

Assignment 3: Product Differentiation

Exercise 1: Two players use the following procedure to share two identical indivisible objects. Player 1 proposes an allocation of the two goods, Player 2 observes the allocation proposed by player 1 and decides whether to accept or reject. If player 2 accepts then the allocation is implemented and each player obtains an utility of 1 for each object received; if player 2 rejects neither player receives either of the objects.

1. Represent the following game in a tree. Write the actions available to player 1 and to player 2.
2. Write a possible strategy of player 1 and a possible strategy of player 2;
3. Find the subgame perfect equilibrium outcomes of this game.

Exercise 2. Let two pubs, A and B, sell the same beer at zero marginal cost in the town of Wivenhoe. Wivenhoe consists of a single straight road of length 1, the Avenue, on which the pubs must locate. There are a continuous of consumers living in the Avenue and they wish to buy the beer. However, a consumer located at x , who buys the beer at one of the two Pubs located at y , has to pay, additionally to the price of the beer, a travel cost $t = (x - y)^2$. Each consumer wishes to buy only one beer and they have a very high reservation value v .

- (a) Suppose that the location of each pub is fixed, but each Pub chooses its own price. Derive the Nash equilibrium. Which is the demand of Pub 1 in equilibrium? If the pubs were located farther away, would there be more or less price competition?. Explain.
- (b) Suppose that the price of beer is fixed by a government at p^* per pint. Derive and illustrate where the two pubs would locate.
- (c) Suppose that in the first stage the two pubs choose where to locate and in the second stage they choose their price. Derive the equilibrium. Compare with part (b).