

Economics

6th edition

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Microeconomics

SIXTH EDITION

Chapter 14

Oligopoly and Monopoly

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For Principles of Microeconomics
Florida International University
Fall 2017**

Oligopoly: a very different market structure

In the previous chapters, we examined perfect and monopolistic competition.

These two market structures were similar: firms produce until their marginal cost is equal to marginal revenue, and the low barriers to entry would result in profit being competed away in the long run.

Oligopoly, a market structure in which a small number of interdependent firms compete, will require completely different tools to analyze. Why?

1. Oligopolists are large, and know that their actions have an effect on one another.
2. Barriers to entry exist, preventing firms from competing away profits.

Oligopoly and Barriers to Entry

Before we analyze how oligopolists behave, it is useful to know which firms/markets we are discussing.

A useful tool for identifying the type of market structure is the *four-firm concentration ratio*: the fraction of an industry's sales accounted for by its four largest firms.

- **A four-firm concentration ratio larger than 40 percent tends to indicate an oligopoly.**

Examples of oligopolies in retail trade and manufacturing

Retail Trade		Manufacturing	
Industry	Four-Firm Concentration Ratio	Industry	Four-Firm Concentration Ratio
Discount department stores (Walmart and Target)	97%	Cigarettes (Phillip Morris and R.J. Reynolds)	98%
Warehouse clubs and supercenters (Sam's Club and BJ's Wholesale Club)	94%	Beer (Anheuser-Busch and MillerCoors)	90%
College bookstores (Barnes & Noble and Follett)	75%	Computers (Hewlett-Packard and Dell)	87%
Hobby, toy, and game stores (Toys "R" Us and Michael's)	72%	Aircraft (Boeing and Lockheed Martin)	81%
Radio, television, and other electronic stores (Best Buy and Apple)	70%	Breakfast cereal (Kellogg's and General Mills)	80%
Athletic footwear stores (Footlocker and Champs)	68%	Dog and cat food (Mars and Procter & Gamble)	71%
Pharmacies and drugstores (Walgreens and CVS Caremark)	63%	Automobiles (General Motors and Ford)	68%

Source: U.S. Census Bureau, *Concentration Ratios*, 2007.

Using Game Theory to Analyze Oligopoly

Unlike perfect and monopolistic competitors, oligopolists are large relative to the market, and the actions of one oligopolist make large differences in the profits of another. So graphical analysis of one firm's actions will not capture the nuances of an oligopolistic market.

Oligopolies are best analyzed using a specialized field of study called *game theory*.

Game theory: The study of how people make decisions in situations in which attaining their goals depends on their interactions with others; in economics, the study of the decisions of firms in industries where the profits of a firm depend on its interactions with other firms.

Game theory

Game theory was developed during the 1940s, and advanced by mathematicians and social scientists like economists.

All “games” share certain characteristics:

1. *Rules* that determine what actions are allowable
2. *Strategies* that players employ to attain their objectives in the game
3. *Payoffs* that are the results of the interactions among the players’ strategies

For example, we can model firm production as a “game”:

- Rules: the production functions and market demand curve
- Strategies: firms’ production decisions
- Payoffs: firms’ profits

Monopoly?

Monopoly is a market structure consisting of a firm that is the only seller of a good or service that does not have a close substitute.

Monopoly exists at the opposite end of the competition spectrum to perfect competition.

We study monopolies for two reasons:

1. Some firms truly are monopolists, so it is important to understand how they behave.
2. Firms might collude in order to *act like* a monopolist; knowing how monopolies act helps us to identify these firms.

Discuss: Do monopolies really exist?

Suppose you live in a small town with only one pizzeria. Is that pizzeria a monopoly?

1. It has competition from other fast-food restaurants
2. It has competition from grocery stores that provide pizzas for you to cook at home

If you consider these alternatives to be *close* substitutes for pizzeria pizza, then the pizza restaurant is not a monopoly.

If you do not consider these alternatives to be close substitutes for pizzeria pizza, then the pizza restaurant is a monopoly.

Regardless, the pizzeria's unique position may afford it some *monopoly power* to raise prices, and obtain economic profit.

Where Do Monopolies Come From?

For a firm to exist as a monopoly, there must be *barriers to entry* preventing other firms coming in and competing with it.

