LECON2112 Advanced Microeconomics II

– Assignment 3 –

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Deadline: Monday, February 26, 2024 at 5pm.

Instructions: To be submitted via Moodle as a single file (including your name and NOMA).

Exercises[1]

8D4. Consider a bargaining situation in which two individuals are considering undertaking a business venture that will earn them 100 dollars in profit, but they must agree on how to split the 100 dollars. Bargaining works as follows: The two individuals each make a demand simultaneously. If their demands sum to more than 100 dollars, then they fail to agree, and each gets nothing. If their demands sum to less than 100 dollars, they do the project, each gets his demand, and the rest goes to charity.

(a) What are each player's strictly dominated strategies?

(b) What are each player's weakly dominated strategies?

(c) What are the pure strategy Nash equilibria of this game?

8D9. Consider the following game [based on an example from Kreps (1990)]:

		Player 2			
		LL	L	M	R
Player 1	U	$100, 2$	$-100, 1$	$0, 0$	$-100, -100$
	D	$-100, -100$	$100, -49$	$1, 0$	$100, 2$

(a) If you were Player 2 in this game and you were playing it once without the ability to engage in preplay communication with Player 1, what strategy would you choose?

(b) What are all the Nash equilibria (pure and mixed) of this game?

(c) Is your strategy choice in **(a)** a component of any Nash equilibrium strategy profile? Is it a rationalizable strategy?

(d) Suppose now that preplay communication were possible. Would you expect to play something different from your choice in **(a)**?

[1] Source: Mas-Colell, Whinston, & Green, 1995. "Microeconomic Theory," Oxford University Press.

8Df. Consider the two-player game $\Gamma = \{N = \{1,2\}, \Delta S = \Delta S_1 \times \Delta S_2, (u_1, u_2)\}$. Let us assume it is a zero sum game, that is, for all $s_1 \in S_1, s_2 \in S_2 : u_1(s_1, s_2) = -u_2(s_1, s_2)$.

- Assume there are two pure strategy Nash equilibria: (s_1^*, s_2^*) and (s_1^{**}, s_2^{**}). Prove that

$$u_1(s_1^*, s_2^*) = u_1(s_1^{**}, s_2^{**}) \quad \text{and} \quad u_2(s_1^*, s_2^*) = u_2(s_1^{**}, s_2^{**}).$$

- Show that the same equivalence property holds if the two equilibria are mixed strategy equilibria.