

# Perfect Competition & Market Imperfections

## 5.1 Perfect Competition Assumptions

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**Market** = Collection of all buyers and sellers, including substitute goods

**Industry** (ignores buyer side) = collection of firms that sell substitute goods

## 5.1 Perfect Competition Assumptions

- (a) Profit maximizers
- (b) Perfectly homogenous goods
- (c) Many identical firms. Price is exogenous to the firm.
- (d) There are no barriers to entry or exit.
- (e) No frictions or other market imperfections. Transaction costs are equal, buyers and sellers understand the market.

## 5.2 Perfect Competition Firm Behavior

### (1) Demand and Revenue

- (a) Individual firm demand curve is a flat horizontal line (ie demand curve is perfectly elastic.)

$$MR = AR = P = demand$$

$$Profit = TR - TC \quad \text{and} \quad TR'(Q) = TC'(Q) = p$$

## 5.3 Market Equilibrium and Long Run Supply

### (1) 3 conditions will hold when there is **long run equilibrium** in perfect competition:

- (a) The market will clear (ie demand = long run supply)
- (b) Equilibrium price will equal long run marginal cost
- (c) Firm economic profit = 0. (If there is profit to be made, new firms will enter which drives price down)  
(ie firm economic profit = 0 when price = long run average cost)

### (2) Long run industry supply curve: **Constant cost**: increase or decrease in supply **does not** impact input prices

- (i) AC and MC remain constant
- (ii) Long run equilibrium cost fixed at minimum AC
- (iii) Long run industry supply curve is a horizontal line
- (iv) Equilibrium price determined by technology (minimum AC)
- (v) Equilibrium quantity determined by demand

### (3) Long run industry supply curve: **Increasing cost**: increase or decrease in supply **does** impact input prices

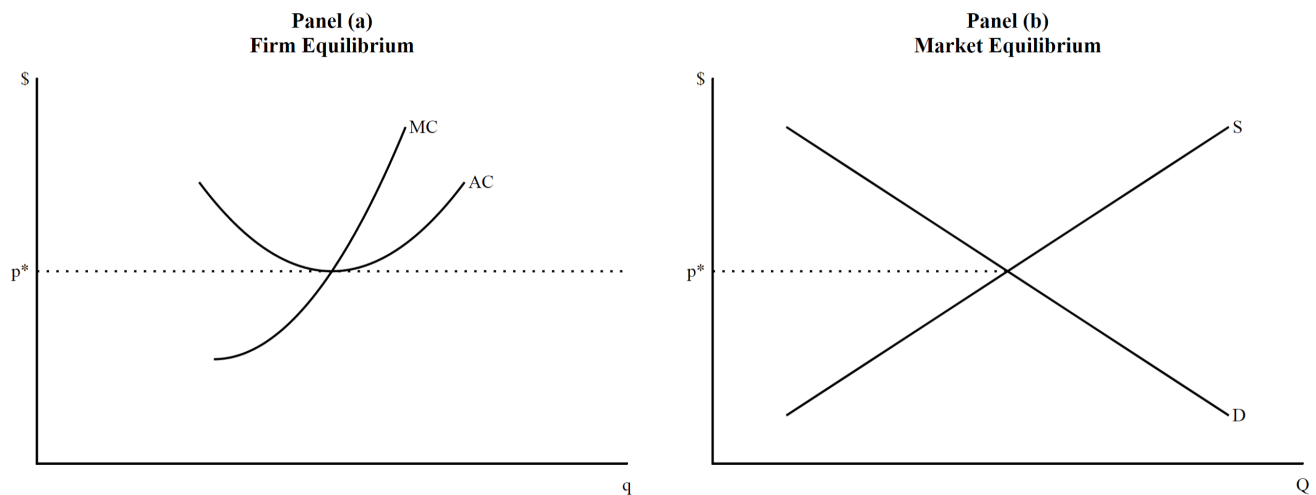
- (i) AC & MC & price increase as production grows
- (ii) Long run supply reflects long run cost of production - supply price = MC = AC
- (iii) Function of price, input prices, and technology

$$(4) \text{ Price elasticity of supply} = \frac{\frac{\% \Delta \text{Quantity supplied of a good}}{\text{Price of the good}}}{\frac{\% \Delta \text{Price of the good}}{\text{Price of the good}}}$$

