

Eco 340 Industrial Economics

Market Structures: Competition

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Supply curve of the individual firm and the market supply curve

Supply behavior of the individual firm: at what price and quantity an individual firm supply to a competitive market?

Competitive market assumptions:

- Perfectly divisible, homogeneous goods
- No externalities and no transactions costs
- No informational asymmetry
- Price taking behavior
- Free entry and exit

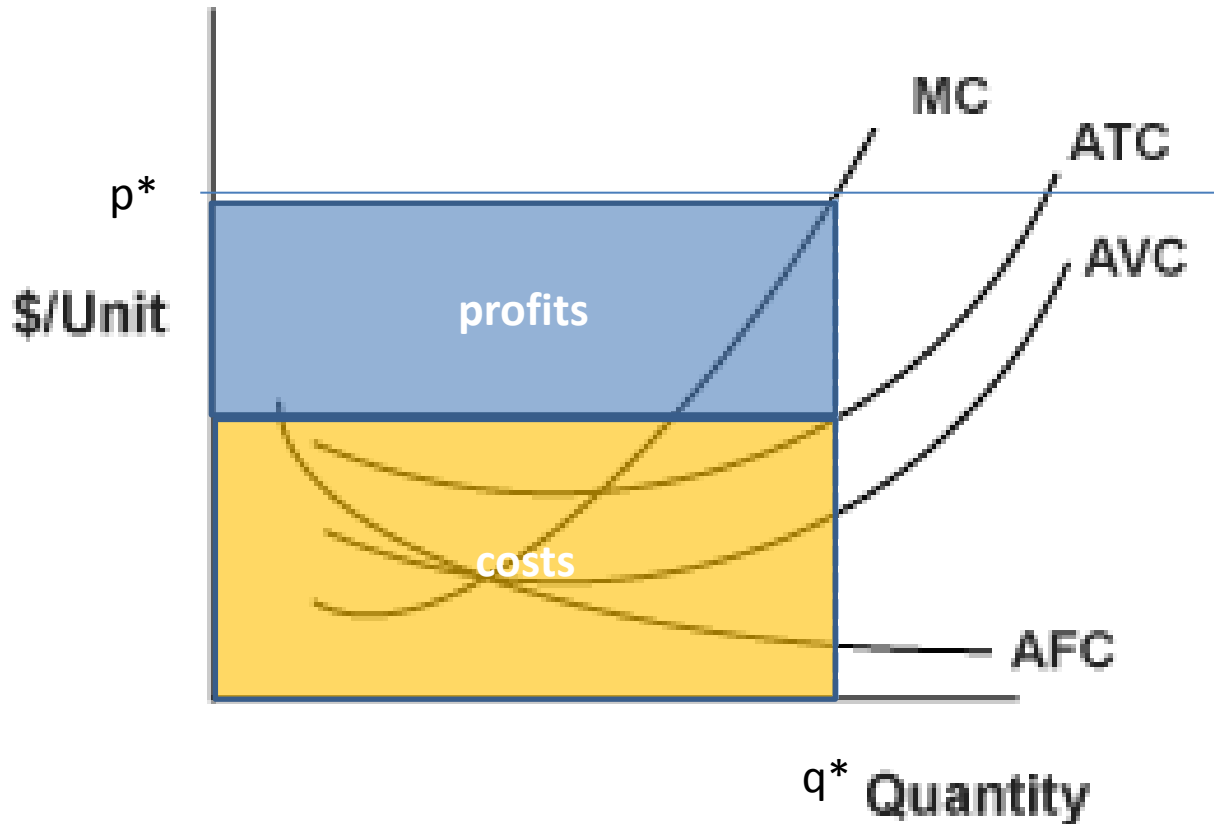
SRSC

The supply schedule of an individual firm is assumed to be based on profit maximization behavior.

