

## Topic 2 - Pricing with and without market power : the two extreme cases of perfect competition and monopoly

- Perfect competition. In a competitive market (i) there are many firms, (ii) firms sell identical products, (iii) in the long run, there is free entry. Then each firm is price-taker. Therefore, the revenue of the firm is  $R(q) = p \times q$  where  $p$  is taken as given. The profit is  $\Pi(q) = p \times q - C(q)$  where  $C(q)$  is the cost function of the firm with  $C' > 0$  and  $C'' > 0$ . The firm produces as long as the marginal revenue is greater than the marginal cost, i.e.  $p > C'(q)$ . In the absence of capacity constraint, the firm produces a quantity  $q(p)$  such that  $p = C'(q)$  (marginal cost pricing), provided that profits are positive. Profits are positive if  $p \times q - C(q) > 0$ , that is if  $p > \frac{C(q)}{q}$  (average cost): the firm produces if  $p > p_{min}$  where  $p_{min}$  is the minimum of the average cost. The supply curve of the firm is

$$q^F(p) = \begin{cases} q(p) \text{ such that } p = C'(q) & \text{if } p > p_{min} \\ 0 & \text{otherwise} \end{cases}$$

The industry supply curve is the sum of individual supply curves. The market equilibrium  $p^*$  is reached when total supply equals total demand.

- Monopoly pricing. This is a particular case of imperfect competition. From a general point of view, under imperfect competition, (i) there are one or many firms, (ii) each firm has control over some components of the good and (iii) entry is free or not. Under imperfect competition, each firm can influence the price, it is price-setter. A monopoly is the single supplier on a given market. The demand it faces (its residual demand) is equal to the demand in that market. To take pricing decisions, the firm trades-off price and quantity: if it decides to produce  $q$ , the most consumers are willing to pay is  $p(q)$  (which is the price he wants to charge). Then its revenue is  $R(q) = p(q) * q$  where  $p(q)$  is the inverse demand. So, we can write the profit  $\pi(q) = p(q) * q - C(q)$ . The firm produces as long as the marginal revenue is greater than the marginal cost. In the absence of capacity constraints, it produces a quantity  $q^M$  such that  $R'(q^M) = C'(q^M)$ , provided that profits are positive. The market price  $p^M$  is the price at which consumers are ready to buy  $q^M$ , i.e.  $p^M = p(q^M)$ .

- Inefficiencies. If we recreate conditions of perfect competition, the monopolist produces a quantity  $q^*$  such that  $p = C'(q^*)$ . The industry supply curve is simply the supply curve of the monopolist (given the firm is alone). The market price  $p^*$  is such that  $p^* < p^M$  and  $q^* > q^M$ ;  $\pi(q^M) > \pi(q^*)$ ; consumers' surplus is smaller under monopoly pricing; and monopoly pricing introduces a deadweight loss since some profitable trades for both the firm and consumers are not undertaken.