

EE211

PRINCIPLES OF MICROECONOMICS

Topic 10:
Market Failures

Topics

Market failures

- Externalities → external effects on bystanders
- Public goods → non-excludable & non-rival
- Market power - Monopoly → $\max \pi @ MR = MC$
→ Price setter ($P > MR$)
- Asymmetric information *

EXTERNALITIES

What is externality?

- **Externality** is the uncompensated impact of one person's actions on the well-being of a bystander (someone who is neither buyer nor seller.)
 - **Negative externality**: the effect on bystanders is adverse (ie. negative).
 - PM 2.5 pollution
 - drunk driver & alcohol consumption
 - over-consumption of anti-biotics (eg. penicillin).
 - **Positive externality**: the effect on bystanders is beneficial
 - Planting flowers in front of the house
 - vaccine → herd immunity

Negative Externality - Pollution

- Air pollution from a factory.

social cost
total "cost" = private cost + external cost

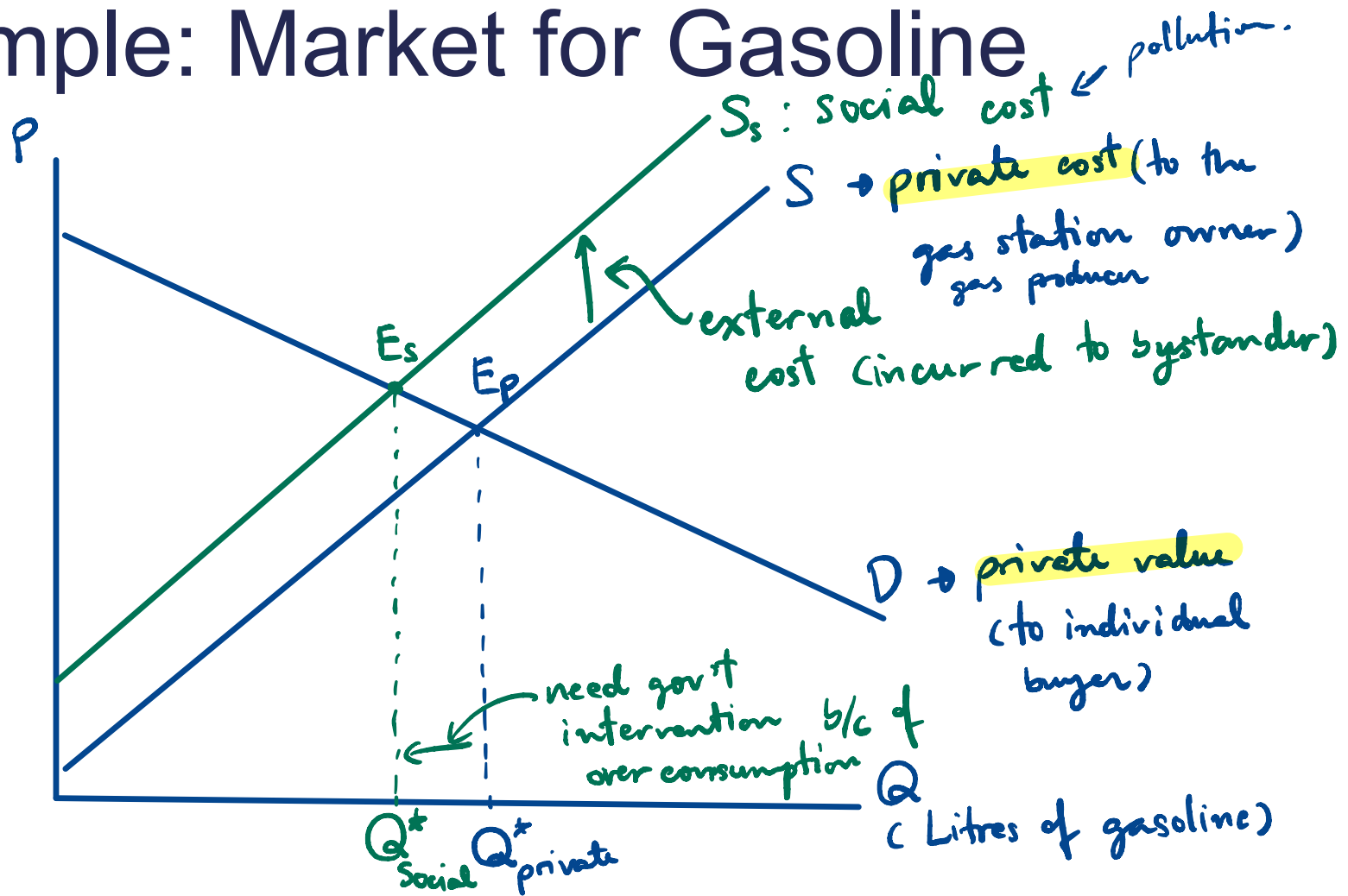
- The firm does not bear the full cost of its production, and so will produce more than the socially efficient quantity.
- How govt may improve the market outcome:
 - Impose a tax on the firm equal to the external cost of the pollution it generates.