Profit maximization leads to a simple rule: the firm sets the quantity to such a level where marginal cost equals market price (where the firm is a price taker). Rationale:

- At a lower production level profit could be increased by higher production.
- At a higher production level every unit of production generates a loss for the firm.

SRSC for an individual firm



In the short run, the firm makes a profit.

SRSC for an individual firm

Shutdown decision

What happens if market price is “low”?

If $p > AC$: produce and sell

If $p < AC$:

If $p > AVC$: continue producing as some of the fixed and unrecoverable cost are being paid

If $p < AVC$: shut down; every additional production causes fixed costs to be lost as well as additional variable cost.

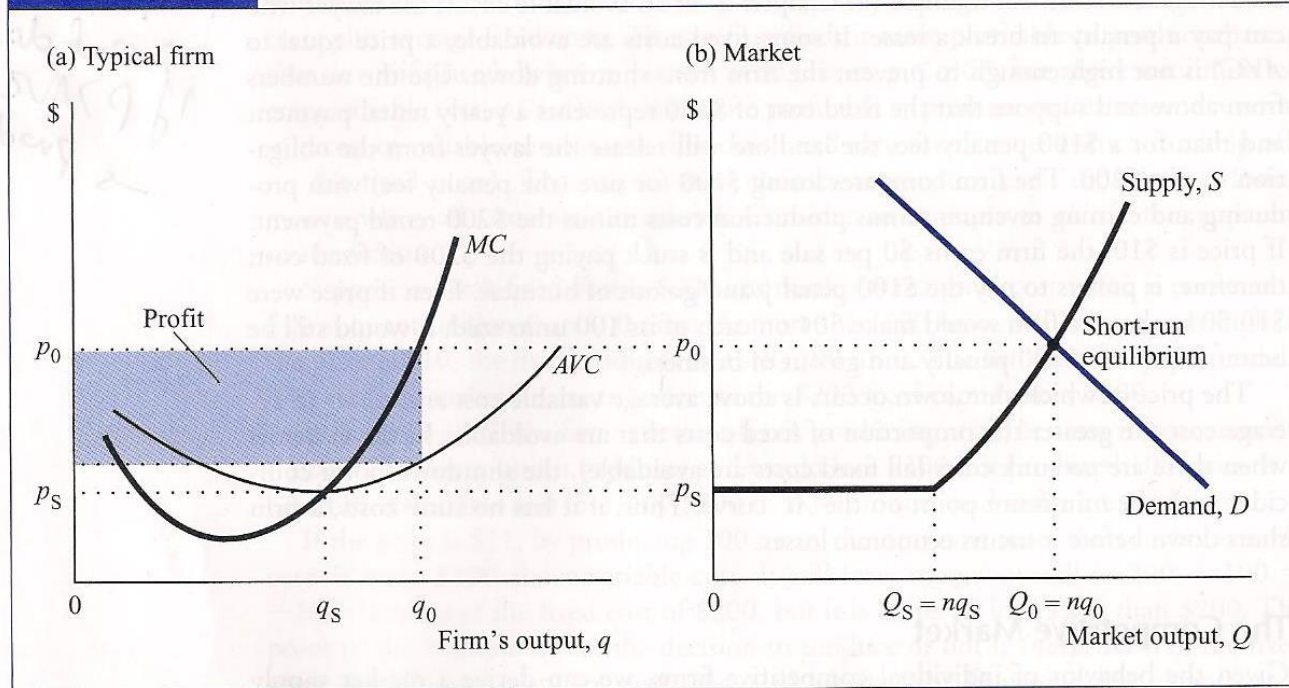
SRSC for the Market and the Equilibrium

In the short-run: the horizontal sum of individual (and identical) firm supply curves yields the market supply curve. The equilibrium price and quantity is determined at the intersection of the market supply curve and the market demand curve. All demand of the good by consumers are met by the suppliers.

The firms make a profit in this short run. That induces entry into the market.

FIGURE 3.2

Short-Run Equilibrium



SRSC for the Market and the Equilibrium

The horizontal portion of the market supply curve derives from the fact that below min AVC the firms will not produce.

