MICROECONOMICS AND POLICY ANALYSIS - U8213
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Class Notes - Spring 2001

Natural Monopoly & Market Power Regulation
Wednesday, March 9th
*Reading:* PR Chapter 11, Winston, Train

How do firms try to increase their market power?
The number of firms in a market power *as well as the number of firms that could potentially enter the market* indicates the firms' market power.
1) High fixed costs/High cost of entry and exit. Fixed costs need to be large relative to the size of the market (ex: Automobile and airline manufacturing)
2) Cartels - successful collaboration (ex: Diamond cartel and OPEC)
3) Brands and advertising – increases the cost of production and fragments the market
4) Driving competitors out of business (ex: Microsoft)
5) Predatory pricing

What constitutes a Natural Monopoly?
•Unique Resources
•Large fixed cost of production is a technology feature of the production process
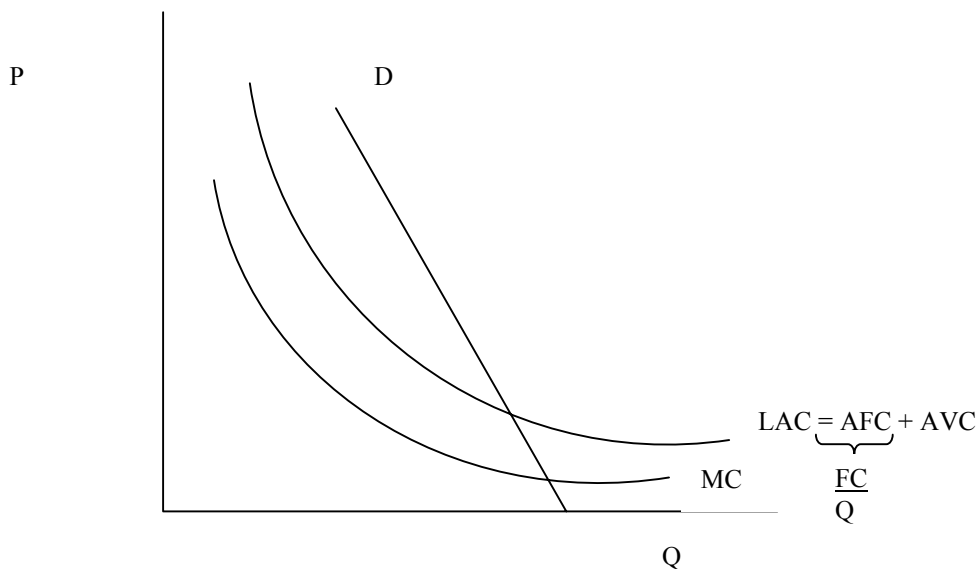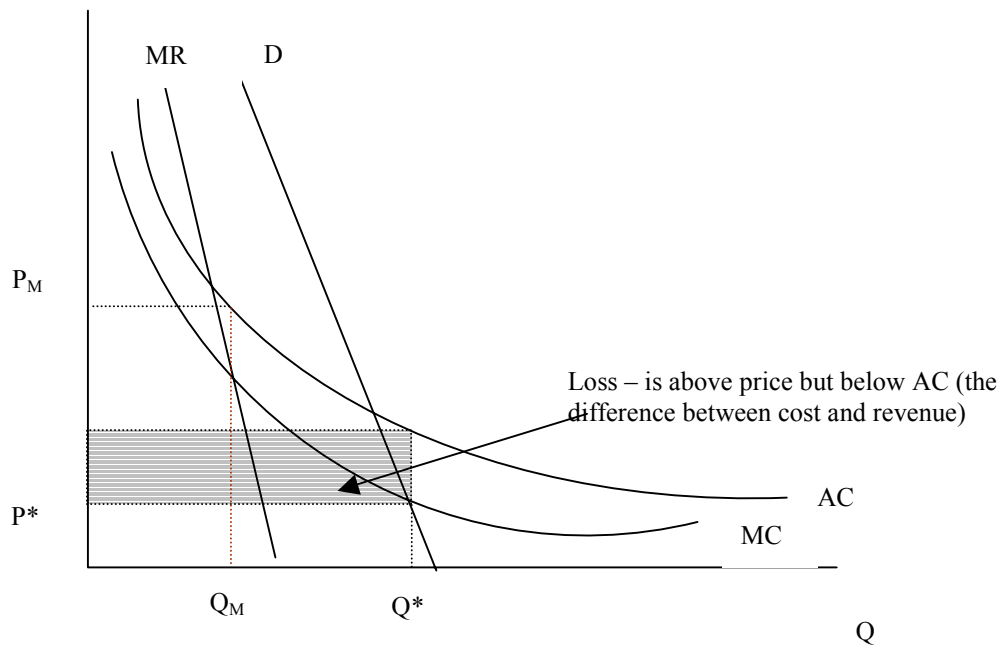

We want to focus on the cost of making a good and the interaction with the ddmand of a good. There may not be enough room in the market for more than one firm.