Negative Externalities

- In the presence of a negative externality, the **social cost** of a good includes
 - **private cost** – the direct cost to sellers
 - **external cost** – the value of the negative impact on bystanders
- The **socially optimal Q** maximizes welfare:
 - At any lower Q , the value of additional unit exceeds its cost.
 - At any higher Q , the social cost of the last unit is greater than its value.

*marginal
social cost = marginal benefit*

Example: Market for Gasoline



Positive Externalities from Education

- A more educated population benefits society:
 - *lower crime rates*: educated people have more opportunities, so less likely to rob and steal
 - *better government*: educated people make better-informed voters
- People do not consider these external benefits when deciding how much education to “purchase”
- Result: market equilibrium quantity of education is too low.
- How govt may improve the market outcome:
 - subsidize cost of education

Positive Externalities

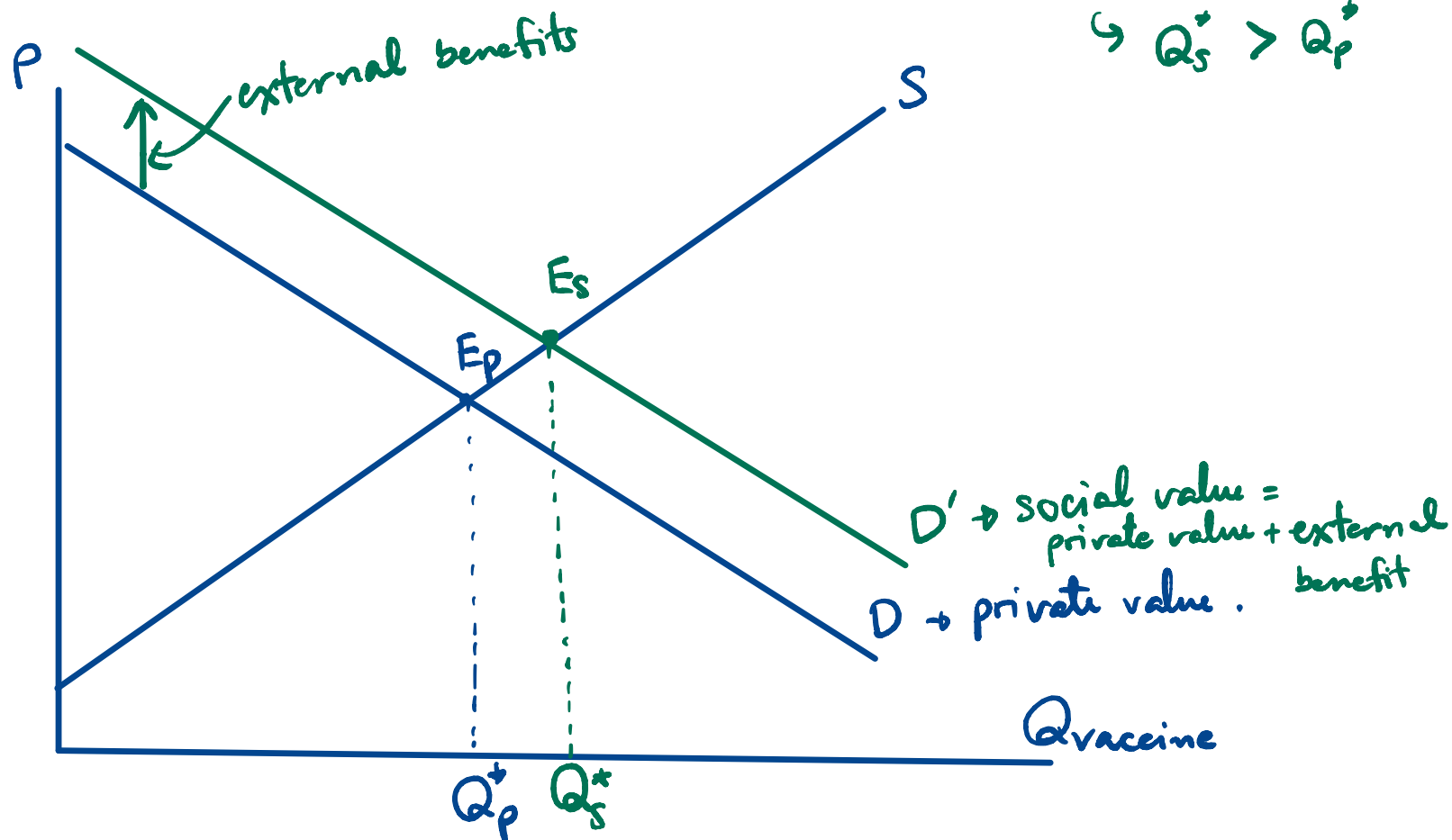
- In the presence of a positive externality, the **social value** of a good includes
 - **private value** – the direct value to buyers
 - **external benefit** – the value of the positive impact on bystanders
- The socially optimal Q maximizes welfare:
 - At any lower Q , the social value of additional units exceeds their cost.
 - At any higher Q , the cost of the last unit exceeds its social value.

