

# Market Failure

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***In general, a system of competitive markets will produce a socially optimal allocation of resources.***

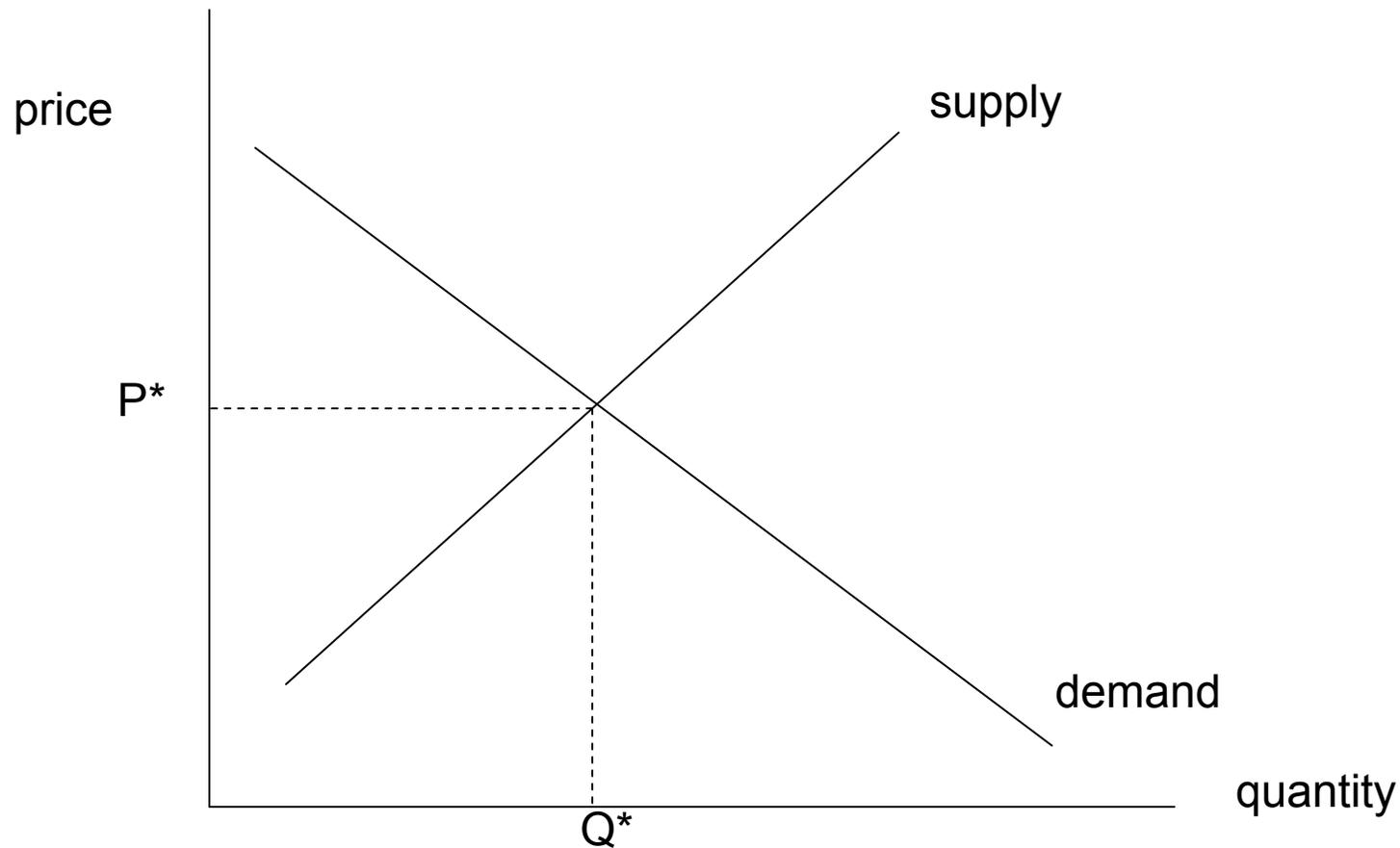
- What does this mean?
- When does a market fail to produce the socially optimal output?
- How can we correct market failures?

# Supply and demand revisited

**Demand** is a function showing the various quantities that consumers would be willing and financially able to purchase at different prices, *ceteris paribus*.

**Supply** is a function showing the various quantities that sellers would be willing and able to provide at different prices, *ceteris paribus*.

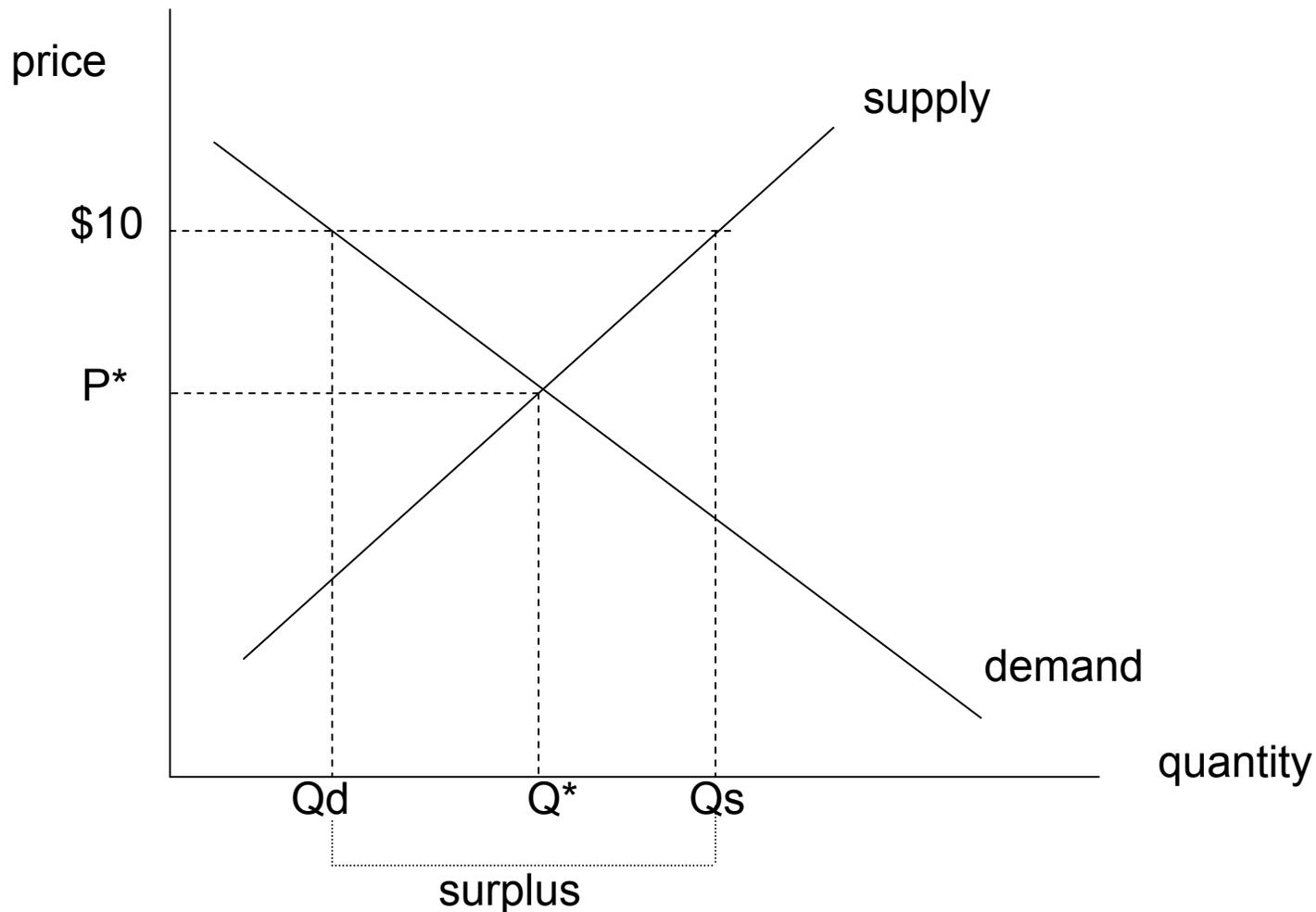
The interaction of demand and supply determines the competitive market output and price.



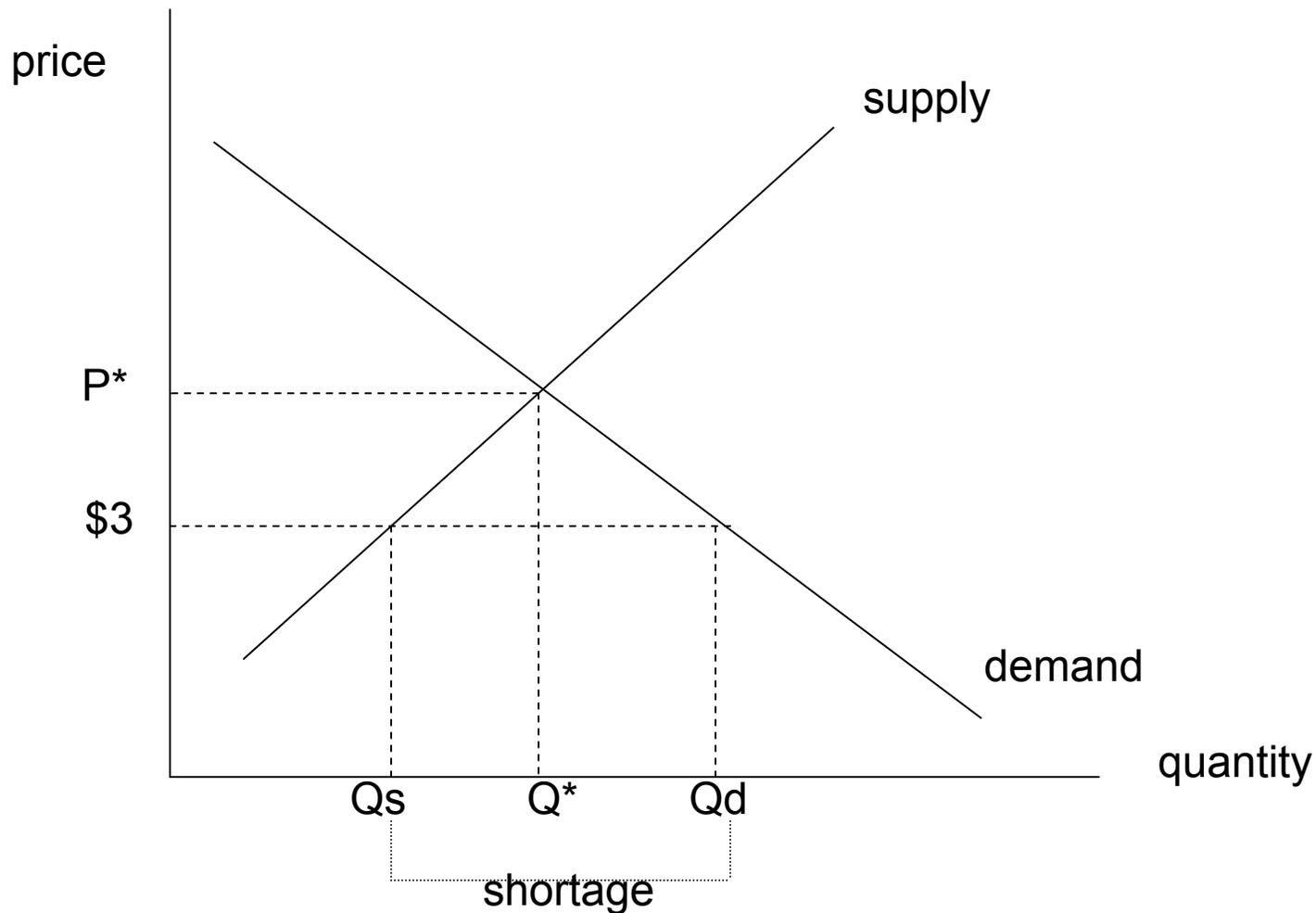
*Review opportunity:* Why does demand slope downward and supply slope upward?

answer: Laws of demand and supply

If price is greater than  $P^*$  then a surplus results. The surplus pushes price down toward  $P^*$ .

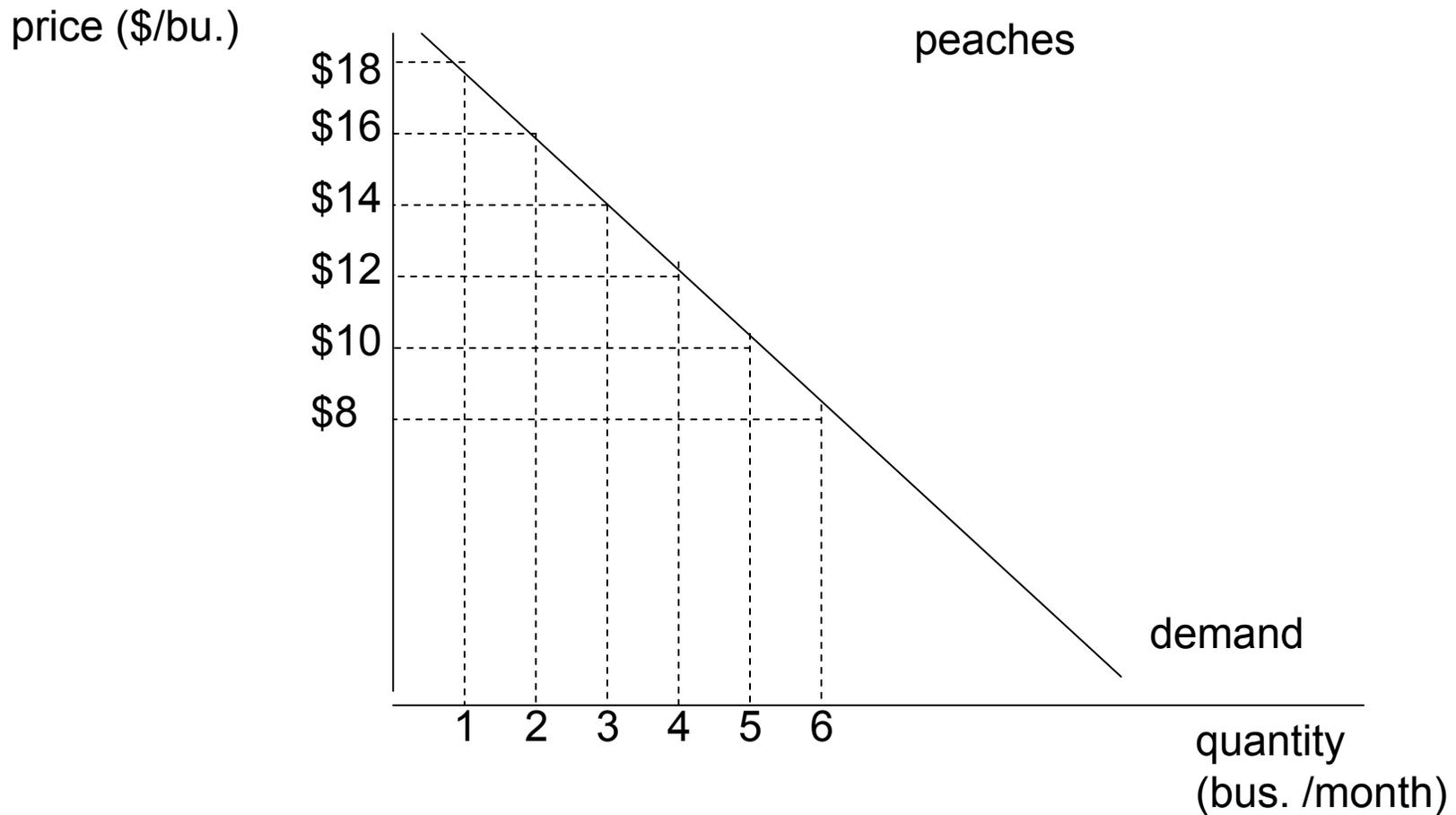


If price is less than  $P^*$  then a shortage results. The shortage pushes price up toward  $P^*$ .



