

Unit 6. Firm behaviour and market structure: perfect competition

Learning objectives:

- to determine short-run and long-run equilibrium, both for the profit-maximizing individual firm and for the industry;
- to explain the equilibrium relationships among price, marginal and average revenues, marginal and average costs, and profits;
- to understand the adjustment process to long-run equilibrium.

Questions for revision:

- ✓ The relationships among the short-run and long-run costs: total, average and marginal;
- ✓ Total and marginal revenue;
- ✓ The profit-maximizing rule;
- ✓ Market supply and the law of supply;
- ✓ Market equilibrium;
- ✓ Efficiency of a competitive market;
- ✓ Tax incidence and dead weight loss.

6.1. Product markets: characteristics and types. Perfect competition as a market structure

A commonly used classification of market structures is based on quantity of producers and consumers.

		Demand		
		Many	A group	Single
Supply	Many	Perfect competition	Oligopsony	Monopsony
	A group	Oligopoly	Bilateral oligopoly	Monopsony bounded by oligopoly
	Single	Monopoly	Monopoly bounded by oligopsony	Bilateral monopoly

Based on: von Stackelberg H. Grundlagen der theoretischen Volkswirtschaftslehre. 2. Auflage. – Bern: A. Francke AG. Verlag; Tübingen: J.C.B. Mohr (Paul Siebeck), 1951; Eucken W. Grundsätze der Wirtschaftspolitik. – Tübingen: Mohr, 1960.

We are going to study perfect competition, monopoly, monopolistic competition and oligopoly at product markets. The following table summarizes the typical features of these market structures.

Perfect Competition	Imperfect Competition	
	Monopolistic Competition	Monopoly and Oligopoly
Many buyers and sellers	Many buyers and sellers	One or few sellers (large)
Firms are too small to affect price	Can affect price	Can affect price
Identical (homogeneous) products	Goods are close substitutes	Homogeneous or heterogeneous goods
Free entry and exit	Free entry and exit	Big entry costs
Zero profits in the long run	Zero profits in the long run	Profits can be positive

Under perfect competition each market participant is too small to affect the market price: firms are price-takers. Producers have no market power. Prices are considered by the firms as exogenous parameters set by market equilibrium.

Under perfect competition all firms produce an identical (homogeneous) good. There is free entry of firms to the market and free exit from the market. There is perfect mobility of factors of production.

6.2. Perfectly competitive firm and industry: profit maximization and supply in short run

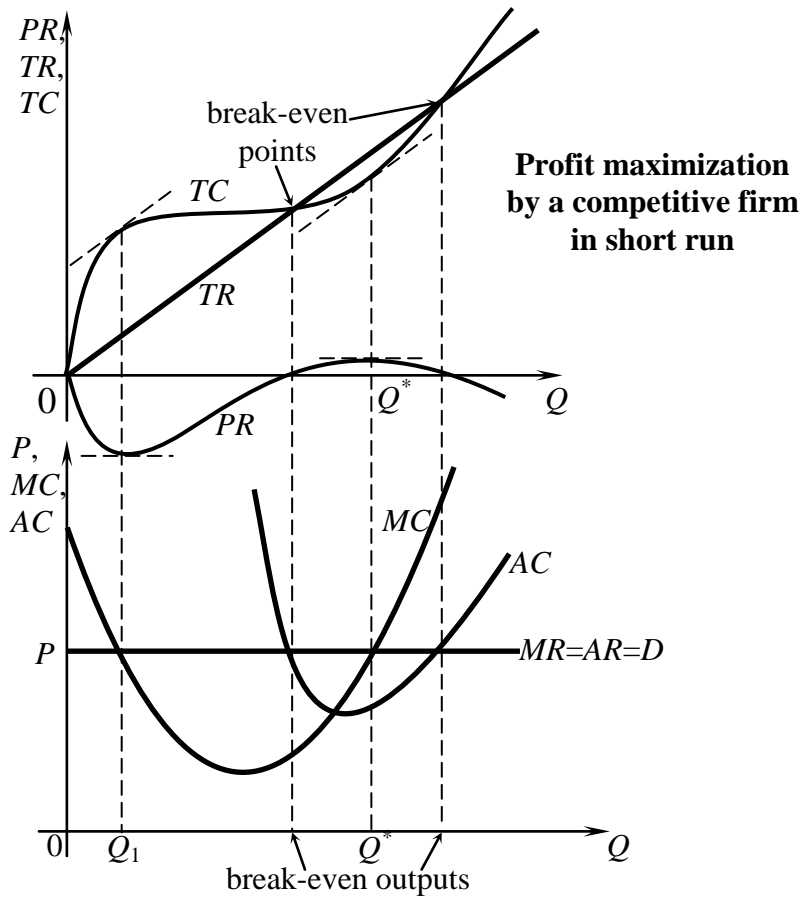
A competitive firm can sell as much as it wants at the market price P^* . It cannot sell anything at a higher price. A firm cannot influence the market price which is set by market equilibrium. Its demand curve (D) is horizontal (see the figure below).