The four main reasons for these barriers to entry are:

1. *Government restrictions on entry*
2. *Control of a key resource*
3. *Network externalities*
4. *Natural monopoly*

How Does a Monopoly Choose Price and Output?

In our study of oligopoly, we abandoned the idea of marginal cost and marginal revenue, because the strategic interaction between firms overrode these concepts.

But monopolists have no competitors, and hence no concern about strategic interactions.

- They seek to maximize profit by choosing a quantity to produce, just like perfect and monopolistic competitors.

Calculating a monopoly's revenue (1 of 2)

Time Warner Cable is a monopolist in a local market for cable television services.

The first two columns of the table show the market demand curve, which is also Comcast's demand curve.

Total, average, and marginal revenue are all calculated in the usual manner.

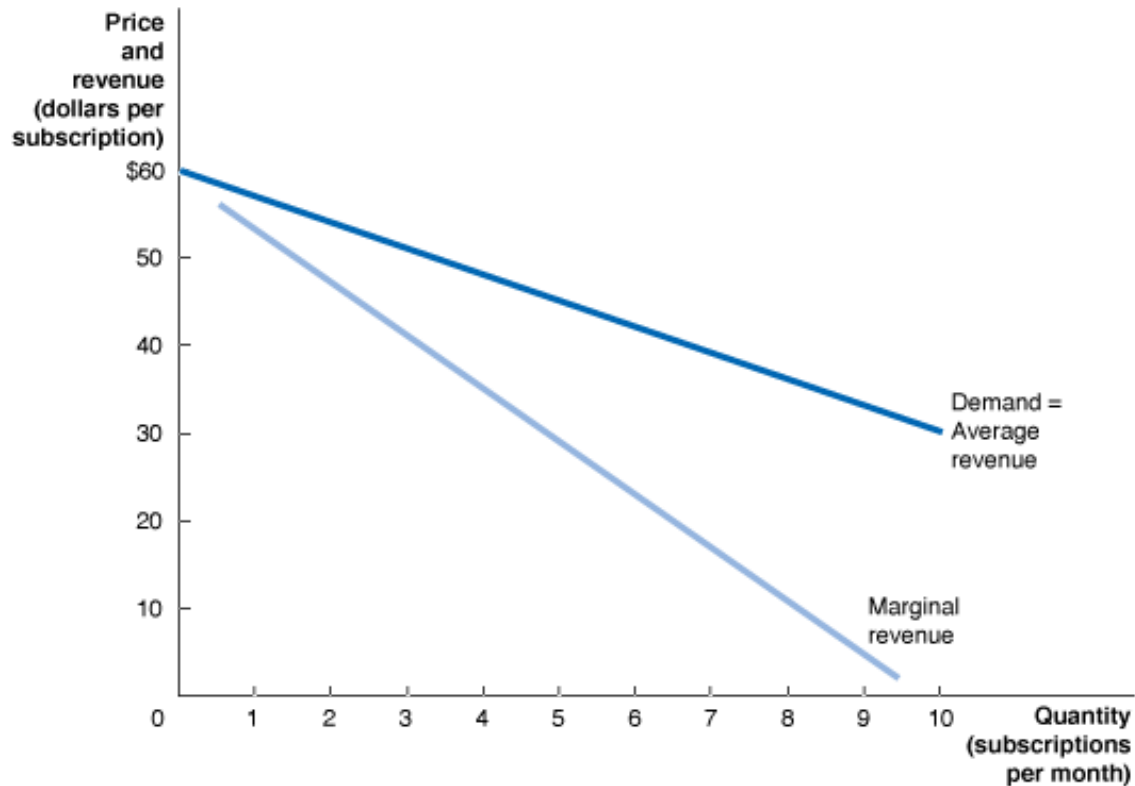
Subscribers per Month (Q)	Price (P)	Total Revenue ($TR = P \times Q$)	Average Revenue ($AR = TR/Q$)	Marginal Revenue ($MR = \Delta TR/\Delta Q$)
0	\$60	\$0	–	–
1	57	57	\$57	\$57
2	54	108	54	51
3	51	153	51	45
4	48	192	48	39
5	45	225	45	33
6	42	252	42	27
7	39	273	39	21
8	36	288	36	15
9	33	297	33	9
10	30	300	30	3

