

Haifa MA Micro I. Fall 2010
Assignment 10: Game Theory.
Due: Monday Jan 10, 3:15 pm

1. Chicken

Lee and Spike want to see who is the bravest. To do so, they play a game called chicken. (Readers, don't try this at home!) They take their cars and drive as fast as they can towards each other. If they both swerve, they both get utility 1. If one swerves and the other doesn't, the one that swerves is the chicken and gets 0 and the brave one gets 2. If neither swerves, they crash and both get utility -3 .

- (i) Model this as a game by writing its normal form.
- (ii) Are there any pure-strategy equilibria of the game? Please explain why or why not for each possibility.
- (iii) Are there any mixed-strategy equilibria of the game? If yes, give the equilibrium. If no, please explain.

2. The Hair-Cut Game

Bill and Ted are about to graduate from high school. They decided to do something wild and get crazy haircuts for the last day of school. The problem is that they live across town and have no way of knowing what the other has decided. They concluded that getting haircuts would be most bodacious and give utility of 4 to each. This would improve their standard utility of 1 each. Bill got to thinking further and determined that if Ted didn't get a haircut it would suck and he would get utility 0. Ted, however, thinks it would be excellent and get utility 2. Ted also determined that if Bill didn't get a haircut and he did it would suck and he would get utility 0. Bill, however, thinks that case would be excellent and get utility 2.

- (i) Model this as a game by writing its normal form.
- (ii) Are there any pure-strategy equilibria of the game? Please explain why or why not for each possibility.
- (iii) Are there any mixed-strategy equilibria of the game? If yes, give the equilibrium. If no, please explain.