A firm's average revenue is equal to marginal revenue and both coincide with market price:

$$MR=AR=P.$$

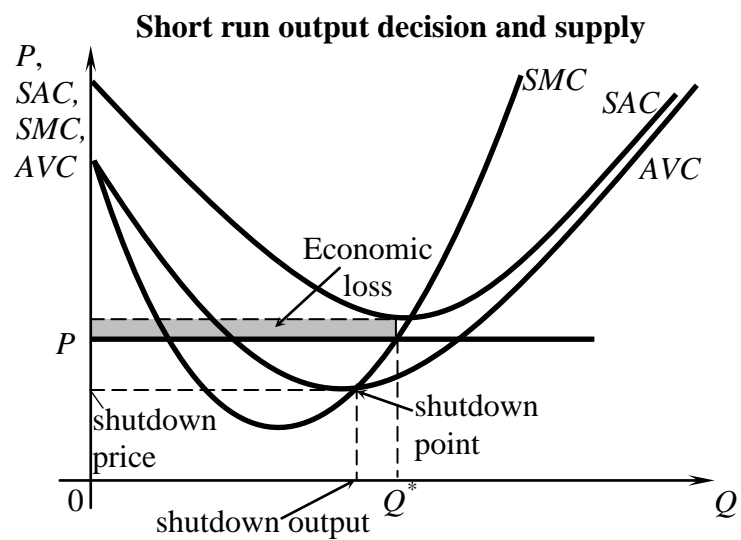
For a competitive firm the profit-maximizing rule is reduced to equation of marginal costs and market price. So, a competitive firm will supply the product according to the rule:

$$P=MC(Q).$$



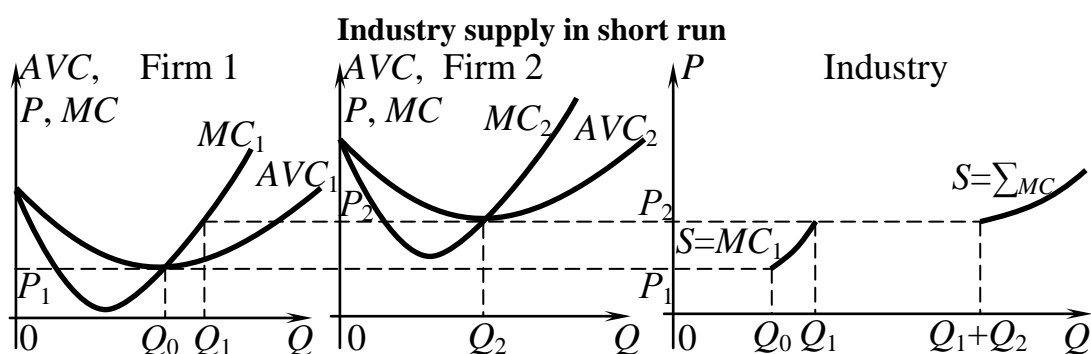
In short run a firm won't immediately shut down, even if it bears losses. If market price is higher than the minimum of AVC , the firm would continue operating because it would cover a part of fixed cost that would be losses if it shuts down (see the figure below).

