

Econ 101: Principles of Microeconomics

Chapter 14 - Monopoly

Fall 2010

Outline

- 1 Monopolies
 - What Monopolies Do
 - Why Do Monopolies Exist?
- 2 Profit Maximization for the Monopolist
- 3 Public Policy Towards the Monopolist
- 4 Price Discrimination and the Monopolist

Other Market Structures

- Up to this point, we have focused our attention on one type of market - the perfectly competitive market.
- Recall that a perfectly competitive market is characterized by
 - Many buyers and sellers, all of whom are price-takers
 - An industry output that is standardized.
- While this market structure is a good approximation for many markets, it certainly does not apply for all markets.
 - Markets can differ in terms of both the nature of the supply side of the market or the demand side.
 - For example, markets can have only one producer (a monopolist)
 - Alternatively, markets can have only one consumer (a monopsonist).
- In this class, we will restrict our attention to departures from the perfect competition due to
 - Limitations in number of producers
 - Product differentiation

Three Additional Market Structures

- Relaxing the conditions that define a perfectly competitive market yields three key new market types:
 - ① **Monopoly**: A *monopolist* is a firm that is the only producer of a good that has no close substitutes. An industry controlled by a monopolist is known as a *monopoly*.
 - Note that product differentiation does not matter here in that there is only one product.
 - ② **Oligopoly**: An oligopoly is a market controlled by *few* producers.
 - Product differentiation is not a key aspect in terms of defining this market type.
 - ③ **Monopolistic Competition**: This market structure arises when there are many producers, but the products they produce are not identical in the eyes of consumers.
 - A classic example here might be restaurants.

What Monopolies Do.

- Why we might be concerned about having a monopolist?
- The key problem associated with the monopolist is that the producer will no longer be a price-taker.
- In a competitive market, the firm cannot directly influence price
 - If the price-taking competitive firm tries to raise price, it will simply lose sales to other firms in the market.
- For the monopolist, there are no other firms to worry about.
- The ability of the monopolist to raise price above the competitive level is known as **market power**.
- The monopolist is, however, still constrained by the market demand.
 - If the firm raises price, quantity demanded will decrease (the *quantity effect*).
 - At the same time, what it does sell it will sell at a higher price (the *price effect*).
- In general, we will see that the monopolist will raise prices and reduce production relative to the competitive market.

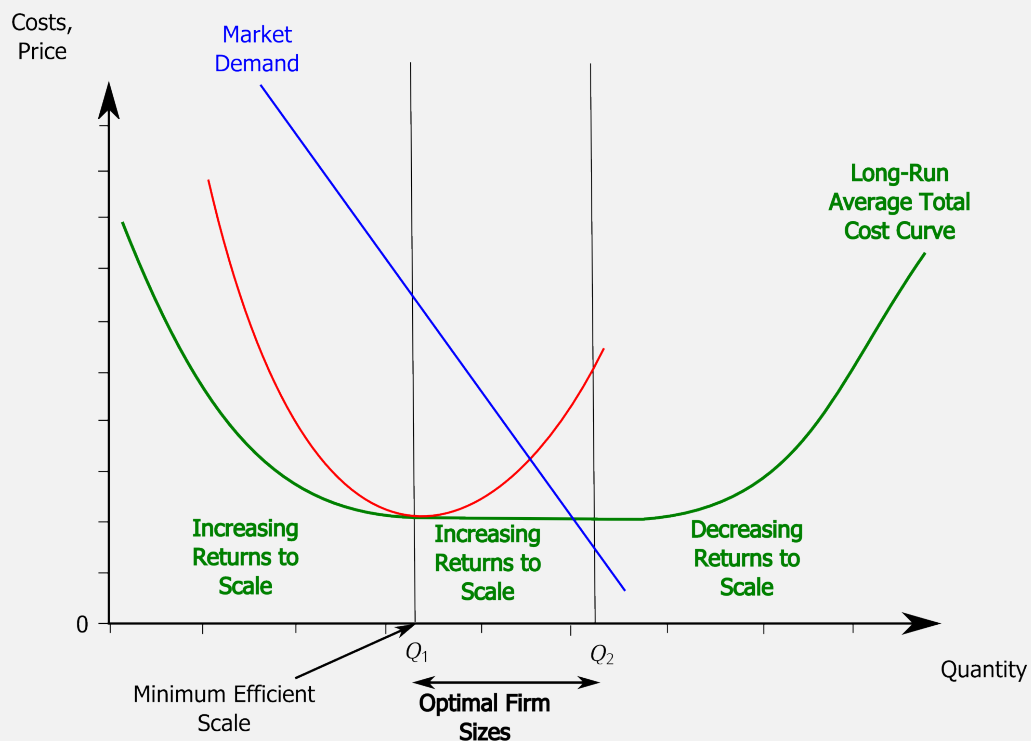
Why Do Monopolies Exist?

