

SEMESTER IV MICRO ECONOMICS II MONOPOLY

Monopoly is a market structure in which one firm makes up the entire supply side of the market. That is, it is the polar opposite to Perfect Competition.

They usually come about due to inability of entry by new firms. These barriers could be

1. Legal Barriers: Such as when the firm which manufactures the product holds a patent.
2. Natural Barriers: An example of this occurs when the market is sufficiently small such that a new firm cannot profitably operate. We call such a monopoly a Natural Monopoly.

Key differences between a Monopoly and Perfect Competition

Monopoly	Perfect Competition
Single Firm	Large Number of Firms
Barriers to Entry	Free Entry and Exit
Price Setter	Price Taker

Let's examine the consequence of these differences each in turn:

1. The reason why the market structure has a single firm is because of barriers to entry which under Perfect Competition does not exist.
2. Since all firms can freely enter and exit, the market consists of a large number of firms where none has any market power, and face a horizontal demand. The Monopoly however on account of its market power since it is the sole supplier faces the usual downward demand. It can only increase quantity supplied by lowering its price. That is the Monopoly is a Price Setter, as opposed to Price Taker.
3. In the Perfect Competition all firms act in their own self interest through competition, and consumers benefit from this since they get the maximum quantity of a good at the lowest possible price. However, a Monopoly due to its market power due to a lack of competition as we will see can in fact have positive profits in both long and short run, and it is often to the detriment of consumers.

Determination of Profit Maximizing Quantity using the condition $MR=MC$

Recall that the Profit Equation for a firm is just

$$\pi = PQ - C(Q) \equiv P(Q)Q - C(Q)$$

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Note that whereas previously for a Perfectly Competitive firm, we have a horizontal line at price P , since the perfectly competitive firm is a price taker, a Monopolist has downward sloping demand, which I have written here as price P that is dependent on quantity supplied, $P = P(Q)$. So just like any profit maximizing firm, a monopolist chooses the profit maximizing quantity supplied by equating its marginal revenue to its marginal cost. That is:

$$\begin{aligned}\max_Q \pi &= \max_Q P(Q)Q - C(Q) \\ \Rightarrow \left(\frac{dP(Q)}{dQ} Q + P(Q) \right) &= \frac{dC(Q)}{dQ} \\ \Rightarrow MR &= MC\end{aligned}$$

The right hand side of the condition tells us that the monopolist has to consider the fact the demand for its good is downward sloping, i.e. it can increase quantity sold by reducing prices.

Note from the condition that

$$\frac{dP(Q)}{dQ} Q + P(Q) < P(Q)$$

Where $\frac{dP(Q)}{dQ}$ is just the slope of the demand schedule of the monopolist. Since we know that the slope of the demand is negative, this means the marginal revenue curve is always below the demand. Matter of fact, assuming the linear demand that we have been using, there is a strict relationship. Let us assume a general demand $P = a - bQ$ where both “a” and “b” are positive numbers. Then total revenue is just

$$TR = P \times Q = (a - bQ) \times Q = aQ - bQ^2 \text{ and the marginal revenue is}$$

$$MR = a - 2bQ$$

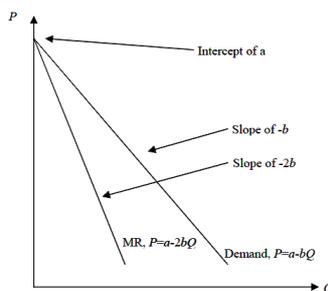
Now compare the marginal revenue equation MR and the demand equation

$$P = a - bQ$$

There are two things to be noticed:

1. They both have the same intercept.
2. The slope of the marginal revenue is steeper, and is twice that of the demand curve.

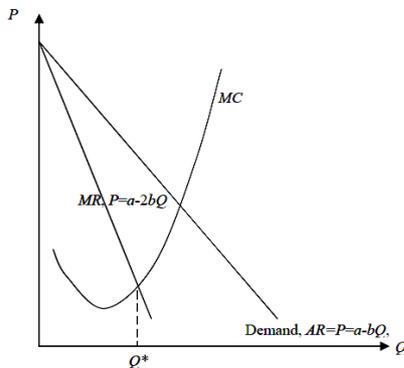
Diagrammatically, we can then draw the two as



