
Externalities, Public Goods and Health Insurance

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Lecture 6: Externalities, public goods and health insurance

This lecture should enable you to:

- ❑ Understand why/how 'externalities' and 'public goods' are forms of market failure.
- ❑ Describe how insurance is a market solution to another form of market failure.
- ❑ Explain how insurance markets generate aspects of moral hazard/adverse selection.
- ❑ Illustrate what can be done to address these various forms of market failure.

What is 'the market'?

- ❑ A market is where producers and consumers meet (physically or virtually) to trade goods/services
- ❑ 'The market' is short-hand for a 'perfectly competitive market'; one form of market structure
- ❑ *Perfectly* competitive markets:
 - generate optimal outcomes
 - Consumers maximise utility/benefit (allocative efficiency)
 - Producers minimise cost (technically & economically efficient)
 - work 'costlessly' (price-mechanism)
- ❑ 'The market' is therefore the 'ideal' structure
 - Where we start with the analysis of markets generally

Important conditions (for perfectly competitive markets)

- ❑ Markets are perfectly competitive only where:
 - Firms:
 - face atomistic competition (individual firms make up a small part of the supply) implying that they are price-takers
 - seek to maximise profits
 - face no barriers to entry or exit (eg professional registration, high fixed costs such as hospital or high-tech equipment etc)
 - Consumers:
 - seek to maximise utility/benefit
 - are *perfectly informed* of benefits and prices of *all* goods
 - bear all costs and receive all benefits (*no externalities*)
 - There are *no 'Public Good' characteristics*
 - There is product homogeneity (price is only factor)
 - Transactions are costless

Market failure and health (care)

1. Lack of atomistic competition (monopoly, oligopoly) (lecture 5)
 2. Non-profit maximization (lecture 5)
 3. Externalities (this lecture)
 4. Public Goods (this lecture)
 5. Uncertainty (insurance markets, moral hazard and adverse selection) (this lecture)
 6. Imperfect information (and supplier induced demand) (lecture 7)
- Note: equity is *not* a market *failure*, but an additional/alternative objective to (or a constraint placed upon) efficiency (lecture 8)

Externalities and health (care)

- ❑ An **externality** (or transaction **spillover**) is a cost or benefit, not transmitted through prices, incurred by a party who did not agree to the action causing the cost or benefit.
- ❑ A benefit in this case is called a **positive externality** or **external benefit**.
- ❑ A cost is called a **negative externality** or **external cost**.
- ❑ Policy issue – design of appropriate institutions, legislation and regulation to align individual incentives and social welfare