Thus, a competitive firm will supply the product in short run according to the rule $P=MC(Q)$ if $MC \geq AVC_{min}$.



In the short run equilibrium market price equates the quantity demanded to the total quantity supplied by the given number of firms in the industry when each firm produces on its short-run supply curve. Short-run

industry supply curve is a horizontal sum of the SRS curves of individual (existing) firms (see the figure below).



6.3. Firm and industry in long run

In the long run a firm (producer) makes decisions: 1) whether it wants to be in the market; and, if so, 2) how much output to produce. Decision 2 is determined by the rule: $MR=P=LPMC$. Decision 1 is subject to the obvious inequality: price must exceed or at least be equal to average cost.

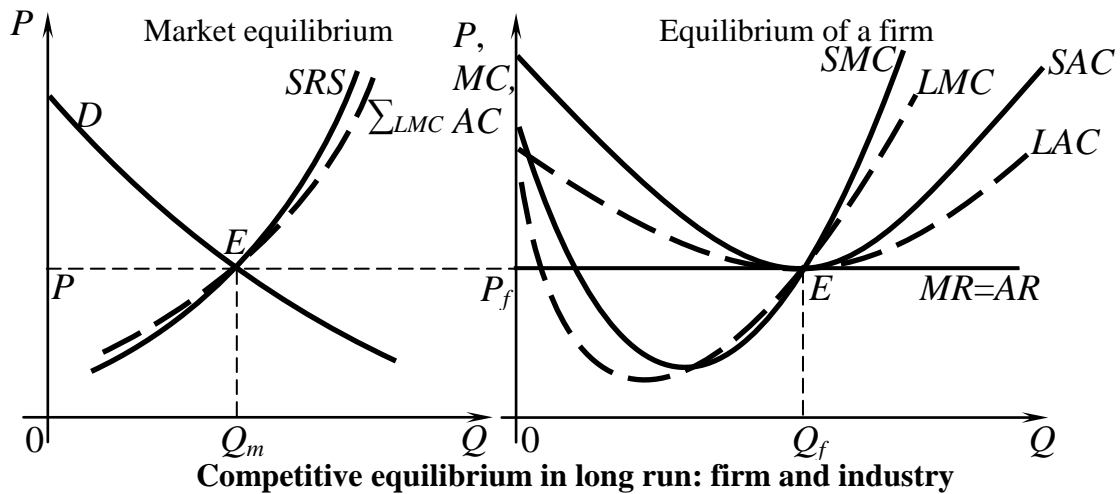
A competitive firm will supply the product in long run according to the rule $P=MC(Q)$ if $MC \geq AC_{min}$.

Suppose that market price exceeds minimum $LRAC$, and a typical firm is making economic profit. It will attract new firms to the market. Entrance of the new firms will shift industry supply curve to the right, equilibrium market quantity of sales will go up, and equilibrium price will go down. This will go on until market price falls to the minimum of $LRAC$ curve. Hence, in long run economic profit of a representative firm is zero.