Calculating a monopoly's revenue (2 of 2)

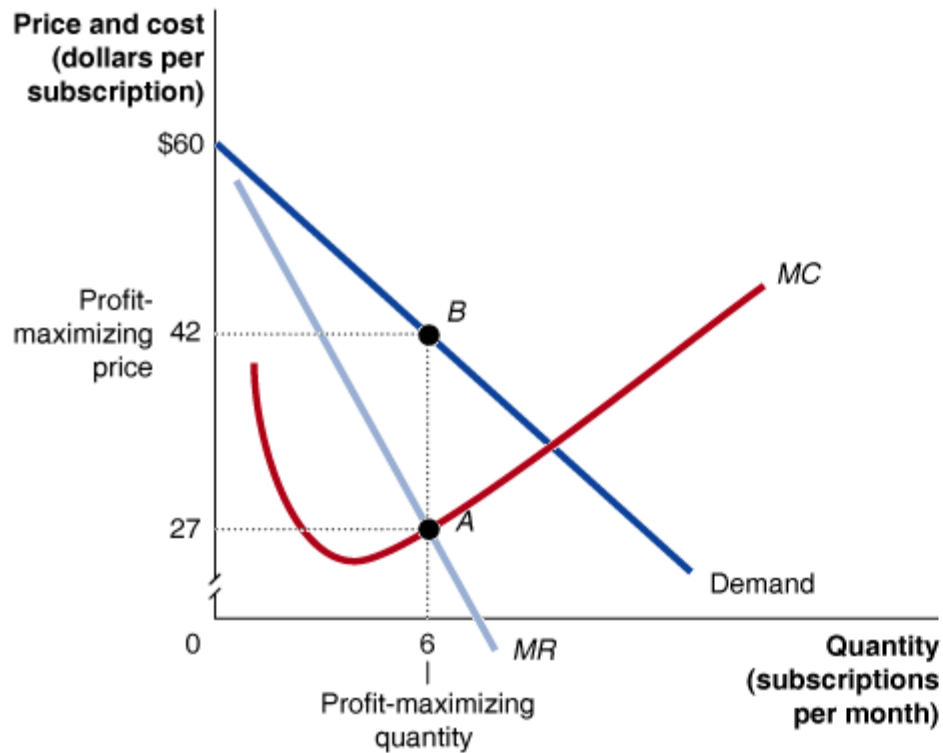
As the monopolist decreases price to expand output, two effects occur:

1. Revenue increases from selling an extra unit of output.
2. Revenue decreases, because the price reduction is shared with existing customers.

So marginal revenue is always below demand for a monopolist.



