

ECON 121: Problem Set #9

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Problem 1

1. Explain why chess is not a static game of complete information.
2. Consider the following game: I write down a number (1, 2, or 3) on a card and set it down. If you guess the right number, I give you \$1. If you guess the wrong number, you give me \$1. Don't solve it; just explain why this is a static game of complete information and draw the matrix representation of the game.
3. Explain the three criteria we use to evaluate solution concepts, and use them to compare Dominant Strategy Equilibrium with the solution concept of "anything can happen."
4. What is a Pareto dominated outcome? Compare with a Pareto optimal/efficient outcome.

Problem 2

Consider the following matrix form game:

P_1/P_2	X	Y	Z
A	(1, 4)	(4, 5)	(8, 2)
B	(5, 4)	(1, 6)	(7, 5)
C	(0, 11)	(3, 9)	(10, 2)

Use Iterated Elimination of Dominated Strategies to find the unique solution. Show your work.

Problem 3

Consider two players: The contestant (C) and the predictor (P). There are two boxes, one opaque and one transparent. The transparent box has \$1000 in it for sure. P either puts \$0 or \$1,000,000 in the opaque box, unseen by C. Then, C chooses either to select only the opaque box (one-box) or both boxes (two-box). C's payoff is simply to maximize his monetary gain. P's strange preferences are to demonstrate his correct prediction in the following way: Only put money in the box if he thinks C will select one box; otherwise, do not put money in the box (ignore mixed strategies for this problem). If P predicts correctly, his payoff is 10; otherwise it is 0. Here is the game in matrix form:

<i>contestant/predictor</i>	One-box	Two-box
A	(10, 10^6)	(4, $10^6 + 10^3$)
B	(0, 0)	(1, 10^3)

1. Explain why this is a static game of complete information.
2. Find the unique surviving set of strategies using IESD.
3. Now suppose P (somehow) observe what C will do before C even acts, and this ability is common knowledge. Explain why this is not a static game. Who effectively moves first as far as the game is concerned, and who then observes that first move?
4. If you read ahead to chapter 7 and 8, we will discuss dynamic games of complete information. Solve the dynamic games you described in part (c) using Sub game Perfect Nash Equilibrium.