social value = cost.

Example: Vaccination

Q_s^* = socially optimal quantity.

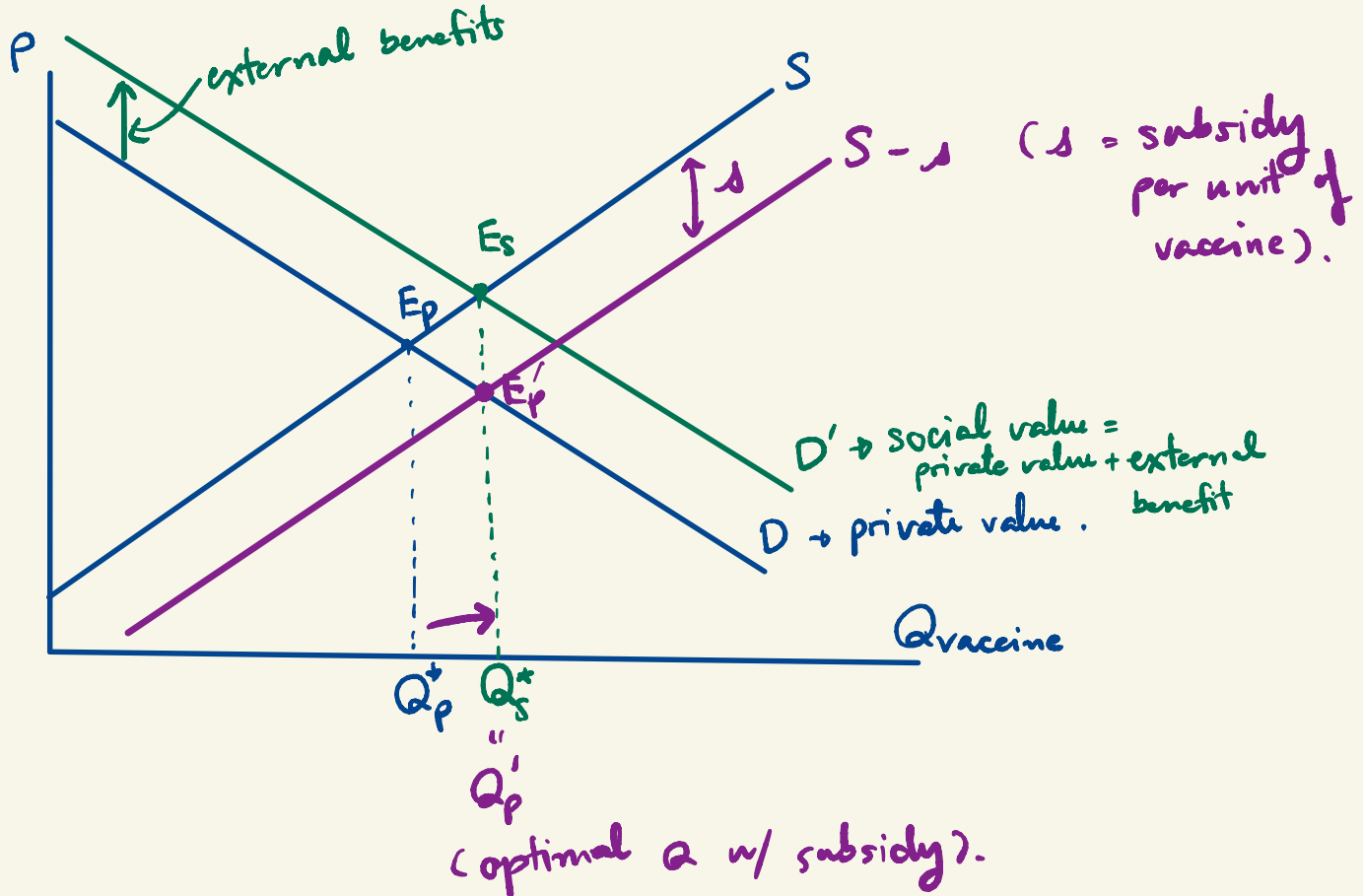
$$\rightarrow Q_s^* > Q_p^*$$



“Internalizing the Externality”

- **Internalizing the externality**: altering incentives so that people take account of the external effects of their actions
 - Imposing tax on goods that produce negative externalities
 - Subsidizing goods that produce positive externalities

Positive externalities $\rightarrow$ Subsidize to "internalize" the external benefit.