But why do we argue that  $Q^*$  is socially optimal, in general?

Let's return to the demand curve and consider what it tells us.



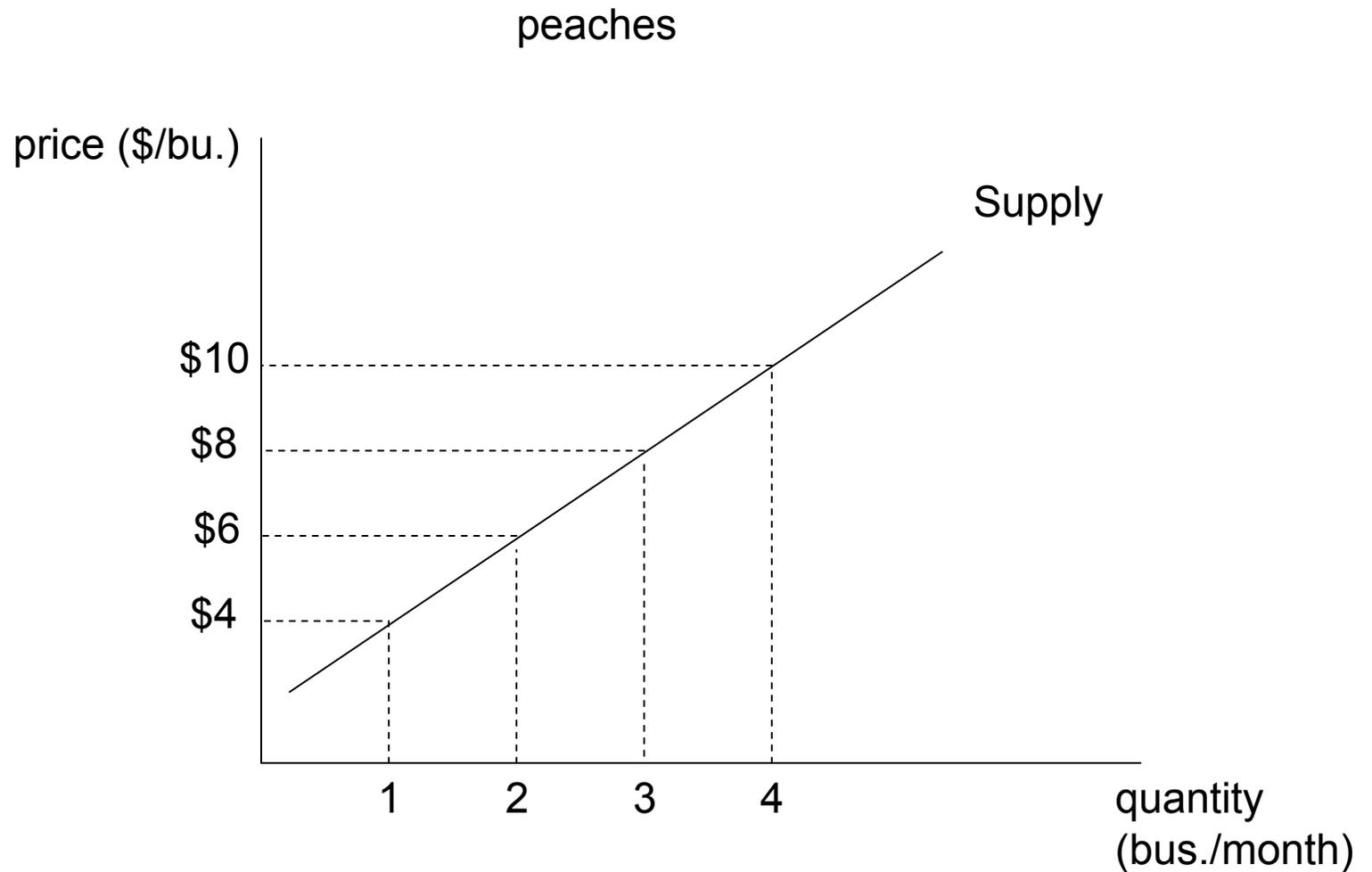
The demand curve captures the benefit (or value) of the additional unit of the good to consumers.

The extra benefit derived from the additional unit of a good is known as *marginal benefit* or *marginal value*.

*Review opportunity:* Why does marginal benefit decline with an increase in quantity?

answer: the principle of diminishing marginal utility

Now, let's consider the supply curve.



The supply curve captures the cost of the additional unit of the good to providers.

The cost of the additional unit of a good is known as *marginal cost*.

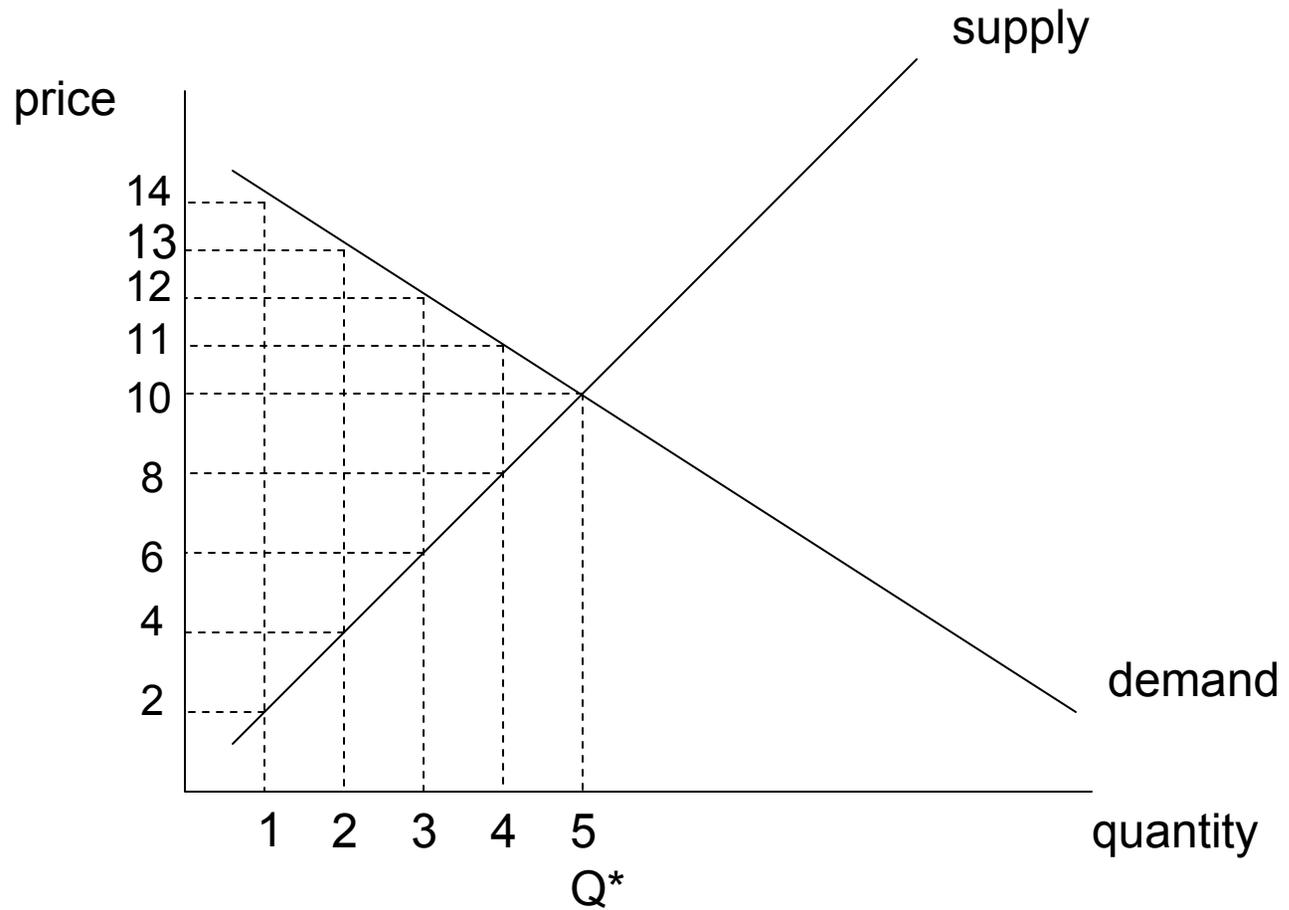
*Review opportunity:* Why does marginal cost increase with an increase in quantity?

answer: the law of diminishing returns in production.

What is the socially optimal quantity for a good?

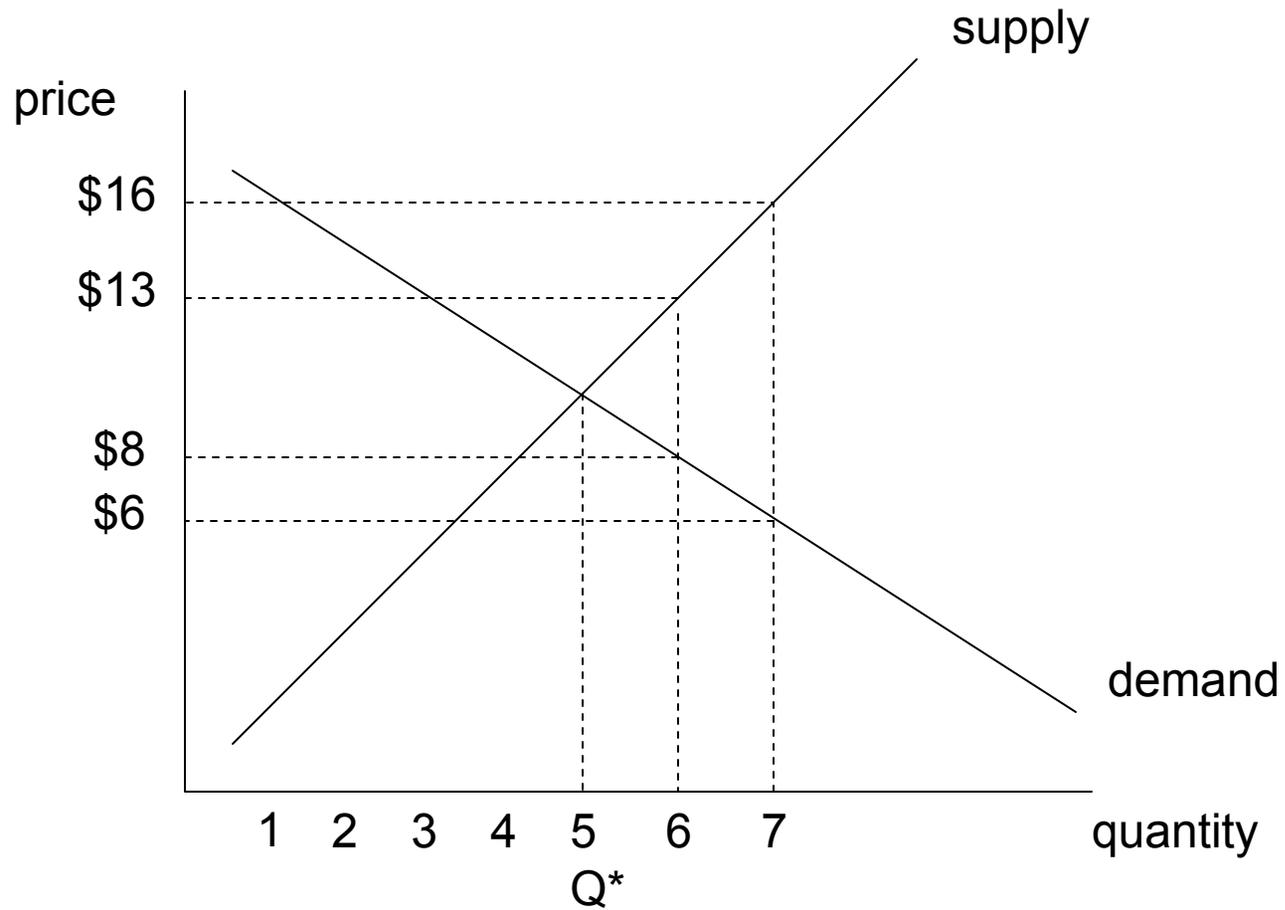
More should be provided as long as the benefit of the additional unit (marginal benefit) outweighs the cost of that unit (marginal cost).

Let's return to a competitive market.



The competitive market will provide all of those units for which the demand curve lies above the supply curve. For these units, marginal benefit exceeds marginal cost.

But what about additional units—beyond  $Q^*$ ?



For all units beyond  $Q^*$ , the marginal cost outweighs the marginal benefit so that these units should not be produced.

The competitive market output of  $Q^*$  is optimal in that all units for which  $MB > MC$  are produced and only those units are produced.

$Q^*$  is optimally distributed among consumers and produced at the lowest cost. Those consumers who are willing to pay the most for the product (more than  $P^*$ ) will consume it. Those producers with the lowest cost (less than  $P^*$ ) will provide it.