Long Run Supply Curve

- In the long run, entry to the market will increase as profit is non-zero. That will drive market price down until it falls to minimum AC for the market where profits are zero.
- Therefore, in the long run, in a competitive market where there is no entry barrier, the supply curve is horizontal at min AC.

FIGURE 3.3

Long-Run Equilibrium

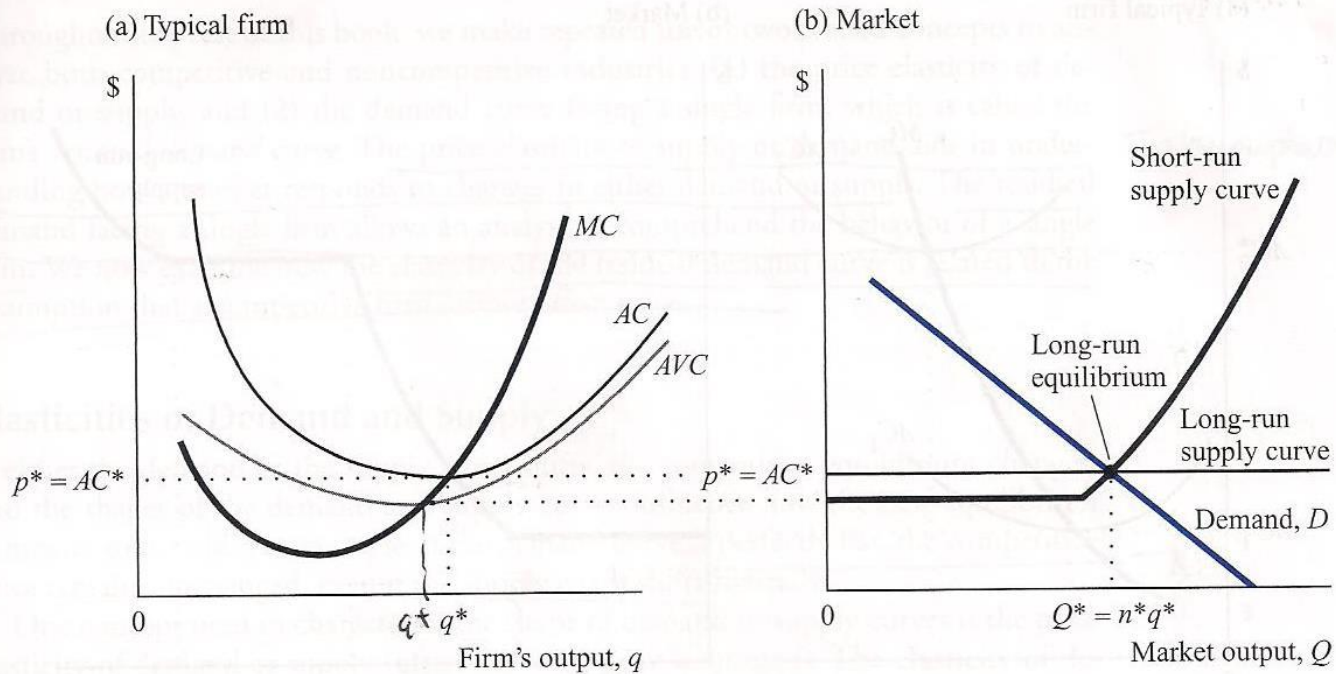
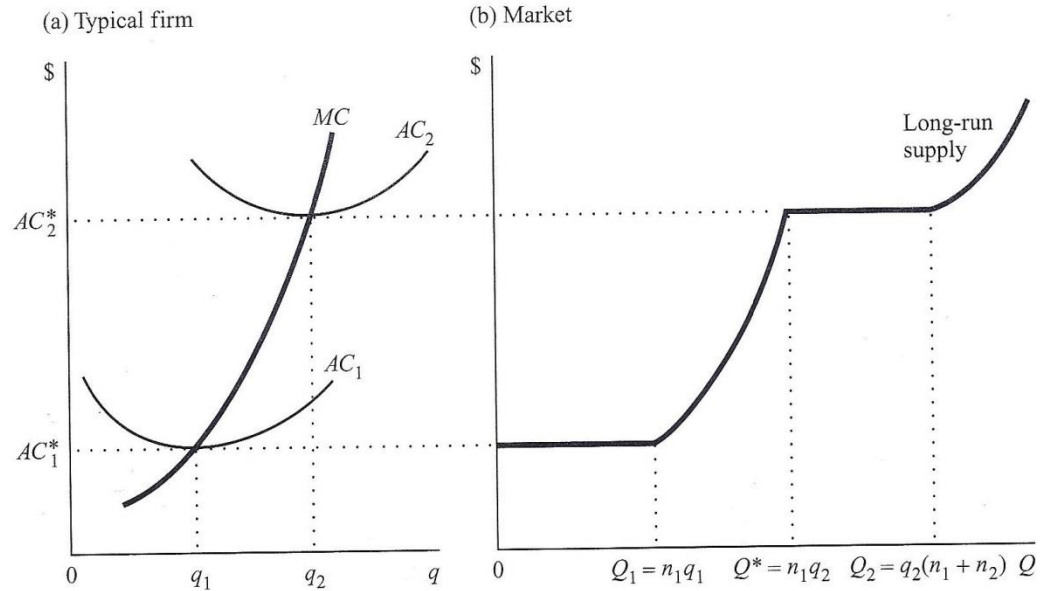