Profit-maximizing price and output for a monopoly

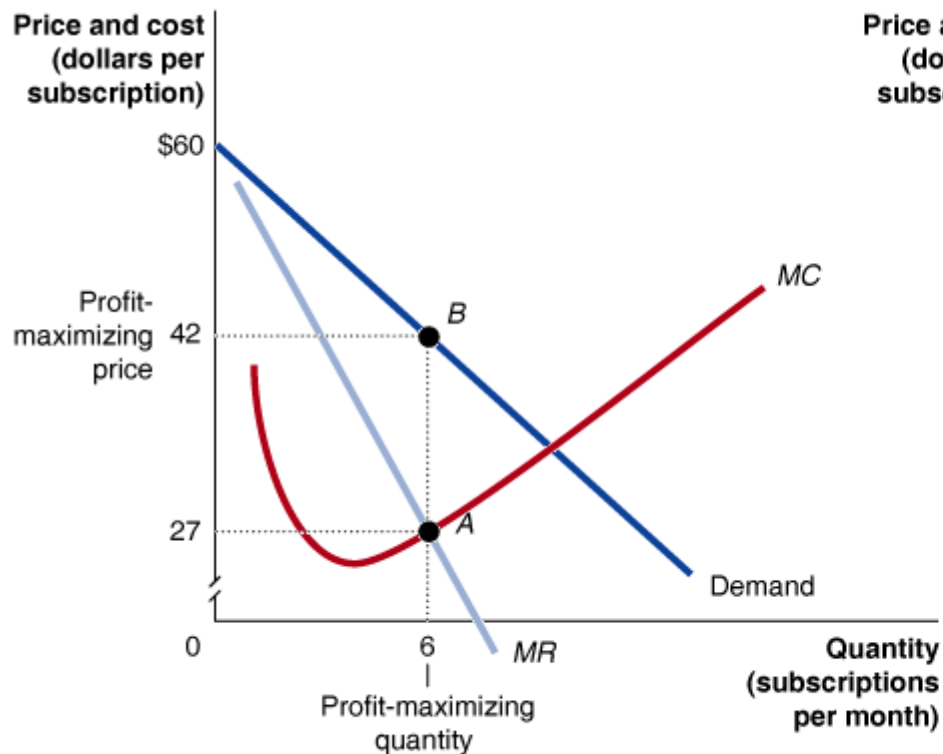


(a) Profit-maximizing quantity and price for a monopolist

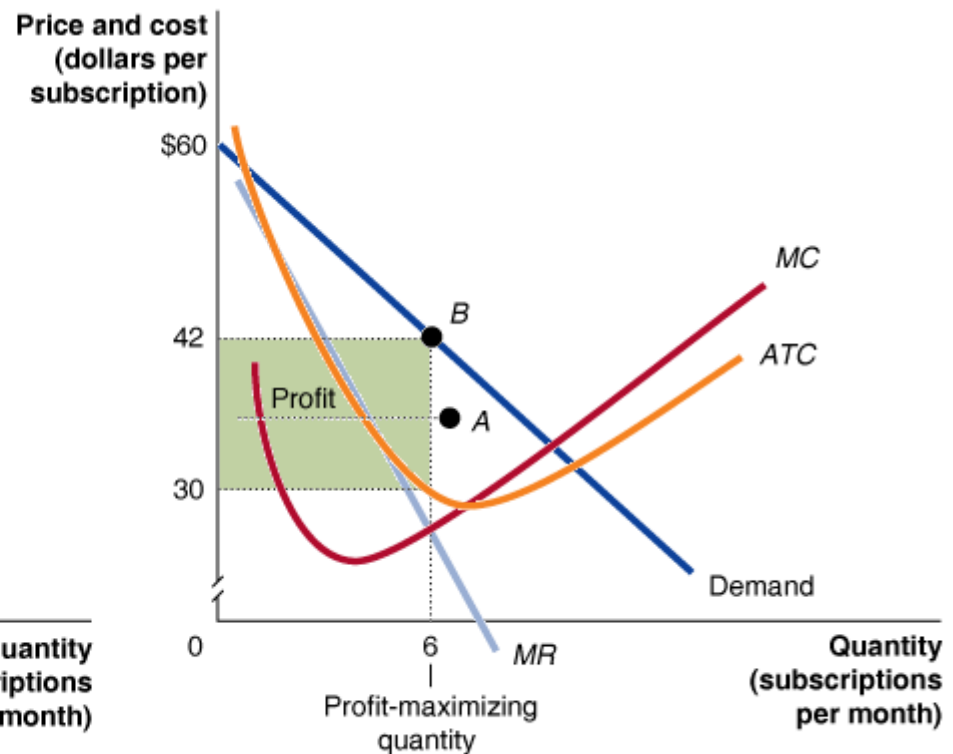
The monopolist maximizes profit by producing the quantity where the additional revenue from the last unit (marginal revenue) just equals the additional cost incurred from its production (marginal cost).

$MC = MR$ determines quantity for a monopolist.

Profit-maximizing price and output for a monopoly (2 of 2)



(a) Profit-maximizing quantity and price for a monopolist



(b) Profit for a monopolist

At this quantity,

- The demand curve determines price, and
- The average total cost (ATC) curve determines average cost.

Profit is the difference between these ($P - ATC$), times quantity (Q).

Long-run profits for a monopoly

Since there are barriers to entry, additional firms cannot enter the market.

- So there is no distinction between the short run and long run for a monopoly.

Then unlike for monopolistic competition, **we expect monopolists to continue to earn profits in the long run.**

Does Monopoly Reduce Economic Efficiency?