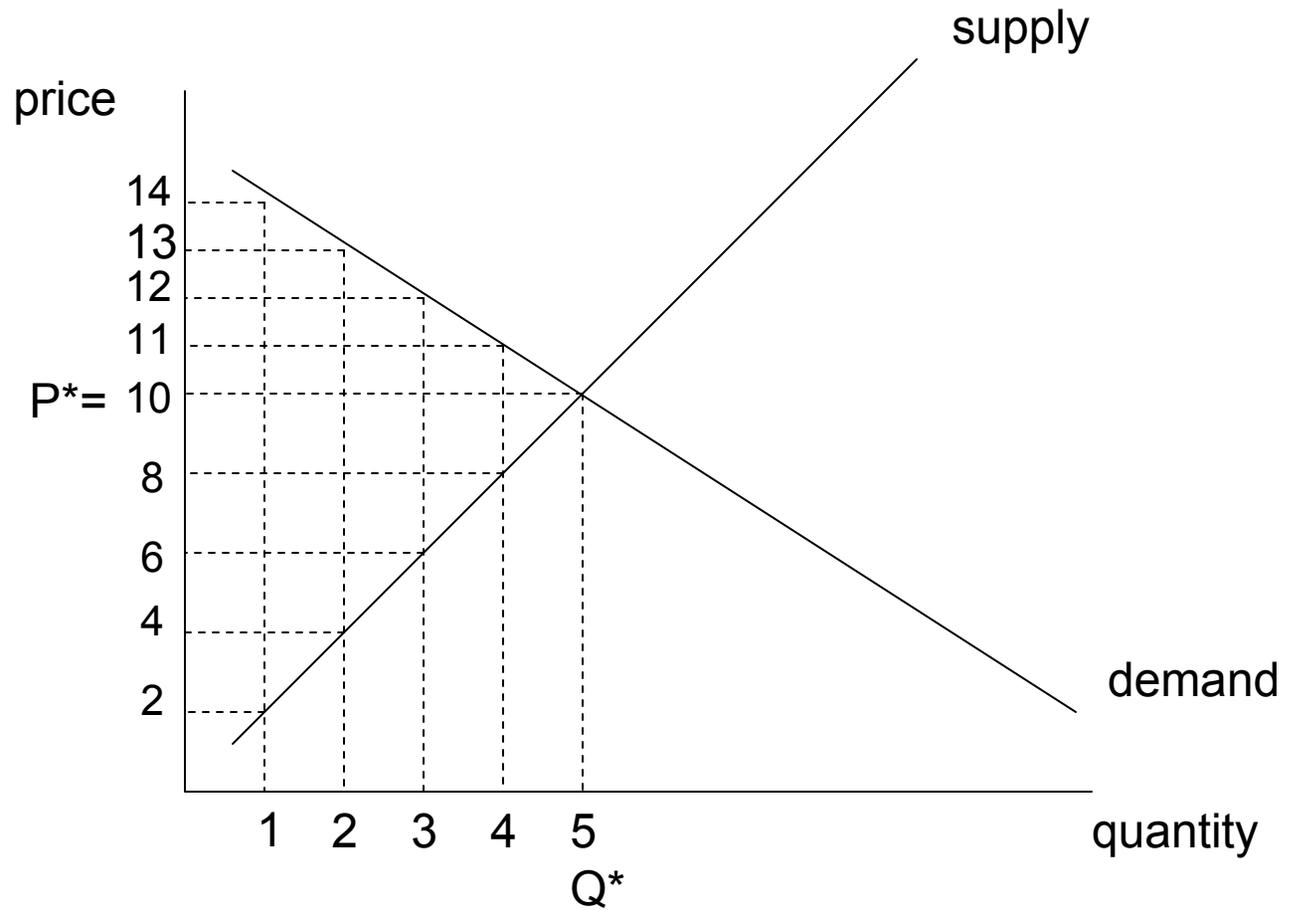
# **An alternative view: the surplus approach**

The competitive market output is optimal in that it maximizes social surplus or the sum of consumer and producer surplus.

***consumer surplus***: the excess of the amount the consumer is willing to pay over what he must actually pay.

***producer surplus***: the excess of the amount the seller receives over the minimal acceptable price.

# Return again to a competitive market.



The competitive market output maximizes the sum of consumer and producer surplus.

# Market Failure

Market Failure is the failure of a market to provide the socially optimal output. The entire market system would then provide a sub-optimal mix of goods and services.

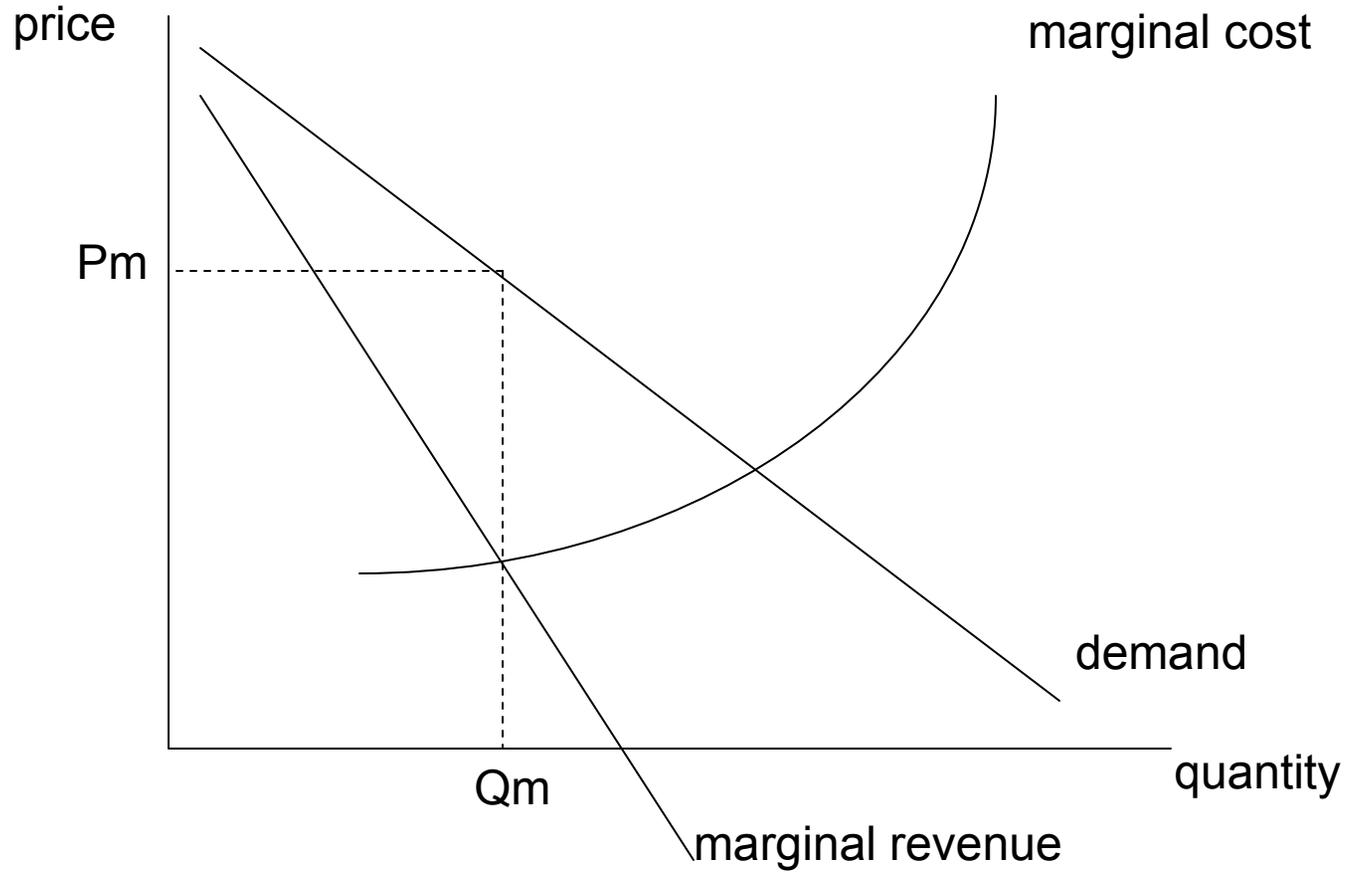
An understanding of market failure and its sources is important because these are the cases under which government intervention into the market is potentially justified on economic grounds.

## Common sources of market failure:

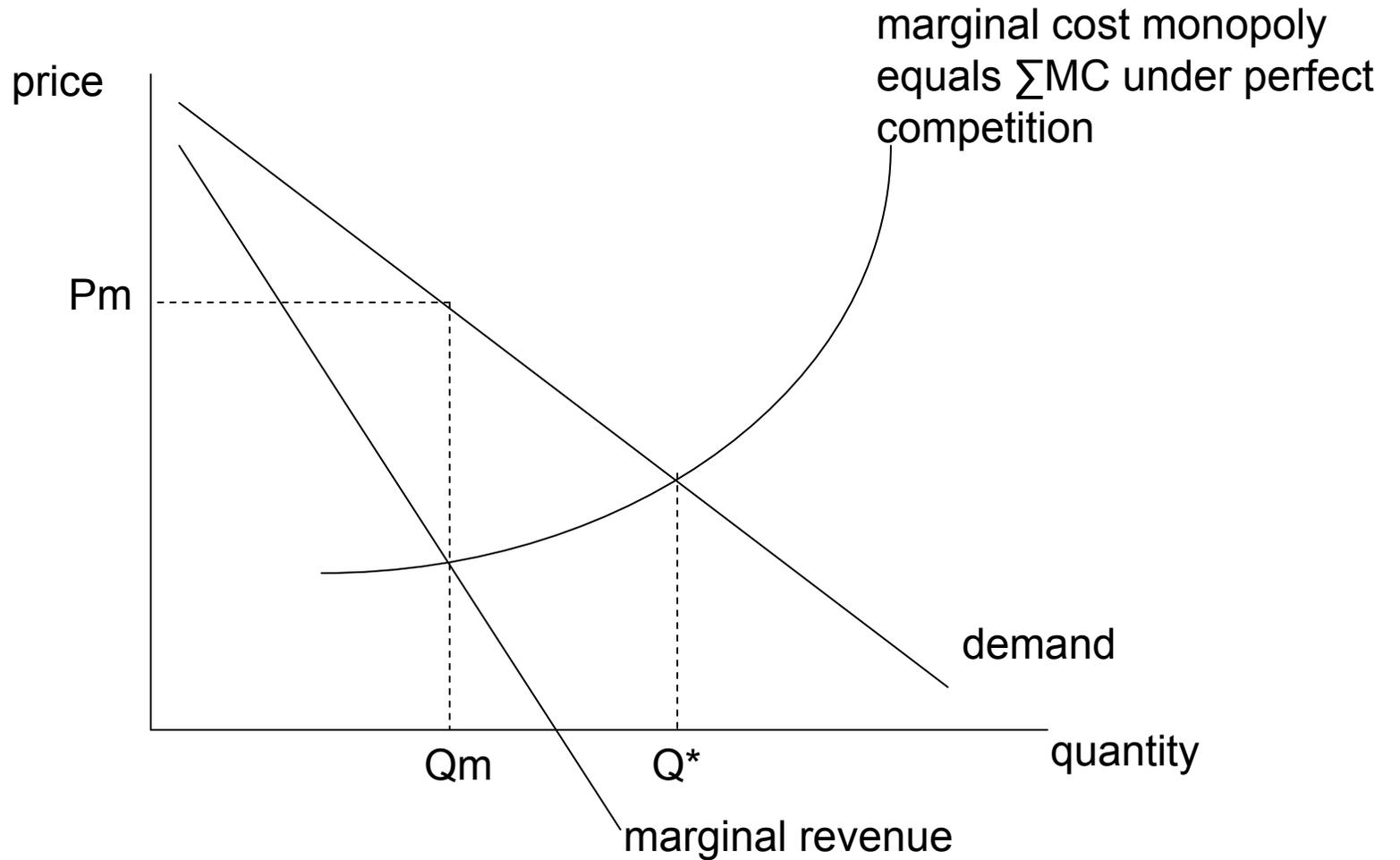
1. monopoly power
2. externalities
3. public goods
4. inequity

Monopoly results in a smaller output and a higher price when compared to perfect competition. Less than the socially optimal output is provided.