PUBLIC GOODS

Characteristics of Goods

- A good is **excludable** if a person can be prevented from using it.
 - *excludable*: food, wi-fi internet
 - *not excludable*: FM radio signals, national defense
- A good is **rival in consumption** if one person's use of it diminishes others' use. (*allow for simultaneous consumption*)
 - *rival*: food, clothes
 - *not rival*: information on billboards, *non-congested public swimming pool.*

The Different Kinds of Goods

Private goods: excludable, rival in consumption
example: food

Public goods: not excludable, not rival
example: national defense , firework.

Common resources: rival but not excludable
example: fish in the ocean

Natural monopolies: excludable but not rival
example: cable TV , wifi

	Excludable	Non-excludable
Rival	Private goods	Common resources
Non-rival	Natural monopolies	Public goods .

Example: Road

- A road is which of the four kinds of goods?

⇒ It depends !

- Uncongested non-toll road : public good ✓
- Congested non-toll road : common resource ✓
- Uncongested toll road : natural monopoly → eg. BEM.
- Congested toll road : private good

Public Goods

- Public goods are goods that are non-excludable and non-rival.
 - Public goods are difficult for private markets to provide because of the *free-rider problem*.
 - **Free rider**: a person who receives the benefit of a good but avoids paying for it
 - If good is not excludable, people have incentive to be free riders, because firms cannot prevent non-payers from consuming the good.
 - Result: The good is not produced, even if buyers collectively value the good higher than the cost of providing it.
- Ex. Public non-toll road } Govt has to provide it.
Street light.

Public Goods

- If the benefit of a public good exceeds the cost of providing it, govt should provide the good and pay for it with a tax on people who benefit.

- Problem: Measuring the benefit is usually difficult.

↳ cost-benefit analysis.

- Important public goods:

- National defense

Public

- Road

- Street lights

- Knowledge created through basic research

Question:

• Is education a public good?

• Is health care service a public good?

Common Resources

National Park.
Public wifi
fish in the ocean
but rival.

- Like public goods, common resources are **not excludable**.
 - cannot prevent free riders from using
 - little incentive for firms to provide
 - role for govt: seeing that they are provided
- Additional problem with common resources:
rival in consumption
 - each person's use reduces others' ability to use
 - role for govt: ensuring they are not overused
- Policy options:
 - Regulate use of the resource
 - Impose a corrective tax to internalize the externality

