Monopoly

A *monopoly* is a firm who is the sole seller of its product, and where there are no close substitutes. An unregulated monopoly has market power and can influence prices.

Examples: Microsoft and Windows, DeBeers and diamonds, your local natural gas company.

Individual restaurants and other products that enjoy "brand loyalty" in otherwise competitive markets will choose prices and output just like monopolists do. [monopolistic competition]

Monopolies arise because of:

(1) A key resource is owned by the firm.

For example, Debeers and diamonds.

(2) The government gives a firm the exclusive right to produce a good.

Examples include: Proposition 3 on slot machine gambling, patents on new drugs, copyrights on software and books.

Some government monopolies are the result of special interests and corruption, some enhance efficiency by encouraging innovation.

(3) The costs of production make one producer more efficient than many, due to increasing returns to scale–"natural monopoly."

Examples include: Columbia Gas, American Electric Power, a toll bridge across a river.

There is a fixed or setup cost in building the bridge, but the marginal cost of allowing one more car is close to zero. *Therefore, average cost falls as quantity of cars increases.*

Once the bridge is built, the natural monopoly does not fear entrants into the market. If a second bridge is produced, average costs would nearly double as the two producers split the market. Having just one bridge is more efficient.

Profit Maximization for a Monopoly

The key difference between a perfectly competitive firm and a monopoly is that the competitive firm faces a flat demand curve, because it can sell as much as it wants at the market price.

In a market with thousands of small firms, one firm's "residual" demand curve is very flat, even if the market demand curve is not.

On the other hand, a monopolist must accept a lower price if it wants to sell significantly more output.

Monopoly Revenue

Consider the following table for a monopoly water producer.

Average revenue is equal to the price for any Q, $AR = P{\times}Q/Q$, but marginal revenue is less than the price.

In fact, marginal revenue, $\triangle TR/\triangle Q$, can even be negative.

When output increases, there are two effects on revenue, P×Q.

First, there is the output effect. When Q goes up, the second part of P×Q is higher.

Second, there is the price effect. When Q goes up, the first part of P×Q is lower, due to the fact that we have a downward sloping demand curve.

If the price did not change as a result of the increased quantity, we would only have a quantity effect, and marginal revenue would be the same as the price.

For a price taker, there is no price effect, so MR = P. For a monopoly, MR < P.

How can MR be a lot less than the price (average revenue), when we are only increasing Q by one unit, so the reduction in price is very small?

Example: Honda sells 5,000,000 Accords at a price of $20,000. Suppose that selling one more Accord would cause the price to drop to $19,999.99.

The quantity effect would be an increase in revenues of $20,000 (give or take a penny).

The price effect would be a reduction in revenues of $0.01 on each Accord sold, which would be negative $50,000 (give or take a penny).

If one Honda dealer selling 100 Accords decided to sell one more Accord, so that the market price dropped to $19,999.99, the quantity effect would be $20,000 and the price effect would be negative $1.00.

For this example, marginal revenue for Honda is -$30,000, but marginal revenue for the (more competitive) Honda dealer is $19,999.00.

Recall that MR for the entire market is negative if demand is inelastic, MR is zero at unitary demand elasticity, and MR is positive when demand is elastic.

Profit Maximization for a Monopoly

A profit maximizing monopoly chooses an output level where MR = MC.

If MR > MC, producing one more unit will add more revenues than costs, so profits increase.

If MR < MC, producing one less unit will save more costs than it sacrifices in revenues, so profits increase.

Given the profit maximizing Q, the monopolist chooses the price the market will pay, which is the height of the demand curve.

Key point: A monopoly does not have a supply curve. The quantity is wants to supply cannot be separated from the demand side of the market. At the monopoly price, it will supply the monopoly quantity. It does not make sense to ask how much it would supply at other prices.

The Welfare Cost of Monopoly

Is monopoly efficient? If we could force the monopoly to give its profits to worthy causes, is there any problem with letting it choose the profit maximizing price?

The efficient quantity, that maximizes total surplus to society, occurs where the MC curve intersects the demand curve.

When the demand curve is above the MC curve, willingness to pay for one more unit exceeds the cost of providing one more unit, so it is efficient to keep producing.

When the demand curve is below the MC curve, willingness to pay for one more unit is less than the cost of providing one more unit, so it is efficient to reduce production.

Monopoly creates a *deadweight loss,* due to the fact that the monopoly restricts supply below the socially efficient quantity.

Another way to see this inefficiency is that the monopoly always chooses a price that is above marginal cost. There are some lost gains from trade, from buyers whose willingness to pay is above marginal cost, but below the monopoly price.