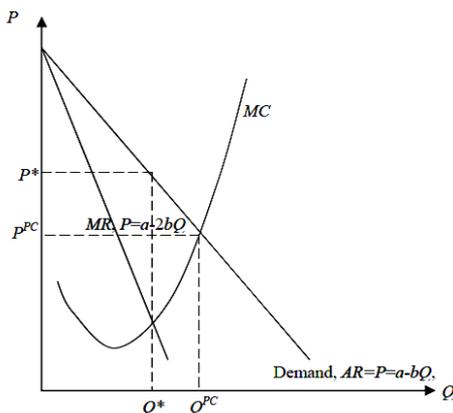
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Then the monopolist determines its profit maximizing quantity by equating its MR to its MC. Diagrammatically



Now that we know how monopolist determine the profit maximizing quantity, how about the prices? Use the demand. But why? Conceptually, what consumers are willing to pay are reflected by the demand, not the marginal revenue schedule. Further, the monopolist's supply or its MC is the industry's supply, while for a perfectly competitive industry the supply is the horizontal summation of all the supply or MC curves. Diagrammatically,

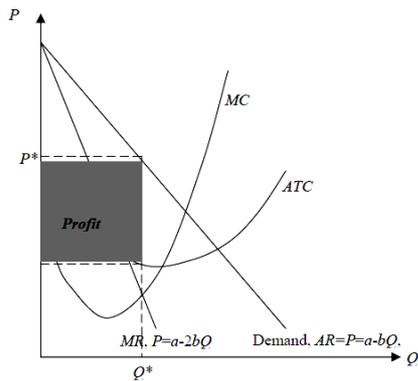


So what is the significance? Have a close look, and recall that a firm under perfect competition chooses price and quantity such that $P = MC$. The price noted about is P^{PC} , and it is lower than P^* . That is a monopolist charges a higher price and supplies a lower level of output. How is it they can do that? Simple, although like the perfectly competitive firm, its equilibrium choice is determined by $MR = MC$. But unlike the competitive firm, its MR is not equal to its price. In fact from the above discussion, we have proved that the MR is always below the demand, and consequently prices due to the fact it has market power.

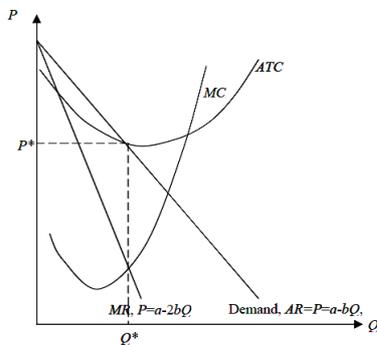
How about a Monopolist's Profits?

As noted at the beginning, monopolist on account of its market power has positive profits, as long as there is demand for their products, and when its cost is sufficiently low. Diagrammatically,

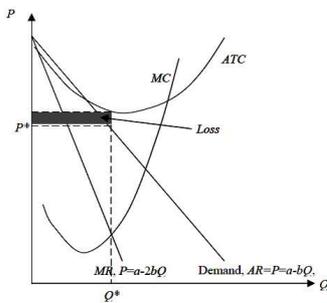
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When does a monopolist earn zero profits? This occurs when the ATC is just tangent to or intersects the demand at the profit maximizing choice of quantity supplied. Diagrammatically,



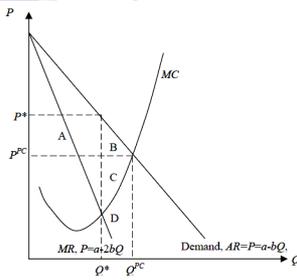
How about when it makes a loss?



Why do we think that monopolies are bad for consumers? Why do we have competition bureaus that protect consumers?

To answer this question, we have to revert to the use of consumer surplus. And to understand the fuss, we have to compare the outcome with perfect competition. Let's examine this using the diagram we have been using,

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From the above diagram, there are several points to note:

1. Because of market power, the monopolist captures the portion of consumer surplus, A, that would have accrued to consumers under perfect competition.
2. Because of the fact that a monopolist's MR is less than price, they choose to produce less than the competitive level, and hence create deadweight loss, B+C. This is commonly noted as welfare loss, since society would have benefited from this had production been increased to the competitive level.
3. Because of their choice, resources that could have been used to produce more goods are diverted to other uses in the form of D. This is not a loss to the society in general, unless the resources diverted are used for evil, and goods produced by the monopolist potentially benefit human kind!

Therefore for primarily these reasons monopolies, unless natural monopolies, are generally frowned upon.