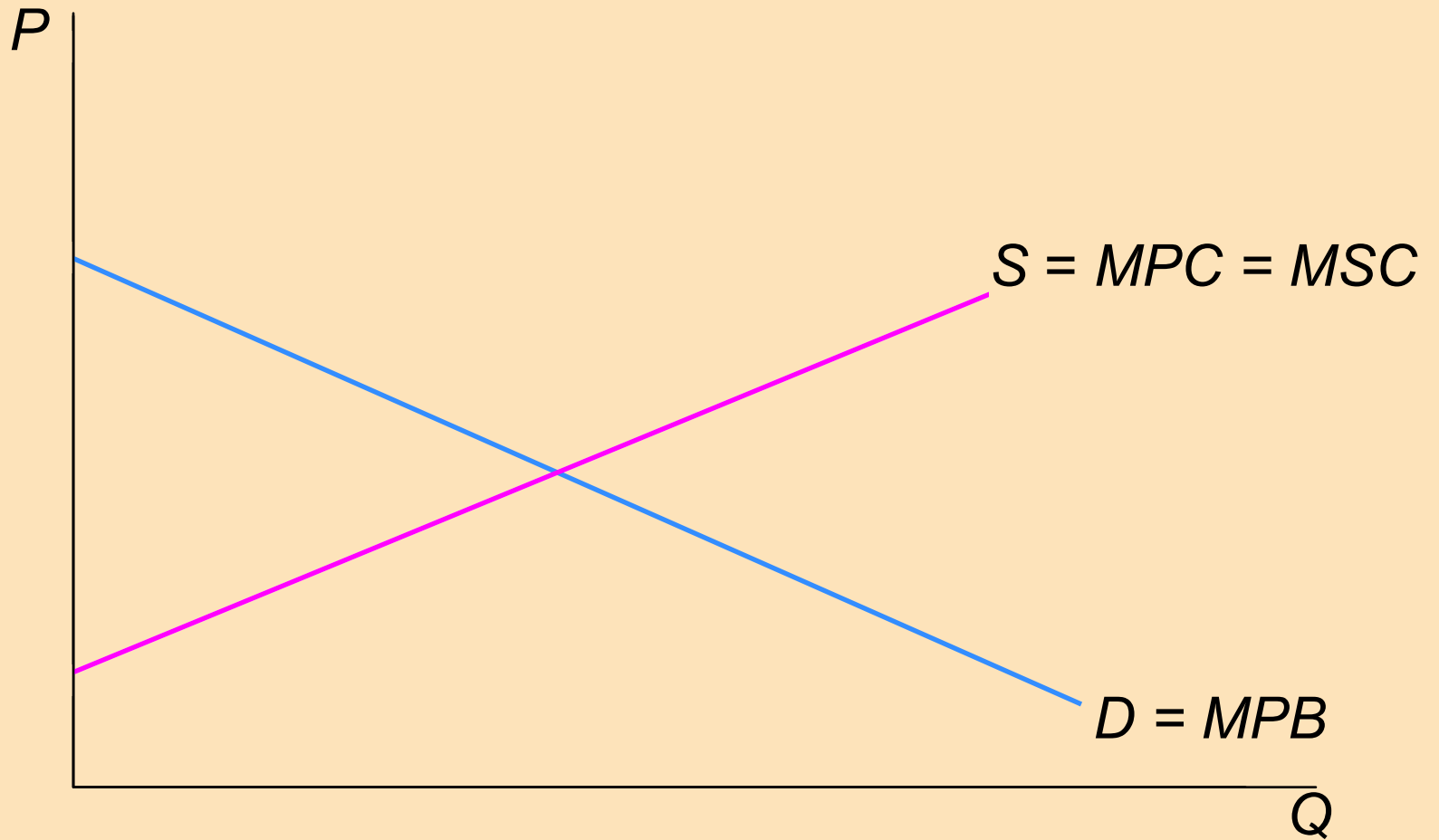
Positive externality

- ❑ **Private benefit** – direct benefit to consumers who buy and consume good
- ❑ **Social benefit** – indirect benefit to all in society, including those who do not consume it
 - Eg. Vaccination (herd immunity effect)
 - Eg. ‘Caring externality’ – others in society care that other people might not be able to receive treatment
- ❑ Causes **market failure** (too little consumption)
 - Demand curve = ‘marginal private benefit’ (MPB)
 - But, where positive externalities exist, additional ‘marginal social benefits’ (MSB)