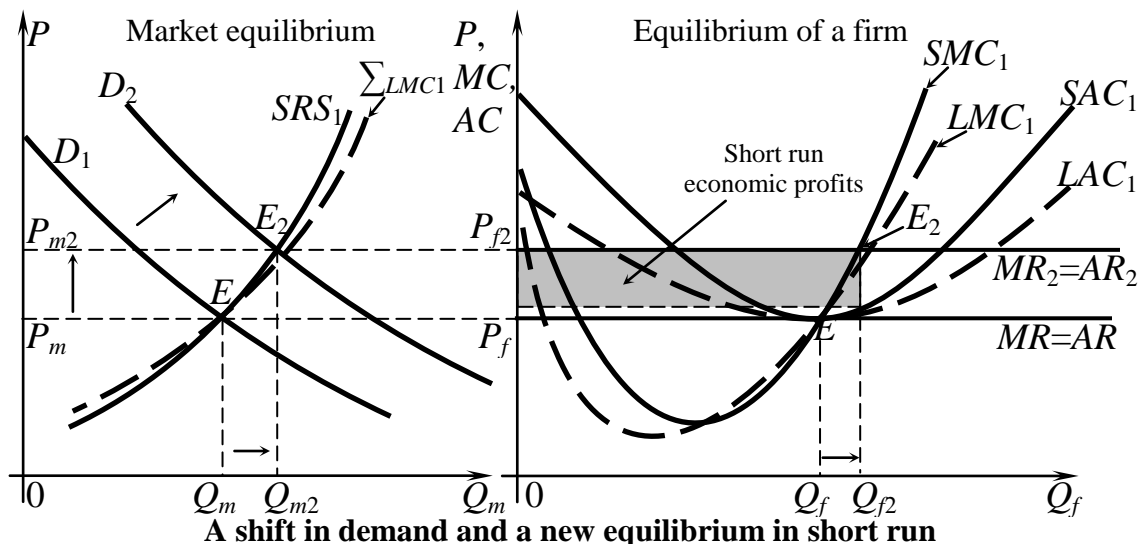
Thus, in long run equilibrium market price will be set at the point where $LRMC$ is equal to minimum $LRAC$ of a representative firm: $P=LRMC=LRAC$.

In LR equilibrium market price equates the quantity demanded to the total quantity supplied when each firm produces on its long-run supply curve, and the marginal firm makes only normal profits: $P=MR=LPMC=SMS$, $P=LAC=SAC$.

The following set of side-by-side graphs are used to derive the long-run supply curve for an increasing-cost industry and a typical firm.



Suppose that initially the perfectly competitive industry and a representative firm are in long-run equilibrium (E). Industry equilibrium price and quantity are labeled P_m and Q_m respectively. The firm's equilibrium price and quantity are labeled P_f and Q_f respectively. \sum_{LMC} is the horizontal sum of long run supply curves of all the firms in the market. Assume an increase in demand for the product of the industry that yields a shift in market demand curve to the right (or up). The new short-run industry equilibrium price and quantity are labelled P_{m2} and Q_{m2} respectively. The new short-run profit-maximizing price and quantity for the typical firm are labelled P_{f2} and Q_{f2} respectively (see the figure below). Equilibrium market price and quantity of sales, as well as output of each firm go up. In the short run the equilibrium moves from E to E_2 .