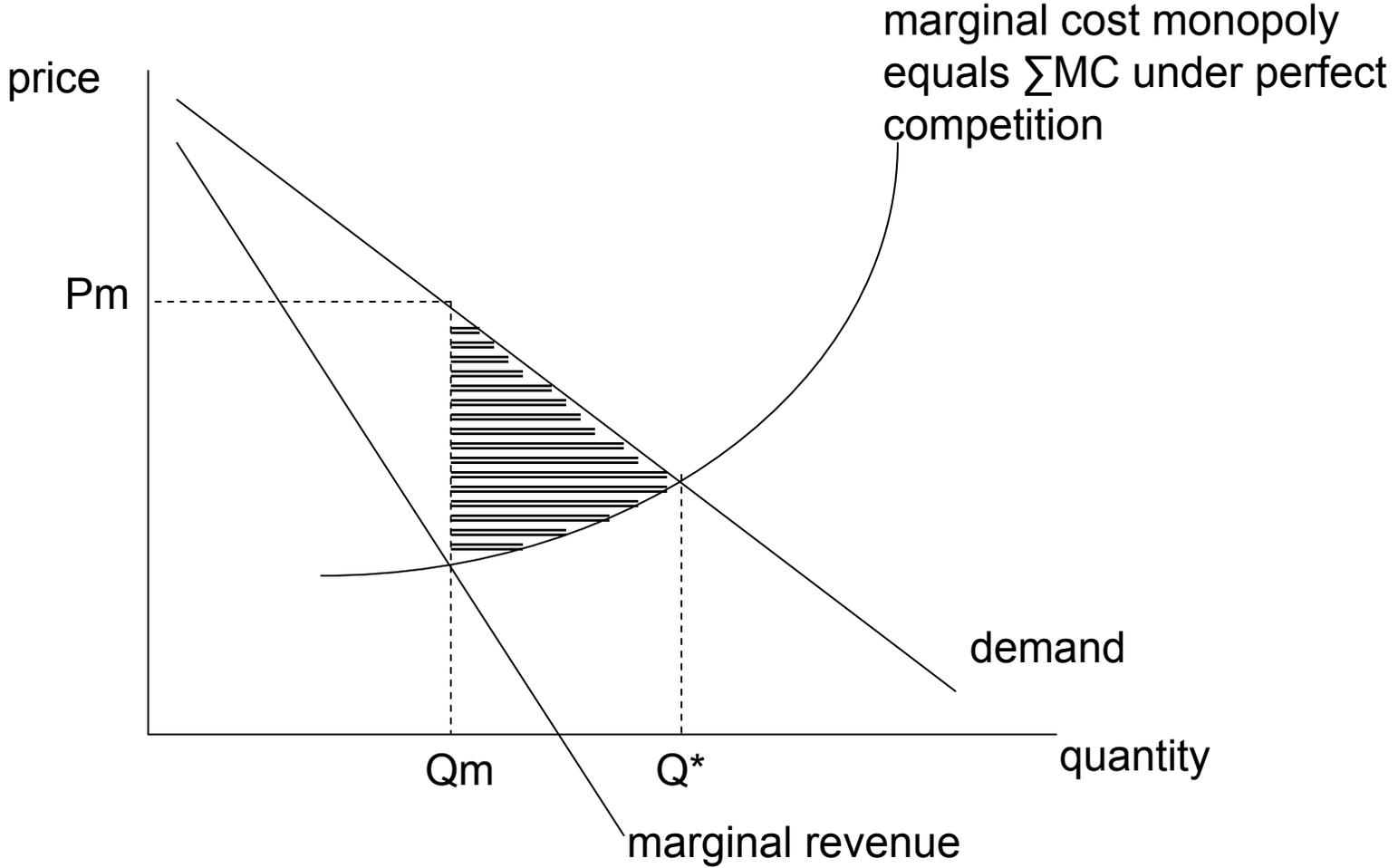
# pure monopoly



# monopoly compared to perfect competition



# the deadweight or social loss due to monopoly

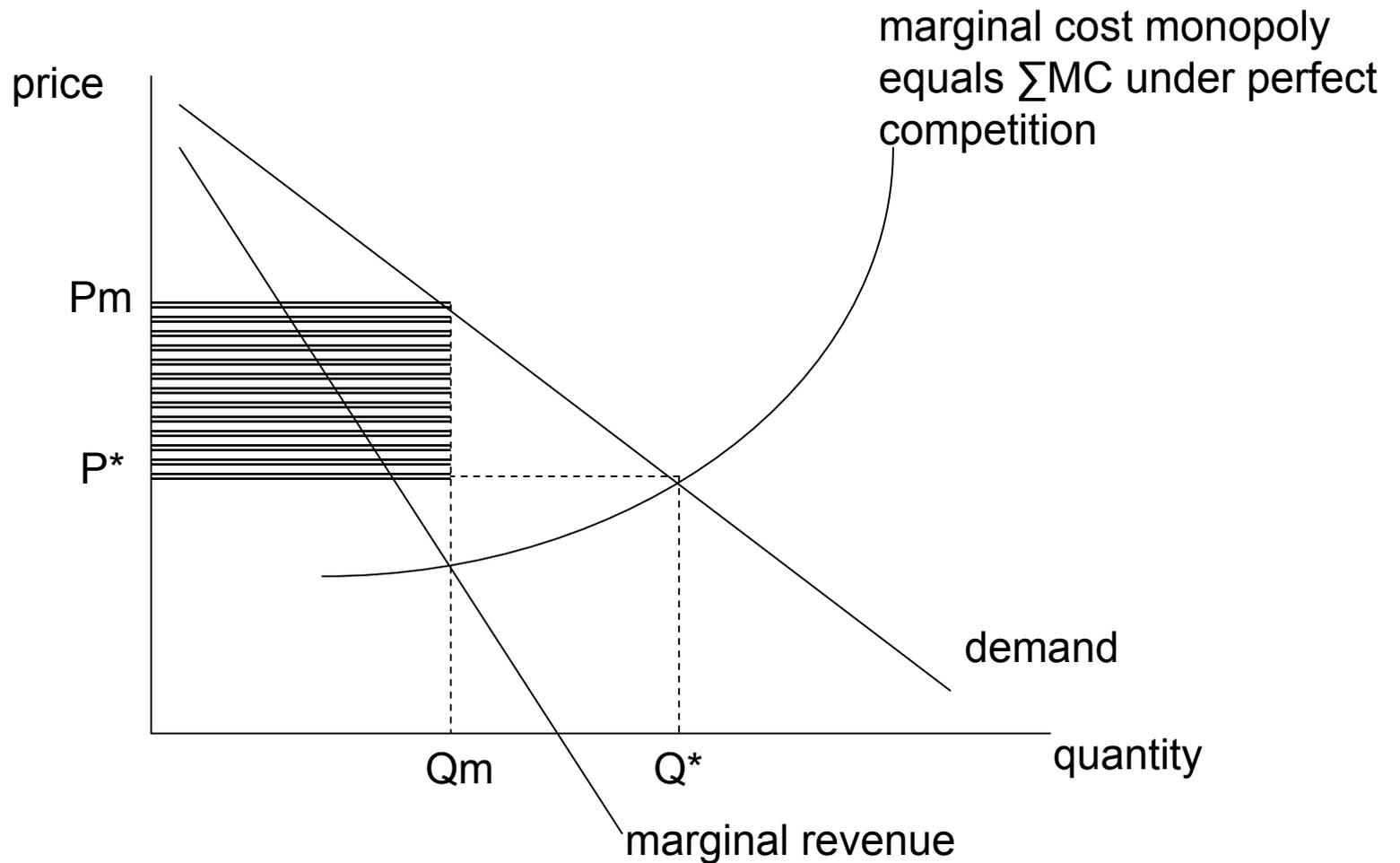


This deadweight loss is simply the excess of value over cost for those units that would be produced under perfect competition but are not produced because of monopoly.

The higher price charged under monopoly also results in a transfer from consumers to producers.

But this is only a transfer. Society as a whole is no better or worse off.

# transfer from consumers to the monopoly



# Solutions to the Problem of Monopoly

- make the monopoly more competitive
  - antitrust policy
- regulate the behavior of the monopoly
- public ownership

# The Antitrust Laws

- The Sherman Act (1890)

“ Every contract, combination in the form of a trust or otherwise, or conspiracy in restraint of trade or commerce among the several states, or with foreign nations, is hereby declared to be illegal....”

## The Clayton Act (1914)

- Spells out the somewhat vague intent of the Sherman Act
- Forbids tying contracts, price discrimination, interlocking directorates, mergers through stock acquisitions, etc..... ***when they might substantially weaken competition***

- Robinson Patman Act (1936)

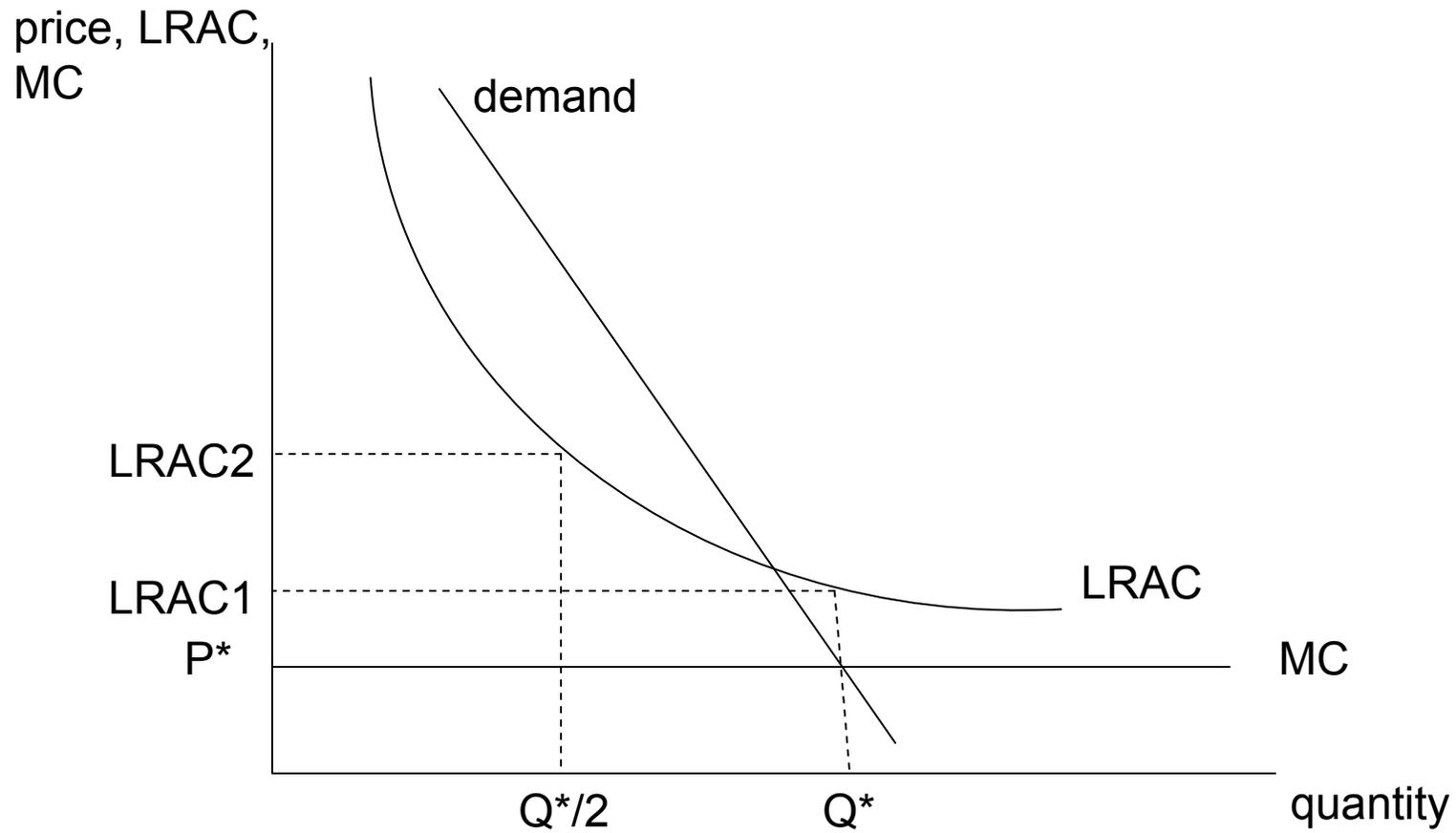
Further addressed the problem of price discrimination.

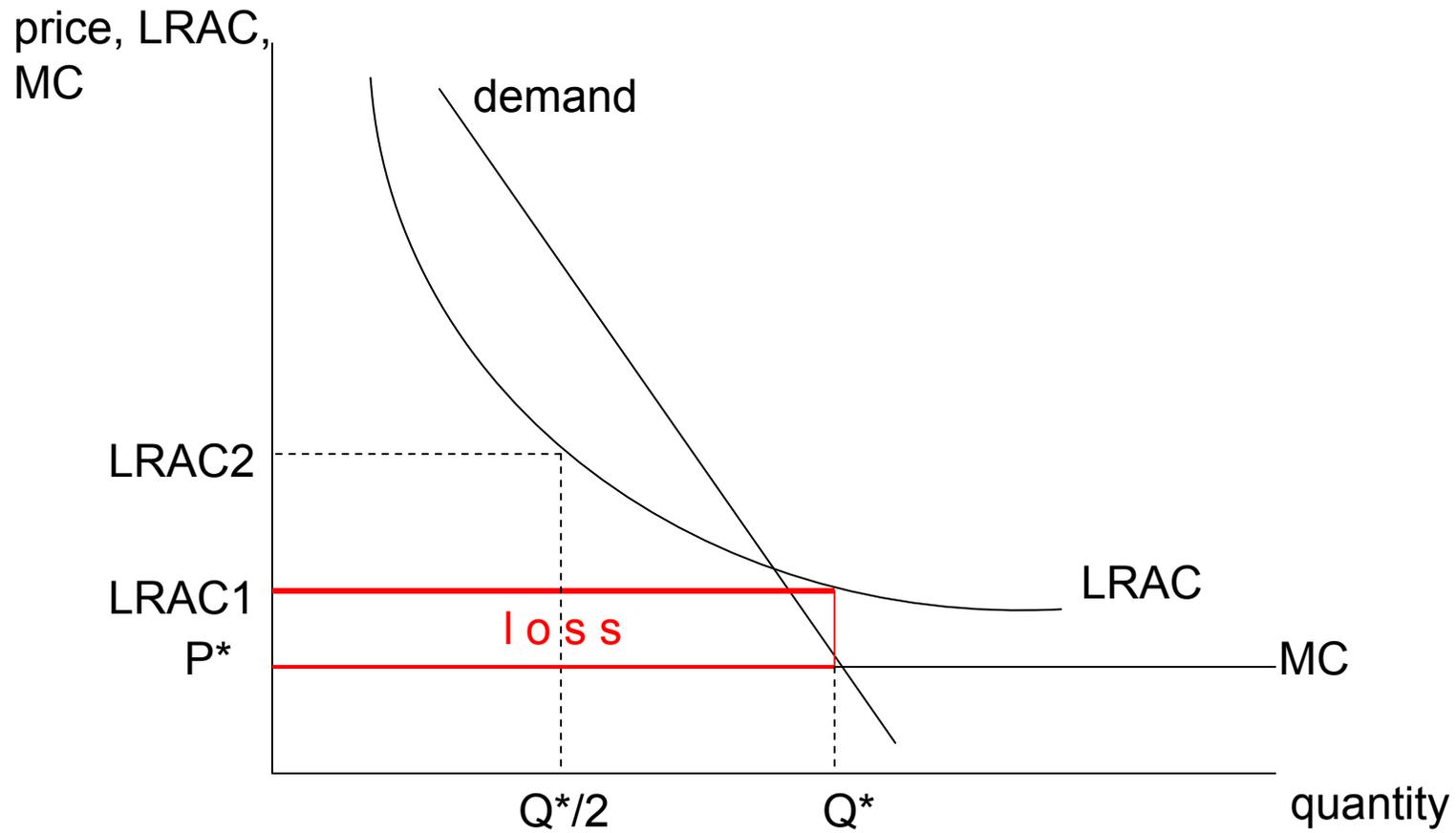
- The antitrust laws allow the government to prevent monopoly by preventing anti-competitive mergers.
- The laws restrict behavior that is deemed to be anticompetitive.
- The laws allow the government to break up monopolies.