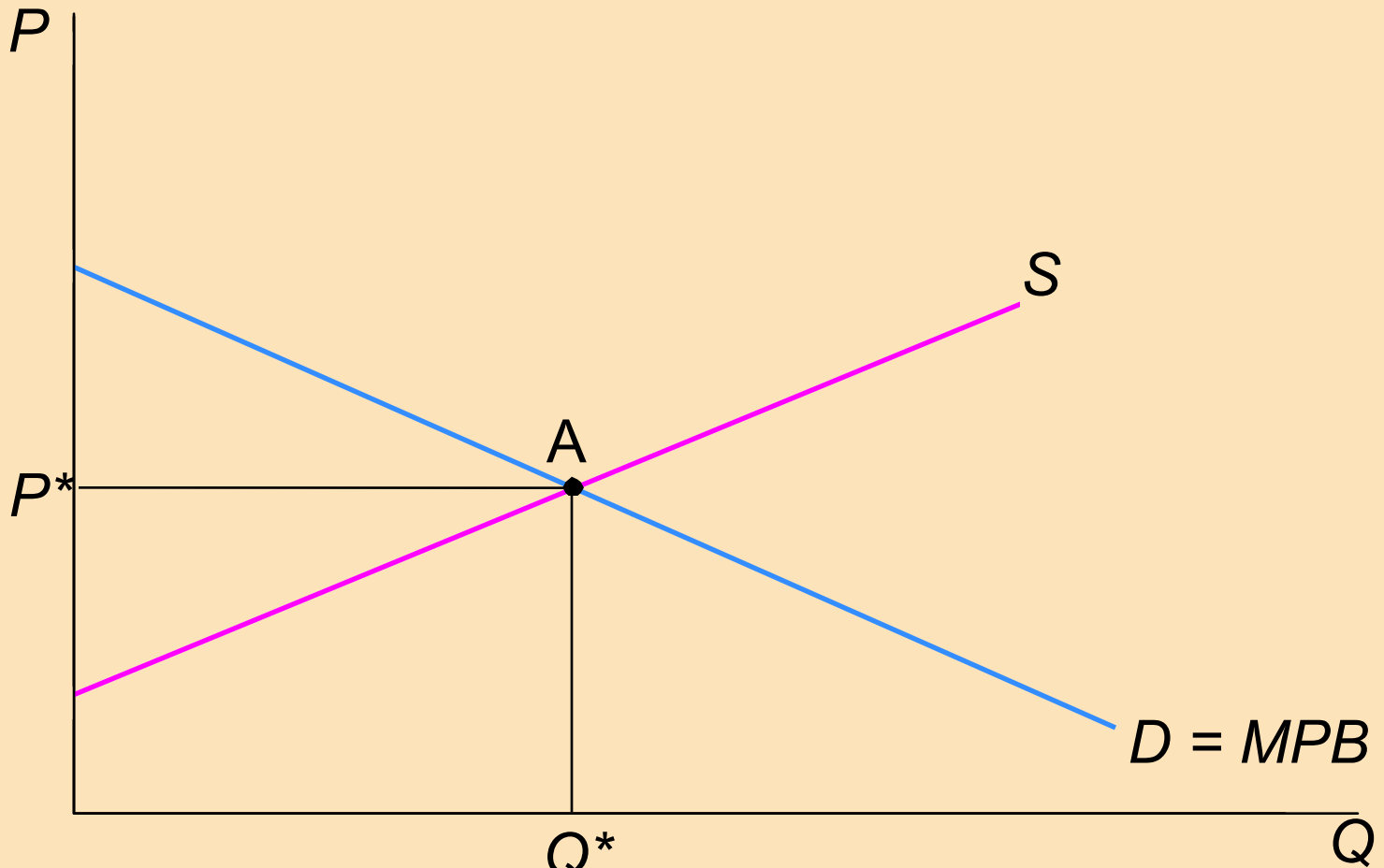
Externality leads to market failure

- ❑ Where externalities exist, the price mechanism does not result in allocative efficiency, therefore market failure.
- ❑ With positive externalities people that would benefit are not buying the product
- ❑ Therefore there is under supply of product and 'deadweight social loss'