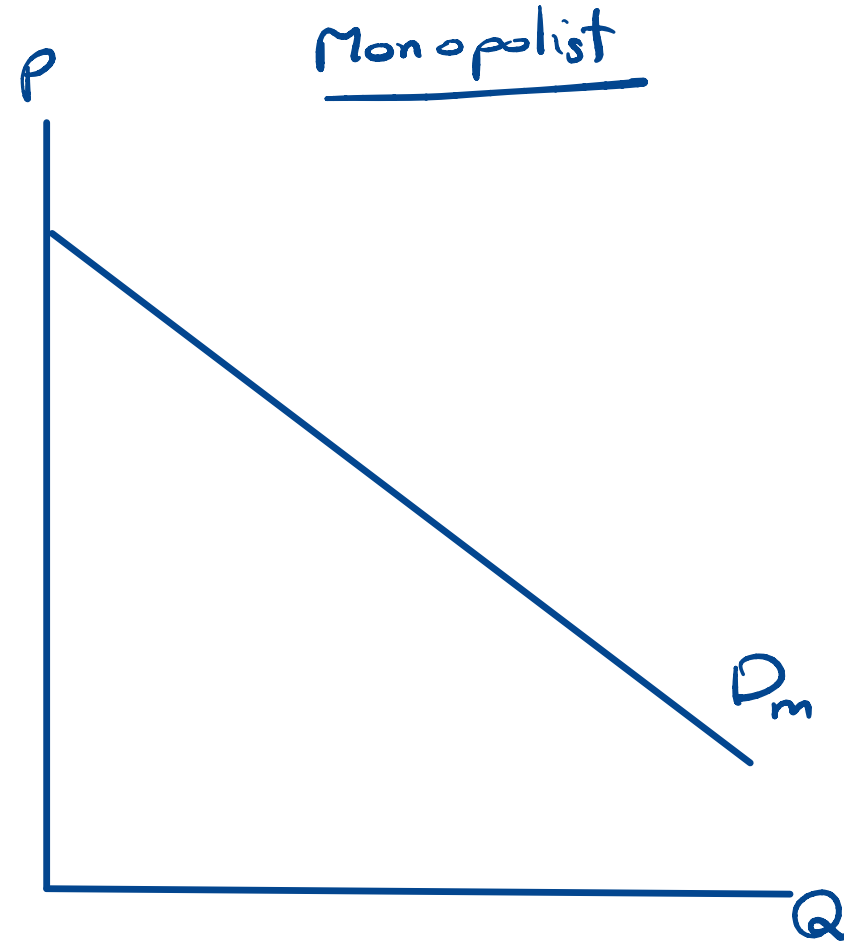
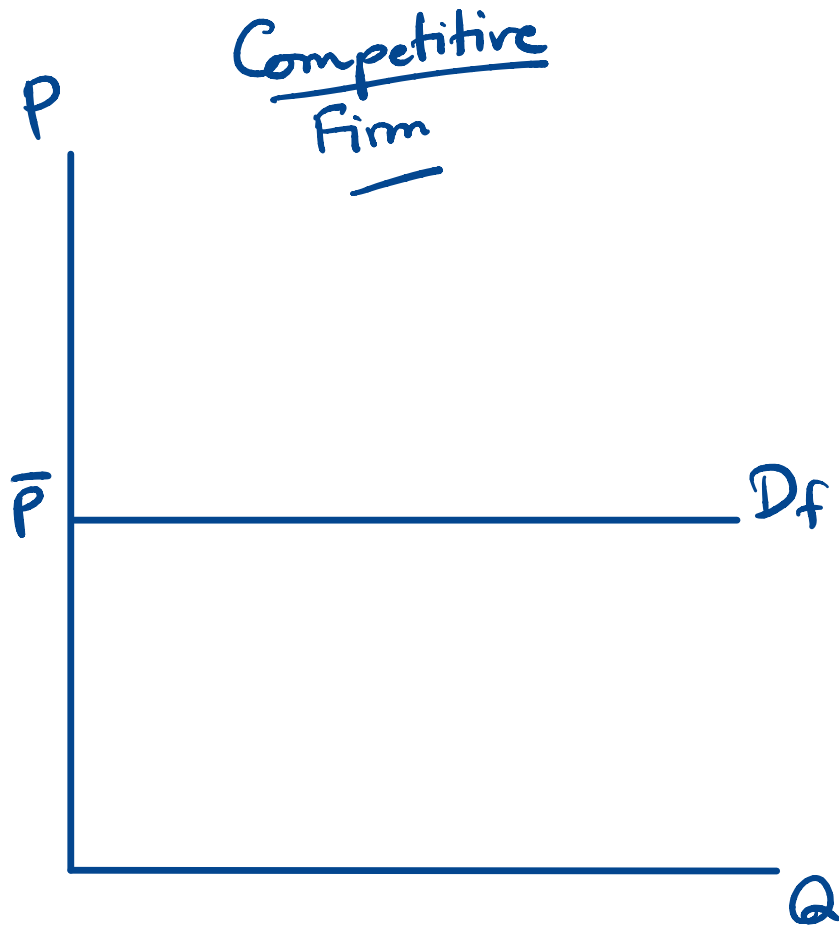
eg. entrance fee, limit the use
by having permit.

MONOPOLY

Introduction

- A monopoly firm has **market power**, the ability to influence the market price of the product it sells. A competitive firm has no market power.
- The main cause of monopolies is **barriers to entry** – other firms cannot enter the market.
- Sources of barriers to entry:
 - A single firm owns a key resource. *eg. De Beers*
 - The govt gives a single firm the exclusive right to produce the good. *eg. patent, copyright.*
 - Natural monopoly
 (high fixed cost *eg. electricity, pipe water*
 ↳ need large scale production). *E.G. AT*

