



Corporate Investment Appraisal

Masters in Finance

2017-2018

Fall Semester

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Problem Set N° 1:

Basic Concepts of Game Theory (Definition of Equilibrium)

HAND IN SOLUTIONS - CLASS OF OCTOBER 2nd, 2017

Problem 1: What are the Nash equilibria of the following game, after elimination of dominated strategies? Explain the steps followed in order to reach your results.

			Player B		
		Left	Center	Right	
	Top	4,0	1,2	1,2	
Player A	Middle	4,5	0,4	0,1	
	Bottom	0,1	2,0	2,1	

Problem 2: Two Californian teenagers, Bill and Ted, are playing a game with the following pay-offs matrix:

			Ted	
		Left	Right	
	Top	-4,-4	4,2	
Bill	Bottom	2,4	-2,-2	

- (a) Determine all equilibria in pure strategies. Explain.
- (b) Determine all equilibria in mixed strategies. Explain.
- (c) What's the probability of both players having positive pay-offs? Explain.

Problem 3: Consider the following coordination game:

		Player B	
		Left	Right
Player A	Top	1,1	0,0
	Bottom	0,0	2,2

- (a) Compute all pure strategy equilibria of this game. Explain.
- (b) Do any of these strategies dominate any of the others? Explain.
- (c) Now suppose that Player A plays first, committing to choose either Top or Bottom. Are the strategies of question (a) still Nash equilibria?
- (d) What are the “subgame perfect” equilibria of this game?

Problem 4: Consider the previous question’s game, but now consider that the players choose their strategies simultaneously.

- (a) Represent the game in extensive form.
- (b) Describe the NE / perfect Bayesian equilibria (PBE) of this game.