Positive externality



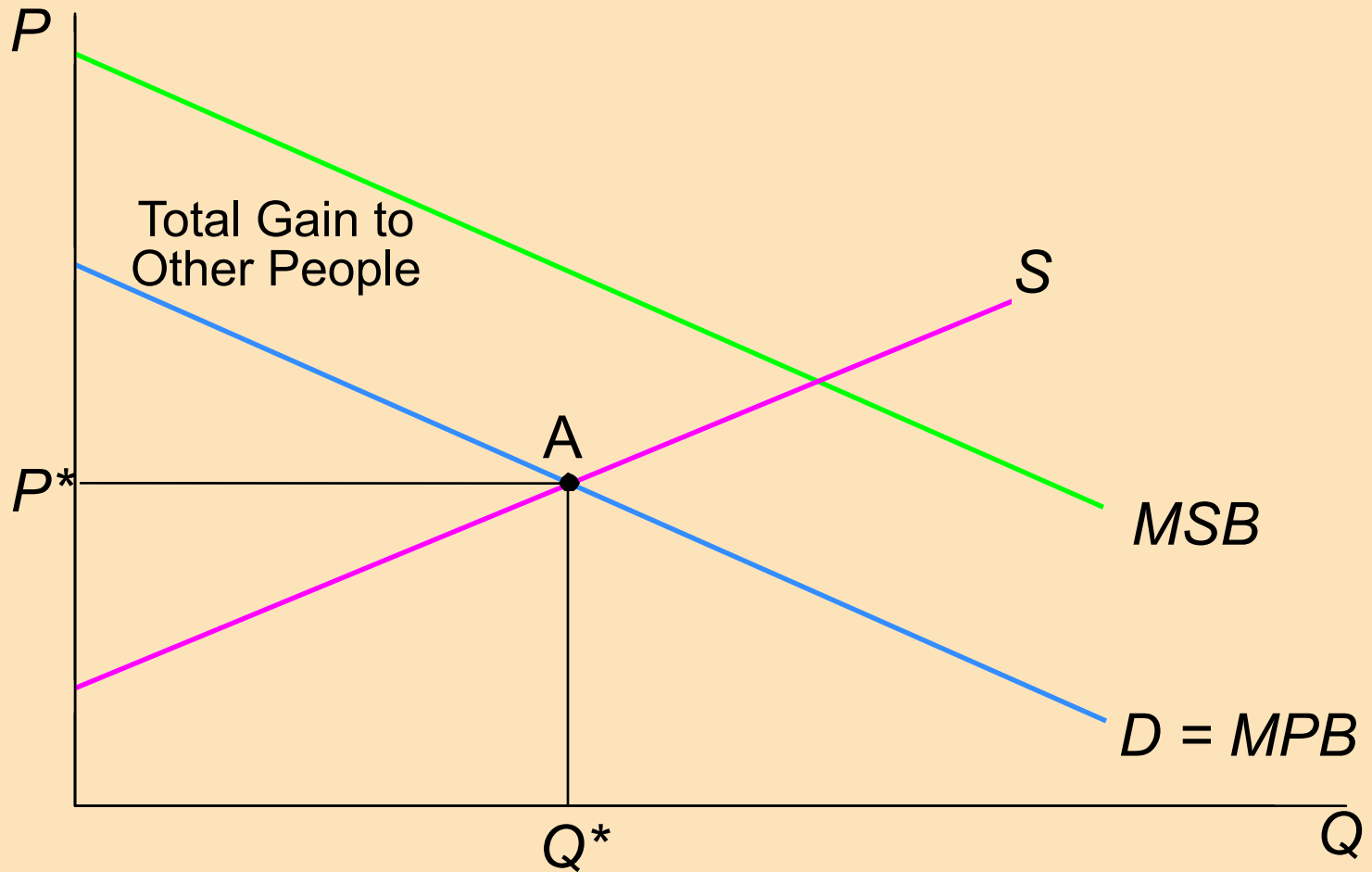
Positive externality



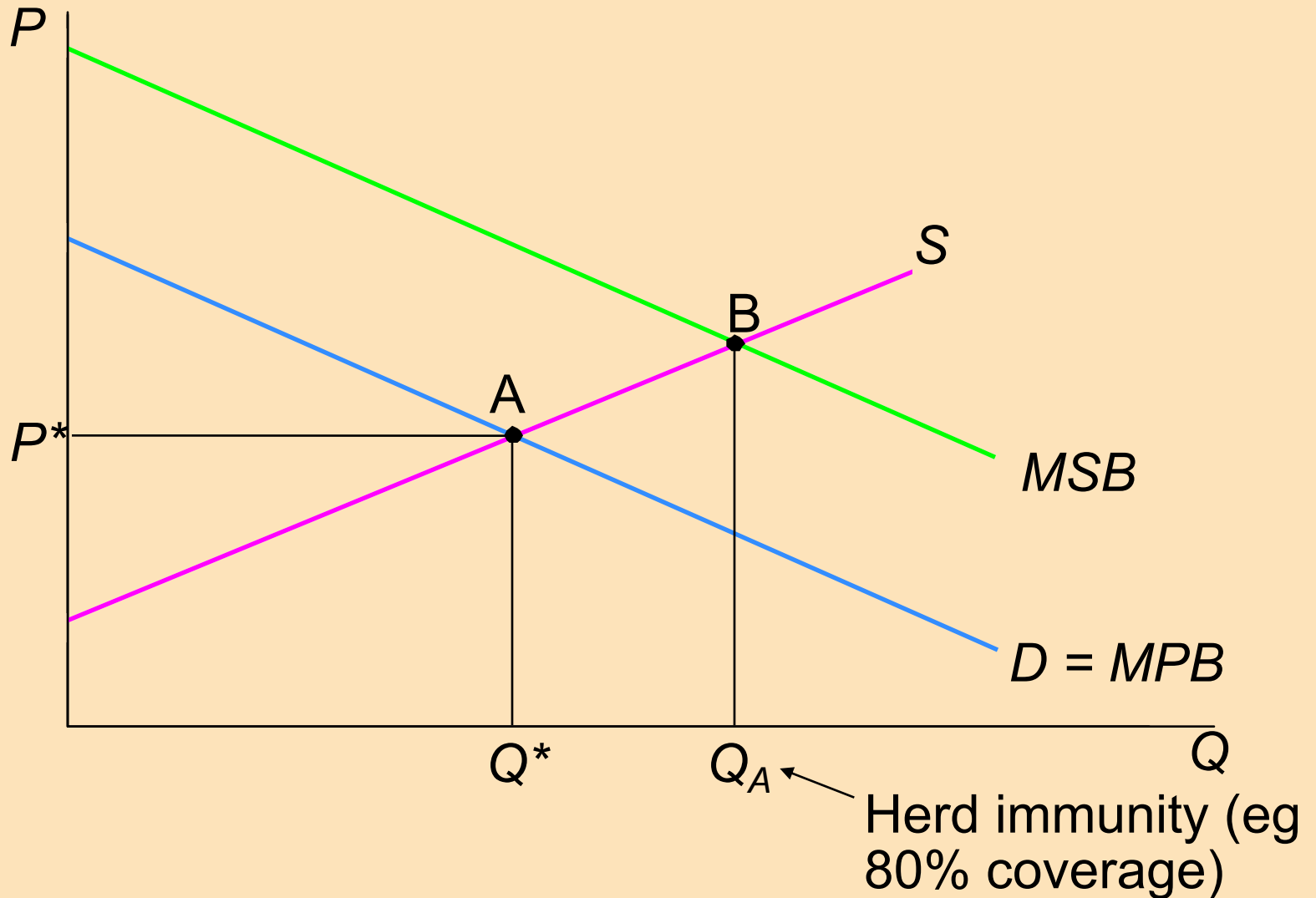
Market Equilibrium



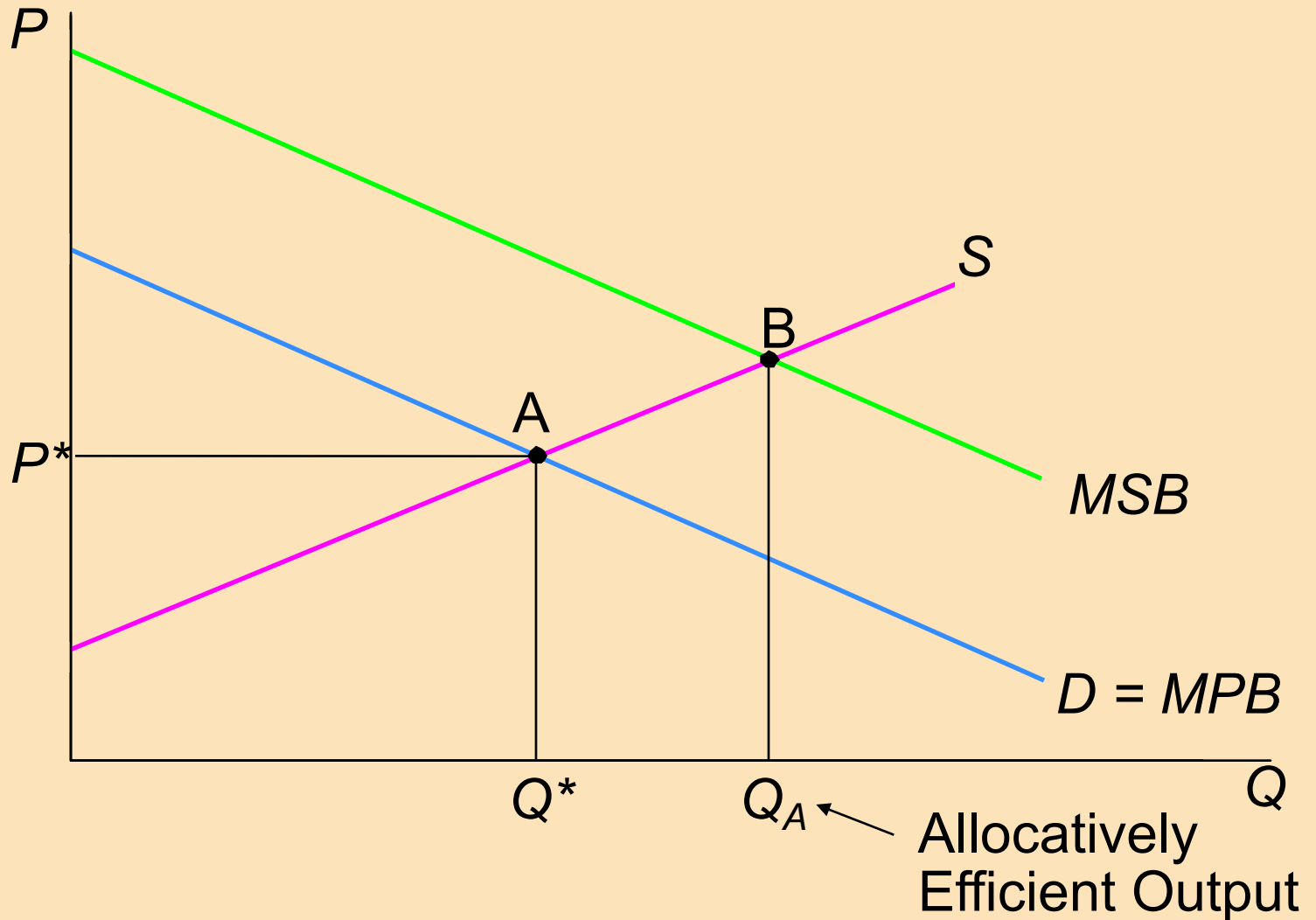