Monopoly vs. Competition: Demand Curves

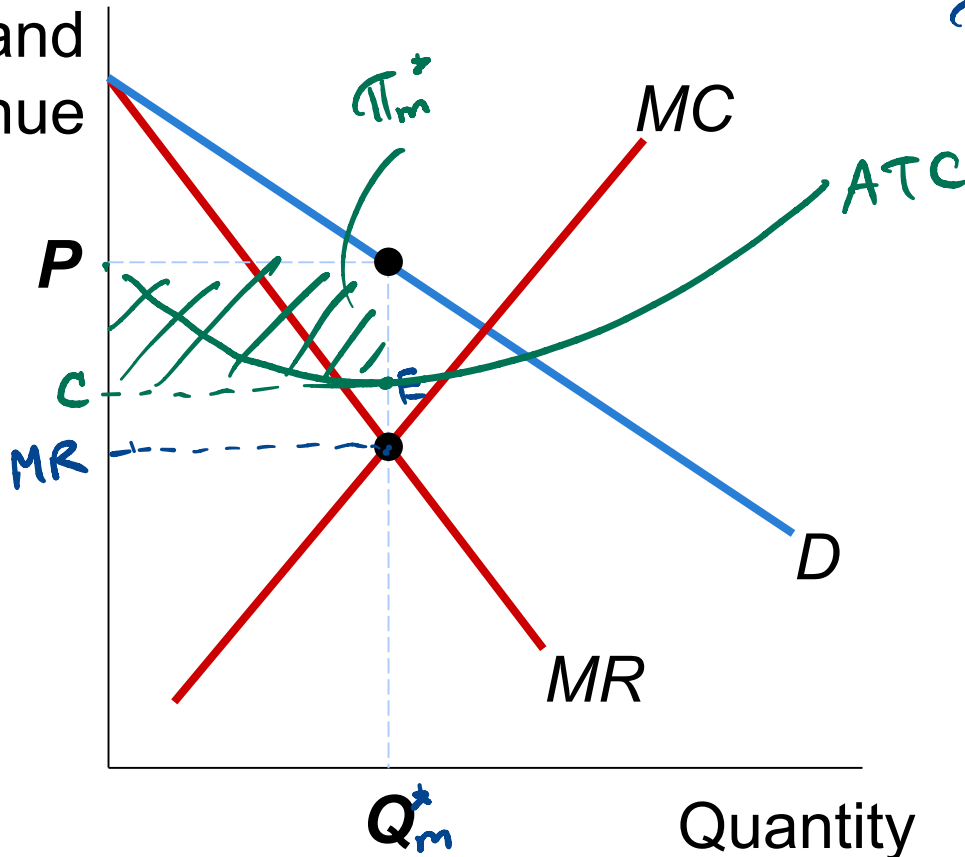


Monopolist's Profit-Maximization

($MR < P$).

$\pi\text{-max} : \underline{MR = MC}$

Costs and
Revenue



$\pi_m = (P - ATC) \times Q_m^*$

A Monopoly Does Not Have an S Curve

A competitive firm

- takes P as given
- has a supply curve that shows how its Q depends on P

A monopoly firm *price setter.*

- is a “price-maker,” not a “price-taker”
- Q does not depend on P ; rather, Q and P are jointly determined by MC , MR , and the demand curve.

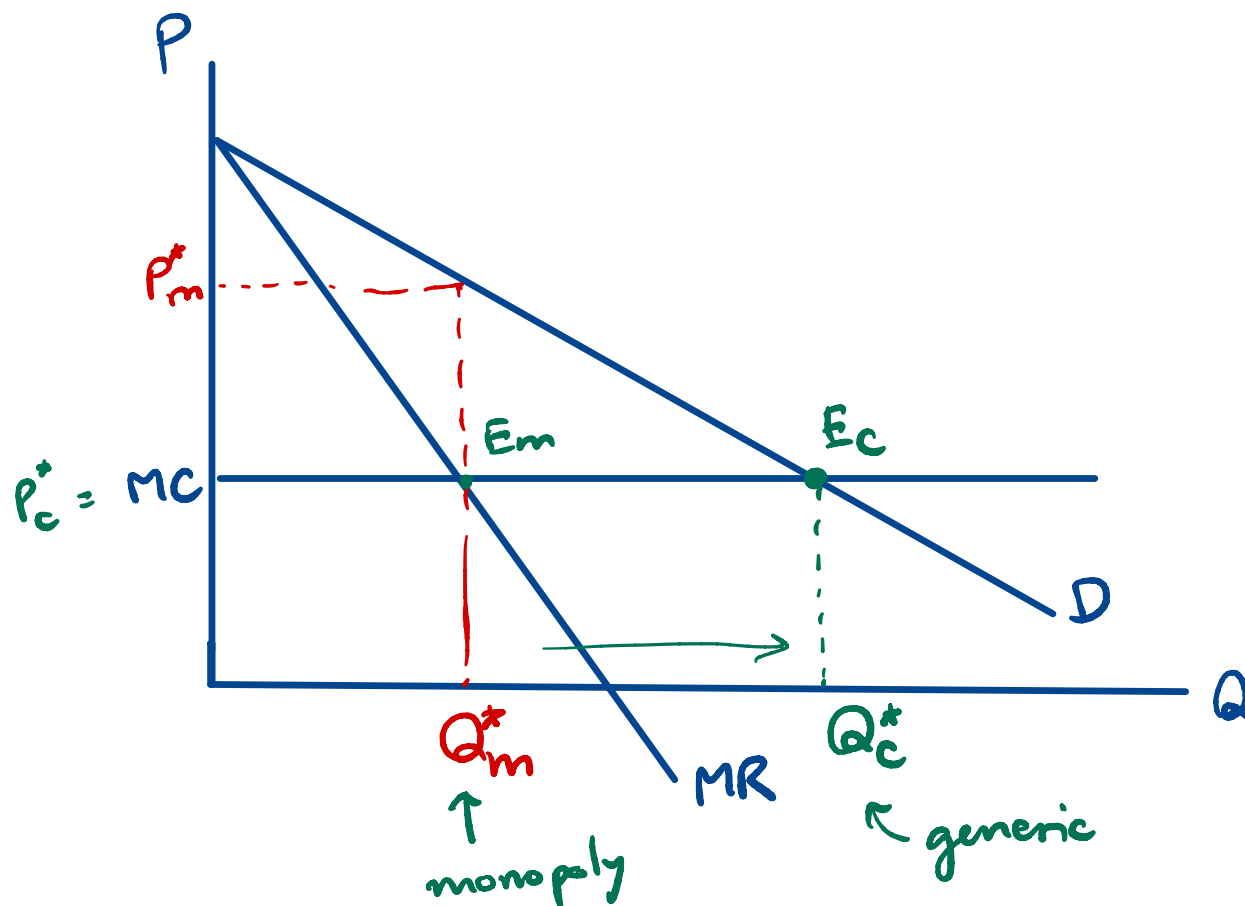
* So there is no supply curve for monopoly. *