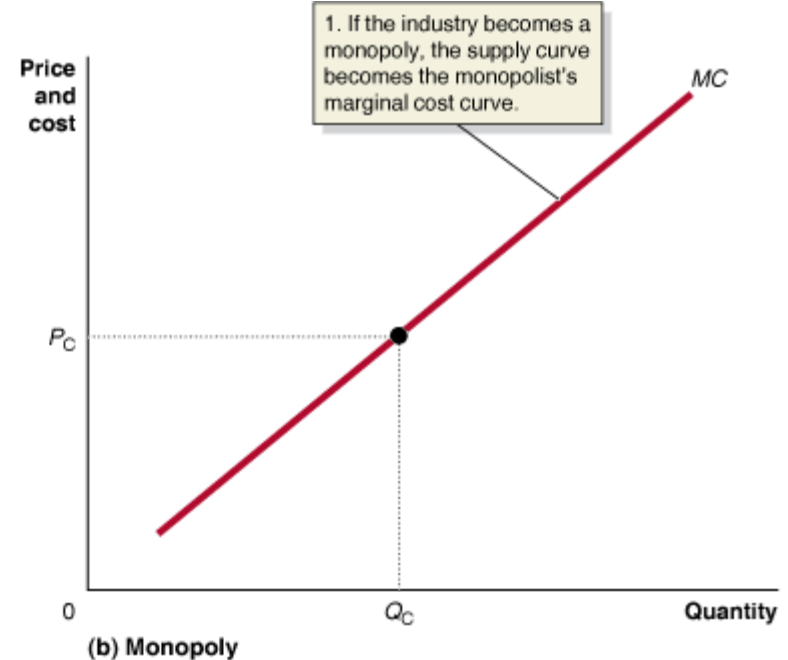
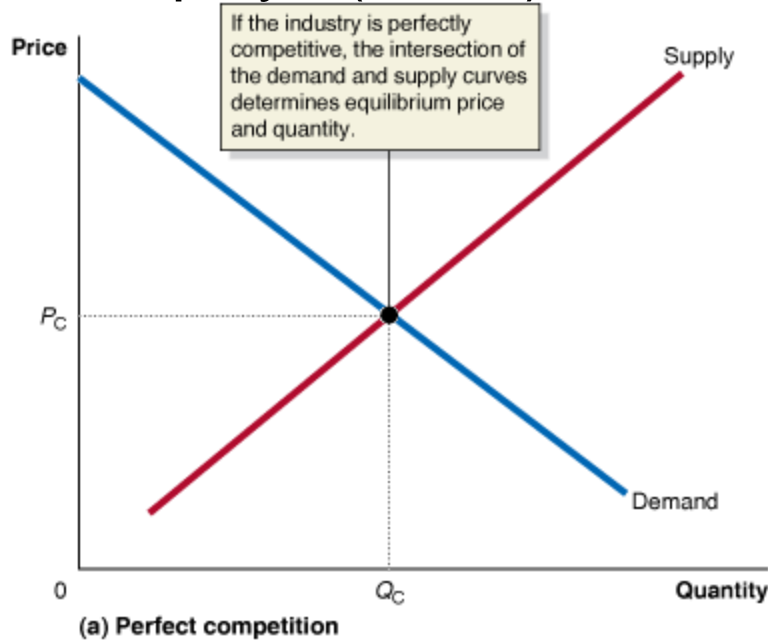
Suppose that a market could be characterized by either perfect competition or monopoly. Which would be better?

Discuss: suppose the market for smartphones is perfectly competitive, then one firm buys up all of the smartphones in the country.

What would happen to:

- Price of smartphones?
- Quantity of smartphones traded?
- The net benefit of consumers (i.e. *consumer surplus*)?
- The net benefit of producers (i.e. *producer surplus*)?
- The net benefit of all of society (i.e. *economic surplus*)?