Positive externality



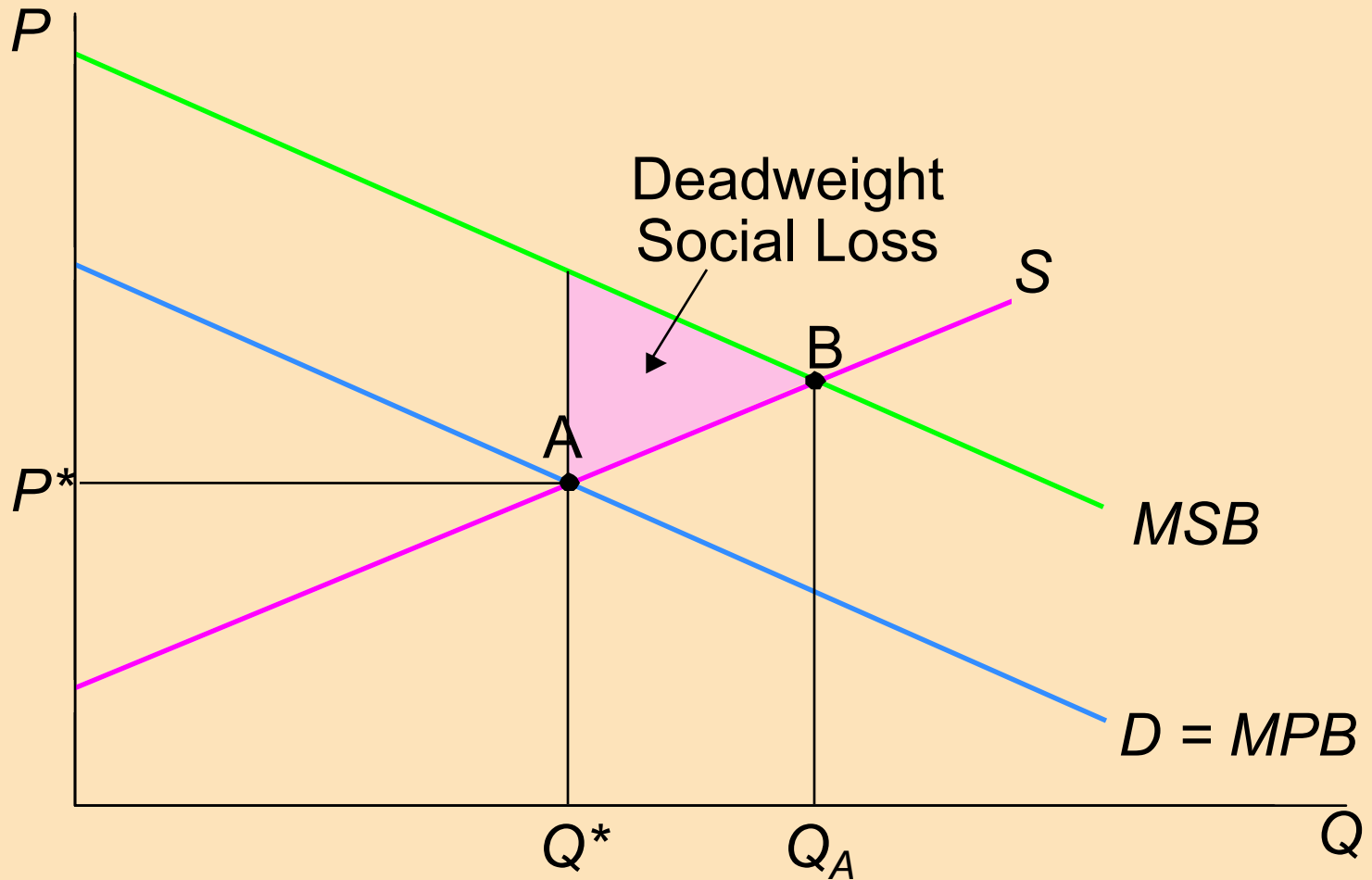
Positive externality



Positive externality



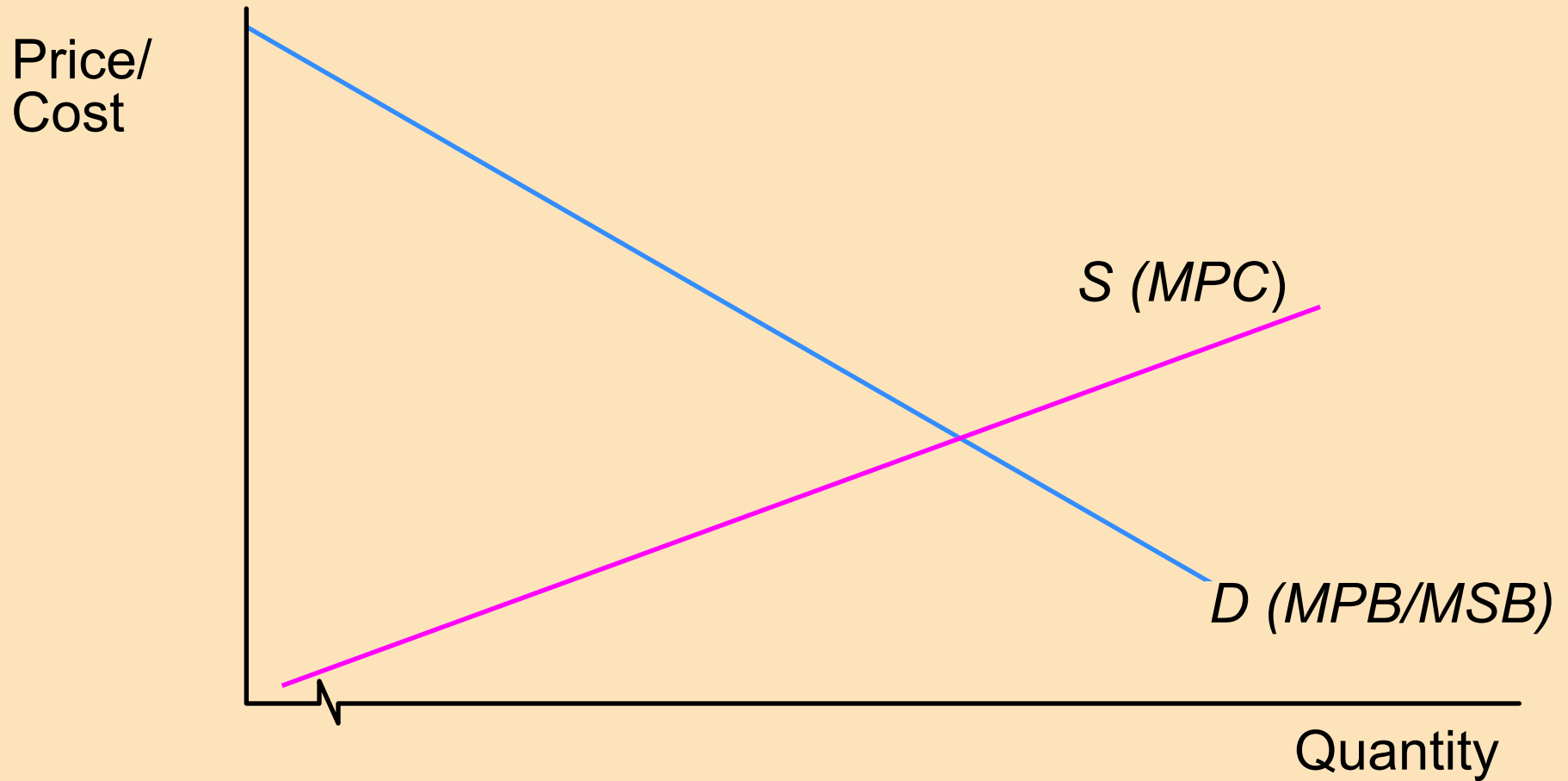
