Product innovation

Product innovation

A pure product innovation creates a new or improved product for sale without any change in the production process – except that more inputs (labour, machine time and materials) may be required.

- In practice, a new product will often require some innovations in the production process, just as a new and improved process often leads to incidental improvements in the product.

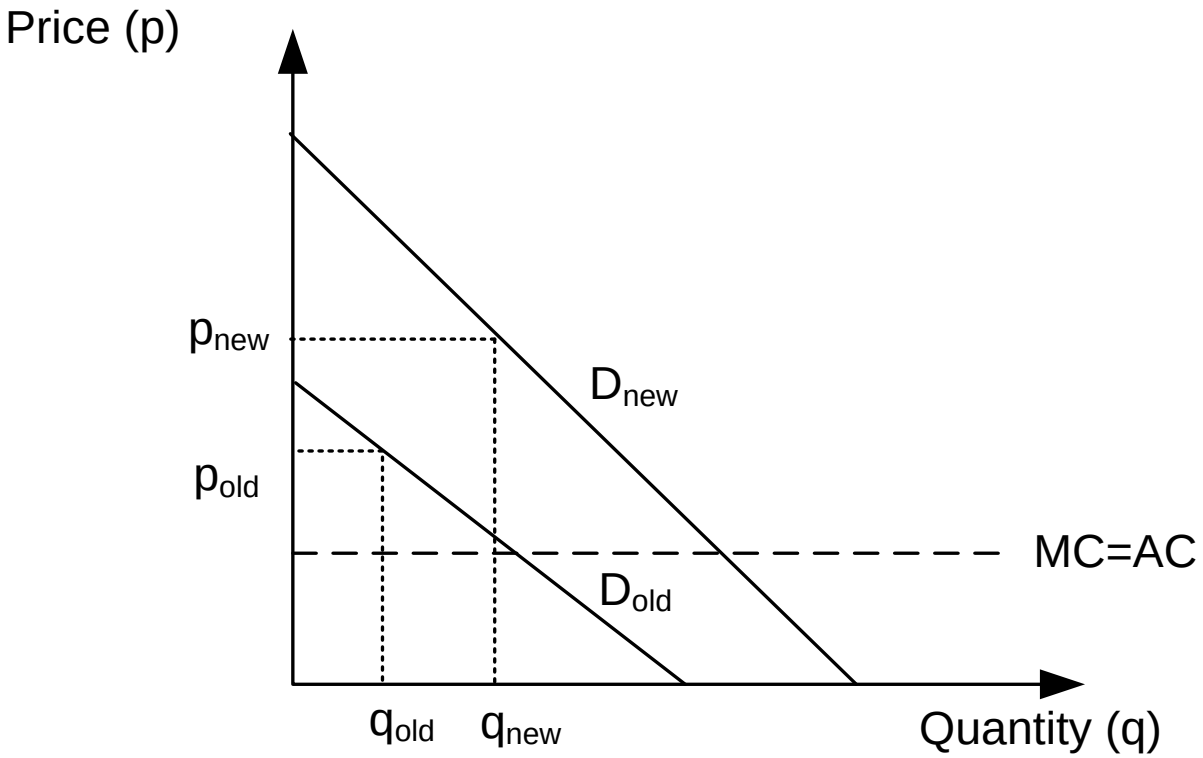
Nevertheless, the conceptual distinction is an important one.

The development of a new product

The successful development of a new product results in a different configuration of changes in costs and rewards.

- In a perfectly competitive market, and in the absence of IPRs over the new product (i.e., we assume that any product innovation can be immediately copied), there is no gain to the innovator. This case of immediate imitation by all other firms in the market is very unlikely.
- More realistically, the innovator uses some form of IPR or, failing this, relies on secrecy or first-mover advantages to delay imitation .