What happens if a perfectly competitive industry becomes a monopoly? (1 of 2)

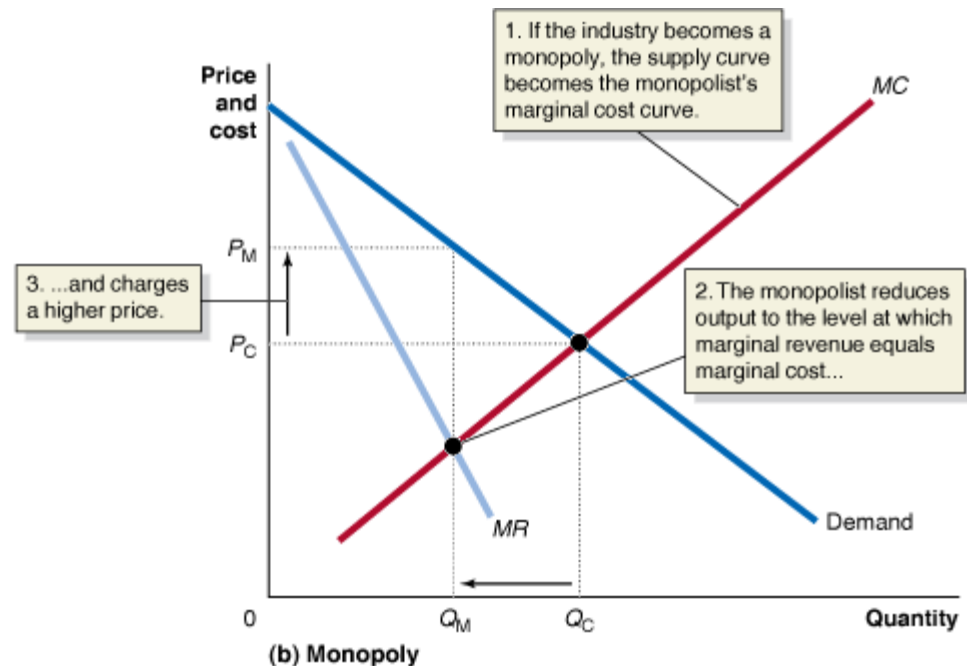
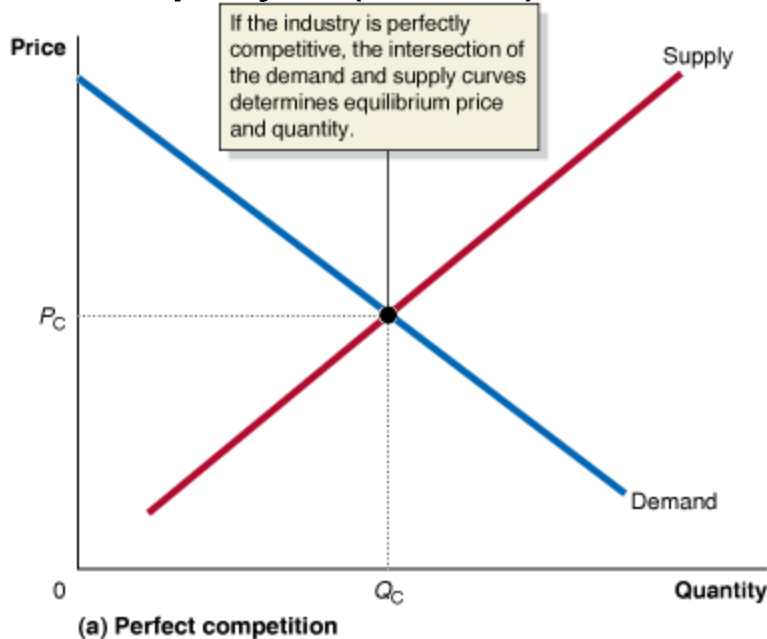


The market for smartphones is initially perfectly competitive.

- Price is P_C , quantity traded is Q_C .

Now the market is supplied by a single firm. Since the single firm is made up of all of the smaller firms, the marginal cost curve for this new firm is identical to the old supply curve.

What happens if a perfectly competitive industry becomes a monopoly? (2 of 2)



But the new firm maximizes market profit, producing the quantity where marginal cost equals marginal revenue ($MC = MR$).

This quantity (Q_M) is lower than the competitive quantity (Q_C)...

... and the firm charges the corresponding price on the demand curve, P_M . This price is higher than the competitive price, P_C .

Measuring the efficiency loss from monopoly

Fewer smartphones will be traded at a higher price.

- Consumer surplus will fall (with the higher price).
- Producer surplus must rise, otherwise the firm would have chosen the perfectly competitive price and quantity.

Could the increase in producer surplus offset the decrease in consumer surplus?

