ECO 650: Final Exam 2022

December, 2022

1 Exercice 1 : Innovation - 8 pts

Suppose that two firms $i = 1, 2$ consider incuring a fixed cost f to establish a research division, in the hope of finding a new product. If created, a research division has a probability λ to succeed. If one firm succeeds, it obtains the monopoly profit Π^m on the product market. If both firms find a new product, they will obtain the duopoly profit Π^d.

1. Assume that only one research division is created. What is its expected gain ? (1 pt.)

2. Assume now that two research divisions were created. What is their expected gains? (1 pt.)

3. Determine the level $\hat{f}$ below which there exists a Nash equilibrium in which both research divisions are created. (2 pts.)

4. Determine the level f^* below which it is optimal for the industry to have both research divisions created. (2 pts.)

5. Compare $\hat{f}$ and f^* and comment. (2 pts.)

2 Bundling (6 pts)

Two consumers A and B have the following valuations for Sport tickets:

Consumers	5 Basket	5 Tennis
Type A	90	50
Type B	70	40

On an annual basis, SPORT 24 offer annual supscription for basketball and Tennis games. Each game costs 5 euros to the Company. Sport 24 cannot discriminate among consumers. To simplify, consider that there is 1 consumer of each type (A and B).

Questions:

1. Determine the best pricing strategy for SPORT 24 if it offers an annual card fee per sport type? (2 pts)

2. Determine the optimal price for SPORT 24 if it offers only a Gold card membership (Full access to all games- pure bundling)? (2 pts)

3. Consumers now have the following valuations:

Consumers	5 Basket	5 Tennis
Type A	90	50
Type B	40	70

4. Answer to the same questions (1) and (2). (1 pt)

5. In which case bundling is the most profitable? Explain. (1 pt)

3   Vertical Relations (6 pts.)

Assume there is one upstream firm U that relies on one downstream firm D to sell its product to consumers. The unit cost of the product is normalized to 0. Consumers' demand is given by $q = a - p$, where $a > 0$ is a parameter, q is the quantity demanded, and p is the final price charged to consumers. Assume that D can also buy the product at cost $c \in [0, a[$ from a competitive fringe.

Questions:

1. Assume that U and D have signed a two-part tariff contract (w, F). Determine the equilibrium profits of firms U and D. (2 pts)

2. Assume now that, anticipating the profit fonctions determined in 1), U and D bargain (with equal power) over the contract (w, F). Determine the equilibrium contract, price and profits. (3 pts.)

3. What is the impact of an increase in c on the profit sharing. Comment. (1 pt.)