- Monopolies arise due to some aspect of the industry that keeps other firms out, known as **barriers to entry**
- There are four key barriers to entry:
 - ① **Control of a Scarce Resource**: The book gives the example here of DeBeer's near diamond monopoly due to its ownership of the bulk of diamond mines.
 - ② **Economies of Scale**
 - ③ **Legal Barriers to Entry**
 - ④ **Network Externalities**
- Krugman and Wells also mention **technological superiority**, but this is largely driven in turn by legal barriers and economies of scale.

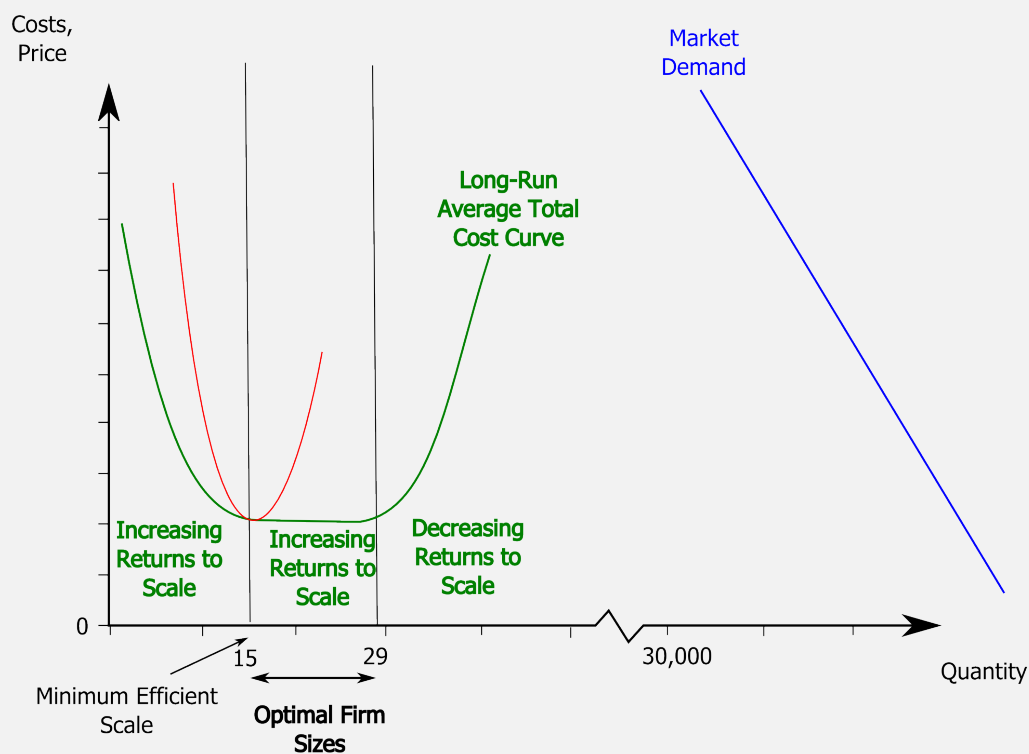
Economies of Scale

- A **natural monopoly** will emerge if the firm's LRATC curve is declining (i.e., there are economies of scale) over the range of outputs likely demanded for the entire output.
- In this case, as single firm can meet market demand at a lower cost than two or more firms.
- Natural monopolies tend to emerge when there are large fixed costs associated with production.
- Local utilities (water, gas, electricity, local cable, local land-lines) are the most common example of a natural monopoly.

The Natural Monopoly



Naturally Competitive



Legal Barriers to Entry

- Sometimes public interest is best served by having a single seller in a market
- Legal barriers take the form of
 - Protection of intellectual property
 - Government franchise - usually granted in cases of natural monopoly.