Case Study: Monopoly vs. Generic Drugs

Ex.

"Tylenol"

"Sara"
Competitive firm



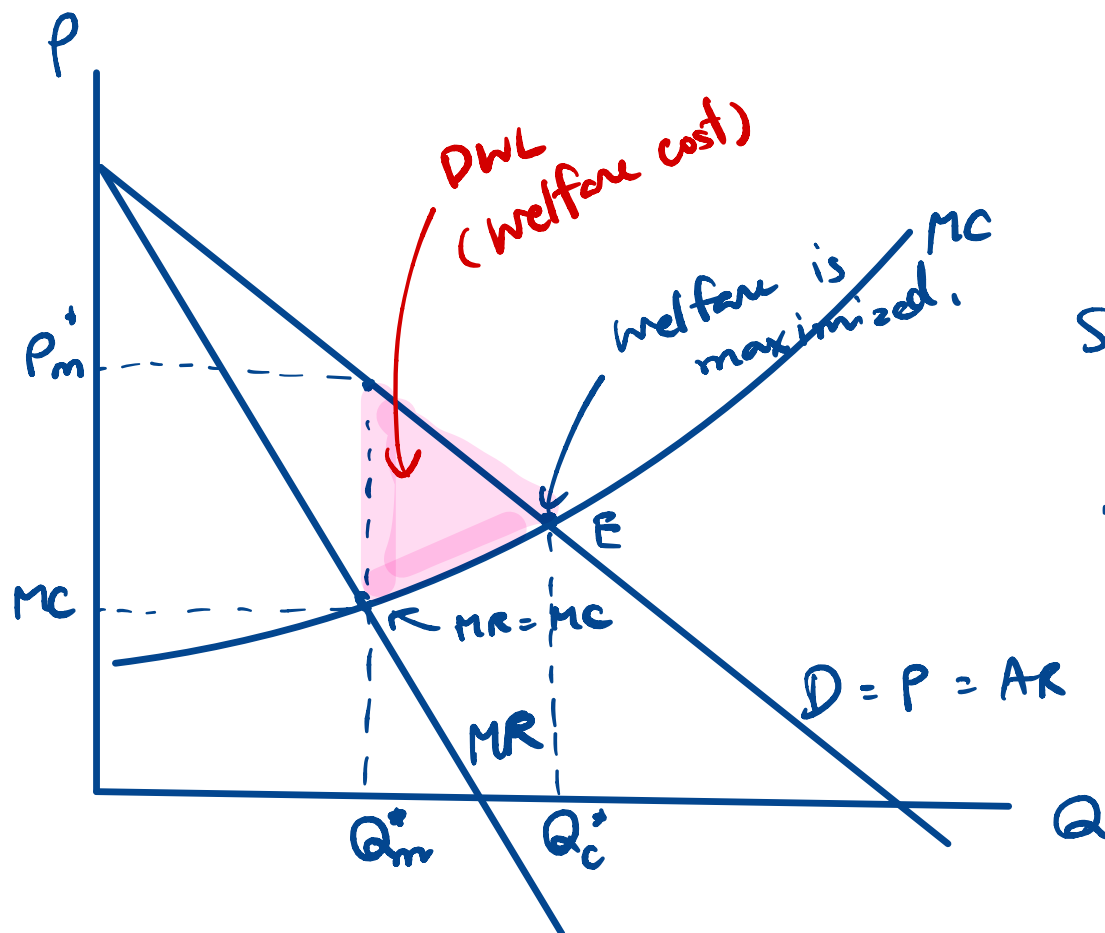
$$C = 50 + 5Q$$

$$\hookrightarrow MC = 5$$

The Welfare Cost of Monopoly

- Recall: In a competitive market equilibrium, $P = MC$ and total surplus is maximized.
- In the monopoly eq'm, $P > MR = MC$
 - The value to buyers of an additional unit (P) exceeds the cost of the resources needed to produce that unit (MC).
 - The monopoly Q is too low – could increase total surplus with a larger Q .
 - Thus, monopoly results in a deadweight loss.

The Welfare Cost of Monopoly



Social Surplus is maximized when $P = MC$.

Gov't intervention → Regulate the price → Ideal price $P = LRMC$
 ↘ Fair price: $P = LRAC$

ASYMMETRIC INFORMATION

Asymmetric Information

- **Information asymmetry**: a difference in two or more parties' access to relevant knowledge
- Two types: *↗ Moral hazard*
 - **Hidden actions** – one person knows more than another about an action he or she is taking. *↗ Adverse selection*
 - **Hidden characteristics** – one person knows more than another about the attributes of good he or she is selling.

Hidden Actions and Moral Hazard

- **Moral hazard**: the tendency of a person who is imperfectly monitored to engage in dishonest or otherwise undesirable behavior
 - Workers sometimes shirk their responsibilities because their employer cannot continually monitor their effort and performance.
 - Someone whose property is insured may not try as hard to protect it from theft/damage. *eg. house insurance*
 - *Health insurance → Those who buy insurance may be more likely to engage in riskier activities, or less likely to take care of their own health.*

The Principal-Agent Problem

- **Agent**: a person who is performing a task on someone else's behalf (e.g., a worker)
- **Principal**: is the person for whom this action is being performed (e.g., an employer)
- Example - When the principal cannot perfectly monitor the agent's behavior, there is a risk ("hazard") that the agent may do something undesirable ("immoral").

Doctor & patient
↑ Agent ↑ Principal

How Principals May Respond

✓ **Better monitoring**

Parents hire nanny to take care of children. → has tendency to shirk