FIGURE 3.4

Upward-Sloping Long-Run Supply Curve



Elasticities and Residual Demand Curve

To understand competitive and non-competitive market structures, two tools are useful

- Residual Demand Curve
- Price Elasticity of Demand and Price Elasticity of Supply

Residual Demand Curve

Demand faced by a single (homogenous) firm:

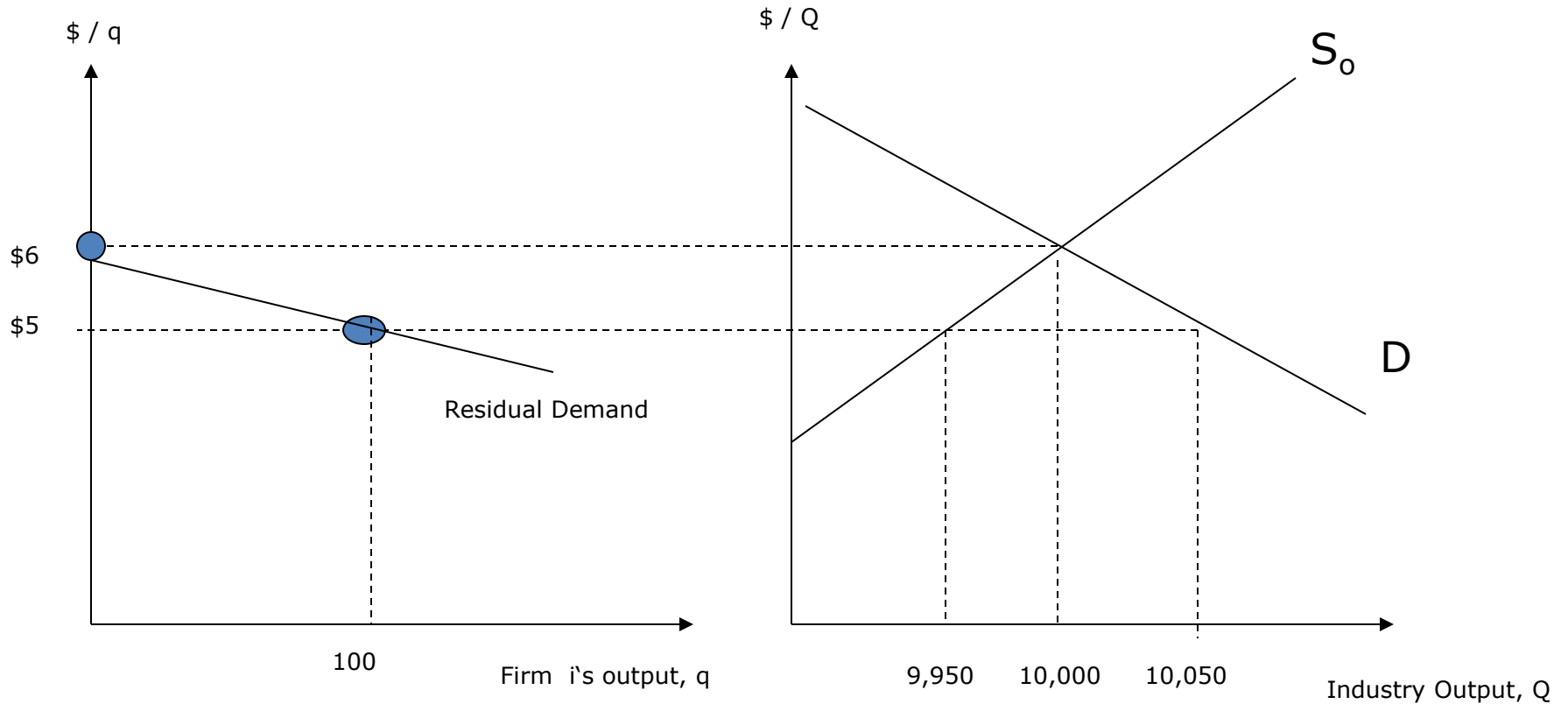
$$D_r(p) = D(p) - S_o(p)$$

$D_r(p)$: residual demand (demand faced by r th firm in the market)

$D(p)$: Total demand in the market

$S_o(p)$: Demand in the total market supplied by all the other existing firms

Residual Demand



Note that residual demand curve's slope is much more flatter than that of market supply curve. Why? What determines these slopes?

Price Elasticity of Demand and Price Elasticity of Supply: Competitive firms

- Three equivalent expressions defining price taking behavior and thus a competitive marketplace:
 - A “competitive firm” is a price taker
 - = residual demand curve is horizontal
 - = elasticity of demand for a competitive firm is very large or infinite

Price Elasticity of Demand and Price Elasticity of Supply

- Elasticity between x and y: how much x changes when y changes by 1%
 - Elastic: elasticity > 1