Protection of intellectual property

- Intellectual property encompasses literary, artistic and musical works, and scientific inventions
- In dealing with intellectual property government strikes a compromise
 - Allows creators of intellectual property to enjoy a monopoly and earn economic profit, but only for a limited period of time
 - Once time is up, other sellers are allowed to enter the market, and it is hoped that competition will bring down prices
- Most important kinds of legal protection for intellectual property are
 - **Patents**: Gives the inventor a temporary monopoly in the use or sale of an invention (usually 16-20 years)
 - **Copyrights**: Gives the creator a literary or artistic work sole rights to profit from that work (usually lifetime +70 years)
- Copyrights and patents are often sold to another person or firm, but this does not change monopoly status of the market, since there is still just one seller.

Network Externalities

- **Network externalities** exist when an increase in networks membership increases its value to current and potential members
- in these cases, joining a large network is more beneficial than joining a small network
 - ... even if product in larger network is somewhat inferior to product in smaller one
- In addition to advantages of joining a larger network
 - ... there are typically advantage in not leaving it once youve joined (avoiding switching costs).

Network Externalities - An Example

- All of this clearly applies to the market for computer operating systems
 - When you buy a computer already loaded with Microsoft Windows, you benefit
 - By having a large number of people with whom you can easily share documents
 - Huge number of computers everywhere you can easily operate
 - You gain access to many more software programs, like Microsoft Word, Excel, or Outlook, since many more programs are designed for Windows than for Linux or Macs.
 - There are also network externalities in terms of informal technical support (e.g., getting help from classmates in using software)

Profit Maximization for the Monopolist

Monopoly Goals And Constraints

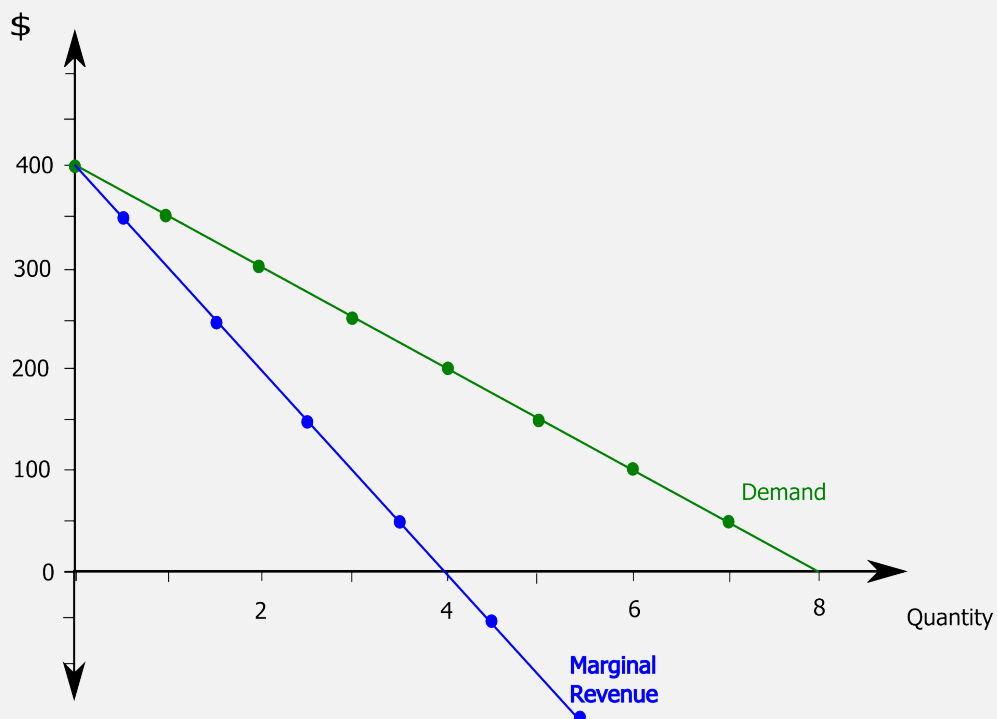
- Goal of a monopoly—like any firm—is to earn highest profit possible
- Like the competitive firm, a monopolist faces constraints
 - Production constraint- For any level of output it might produce, total cost is determined by
 - Technology of production
 - Price it must pay for its inputs
 - Demand constraint
 - Monopolists demand curve tells us the maximum price the monopolist can charge to sell any given quantity of output.
- The key difference between the monopolist and the perfectly competitive firm is that the latter views the demand for its product as perfectly elastic at the market price ($MR = P$).
- The monopolist, because it is the only producer, sees the linkage between price and quantity demanded ($MR \neq P$); it knows if it raises prices it will not lose all its customers.