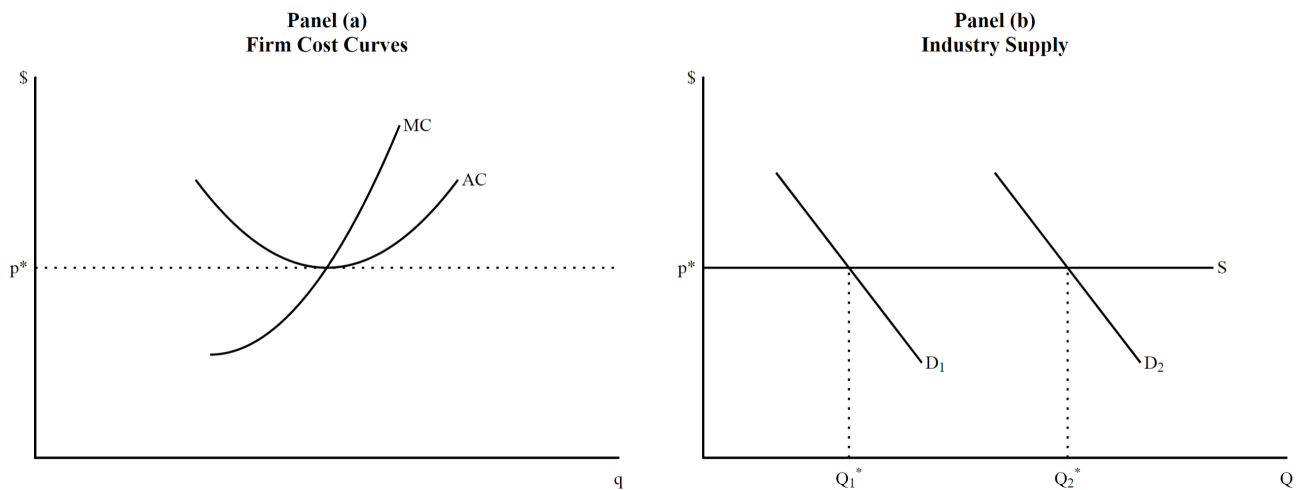
Partial derivative: **Price elasticity of supply** =  $\overline{P} * \overline{Q}$

Elasticity will be **positive** for the **increasing cost** industry

## Equilibrium



## Cost Curves



## 5.4 Comparative Statics

**Comparative statics:** analysis of change in endo variables resulting from change in exo variables

We compare the two static equilibria, ignore the process to go from one to the next

$$\frac{\Delta Q}{\Delta E} = \frac{rE}{(1-p)}$$

How will an outside variable effect our outcome?

E represents a variable outside of our model

$$\pi = pQ - cQ^2$$

$$\frac{\pi'}{Q'} = p - 2cQ = 0$$

$$p = 2cQ$$

$$\frac{p}{2c} = Q = \frac{p \cdot c^{-1}}{2}$$

← max product here, but how does a slight cost increase impact us?

comparative static  $\rightarrow \left( \frac{p \cdot c^{-1}}{2} \right)'$

$$\frac{1}{Q'} = \frac{-p}{2c^2}$$

How much does quantity change for one unit change in  $c$ ?

## 5.5 Efficiency and welfare

Desirable market performance has 4 criteria:

- (1) Macro stability
- (2) Equitable
- (3) Dynamically efficient
- (4) Statically efficient

**Firm level:**

- (1) **Technical efficiency:** using minimum quantity to inputs to produce output (not using too much capital or labor)
- (2) **Economic efficiency:** produces output at lowest cost combo (noone would be better off by having those resources used somewhere else)

**Industry level:**

- (3) **Productive efficiency:** produces output at minimum cost - lowest cost combo
  - (i) **Cost minimizing industry structure:** number of firms that minimizes industry production cost
- (4) **Allocative efficiency:** produces socially desirable level of output (ie society marginal benefit = marginal cost of production)
  - (i) **Consumer surplus:** price I would pay (minus) what I actually paid
  - (ii) **Producer surplus:** price I receive (minus) opportunity cost of inputs used
  - (iii) **Total surplus:** measures total social welfare (CS + PS)
    - (a) Maximized when equilibrium price = marginal cost (ie allocatively efficient)

**Summary:** Perfectly competitive market is statically efficient, all firms are technically and economically efficient, and the industry is productively and allocatively efficient

## 5.6 Market Failure, Limits of Perfect Competition

**Market failure:** when markets fail to maximize total surplus

- (1) Monopoly or market power: firms are able to maintain equilibrium price above long run MC
  - (i) Too little output is produced, allocative efficiency suffers
- (2) Externalities (spillover): receiving a benefit even though you didn't help (eg a firm polluting a river)
 

These arise when the marginal cost of production for the firm is less than the marginal cost to society

Network externality: one person's demand for a good depends on other people's demand for the good (picking the right online dating site)

(3) Public goods

- (i) Nonrivalry in competition: my use doesn't diminish the quantity/quality for others
- (ii) Nonexclusion: think radio broadcasts

(4) Imperfect info

- (i) Lemons problem: if consumers can't distinguish between high and low quality, high quality will be pushed out
- (ii) Cognitive weakness: fail to accurately assess info
  - (1) Framing, anchoring, default effects, overconfidence, over-exuberance

**Network externality:** your demand depends on my demand (sets up the market to avoid competition)

**Cognitive issues**

**Free rider problem:** using a public good without paying for it