# Regulation

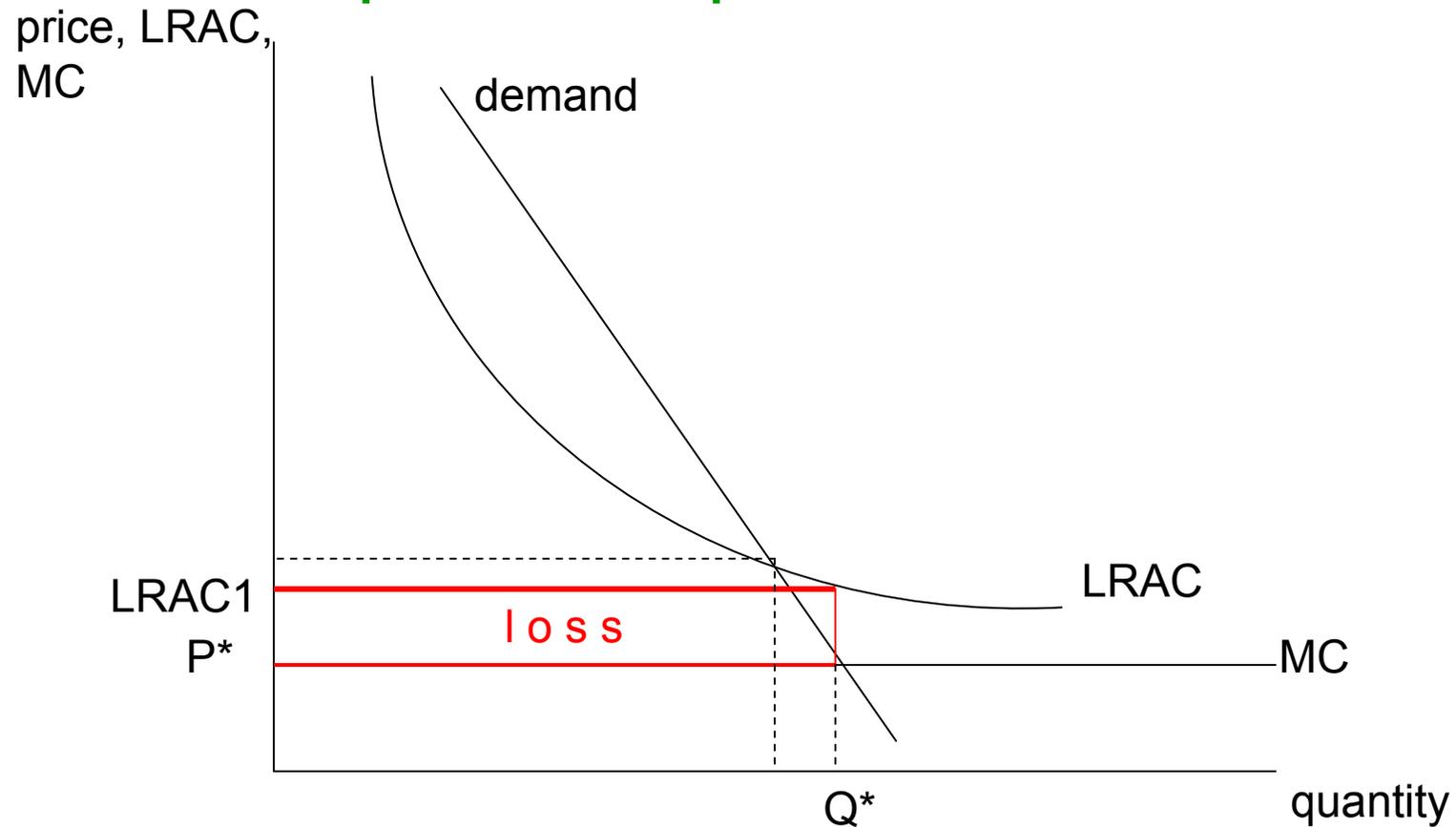
Price regulation is commonly used to address the problem of natural monopolies such as water and electric companies.

A natural monopoly is characterized by extensive economies of scale so that LRAC declines over the entire range of market demand. One firm can serve the entire market at a lower cost than multiple firms.





# One Solution: Average cost pricing with suboptimal output.



or public ownership

How is the incentive structure impacted by public vs. private ownership?

or price discrimination

# Patents

They result in monopoly but do patents result in market failure?

# Externalities

An externality is produced when all of benefits or costs of an economic decision do not accrue to the decision maker.

Someone makes a decision and someone external to that decision is affected.

An externality can be positive so that someone external to the decision benefits.

or

An externality can be negative so that a cost is imposed on someone who is not a party to that decision.

Externalities can occur in consumption (the demand side) or in production (the supply side).

# Examples

External benefit in consumption:

- education, particularly at the early levels
- vaccines for contagious disease

External costs in consumption:

- cigarettes which generate passive smoke

External benefit in production:

- pollination provided by producers of honey

External cost in production:

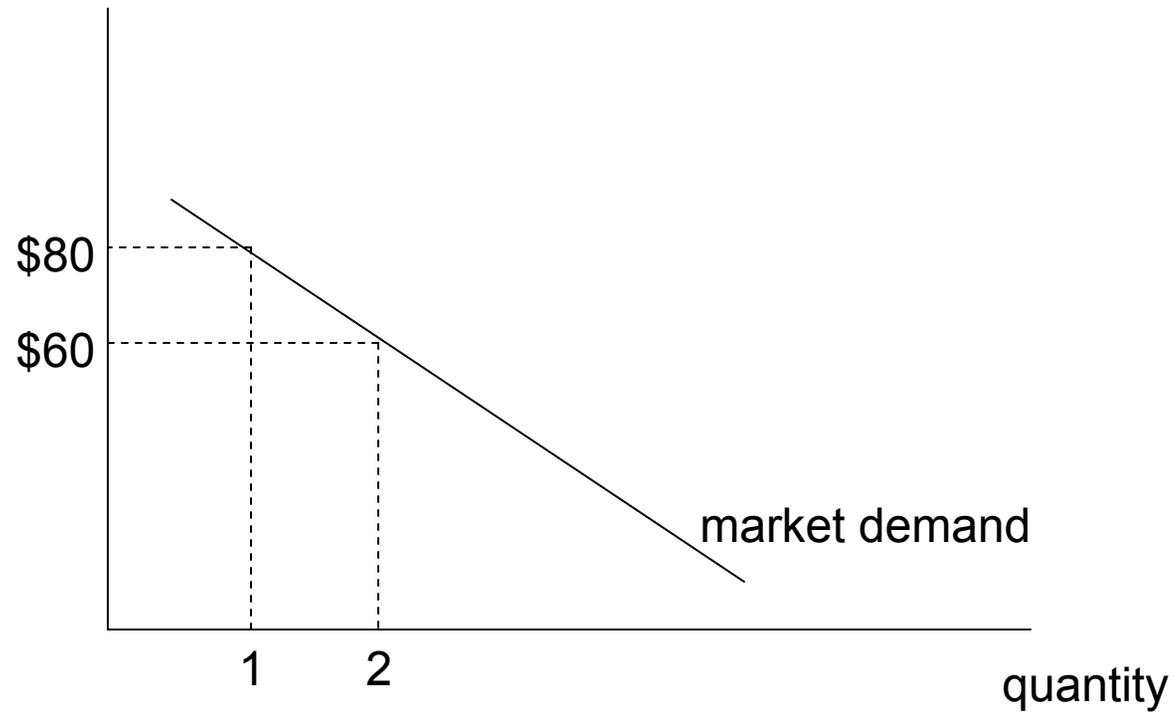
- pollution generated in the production of many goods

# An external benefit in consumption

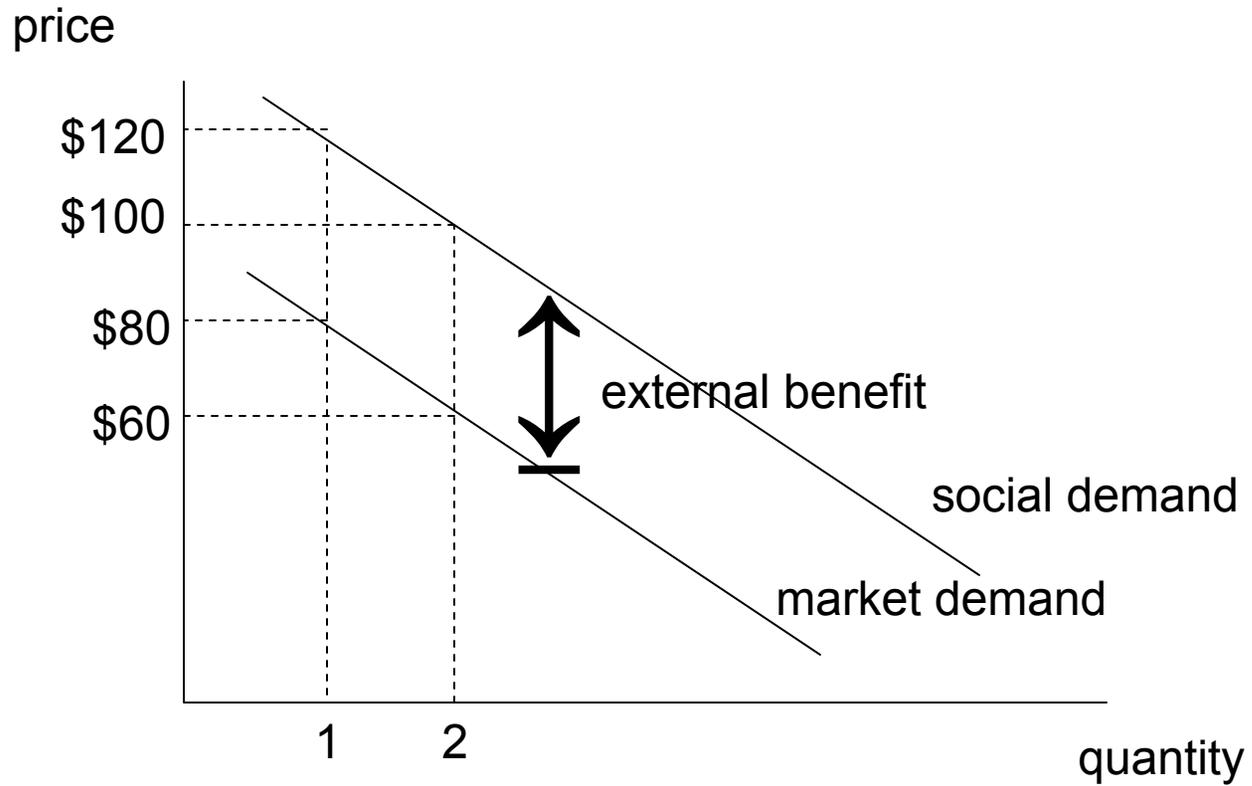
When an externality in consumption is present, the market demand curve does not capture the full marginal social benefit. Instead, it captures only the marginal benefit to the consumer.

# example: flu vaccines

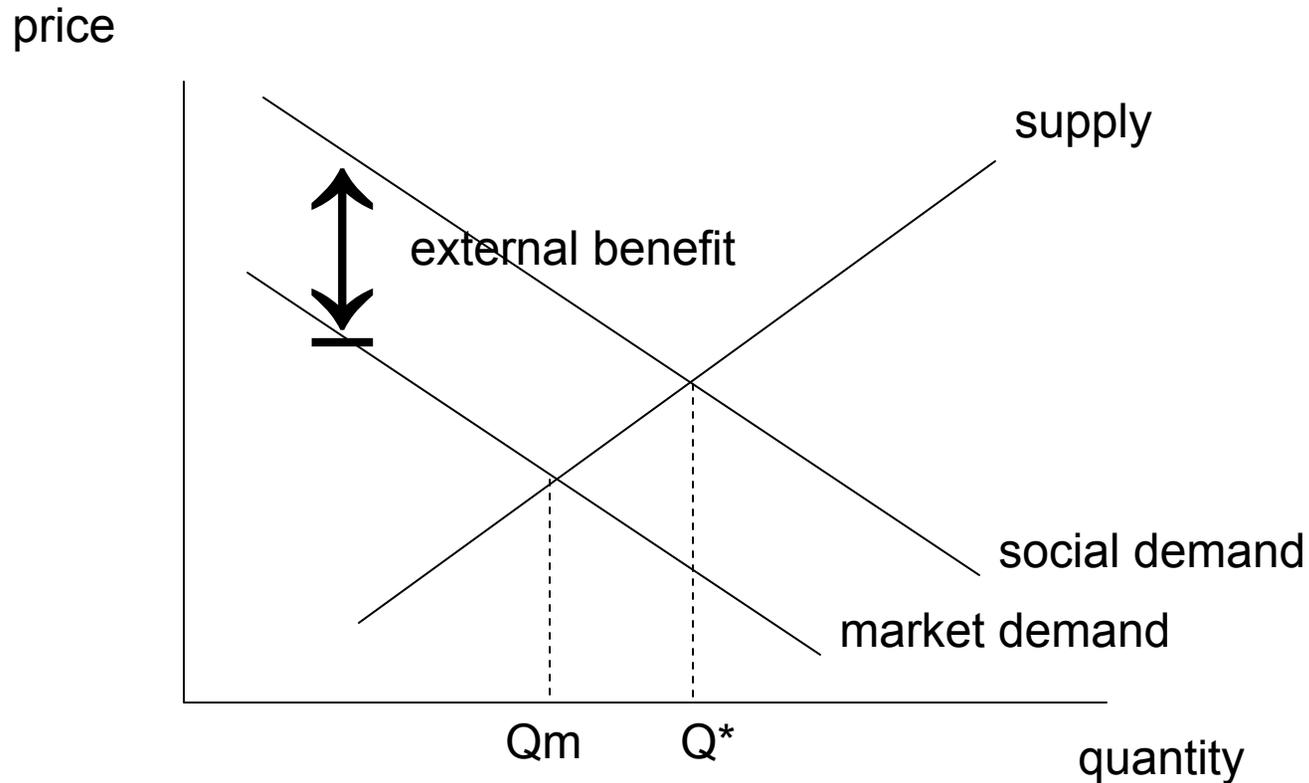
price



# flu vaccines

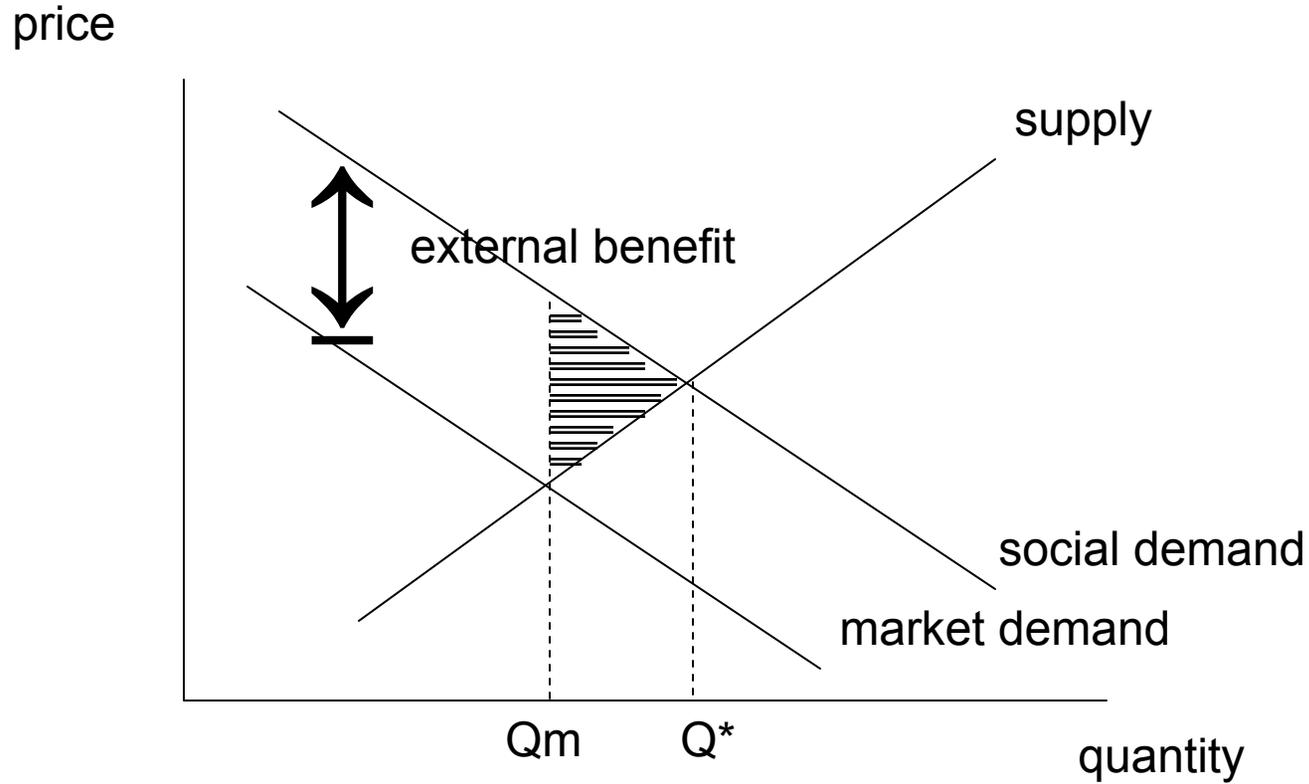


The problem: The market produces  $Q_m$ .  
The socially optimal output is  $Q^*$



In the case of an external benefit, the market will produce less than the socially optimal quantity of the good.