Another type of inefficiency occurs if the monopoly incurs costs to maintain its monopoly position. These resources could instead be used for productive purposes. For example, the monopoly could be wasting resources in order to lobby government officials for favorable legislation or contracts.

What should governments do about Monopolies?

I. Antitrust laws encourage competition. The Department of Justice can go to court to prevent mergers that monopolize an industry. People can sue firms engaging in "conspiracies in restraint of trade."

But, firms may have to be large to be efficient. (Returns to scale or other synergies)

Society does not want to break up natural monopolies, in which case antitrust laws cannot provide an efficient solution.

II. Regulation

Since the efficient quantity is where the demand curve intersects the marginal cost curve, what about requiring the monopoly to set the price at which the two curves intersect?

The big problem with this scheme is that the downward sloping ATC curve that characterizes natural monopoly means that MC is below ATC. Marginal cost pricing leads to negative profits.

The most reasonable, but imperfect, solution is average cost pricing. Require the monopoly to set a price at which the demand curve intersects the ATC curve.

Average cost pricing or *rate of return regulation* allows normal profits (zero economic profits), but chooses a slightly inefficient quantity. Deadweight loss is smaller than without regulation.

What about requiring marginal cost pricing, but taxing the product to subsidize the monopoly so that it can break even?

Then the tax rate will have to be the difference between ATC and MC, so the full price paid by consumers is exactly what it would be under rate of return regulation!

Other problems with regulation, besides creating a deadweight loss, are:

- there is little incentive to reduce costs and be as efficient as possible
- the monopoly might try to exaggerate their costs
- monopolists might capture the regulatory process

III. Public Ownership

Let bureaucrats run the monopoly, and impose marginal cost pricing.

The problem is that the incentives for corruption and mismanagement are at least as high as under regulation. If managers of a regulated firm are doing a bad job, the stockholders can fire them. If managers of a government owned firm are doing a bad job, voters will have to make this an important election issue.

IV. Do nothing

Sometimes the "market failure" is better than the "political failure" associated with regulation.

For true natural monopolies, this might be a bad idea, but we should try to deregulate industries that no longer qualify. Long distance phone service in the 1980's, now all phone service, airlines, electricity generation, etc.

Especially for industries going through constant technological change, competition to be the next IBM or Microsoft can encourage innovation.

Price Discrimination

Price discrimination is when a firm sells the same good to different consumers at different prices.

Examples: student or senior discounts, "dumping" in foreign markets.

Price discrimination is impossible in a perfectly competitive market, because if low-price buyers are profitable, then a rival will profitably steal away your high-price buyers.

For a monopolist to price discriminate, buyers must be separated according to their willingness to pay, and low-price buyers must be prevented from selling to high-price buyers.

An Example: Readalot Publishing

Readalot hires its best-selling author to write a novel for $2 million. Ignore production costs.

There are two types of readers:

100,000 die-hard fans willing to pay $30

400,000 less enthusiastic readers w.t.p. $5

Clearly, the monopoly price is either $30 or $5.

If p = $30, revenues are $3 million and profits are $1 million.

If p = $5, revenues are $2.5 million and profits are $500,000.

If Readalot had to pick one price, it would pick $30. Notice the deadweight loss of $2 million.

Can Readalot do better? Suppose it discovers that all of the die-hard fans live in Australia, and all of the other readers live in the U.S.

By charging $30 in Australia and $5 in the U.S., Readalot's profits increase to $3 million.

Notice that for this price discrimination scheme to work, Readalot must prevent *arbitrage*. Australian fans must be unable to have their books shipped from the U.S., and Australian bookstores must be unable to purchase their books in the U.S. and resell them in Australia.

Notice also, that allowing Readalot to price discriminate makes the market more efficient. In this case, there is no deadweight loss.

Under perfect price discrimination, the outcome is socially efficient.

This is not surprising when you realize that the monopoly takes away all of the consumer surplus by charging each buyer exactly what he or she is willing to pay. Since the monopoly is taking all of the surplus for itself, it has an incentive to maximize the total surplus, which is efficient.

Real world examples of price discrimination are imperfect, and sometimes might be less efficient than a single-price monopoly.

When foreign manufacturers dump their products in the U.S. market in order to price discriminate, our economy benefits. Dumping hurts us when foreign firms try to drive our producers out of business and raise their price later. Ongoing low prices is good for us, even if our producers cannot compete.

Subtle forms of price discrimination include:

1. Paperback vs. Hardcover editions of a book.

2. Airline prices, such as Saturday night stayovers.

3. Coupons.

4. Financial aid at colleges.

5. One-day carpet or tire sales.

6. Trade-ins (cars, luggage).

Conclusion: Price discrimination is pervasive whenever competition is less than perfect and there is some brand loyalty. (Marketing departments call this phenomenon "yield management.")