 - Infinitely elastic: elasticity = ∞
 - Unitary elastic: elasticity = 1
 - Inelastic: $0 < \text{elasticity} < 1$

Residual Demand Curve

Remember the definition of the residual demand:

$$D_r(p) = D(p) - S_o(p)$$

This leads to:

$$\epsilon_i = \epsilon n - \eta_0 (n - 1)$$

where:

ϵ_i : (price) elasticity demand for the firm

ϵ : (price) elasticity demand for the market (all firms)

η_0 : price elasticity of supply (all) other (homogenous) firms

n : total number of firms in the market

Residual Demand Curve: Implications for a competitive firm

$$\epsilon_i = \epsilon n - \eta_0 (n - 1)$$

Note that: As $n \rightarrow \infty$ $\epsilon_i \rightarrow$ negative ∞

More firms in the market makes our firm's residual demand curve perfectly (infinitely) elastic. That means, any increase in price will reduce demand strongly.

In other words, as n grows, residual demand curve becomes horizontal.

Residual Demand Curve: Implications for a competitive firm

$$\epsilon_i = \epsilon n - \eta_0 (n - 1)$$

Note that: As $n \rightarrow \infty$ $\epsilon_i \rightarrow$ negative ∞

What does this mean?

More competitors; more competition; less power for our firm.

Any increase in our firm's pricing will drive it out of market .