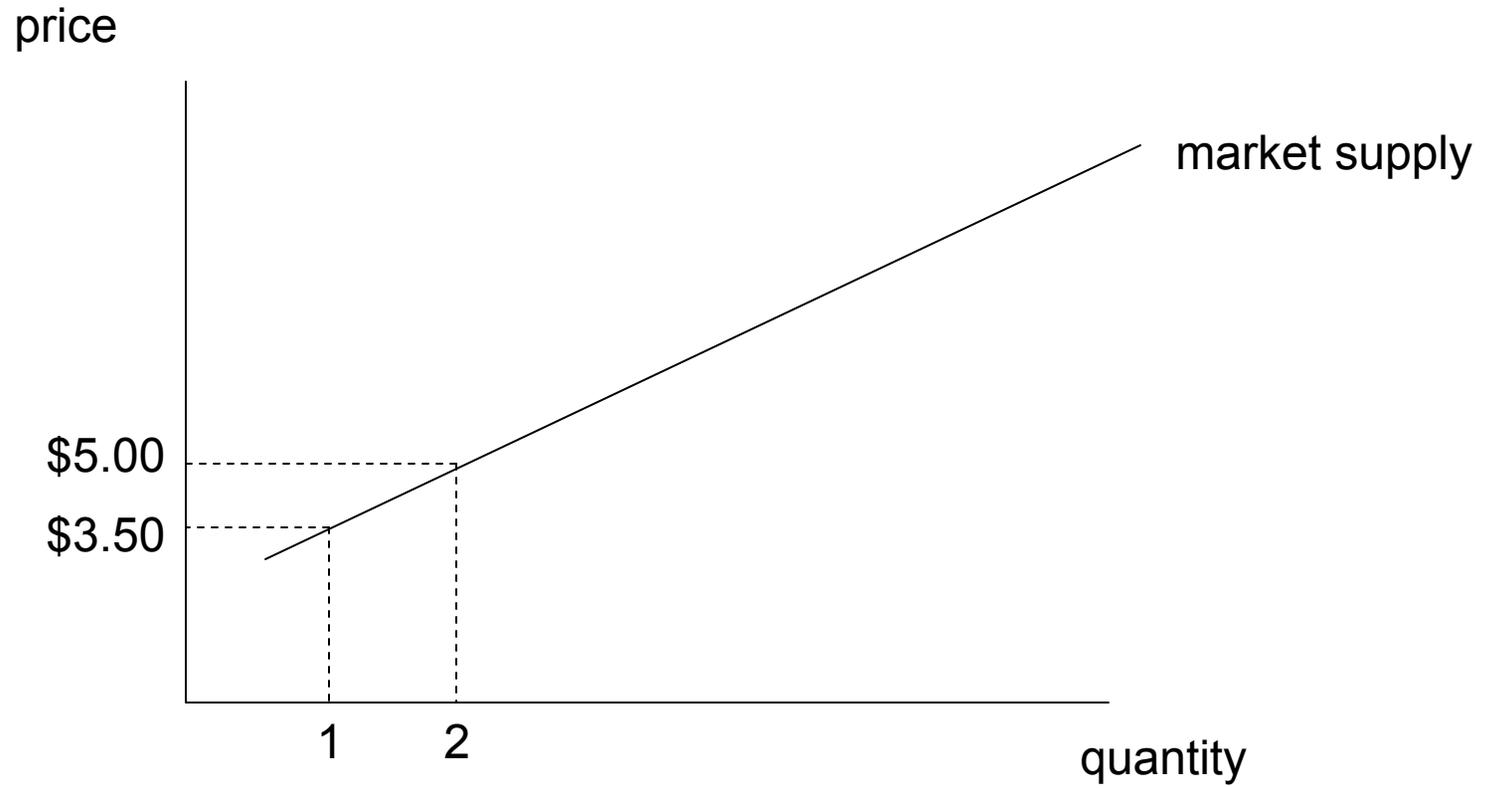
# The associated deadweight loss



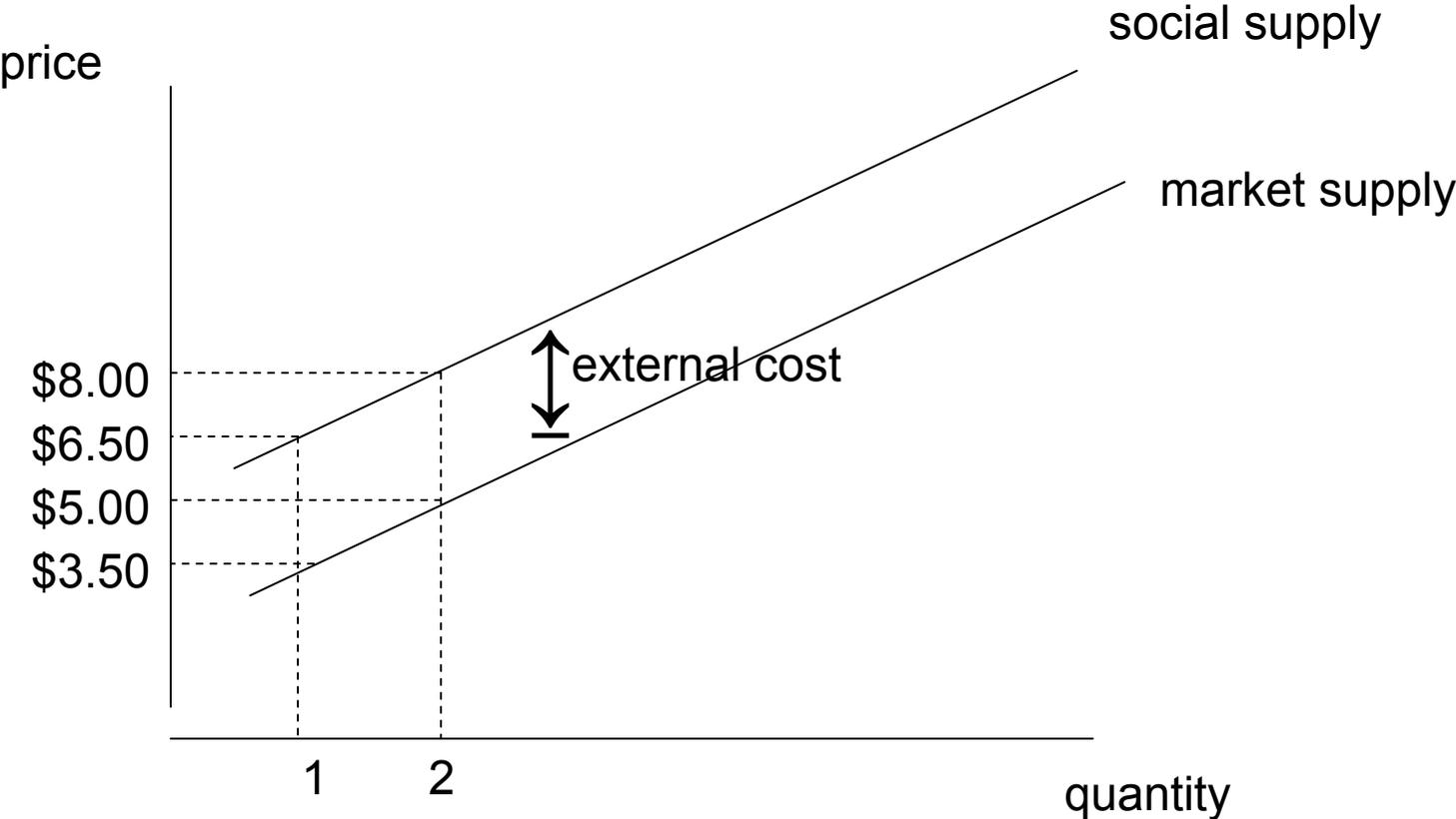
# An external cost in production

When an externality in production is present, the market supply curve does not capture the full marginal social cost. Instead, it captures only the marginal cost to the producer.

# example: paper

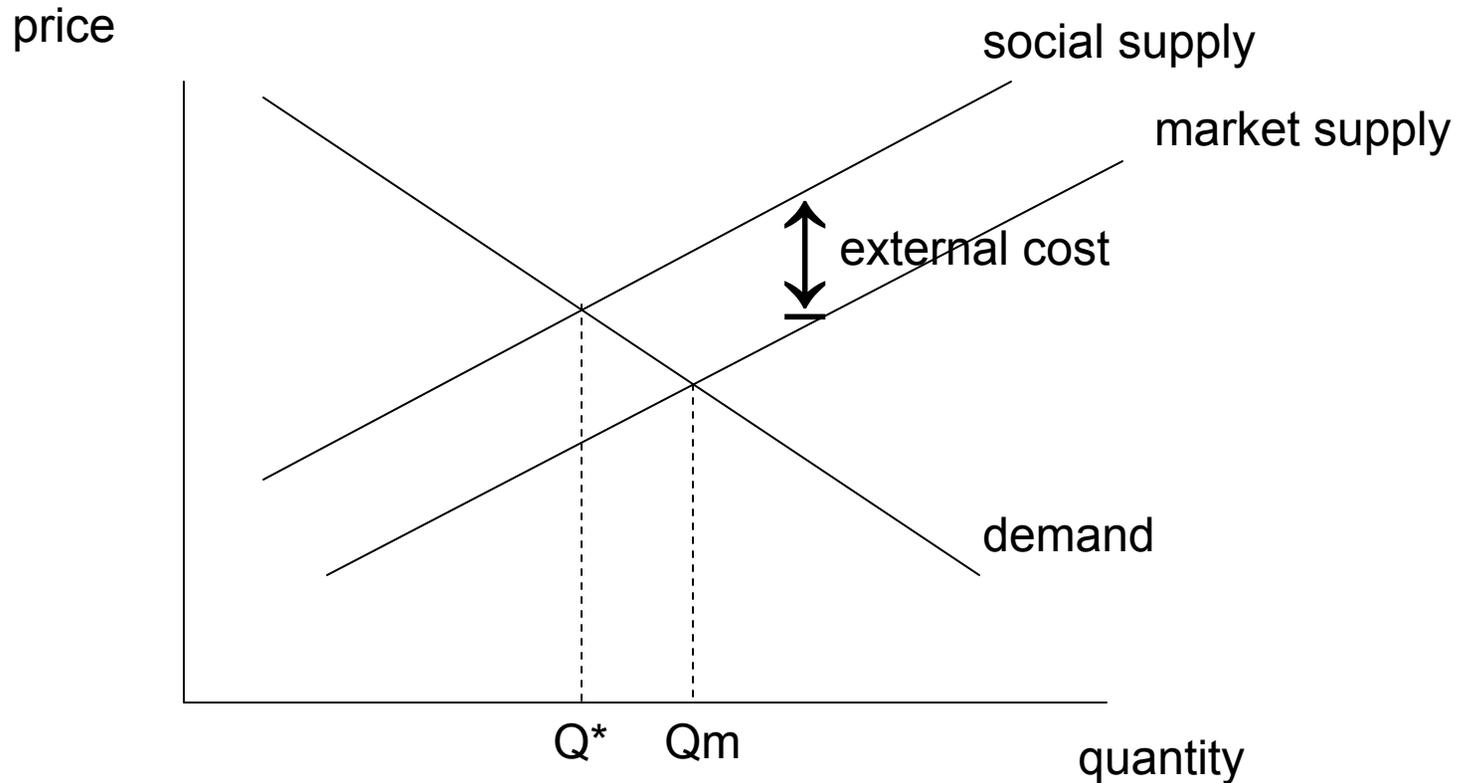


# example: paper



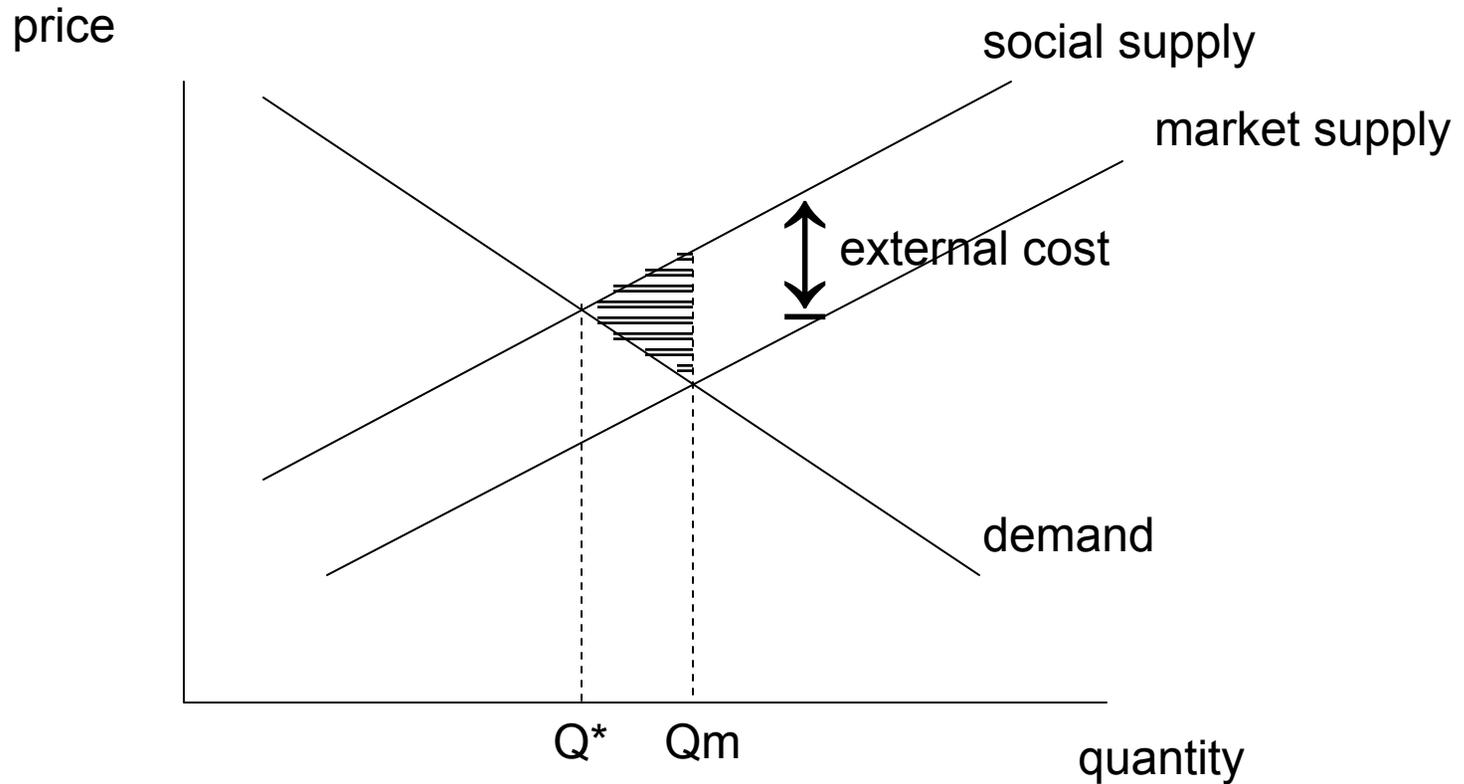
The social supply curve, which captures the marginal cost to the seller plus the external cost, lies above the market supply curve by a vertical distance equal to the external cost.

