (X^*) will be the same. Don't mix X^* which is the solution you obtain from first-order condition with X which is the decision variable.