

Entry and exit decisions.

- All salvageable or avoidable costs are an opportunity cost of staying in a market.
- No costs are fixed when entry or exit are concerned,
- ... though some costs may be sunk (unsalvageable).

Entry example.

Entering the bottled tea market.

- Entry costs \$10,000 (researching teas, lining up distributors).
- You can rent a brewing machine for \$3000 per month.
- The monthly cost of labor and materials is a function of the number of cases brewed:

$$C_{LM} = 500 + 6T + .001T^2$$

MC =

Entry example (continued).

- Monthly demand for brewed tea is $P = 12 - .001T$.

Entry example (continued).

- What if demand declines to $P = 10 - 0.01T$? Should the firm stay in the market? If not, when should it exit?

Entry intuition and average costs.

- Before entry no costs are sunk
- Fixed costs of entry F , marginal costs $MC(Q)$
- Project operating profits at optimal Q
 - $MR(Q^*) = MC(Q^*)$
- Enter if $TR(Q^*) > TC(Q^*)$
- Divide $TR(Q)$ and $TC(Q)$ by Q
 - Enter if $P(Q^*) > AC(Q^*)$

Long-run equilibrium.

In a *long-run equilibrium*, no new firm wants to enter the market and no existing (incumbent) firms want to exit.

Note: in a short-run equilibrium, each firm is maximizing its profits given that the number of firms in the industry is fixed.

Market structure 1: monopoly.

- One firm faces downward sloping (industry-wide) demand.
- The firm produces as long as $MR > MC$, stops when MR drops below MC.
- In the short-run, firm will stay open as long as $TR > VC$ (or $P > AVC$).
- The monopolist may earn positive economic profits in the long run (*i.e.* $P > AC$ or $TR > TC$), but may not.

Monopolies in the long run.

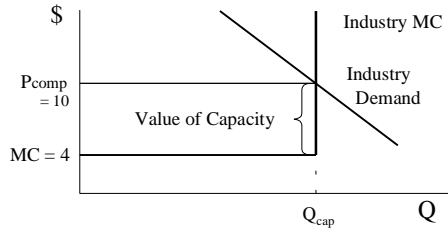
How can a market be dominated by a monopoly in a LR equilibrium?

Market structure 2: perfectly competitive market.

- Many price-taking firms produce as long as $MC < P$, stop when $MC = P$.
- In the short run, all firms in perfectly competitive markets can earn economic profits.
- New firms will enter if they can earn economic profits.
- Incumbents will exit if economic profits are negative ($P < AC$).

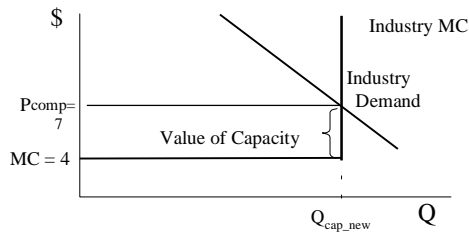
Prices in capacity constrained markets (perfect competition)

Should you add more capacity if capacity cost = 3?

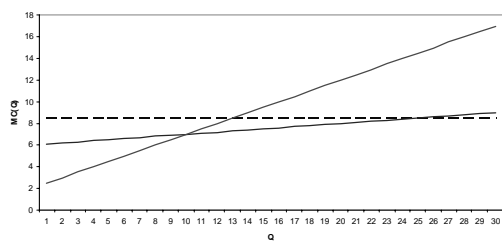


Prices in capacity constrained markets (perfect competition)

Keep adding until value of capacity = cost of capacity



Exit: If avoidable costs are 35, the unlucky firm will exit.



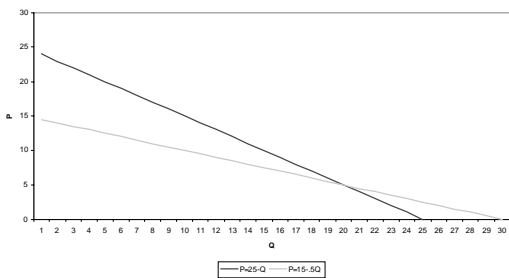
PC markets in the long run.

- $P = \min(\text{LRAC})$.
- Firms will earn zero **economic** profits.

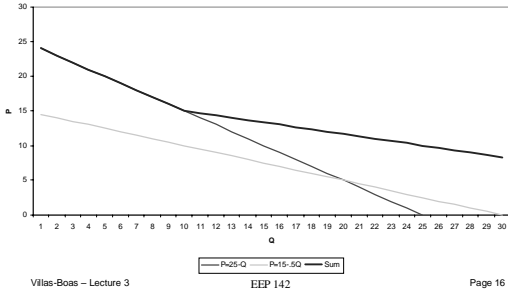
Market structure 3: dominant firm & a competitive fringe.

- "Fringe" firms act as price takers.
- Examples: fringe firms are gov't owned (hospitals), very small (Linux).
- Dominant firm faces a *residual demand curve* after others' production.
- Dominant firm maximizes profits on the residual demand curve.
- Fringe firms produce until $MC=P$, where P is set by the dominant firm.

Two demand curves.



Aggregate demand is the horizontal sum of the two curves.

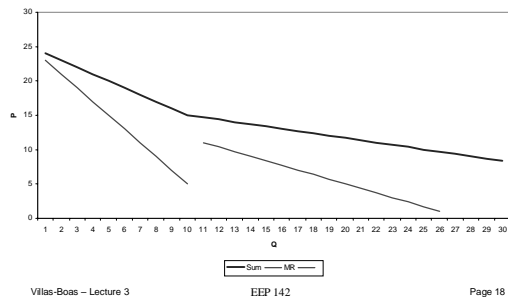


Calculating aggregate demand.

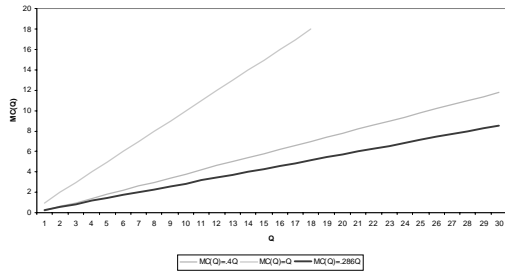
D1: $P = 25 - Q$ D2: $P = 15 - .5Q$
 Rewrite in terms of Q:
 $Q_1 = 25 - P$ $Q_2 = 30 - 2P$
 Sum:
 $Q_{TOT} = 55 - 3P$
 Rewrite in terms of P:
 $P = 18.33 - .33Q$
 Beware of negative demand levels.
 $P = 25 - Q$ for $P > 15$
 $= 18.33 - .33Q$ for $P \leq 15$

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MR with a kinked demand curve.



Aggregating marginal cost curves.



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Calculating aggregate supply.

$$MC1: MC = .4Q \quad MC2: MC = Q$$

Rewrite in terms of Q:

$$Q = 2.5MC \quad Q = MC$$

Sum:

$$Q = 3.5MC$$

Rewrite in terms of MC:

$$MC = .28Q$$

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