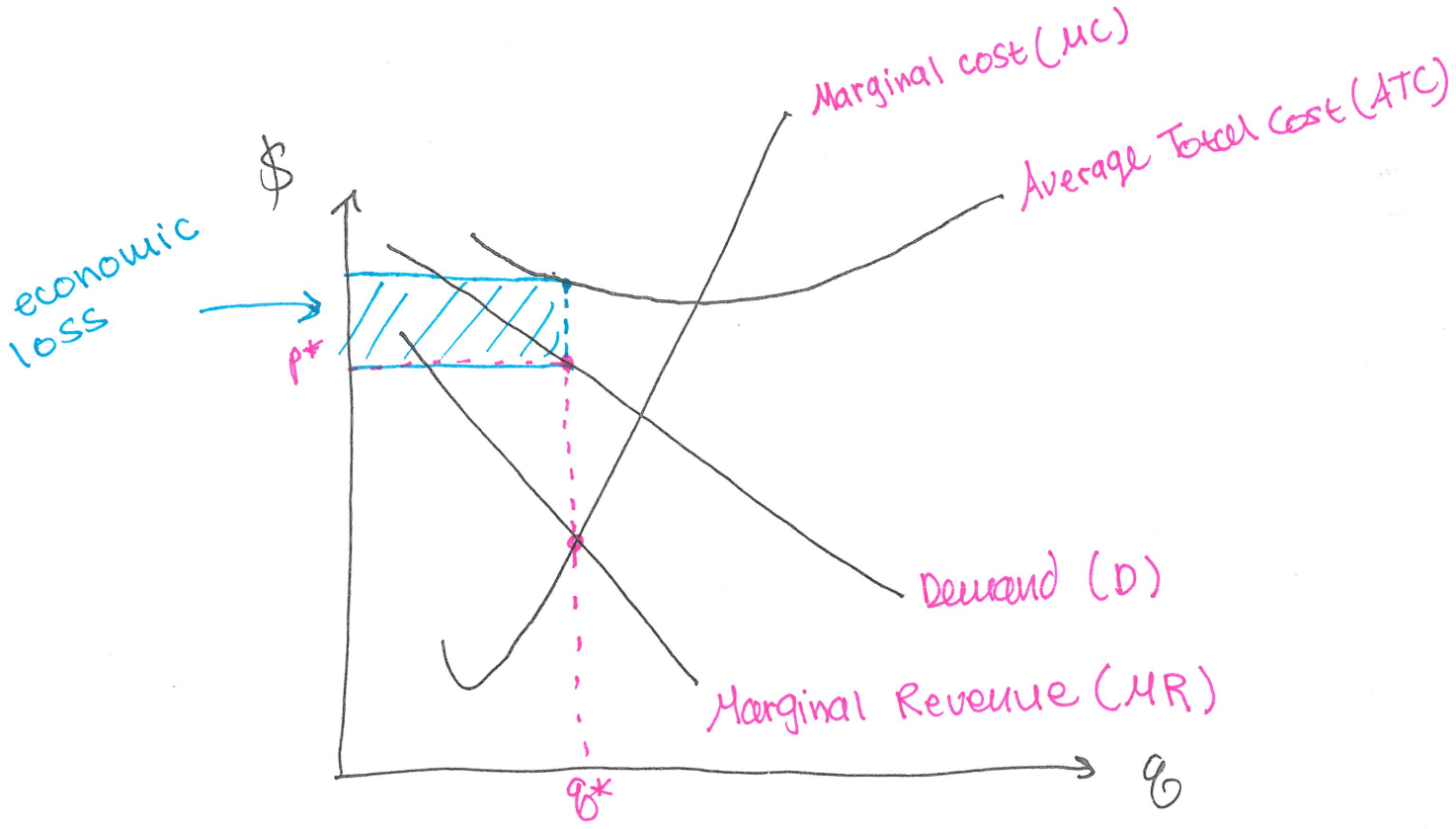
Econ 142 Discussion

Monopolistic Competition: Short-Run Equilibrium ~~Transition to Long-Run Equilibrium~~

NAME: _____

11/18/2015 (Week 13)

The graph shows a short-run equilibrium with economic profit in a monopolistically competitive market. Label the average total cost, marginal cost, marginal revenue, and demand curves. Label the quantity that the firm will produce, and the price that it will charge. Explain why the firm will pick that quantity and that price. Show the area representing the firms profit.



