

EC403 Game Theory
 Summer Term Session 1
 Instructor: Antonio Miralles
 Problem Set 2

To be corrected in class on Thursday, June 12 2008.

1) WHERE SHALL WE MEET? Find all pure strategy and mixed strategy Nash Equilibria of this game. What are the expected payoffs arising from the mixed strategy equilibrium?

Player 2 columns →	Starbucks	Espresso Royale
Player 1 rows ↓		
Starbucks	2 , 1	0 , 0
Espresso Royale	0 , 0	1 , 2

2) CUTTING THE CAKE ONCE AND AGAIN. Consider the one-shot game in which there is a proponent (the old sister) and a taker (the young brother). The sister proposes one out of two ways to split a cake: either a 50-50 deal or a 90-10 deal (obviously, the proponent would keep the 90% portion!). The brother can say either Yes or No to the offer. If he accepts the offer, each sibling takes the agreed portion. If he does not accept, then the cake is thrown away (let us say that the parents get angry because the siblings do not agree).

- a) Represent this game in normal form and find the Nash Equilibrium.
- b) Now suppose that the siblings are given a cake to split every day, so they play the cake game every day. Both siblings have identical discount factor $\delta < 1$ between days. Show that for $\delta \geq 1/5$ there is a Subgame Perfect Equilibrium characterized by the following strategies: 1) the sister repeatedly proposes the 50-50 deal, but if she observes that the brother accepts a 90-10 deal even only once, then she offers the 90-10 deal from that moment on forever; 2) the brother always accepts a 50-50 deal and rejects a 90-10 deal, but if he accepts the 90-10 once, then he has to accept any given offer from then on.

3) THE STRIKE. Do Exercise 2 in Chapter 14 of the textbook (page 497).

4) MANIPULATING VOTES. Do Exercise 1 in Chapter 15 of the textbook (page 532).