Parents plant hidden cameras in the home to increase the chance of detecting undesirable behavior.

✓ **Higher wages**

Employers pay workers **efficiency wages** (wages above the equilibrium level) to increase the penalty for being caught shirking.

✓ **Delayed payment** – “disincentive”

Firms delay payment (e.g., year-end bonuses) to increase the penalty for being caught shirking.

Hidden Characteristics and Adverse Selection

— one party has more information about the characteristics

Adverse selection arises when the seller knows more than the buyer about the good being sold.

Example 1: The market for used cars “Lemons” problem

- The seller knows more than the buyer about the quality of the car being sold.
- Owners of “lemons” more likely to put their vehicles up for sale.
- So buyers are more likely to avoid used cars.
- Owners of good used cars less likely to get a fair price, so may not bother trying to sell.

Lemons
↑
bad-quality cars

vs.

Cherries

↑
Good-quality cars

“Akerloff”
—
More “bad” cars
Lower prices

→ Before

Hidden Characteristics and Adverse Selection

Example 2: Insurance

- Buyers of health insurance know more about their health than health insurance companies.
 - People with hidden health problems have more incentive to buy insurance policies.
 - So, prices of policies reflect the costs of a sicker-than-average person.
 - These prices discourage healthy people from buying insurance.
- high price for HI .
→ more "sick" people in the pool

In both examples, the information asymmetry prevents some mutually beneficial trades.

Market Responses to Asymmetric Information

Signaling: action taken by an informed party to reveal private information to an uninformed party

- Individual selling a good used car provides all receipts for work done on car.
- Label* • Firms spend huge sums on advertising to signal product quality to buyers.
- Highly competent workers get college degree to signal their quality to employers. *'certificate'*

Screening: action taken by an uninformed party to induce informed party to reveal private information

- Health insurance company requires physical exam before selling policy.
- Buyer of a used car requires inspection by a mechanic.