- No! Perfectly competitive markets maximized the economic (total) surplus in a market; if fewer trades take place, the economic surplus must fall.

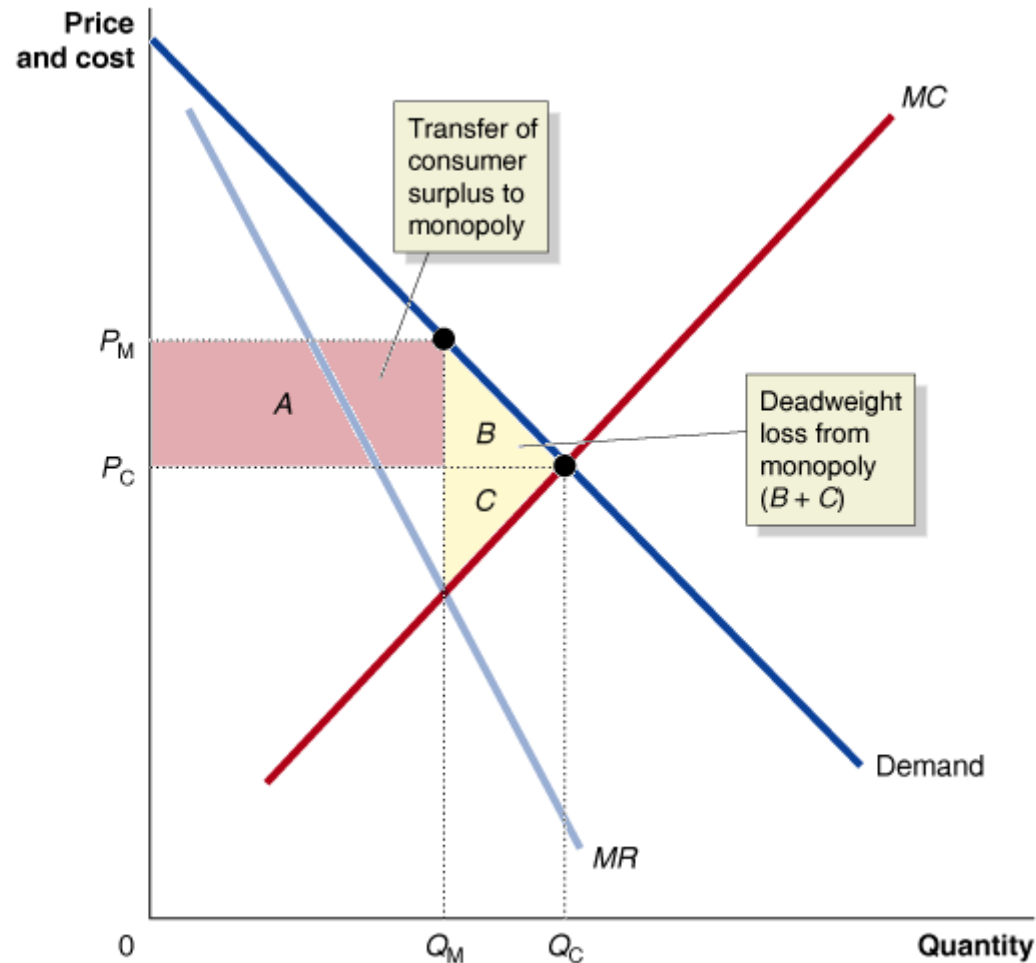
The inefficiency of monopoly

With the higher monopoly price, consumer surplus decreases by the areas $A+B$.

Producer surplus falls by C , but rises by A ; an overall increase.

Area A simply is simply a transfer of surplus: neither inherently good nor bad.

But areas B and C are lost surpluses: deadweight loss.



Government Policy Toward Monopoly

Because monopolies reduce consumer surplus and economic efficiency, governments regulate their behavior.

- Many governments try to stop firms *colluding*, and seek to prevent mergers and acquisitions creating large firms, through *antitrust laws*.

Collusion: An agreement among firms to charge the same price or otherwise not to compete.

Antitrust laws: Laws aimed at eliminating collusion and promoting competition among firms.

Important U.S. antitrust laws

In the 1870s and 1880s, several “trusts” had formed: boards of trustees that oversaw the operation of several firms in an industry, and enforced collusive agreements.

