



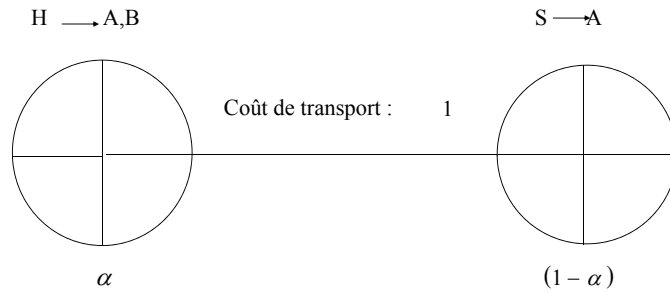
## ECO 650: Multiproduct -Exercices

### 1 Loss Leading

There are two stores H (Hypermarket) and S (Supermarket). We assume that H sells A and B whereas S only sells A. Consumers live in the city represented in the figure below: a fraction  $\alpha \in [0, \frac{1}{2}]$  of consumers are located around H and  $1 - \alpha$  around S.

Consumers have no cost to go to the store nearby but incur a transportation cost normalized to 1 to go to the other store. Product A is produced at no cost and product B is produced at a unit cost  $b \in [0, 1]$ . All consumers are identical and have a willingness to pay  $u_A = 1$  for product A. Consumers' willingness to pay for B,  $u_B$  is uniformly distributed over  $[0, 1]$  around each store.

We note  $p_A^H$ ,  $p_B^H$  and  $p^H = p_A^H + p_B^H$  the sum of prices for the two goods at store H;  $p^S$  the price of A at store S.



**Questions:**

1. Which consumers may travel from one store to the other?
2. Determine the demand at each store in the two cases when  $p^S < p^H$  and  $p^H < p^S$ .
3. Determine the profits of firms H and S in the two cases.
4. Determine the two candidates Nash equilibria in pure strategy.
5. Assume  $b \rightarrow 0$  and  $\alpha = \frac{1}{9}$ ; show that the loss-leading equilibrium is the unique Nash equilibrium in pure strategy.
6. How do you explain the emergence of this loss-leading equilibrium?

## 2 Bundling

Food for life makes health food for active, outdoor people. They sell 3 basics products (Whey powder, high protein Strenght bar, a meal addi-

tive(Sawdust)). Each product costs 3 to produce and the bundle of 3 products costs 9.

Consumers fall into two types:

Consumers	Whey	Strenght	Sawdust
Type A	10	16	2
Type B	3	10	13

The firm cannot discriminate among consumers. We assume there is one consumer of each type (A and B) and they want one unit of each product.

**Questions:**

1. Determine the optimal prices under separate selling.
2. Determine the optimal prices under pure bundling (only bundles of 3 products must be considered)? Comment.
3. Determine the optimal prices under mixed bundling? Comment.
4. What is the best pricing policy when authorizing bundles of two products? Comment.