The problem: The market produces  $Q_m$ .  
The socially optimal output is  $Q^*$



In the case of an external cost, the market will produce more than the socially optimal quantity of the good.

# The associated deadweight loss.

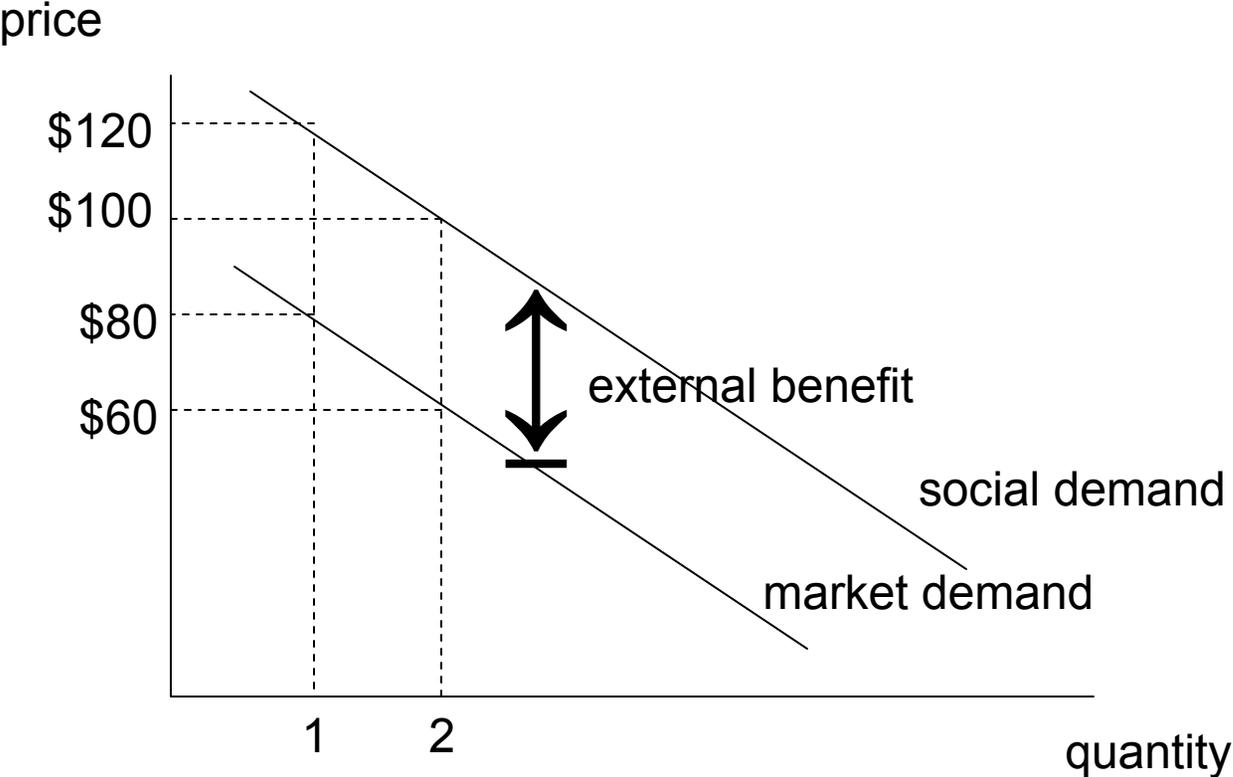


This time, the deadweight loss is the amount by which full social cost exceeds value for those units which should not be produced.

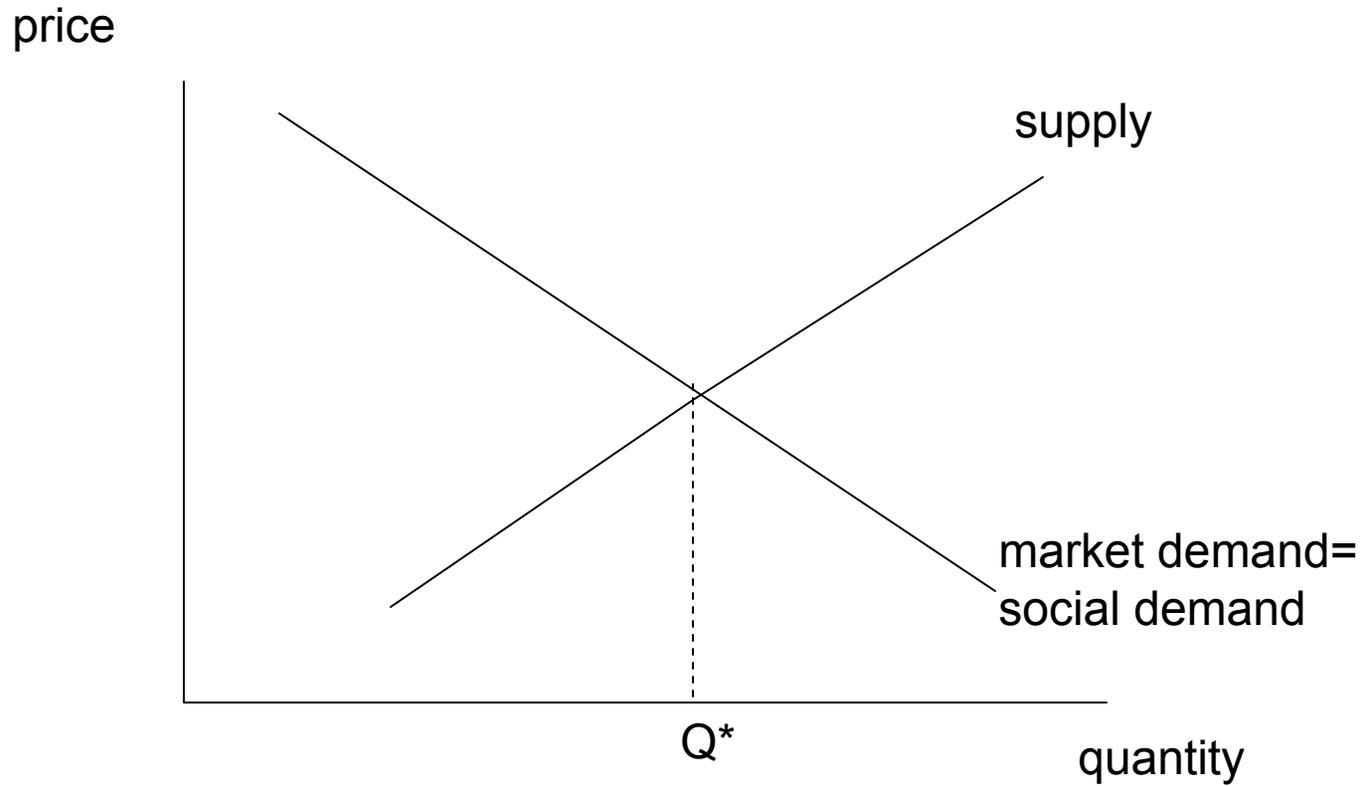
## Solutions to the problems of externalities:

- more completely defined property rights
- subsidies or taxes

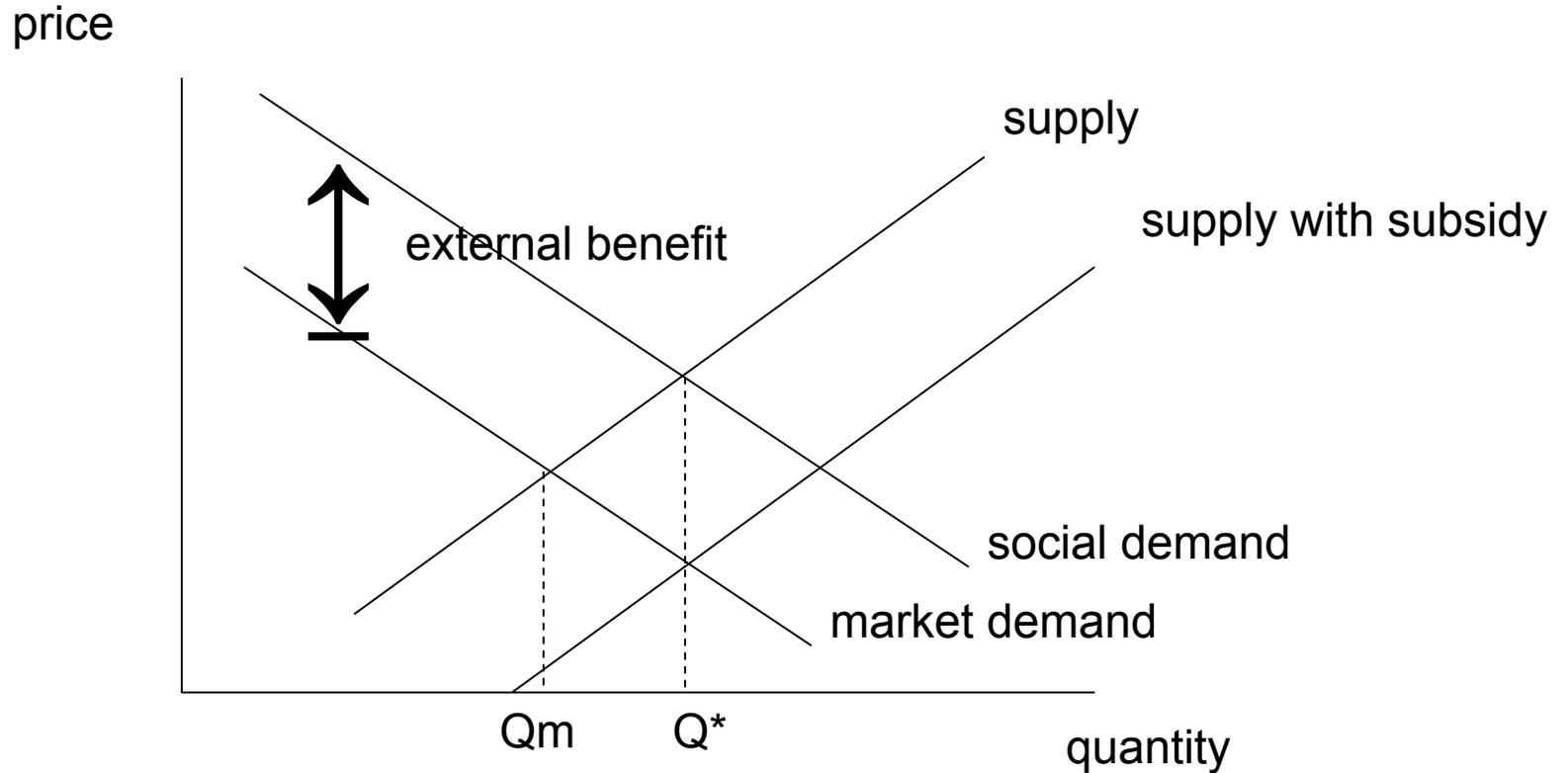
A \$40 per unit subsidy to consumers would bring the market demand curve into line with the social demand curve.



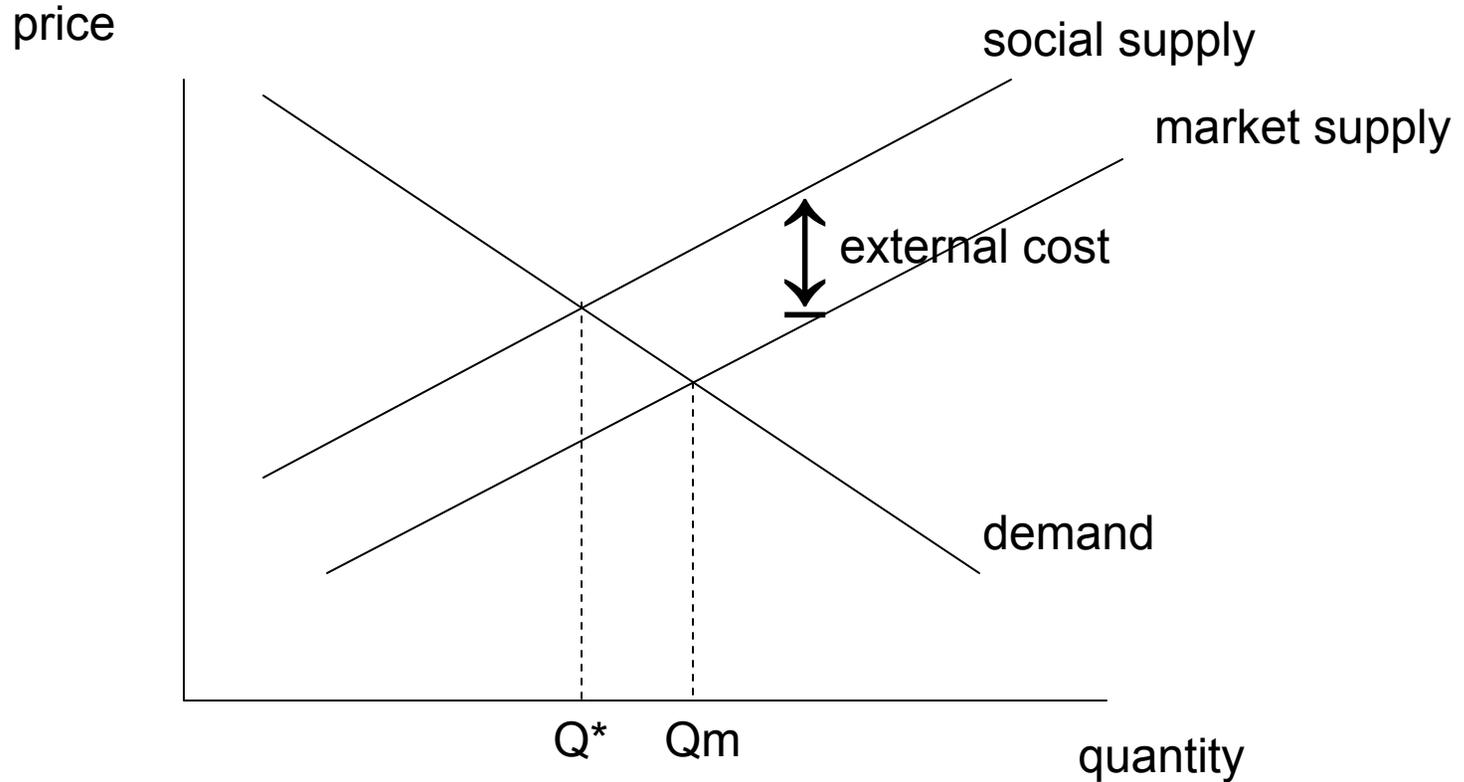
Market outcome, with the subsidy, will now be optimal.