John's Marginal Revenue

Suppose that John has a demand schedule given by:

Price	Quantity Demanded	Total Revenue $TR = P \times Q$	Marginal Revenue $MR = \Delta TR / \Delta Q$
400	0	0	
350	1	350	350
300	2	600	250
250	3	750	150
200	4	800	50
150	5	750	-50
100	6	600	-150
50	7	350	-250
0	8	0	-350

Marginal Revenue Curve



Marginal Revenue

- Notice that
 - Marginal revenue is less than price.
 - With a linear demand curve, the MR curve intersects the horizontal axis halfway between the origin and where demand intersects the axis.
- Why is $MR < D$?
- When price is lowered, two opposing effects occur:
 - ① **A quantity effect:** Lowering the price results in more units sold, increasing revenue by the price of the additional unit sold.
 - ② **A price effect:** By lower the price, all of the previous units sold are now sold at a lower price, decreasing total revenues.
- In essence, the *price effect* creates a wedge between P and MR .
- This problem should look familiar. This is precisely the problem we discussed in chapter 3 relating total revenues and the price elasticity.

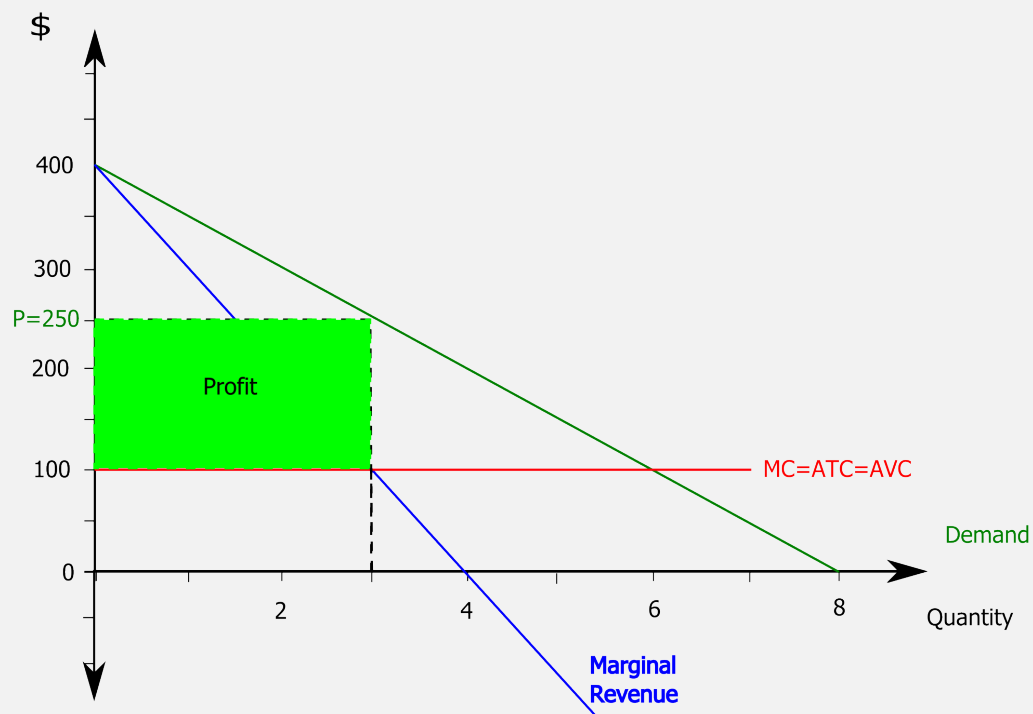
John's Marginal Revenue and Price Elasticity

Price	Quantity Demanded	Total Revenue $TR = P \times Q$	Marginal Revenue $MR = \Delta TR / \Delta Q$	Price Elasticity
400	0	0		
350	1	350	350	15.00
300	2	600	250	4.33
250	3	750	150	2.20
200	4	800	50	1.29
150	5	750	-50	0.78
100	6	600	-150	0.45
50	7	350	-250	0.23
0	8	0	-350	0.07