A product innovation represented by a shift in existing demand curve

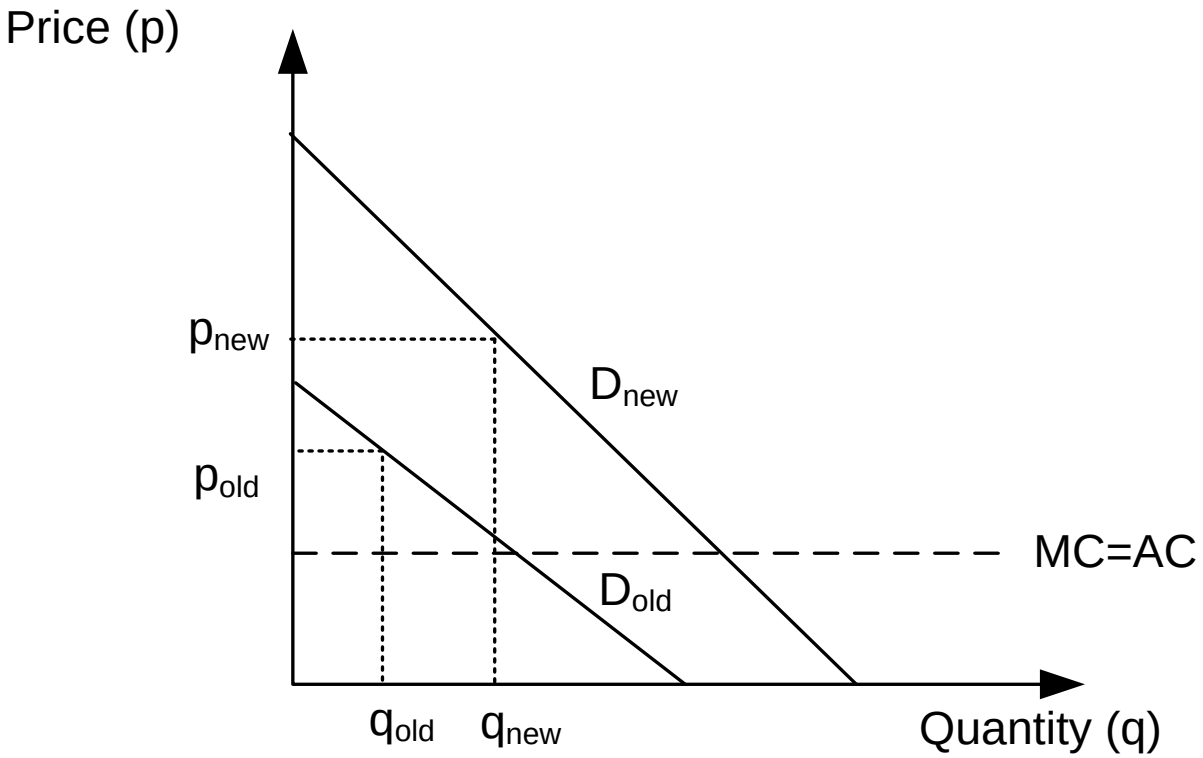


By introducing a new product the firm aims to achieve an outward shift and steeper slope to the demand for its product (analogous to the effect of advertising, increasing product loyalty to the firm).

Even though consumers are charged a higher price, they buy more and have more consumer surplus.
Of course, over time the market may become more competitive as more product innovation occurs and this may reduce prices.

A general way of describing this situation is to say that consumers benefit from the increase in product variety and/or the rise in the quality of the products on offer.