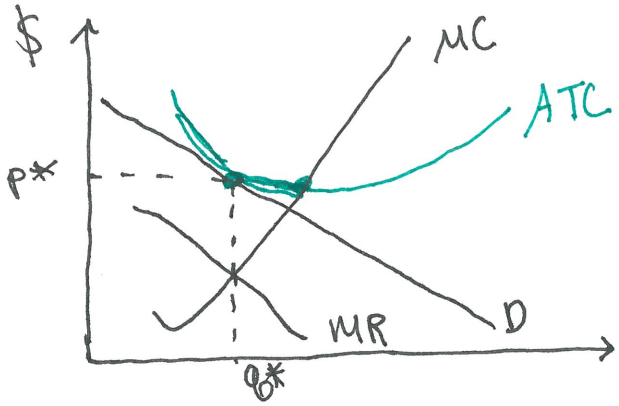
Firms pick the Q that makes MR=MC. On the graph, that will be the Q where MR & MC intersect, which is Q*. To find the price the firm will charge, look at the demand curve (because it shows what consumers are willing & able to pay for that quantity). Here, that price is P*.

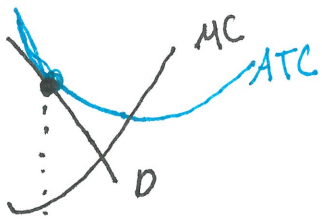
There is <u>not</u> an econ profit at Q* because ATC is greater than the price. There is an economic loss equal to (ATC at Q* − P*)·Q*.

NAME: _____ 11/18/2015 (Week 13)

Explain how a monopolistically competitive market will transition from a short run equilibrium with positive economic profit, to a long run equilibrium. Draw a graph showing the long-run equilibrium for a firm (include ATC, MC, MR, and Demand). Show the long run equilibrium price and quantity. Note: you don't need to include the short run equilibrium curves in your graph, just indicate how they will change in your explanation.

Starting with positive economic profit will cause firms to enter the market (with no barriers & positive econ profit there will always be entry). As firms enter, new varities of the product become available. This decreases demand for existing firms & makes it relatively more elastic (flatter). Entry will stop when econ $\pi = 0$. Then the market is in long run equilibrium.





ATC touches D at Q* & crosses MC at the minimum ATC.

Explain why the long run equilibrium is not allocatively efficient and not productively efficient.

In LRE, the price is greater than the MC so there is allocative inefficiency. Also, the ATC is greater than the minimum ATC, so there is productive inefficiency.

A benefit would be that consumers get a variety of products to chose from.

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Assume that there are 2 identical firms in a market, producing identical products, and that there are barriers that prevent any other firms from entering that market. Both firms have no fixed costs, and constant marginal costs equal to \$10. Demand is given by $Q = 150 - \frac{1}{2}P$. Find the equation for firm 1's total revenue (TR).

$TR_1 = Q_1 \times P$. Find P by solving demand for P, then plug $Q = (Q_1 + Q_2)$ into that equation for P. Firm 1's TR is Q_1 times that equation for P.

$Q = 150 - \frac{1}{2}P$

$\frac{1}{2}P = 150 - Q$

$P = 300 - 2Q$

$$TR_1 = (300 - 2(Q_1 + Q_2)) \cdot Q_1$$

Find firm 1's reaction function if marginal revenue is given by, $MR_1 = 300 - 4Q_1 - 2Q_2$. The reaction function is an equation for the quantity that will maximize firm 1's profit.

For the reaction function, set MR = MC & solve for Q_1.

$300 - 4Q_1 - 2Q_2 = 10$

$300 - 10 - 2Q_2 = 4Q_1$

$$Q_1 = \frac{290}{4} - \frac{2}{4}Q_2 = 72.5 - \frac{1}{2}Q_2 \text{ simplified}$$

Assuming firm 2 has the exact same reaction function (with the subscripts switched around, so that Q_2 = something that depends on Q_1), how many units will firm 1 produce? How many units will firm 2 produce? (This is the Nash equilibrium). Calculate the profit for firm 1 if it produces that quantity.

Firm 2's reaction function is $Q_2 = \frac{290}{4} - \frac{1}{2}Q_1$.

To find the equilibrium, plug Q_2 into the equation for Q_1. Then solve for Q_1.

$Q_1 = 72.5 - \frac{1}{2}\left[72.5 - \frac{1}{2}Q_1\right]$

$= 72.5 - 36.25 - \frac{1}{4}Q_1$

$Q_1 - \frac{1}{4}Q_1 = 36.25$

$.75Q_1 = 36.25$

$Q_1 = 48.33$

Firm 2 also produces 48.33.

$\pi = 4{,}672.51$