Profit Maximization for the Monopoly

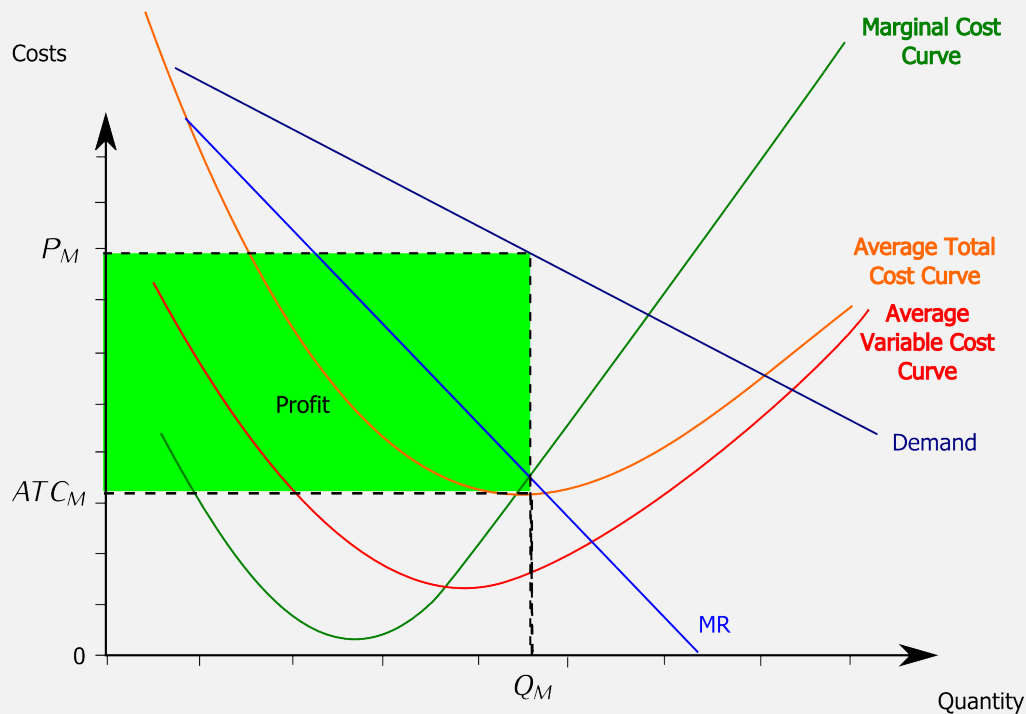
- For the monopolist, just like the competitive firm, profit maximization occurs where $MR = MC$.
- The difference for the monopolist, is that $MR \neq P$.
- In fact for the monopolist $MC = MR < P$, so the firm is charging more than the marginal cost of production.
- For simplicity, assume that John's MC is fixed at \$100 and that he has no fixed costs.
- In this case, $ATC = AVC = MC$

Profit Maximizing Monopoly - Constant MC



Profit Maximizing Monopoly - The General Case

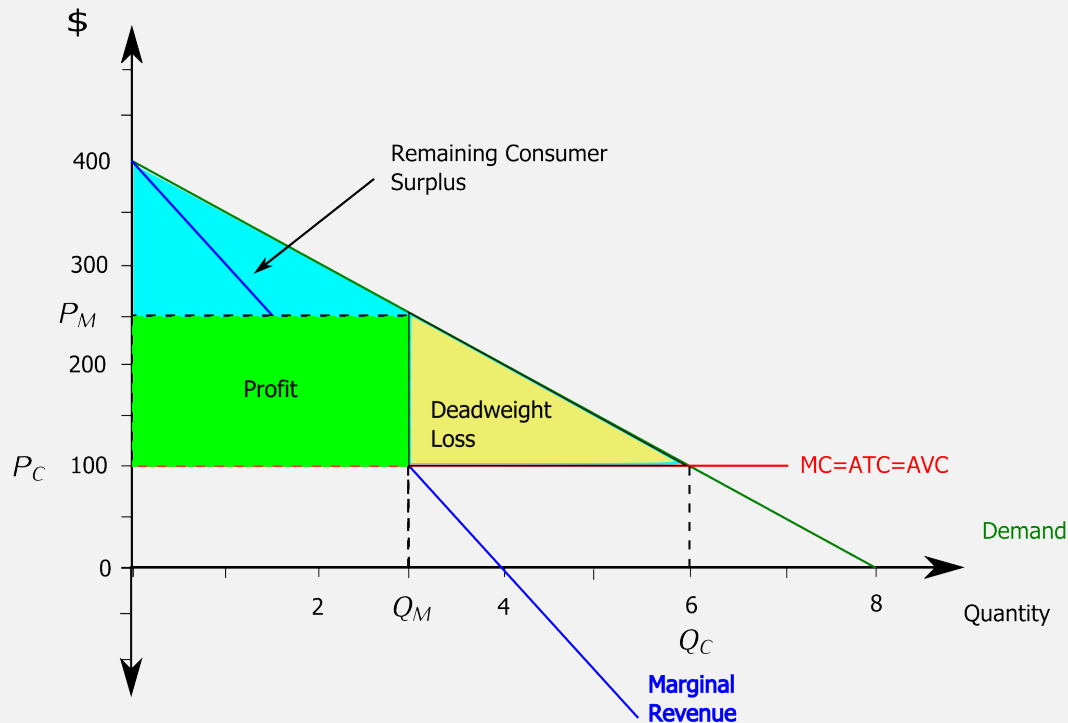
A similar result occurs when there are fixed costs and MC is not constant.