The federal government responded with antitrust laws to limit anti-competitive behavior.

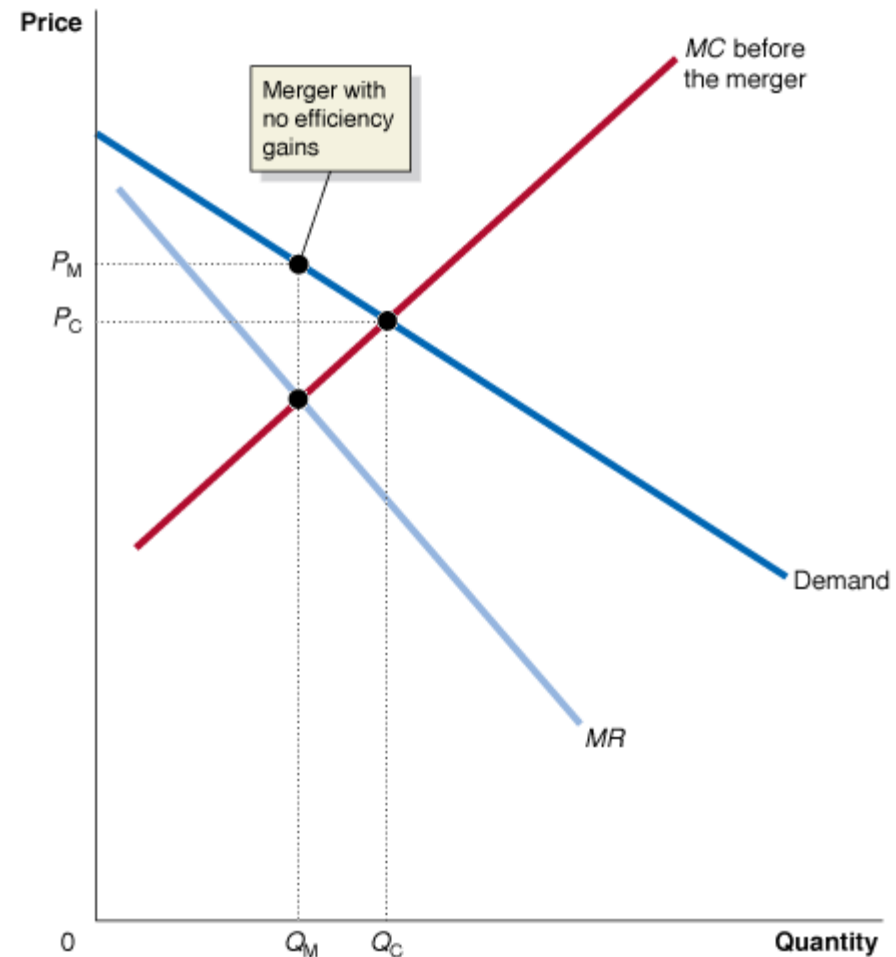
Law	Date Enacted by Congress	Purpose
Sherman Act	1890	Prohibited “restraint of trade,” including price fixing and collusion. Also outlawed monopolization.
Clayton Act	1914	Prohibited firms from buying stock in competitors and from having directors serve on the boards of competing firms.
Federal Trade Commission Act	1914	Established the Federal Trade Commission (FTC) to help administer antitrust laws.
Robinson–Patman Act	1936	Prohibited firms from charging buyers different prices if the result would reduce competition.
Cellar–Kefauver Act	1950	Toughened restrictions on mergers by prohibiting any mergers that would reduce competition.

A merger that makes consumers better off.

Antitrust laws also cover mergers; particularly **horizontal mergers**: mergers between firms in the same industry, as opposed to **vertical mergers** between two firms at different stages of the production process.

- Such mergers are likely enhance firms' market power.

The graph shows such a merger, increasing the price from the competitive price (P_C) to the monopoly price (P_M), and resulting in deadweight loss.



A merger that makes consumers better off

Firms seeking to merge typically argue that the resulting larger firm will have lower costs, and hence be able to produce more efficiently.

- Then even if they charge the (new) monopoly price, the result is an improvement for consumers.

However, costs may not decrease by as much as the firms claim, resulting in consumers being worse off.

- Economists with the FTC and Department of Justice review potential mergers one-by-one.

