**MONOPOLY**

A monopoly is a firm or company which is the only producer of a good with no close substitutes. The basic difference with respect to competitive markets is the fact that the monopoly has **market power**, namely the **ability to set a price** which is **different from marginal cost**, so to set freely its own price (higher than market price).

The monopoly can reduce output in order to keep the price high. So, in comparison to perfect competition, Q is lower and P is higher.

Why does the market become monopolistic and how can it be maintained as such?

A producer can become and remain a monopolist when the market has **barriers to entry** that generate profit for the monopolist both in the long and short run, such as:

* **Control of natural resources or inputs:** the most common example is De Beers Company, which at the beginning was the only one extracting and selling diamonds in the world market. in 20th century, new firms had access to the same kind of natural resource its market power was reduced, even though it remained a monopoly for a long time even when they had entered the market.
* **Increasing returns to scale:** average total cost decreases as output increases, so firms tend to grow larger because it is more profitable (efficient) to keep only one company with a large share in the market. The source of this condition is large fixed costs: when large fixed cost are required to operate, a given quantity of output is produced at lower average total cost by one large firm than by two or more smaller firms. When a monopoly is created and sustained by increasing returns to scale, we talk about natural monopoly (firms selling natural products, e.g. gas).

If there was another company with the same share, the average total cost would increase.

* **Technological superiority:** at least in the short run, a firm can maintain a consistent technological advantage over competitors. For example, at the beginning Apple was the only big company operating in the market for smartphones. Then new companies were able to catch up and modify the technological resources to enter the market: now this kind of market is an oligopoly.
* **Government-made barriers** (**patents** or **copyrights**)**:** a **patent** fives an inventor a temporary monopoly in the use or sale of an invention, usually applied to goods that require a lot of research (e.g. medical drugs). A **copyright** gives the creator of a literary or artistic work sole rights to profit from that work. An example of patent is antiretroviral drugs: initially all of them were covered by a patent that made them very expensive. So at the end of ‘80s there were strong campaigns in order to raise awareness and free the market for these drugs; now they are very cheap but this had a drawback, since it made people less aware of how the HIV can be contracted.

How do monopolies define quantity and price? Any firm who wants to maximize its own price must set a quantity where MR = MC: this condition means that there is no incentive to modify the quantity of output. In competitive markets MR = P, so this equality translates into MC = P because all agents are price-takers. In monopoly, it is different because the monopolist is free to set both quantity and price. Therefore, MR is different from P, which is set by the monopolists rather than by the market itself. Given that TR = P x Q, P is not a unique one but there is a range of prices. If we substitute P with the indirect demand function (P = a – bQ), we have   
**TR = (a – bQ)xQ 🡪 aQ – bQ2**. Starting from TR, if we want to define MR as , then if we calculate the derivative we have **MR = a – 2bQ**. When the demand of the market is represented in a linear way, the marginal revenue is a straight line with the same vertical intercept of the demand curve but double slope.

Suppose that our monopoly has constant MC and that, to maximize profit, the condition is MR = MC. The optimal quantity is the intersection between the two curves, but a monopolist can set a maximum price equal to the consumers’ willingness to pay for that good, namely the point in the demand curve corresponding to the optimal quantity (vertical projection of the optimal quantity on the demand curve). The difference with respect to a competitive market is that, in that case, the optimal quantity would be the intersection between the marginal cost curve and the demand curve and the corresponding price (= MC) 🡪 *fig.1*

A monopoly cannot change the behaviour of consumers, so it cannot increase quantity because it would be forced to reduce the price, otherwise nobody would buy the product if a high price was maintained. When a monopolist decides Q and P, it must make sure that the consumers will buy the product, taking two effects into account:

* **Quantity effect:** one more unit is sold, increasing total revenue by the price at which the unit is sold. Usually positive.
* **Price effect**:to sell the last unit, the monopolist must cut the market price on allunits sold. This decreases total revenue (negative).

However, if the market is inelastic (e.g. necessary goods) the monopoly not regulated by government would be able to set a very high price. However, for products such as life-saving drugs there is government regulation to avoid monopoly.

Profit maximization in monopoly consists of two steps:

* Choosing a quantity where MR = MC.
* Choosing a price which is the highest price consumers will pay for that quantity. Once picked a quantity, it is necessary to follow the graph to the demand curve, showing how much consumers will pay.

The consequence of a reduced equilibrium quantity and higher equilibrium price is **inefficiency**: with the same demand curve, a competitive market will produce a consumer surplus equal to the entire triangle below the demand curve and above MC (=P). In monopoly, the consumer surplus will correspond to the area below the demand curve and above the price imposed by monopoly (smaller area), while producer surplus will correspond to profit and a big portion of the figure represents a deadweight loss, since the quantity between QM and a hypothetical QC is not traded even if the willingness to pay of consumers is greater than marginal cost, so there are missed opportunities. Therefore, in monopoly a lower quantity is sold at a higher price and there is a loss of efficiency due to deadweight loss. Producers, in this case the monopoly, do not care about efficiency and total surplus.

Therefore, monopolistic profit comes at the expense of consumers, since consumer surplus is much reduced. To avoid deadweight loss, government policies (**antitrust policies**) attempt to prevent monopoly behaviour, pushing for a reduction of price. When monopolies are regulated by government, there is an unrealistic **first best** (rule according to which monopolies set a **price equal to MC**, yet it leads to negative profits) and a **second best** solution (imposing a **price equal to ATC** 🡪 greater than PC but lower than PM, usually occurring in natural monopolies).

If government imposes regulation, consumer surplus rises and profits fall.