Monopoly Versus Perfectly Competitive Firm

- Recall that the perfectly competitive firm produced where $P = MC$.
- The consequences of monopoly are that the monopoly will:
 - 1 Produce at a smaller quantity (i.e., $Q_M < Q_C$)
 - 2 Produce at a higher price (i.e., $P_M > P_C$)
 - 3 Make a profit, with no firm there to compete away that profit.
- From a social perspective, the reduced quantity results in
 - An overall deadweight loss
 - An a shift in the remaining surplus from consumers to producers.

The Impact of Monopoly Power on Consumer Surplus



Public Policy Towards the Monopolist

- Clearly, monopoly power imposes a cost on society.
- One approach to dealing with a monopoly is to break it up into smaller firms
- The government has done this on a number of occasions:
 - ① 1911, the court ordered the break-up of Standard Oil, which controlled most of U.S. oil refining.
 - ② 1982, AT&T ("Ma Bell") was divested of its local systems (creating a series of "Baby Bells").
- However, in the case of a *natural monopoly*, it is unclear whether this is wise;
 - There is a tradeoff between the market power it has...
 - ...and the lower cost of production it brings.
- In these cases, the government has several possibilities.

Dealing with a Natural Monopoly

- In lieu of breaking up a natural monopoly, the government may instead choose **public ownership**; prominent examples of which include:
 - The U.S. Postal Service
 - Amtrak
 - British Airways in the U.K.
- Alternatively, the government may instead choose regulation.
 - Local utilities (such as electric utilities, telephone service, natural gas, etc.) are prime examples.
 - Such regulation typically takes the form of *price regulation*.
 - Marginal Cost pricing is not possible, since with a natural monopoly, MC-pricing will necessarily yield losses for the firm
 - **Rate of return regulation** was used instead to insure a “reasonable profit” for the firm.
 - Regulatory pricing, however is difficult, fraught with unintended consequences.
 - Electric Utility examples

Monopolies Do Not Necessarily Make Large Economic Profits

- Forces tending to cut monopoly profits
 - Government regulation
 - Rent-seeking activity
- Any costly action a firm undertakes to establish or maintain its monopoly status is called **rent-seeking activity**
- In countries with corrupt bureaucracies, rent-seeking activity includes bribes to government officials
- In less corrupt governments, it includes time and money spent lobbying legislators and public for favorable policies
- Rent-seeking activity that helps establish or maintain a firm's monopoly position is part of firm's costs
- As a result, rent-seeking activity can reduce economic profit of a monopoly

Price Discrimination

- Up until now, we have focused our attention on the **single-price monopolist**; i.e., the monopolist that charges all its customers the same price.
- An alternative is the **price discriminating monopolist** that charge different prices to different customers.
- **Price discrimination** occurs when a firm charges different prices to different customers for reasons other than differences in costs.
- Note: Price-discriminating monopoly does not discriminate based on prejudice, stereotypes, or ill-will toward any person or group
- Rather, it divides its customers into different categories based on their willingness to pay for good