We need to look at average costs to decide if a natural monopoly will exist. A downward sloping average cost implies that each firm would tend to produce large quantities. A natural monopoly exists if the fixed costs are large with respect to the size of the market. In the long run firms operate at their minimum average cost. We need to look at how large the minimum average cost is compared to the size of the market. If the minimum average cost is large

compared to demand then there is a natural monopoly. (Also see graph in Train article, p.7 fig.1.3)

How do you regulate a natural monopoly?

P

MR   D

P_M

P^*

Q_M Q^*

Loss – is above price but below AC (the difference between cost and revenue)

AC

MC

Q

1) You could force the natural monopoly to charge the competitive price P*.
You could force the firm to operate with P = MC. This is desirable because it maximizes social surplus. BUT, if P=MC then no firm would stay in the market due to long run losses. The monopolist can not operate profitably at the competitive price. You would need to provide a lump-sum subsidy equal to the loss if you want the service or product to continue to be provided.

> **Train article:**
> 1) First Best: Maximize social surplus and provide a transfer to the firm. Problem: Firms will not be self-sufficient.
> 2) Second-Best: Set P=AC (where AC intersects demand). At this point firms will make zero profit. Problem: decreased efficiency and asymmetric information

2) You could charge price based on cost.
Regulate the firm so that they make zero profits. A regulator could examine the market and determine what a descent rate of return would be for the firms and then offer this same rate of return everyone **(rate of return regulation)**. The concept of basing a firm's price based on their costs is important, however, the firms' incentive to maintain efficiency is lost.   Also, only the firms have the information on costs. It is difficult to gain enough information about the costs of a firm. Firms have incentive to misrepresent and manipulate information. An alternative would be to charge based on average costs and set P = AC.

3) You could charge minimizing deadweight loss (Ramsey Pricing)

What is the method of taxation that produces the smallest deadweight loss across markets? That's where Ramsey pricing comes in.

If you are regulating two industries with a natural monopoly then what is the appropriate regulation? (one firm, two goods) To what extent do you want to increases prices above the marginal cost in each industry if you want the firm to break even?

Charge P>MC, but chose one that maximizes social surplus (2nd Best). As you increase the price of a good you are engaging in a transfer from consumers to producers (necessary because of high fixed costs) and you are reducing the quantity that consumers are willing to consume, reducing the deadweight loss from the monopolist.

How do you minimize deadweight loss?

DWL is a function from the socially optimal quantity. We want to raise prices more in markets where demand is less elastic because it produces proportionally less response.

If the price elasticity of demand is inelastic and the price increases the change in quantity demanded isn't very big and the deadweight loss from increasing the price of the good is smaller than if the market is elastic. You should increase prices more in the inelastic market (above the marginal cost in direct proportion to the price elasticity of demand). Therefore, the elasticity of demand influences the size of the deadweight loss.

$$\left(\frac{P_1 - MC_1}{P_1} \right) E_1 = \left(\frac{P_2 - MC_2}{P_2} \right) E_2$$

$$\underbrace{}$$

Mark-up in   Mark-up in
Market 1 (M_1)   Market 2 (M_2)

$\dfrac{Markup_1}{Markup_2} = \dfrac{E_2}{E_1}$ The more inelastic market 1 the higher the mark up in market 2 relative to market 1.

Regulation is not static. Technology changes over time. These changes may render the need to regulate obsolete or may create the need for regulatory changes (ex: Telecommunication Industry).

<u>Deregulation</u>
There are tendencies toward deregulation in some industries (ex: Airlines, cable). The selling point of deregulation is that is introduces competitive forces into the industry. This decrease prices, increases quantity, increases quality and increases innovation. BUT, time horizons matter!
If you deregulate suddenly then in the short run prices may increase because you are allowing the monopolist to exercise its monopoly power. In the long run by deregulating you create other entrants which eventually leads to lower prices. The existence of potential entrants is key to the model of deregulation.