Positive externality



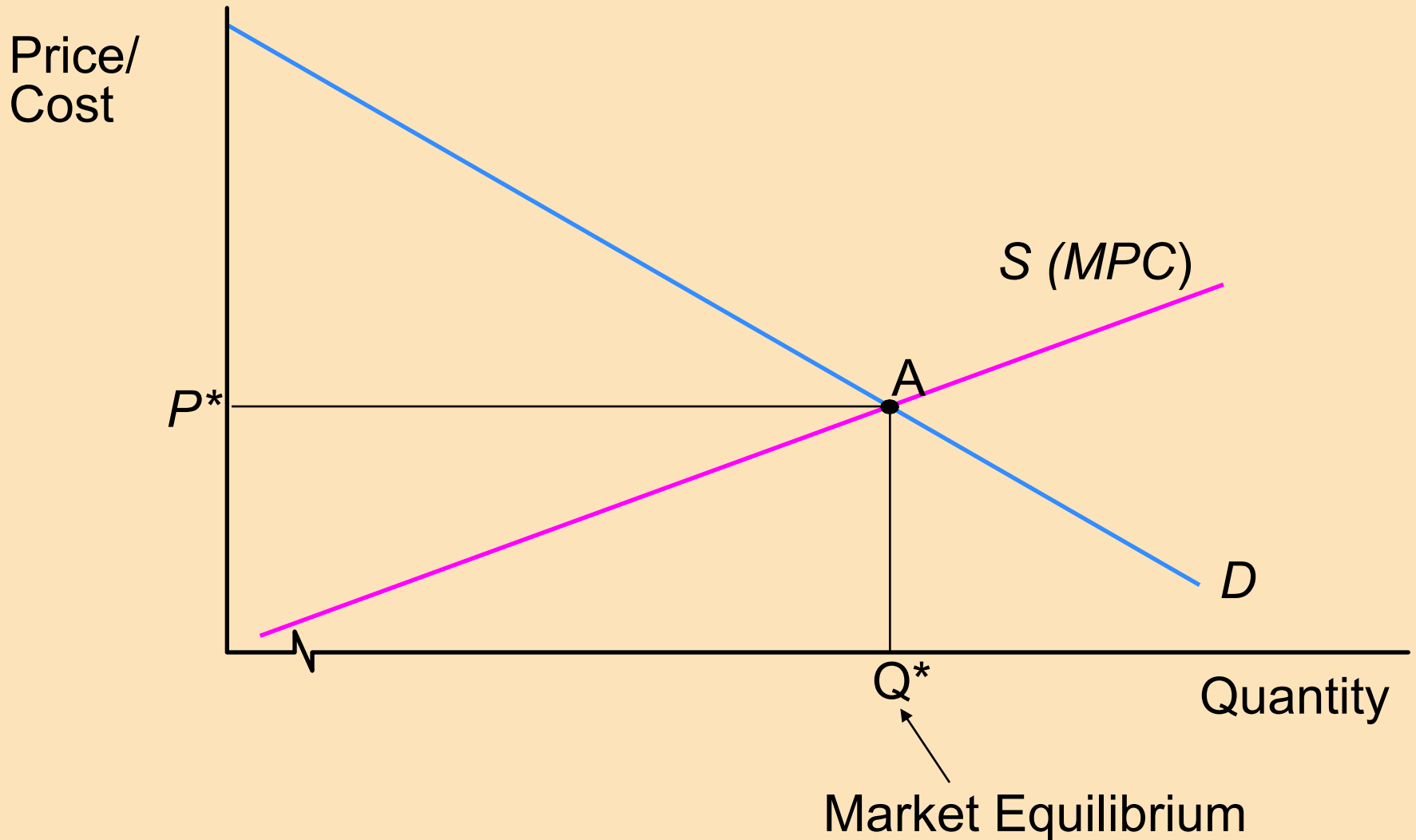
Negative externality

- ❑ **Private cost** – direct cost to producers who produce good (consumers who buy good)