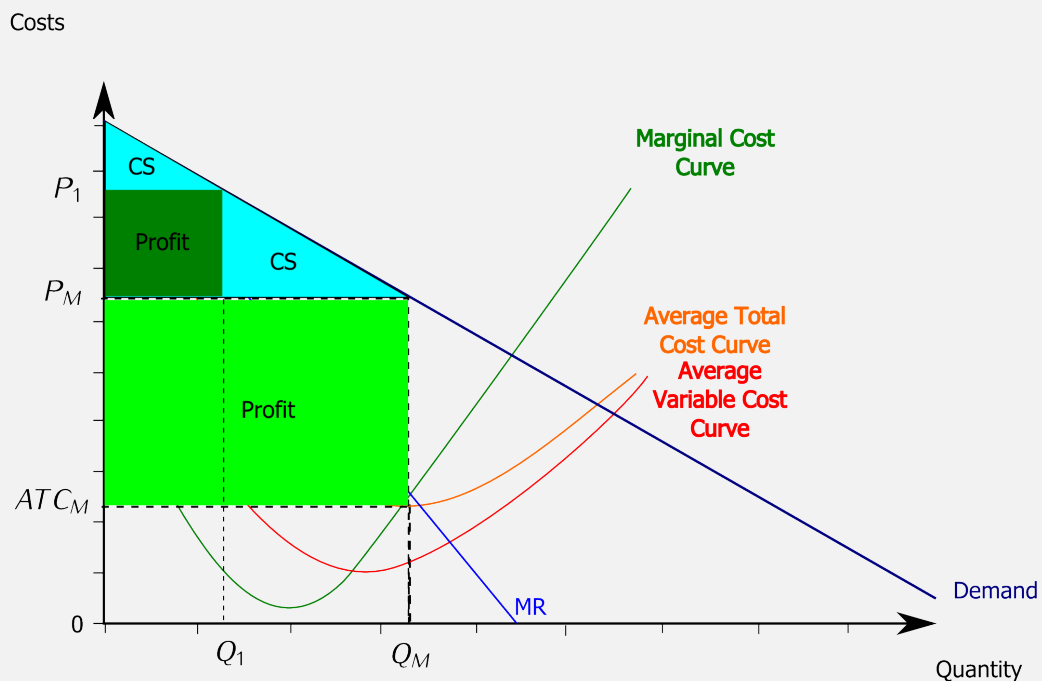
Requirements for Price Discrimination

- Although every firm would like to practice price discrimination, not all of them can
- To successfully price discriminate, three conditions must be satisfied
 - ① Must be a downward-sloping demand curve for the firms output
 - ② Firm must be able to identify consumers willing to pay more
 - ③ Firm must be able to prevent low-price customers from reselling to high-price customers
- Price discrimination does not necessarily harm consumers nor does it necessarily cause inefficiency

Price Discrimination that Harms Consumers

- Price discrimination always benefits owners of a firm
 - Can use this ability to increase its profit
- When price discrimination raises price for some consumer above price they would pay under a single-price policy it harms consumers
- The additional profit for the firm is equal to monetary loss of consumers

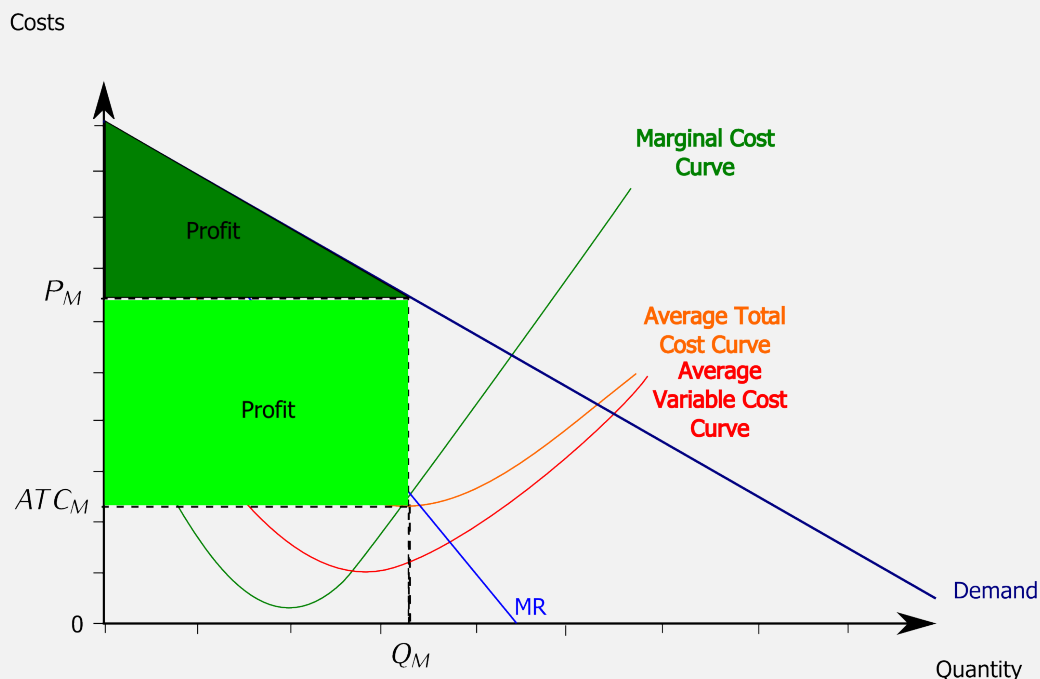
The Impact of Price Discrimination on Consumer Surplus