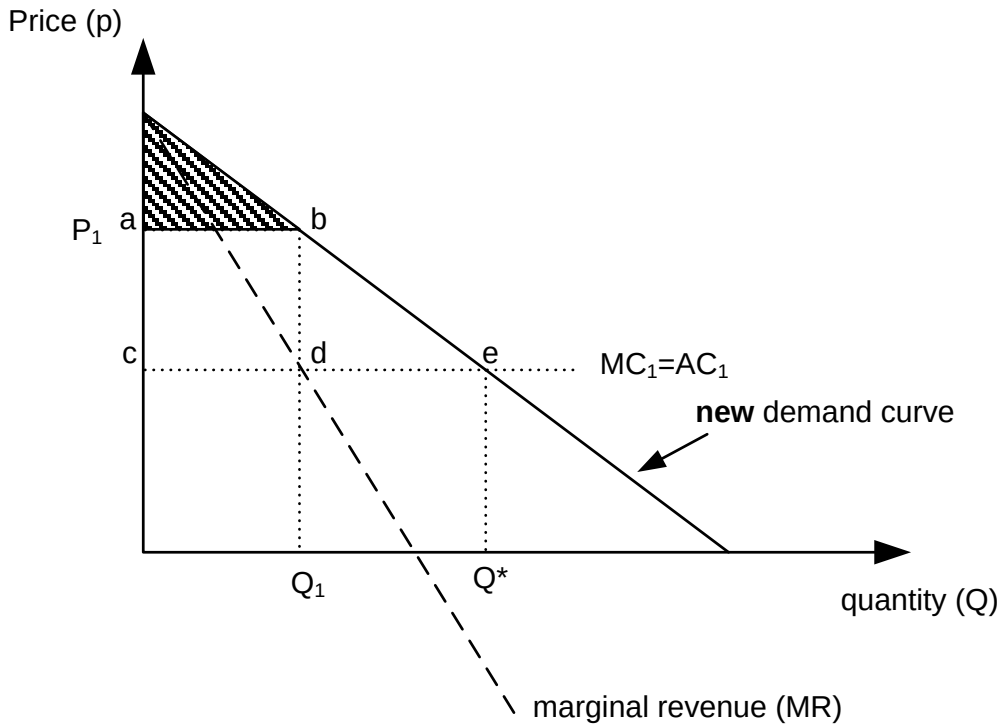
A product innovation represented by a shift in existing demand curve



Even if a new product is more expensive than existing ones, if it has exactly the right set of **characteristics to match the customers' tastes, they may be happier to buy this item.**

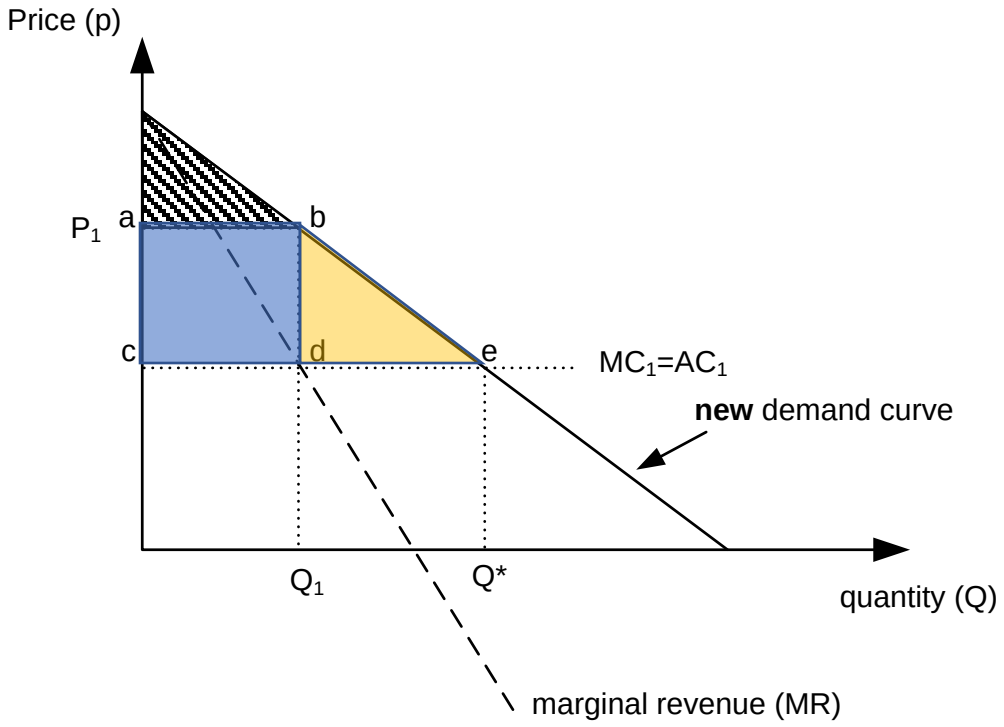
If the product has a broader and more favorable set of characteristics than an earlier variety, then, even with a higher price, it can still be seen as good value for money.