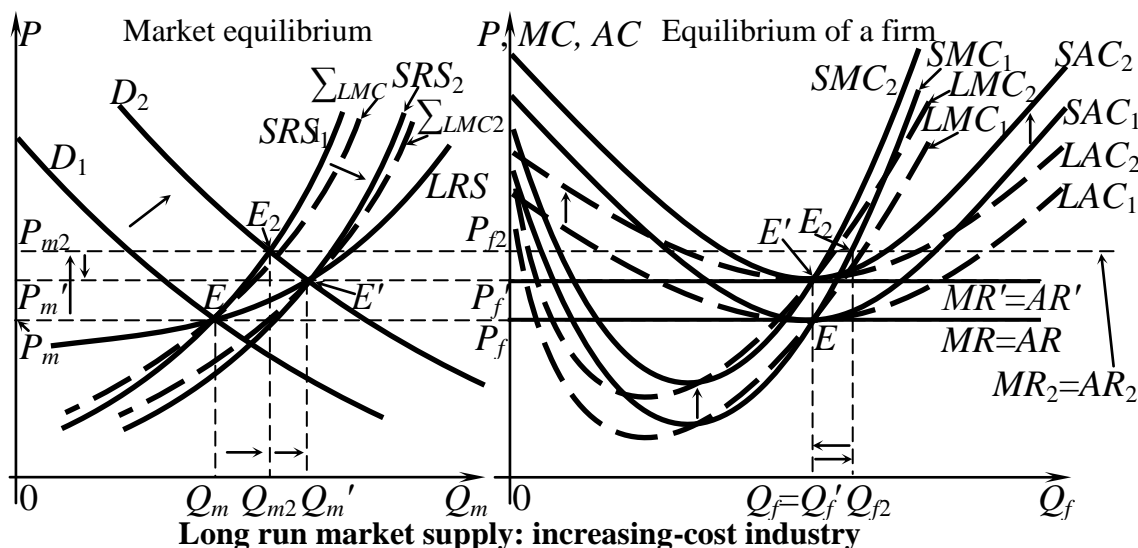


A typical firm in the market makes positive economic profits in the short run (the shaded area in the figure above), that attracts new firms to the industry. As the industry adjusts to a new long-run equilibrium the number of firms goes up.

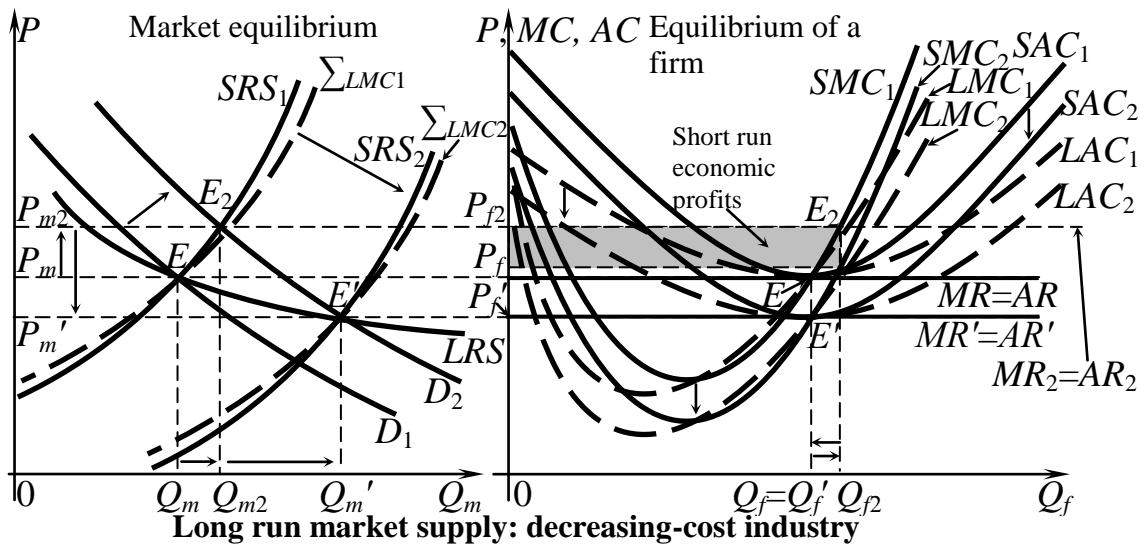
A growth of output in an increasing-cost industry expands the demand for factors of production and pushes up their prices. As a result a firm's average total cost curve shifts upward (see the figure below).

Entrance of new firms shifts down short-run supply curve. In the long run equilibrium moves from E_2 to E' . The new long-run equilibrium price P_f' will be lower than its former short-run equilibrium level P_{f2} but higher than the initial price P_f because in an increasing cost industry the rising factors' prices shift upward a firm's average total cost curve (its minimum is now above the former one), and the entrance of new firms to the market will continue until the market price falls down to the new LAC minimum (see the figure below). The quantity of the good sold and bought in the market will go up.

The long-run industry supply curve connects all long-run equilibrium points (LRS curve in the figure below). Industry long-run supply curve is flatter than the short-run supply curve.



In a decreasing-cost industry input prices go down with an increase in output, and the long-run supply curve is downward-sloping.



In a constant-cost industry input prices do not change with output, and the long-run supply curve is horizontal.