Residual Demand Curve

Question:

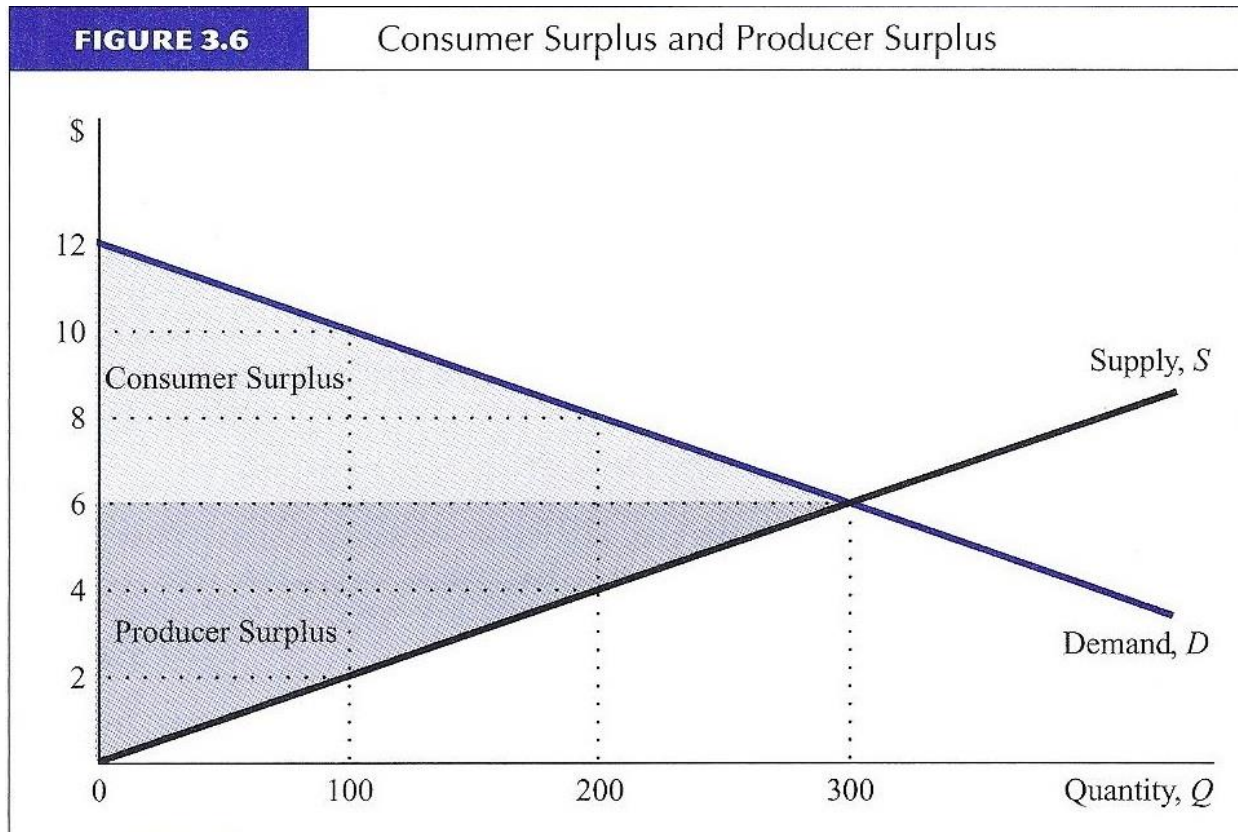
If you are the CEO of a manufacturer of pencils; do you prefer a competitive or non-competitive market?

Why?

Competition and Welfare

- Competitive equilibrium maximizes welfare of the society.
- One way to show that is to use the concepts of consumer and producer surplus.
- At the competitive equilibrium the sum of consumer and producer surplus is maximized; i.e., deadweight loss is zero.

Consumer and Producer Surplus



Deadweight loss due to taxation

Taxes create deadweight loss; i.e., have negative welfare effects.