New product demand curve



We can represent the introduction of the new product with a new demand curve.
Figure shows the demand curve for a new consumer good.
The position and elasticity of the demand curve depends on how much the **new product is valued, which in turn depends on the availability of substitute products.** If we assume that the firm has an IPR that prevents imitators, the firm acts like a monopolist and maximizes profits.

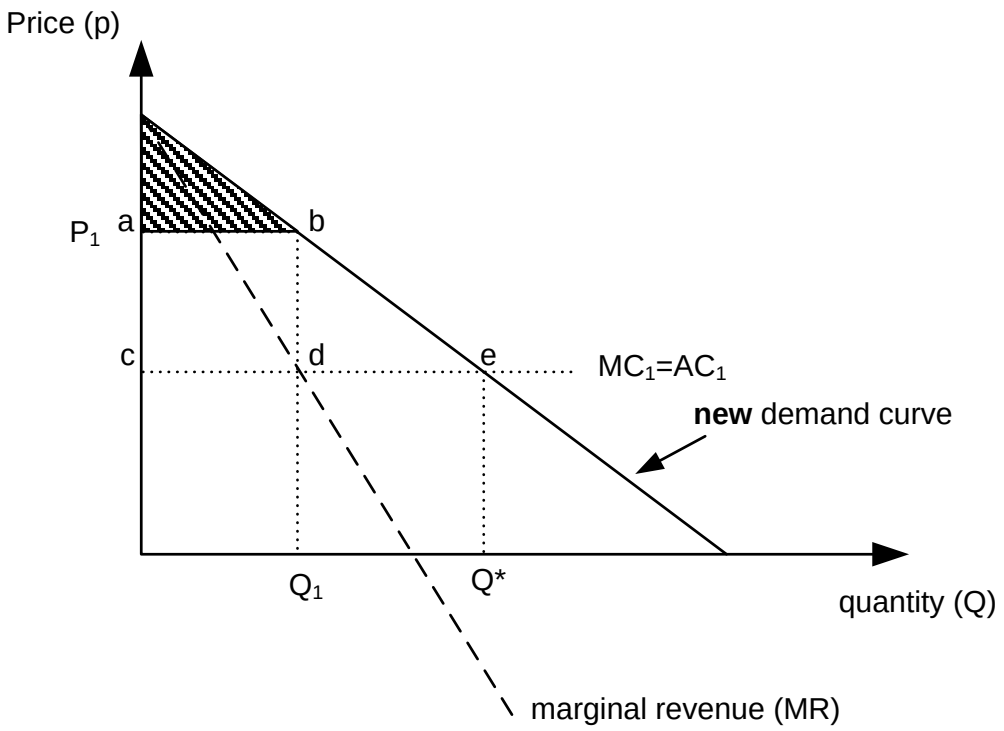
New product demand curve



The new product creates "consumer surplus": the triangular area above the price but below the demand curve. This is a measure of the surplus value to the consumers over and above the price they have to pay.

However, because price (P1) is greater than marginal cost (MC1), consumer surplus is not maximized, since this would occur at $Q*$. It is clear that rewarding innovations with profits (i.e., allowing *P* to be greater than MC) creates a further problem. Looking at figure, we can see that some of the lost consumer surplus is, in fact, profits to the innovator (i.e., area ABCD), but some of the lost consumer surplus is wasted (i.e., area BDE). For this reason, area BDE is called the "deadweight loss" associated with monopoly pricing.

New product demand curve



Consider as an example the situation where an important new drug, that can treat a serious disease, is developed.

During the period of protection by a patent, it is sold at a higher price than its marginal cost of production. Some sufferers who could afford the drug if priced at marginal cost are not able to obtain it at this higher price;

the number of people affected is proportional to the distance $Q* - Q1$.