Rather than subsidizing the consumer, a subsidy to the producer would work.



# An external cost-output is too much .



In the case of an external cost, imposing a per unit tax equal to the amount of the externality will correct the problem. A tax on either side of the market will work.

Things are a bit more complicated in the real world...

- the magnitudes of externalities are difficult to measure
- programs of taxes and subsidies incur administrative costs
- the required taxes or subsidies may be politically unpopular.

# Public Goods

The distinguishing characteristic of a public good is *not* the sector that provides the good. Some public goods are provided by the private sector and many private goods are provided by the public sector

A ***public good*** is characterized by joint consumption or non-rivalry in consumption.

One person's consumption of the benefits of a public good does not reduce the availability to others.

Consumers can jointly benefit from a public good.

# Examples of Public Goods

- national defense
- services of a lighthouse
- TV or radio broadcast

# Congestible Public Goods

Some goods, like highways, libraries and parks, are non-rival when few people are using them but become rival when heavily used.

These are sometimes called ***congestible public goods***.

Many public goods are also non-excludable.

A good is ***non-excludable*** if those who do not contribute to its provision cannot be excluded from consuming its benefits.

example: a public radio broadcast

A public good that is also non-excludable is a ***pure public good***.

So a ***pure public good is*** non-rival in consumption and non-excludable.

For pure public goods, the *free rider problem* poses challenges for market provision.

If those who don't contribute cannot be excluded, the incentive to contribute is diminished. Non-contributors enjoy a free ride.

The market can sometimes solve the free rider problem, allowing market provision of the pure public good. But the good is likely to be underprovided—often no provision would occur.

In the case of an excludable public good, those who don't contribute will generally be excluded if the good is provided by the private sector. Because the marginal social cost of extending the benefits to another person is zero, this is inefficient.

# Pareto Efficiency

An allocation of resources is Pareto Efficient (or Pareto optimal) if there is no alternative allocation that would render some member(s) of society better off and nobody worse off.

Excluding anyone from enjoying the benefit of a public good is Pareto inefficient.

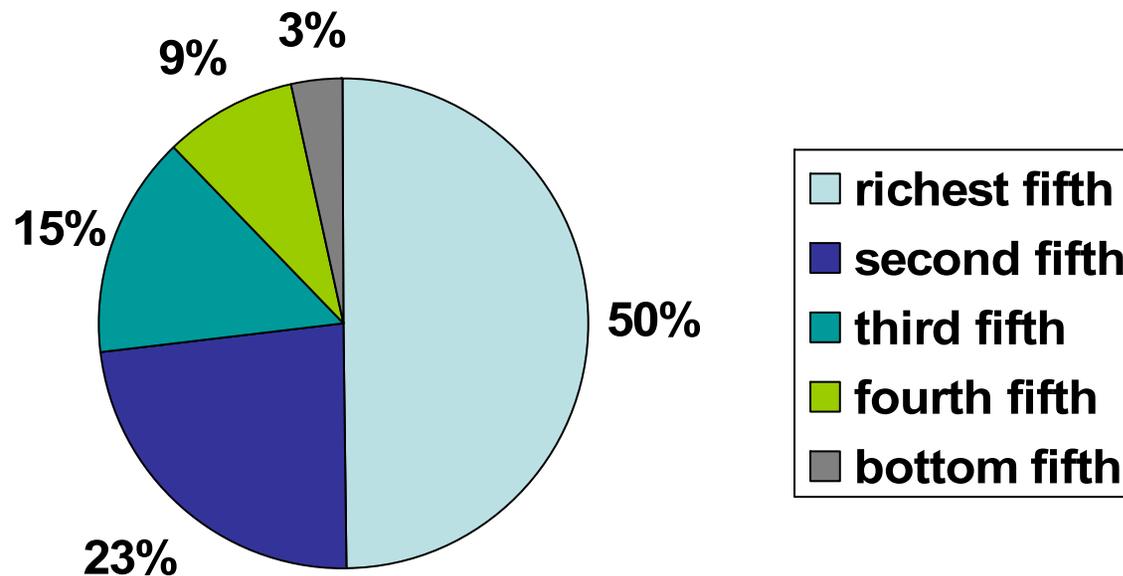
# Inequity

If the underlying income distribution is inequitable then the market distribution of goods and services will also be inequitable.

The standard of equity is a societal standard.

# The 2007 U.S. Income Distribution by Household

source: U.S. Census Bureau



# Share of Total Income by top 10% in 2006

Botswana	57%
Colombia	46%
Brazil	44%
Mexico	38%
Argentina	36%
U.S.	30%
United Kingdom	29%
Canada	25%
Japan	22%
Germany	22%

source: The World Bank

# Changes in U.S. Income Shares

	bottom 20%	top 20%
1970	4.1%	43.3%
1980	4.3%	43.7%
1990	3.9%	46.6%
2000	3.6%	49.8%

source: U.S. Census Bureau

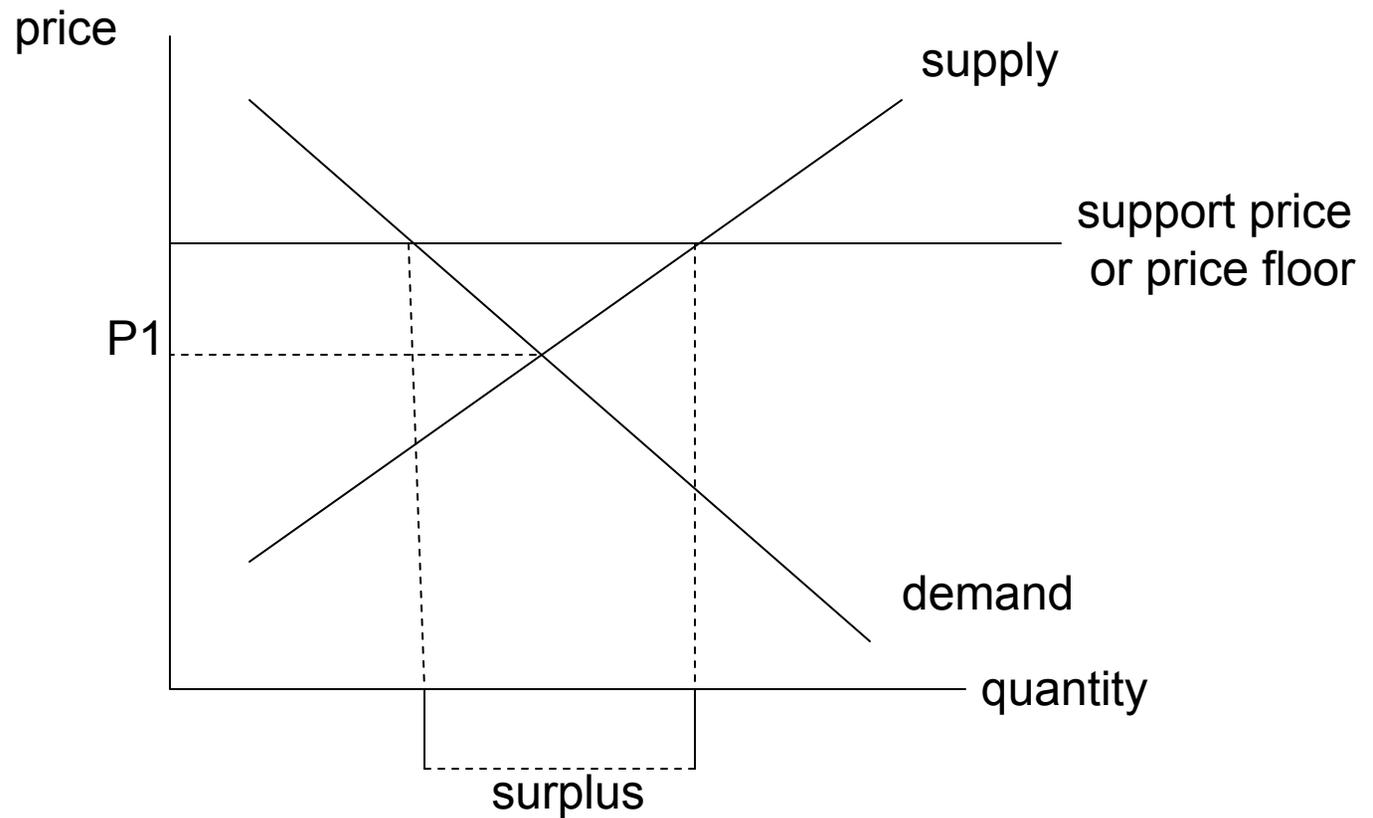
# What explains income inequality?

- Differences in labor skills and effort-  
human capital
- Luck- inherited wealth; return on  
investment; health; misfortune
- Discrimination – in education and  
employment
- Choice- return on accumulated wealth,  
compensating wage differentials
- Life-cycle effects

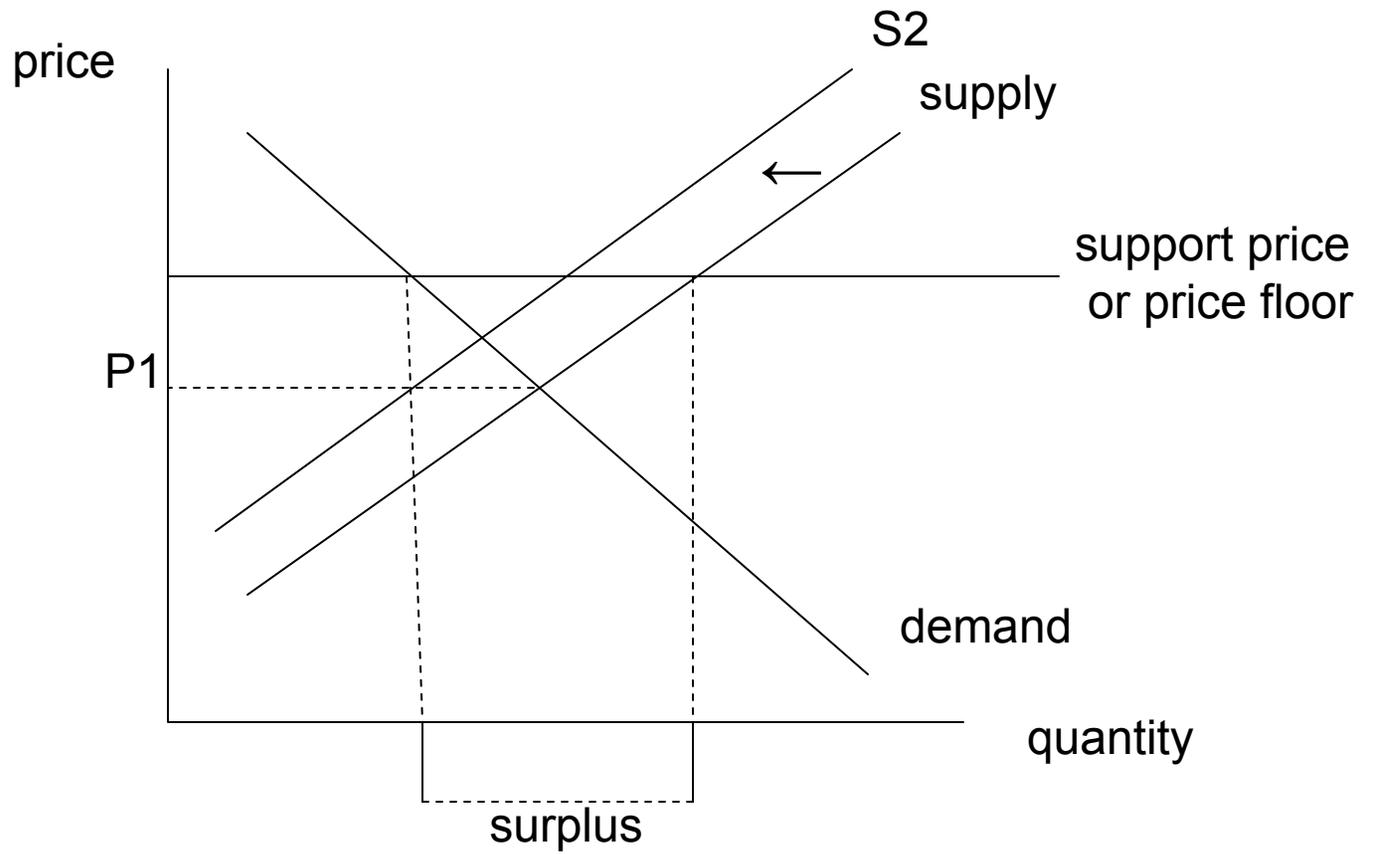
If there is inequity in the underlying income distribution then there will be inequity in the resulting allocation of resources.

The attempt to address inequity through the market system may cause more problems than it solves.

# Impact of a price floor for dairy products



The government must now address the surplus. Dispose of the milk? or perhaps reduce dairy herds by slaughtering milk cows?



Can low income families afford milk for their children? Is this fair? ...the school milk program.

# Income redistribution through taxes and transfer spending

2004

income group	% of market income	% of disposable income
highest quintile	53.44	44.88
4 <sup>th</sup> quintile	23.63	24.02
3 <sup>rd</sup> quintile	14.10	16.08
2 <sup>nd</sup> quintile	7.36	10.34
lowest quintile	1.48	4.68

source: U.S. Census Bureau

Transfer payment: a payment for which no current goods or services are exchanged.

Examples: social security payments, TANF benefits, food stamp payments, unemployment benefits...

An equitable distribution of resources may require more than income transfers.

Merit Good- a good or service to which society deems everyone is entitled in some amount. Government intervention may be required to ensure that these standards are met.

Why won't private charity eliminate poverty?

# Government Failure

- Government intervention is itself costly. Intervention may not be worth it.
- The government may be unable to solve the problem.
- The solution may be politically infeasible.