Perfect Price Discrimination

- In the extreme, when the monopolist is able to charge each individual his/her marginal willingness to pay to the good, we say the monopolist achieves **perfect price discrimination**
- This, of course virtually never happens, for two reasons
 - ① The firm would need to be able to perfectly identify each person's MWTP (and consumers will have an incentive to lie)
 - ② It is usually illegal to price discriminate (at least directly)
- Firms instead rely on indirect ways to price discriminate
- Airlines charge high fares for tickets that do not involve weekend stays.
 - This is indirectly targeting business travelers who have a high MWTP and a low price elasticity of demand for travel.
 - Lower fares for weekend stays targets non-business travelers who have a lower MWTP and a higher price elasticity of demand for travel.

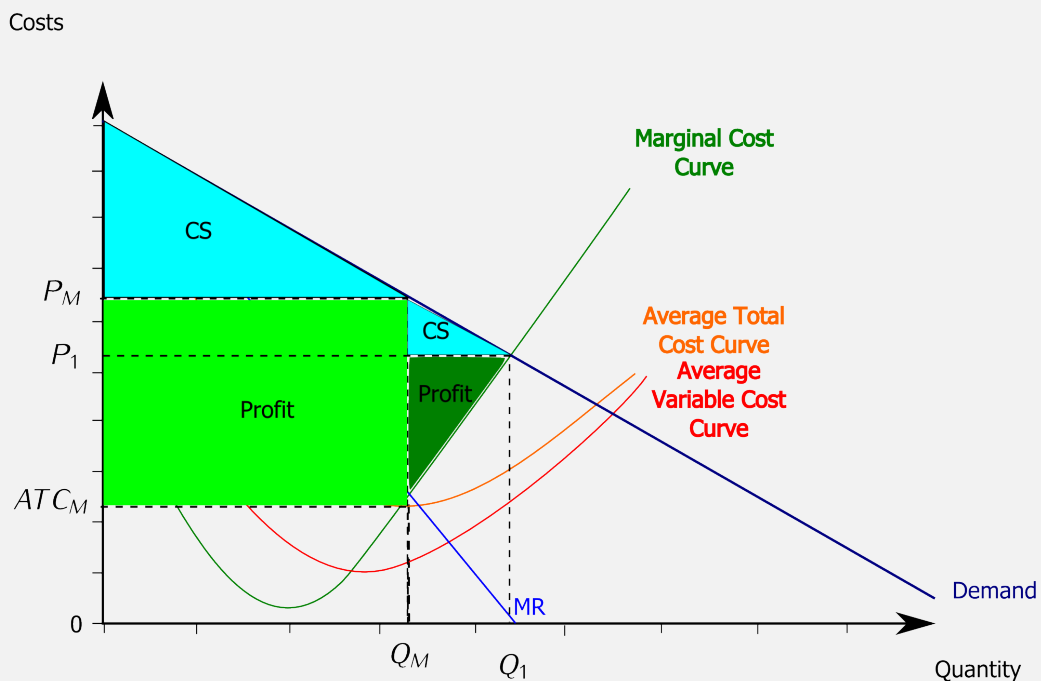
Perfect Price Discrimination



More on Price Discrimination

- Firms use other means to separate out consumers:
 - 1 Advance purchase restrictions
 - 2 Volume Discounts
 - 3 Two-part tariffs
- Price discrimination can actually help consumers if it brings into the market those who might otherwise be priced out (e.g., through senior or student discounts).

Beneficial Price Discrimination



Price Discrimination at Colleges and Universities

- Most colleges and universities give some kind of financial aid to a large proportion of their students
- Financial aid has been used as an effective method of price discrimination
- Designed to increase revenue of the college
- Colleges have long been in an especially good position to benefit from price discrimination, because they satisfy all three requirements
 - ① Face downward-sloping demand curves
 - ② Able to identify consumers willing to pay more
 - ③ Able to prevent low-price customers from reselling to high-price customers