- ❑ **Social cost** – cost to all in society, including those who do not consume it
 - Eg. Tobacco & passive smoking
- ❑ Causes **market failure** (over-consumption)
 - Supply curve = ‘marginal private cost’ (MPC)
 - **But**, where negative externalities exist, additional ‘marginal social costs’ (MSC)

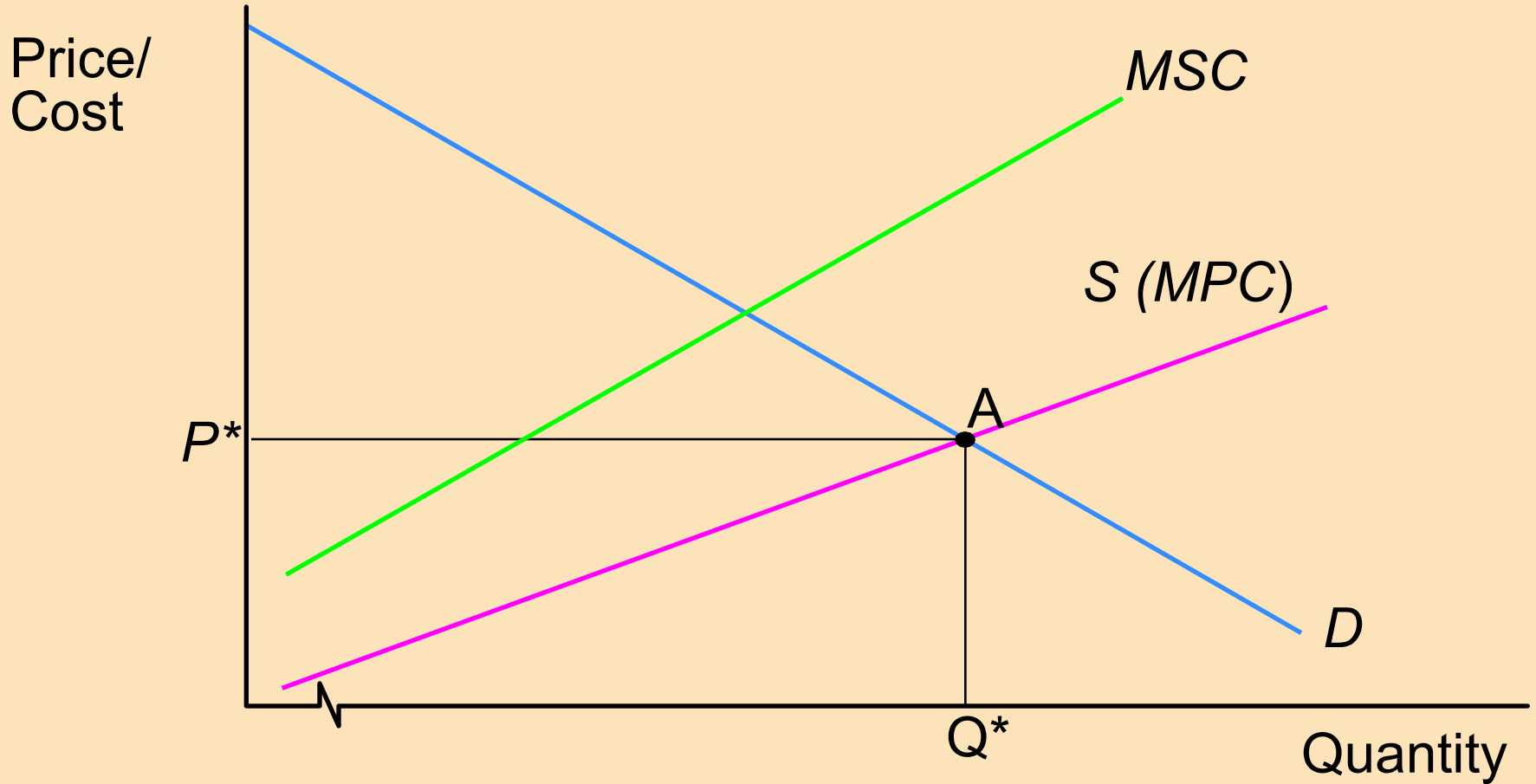
Negative externality



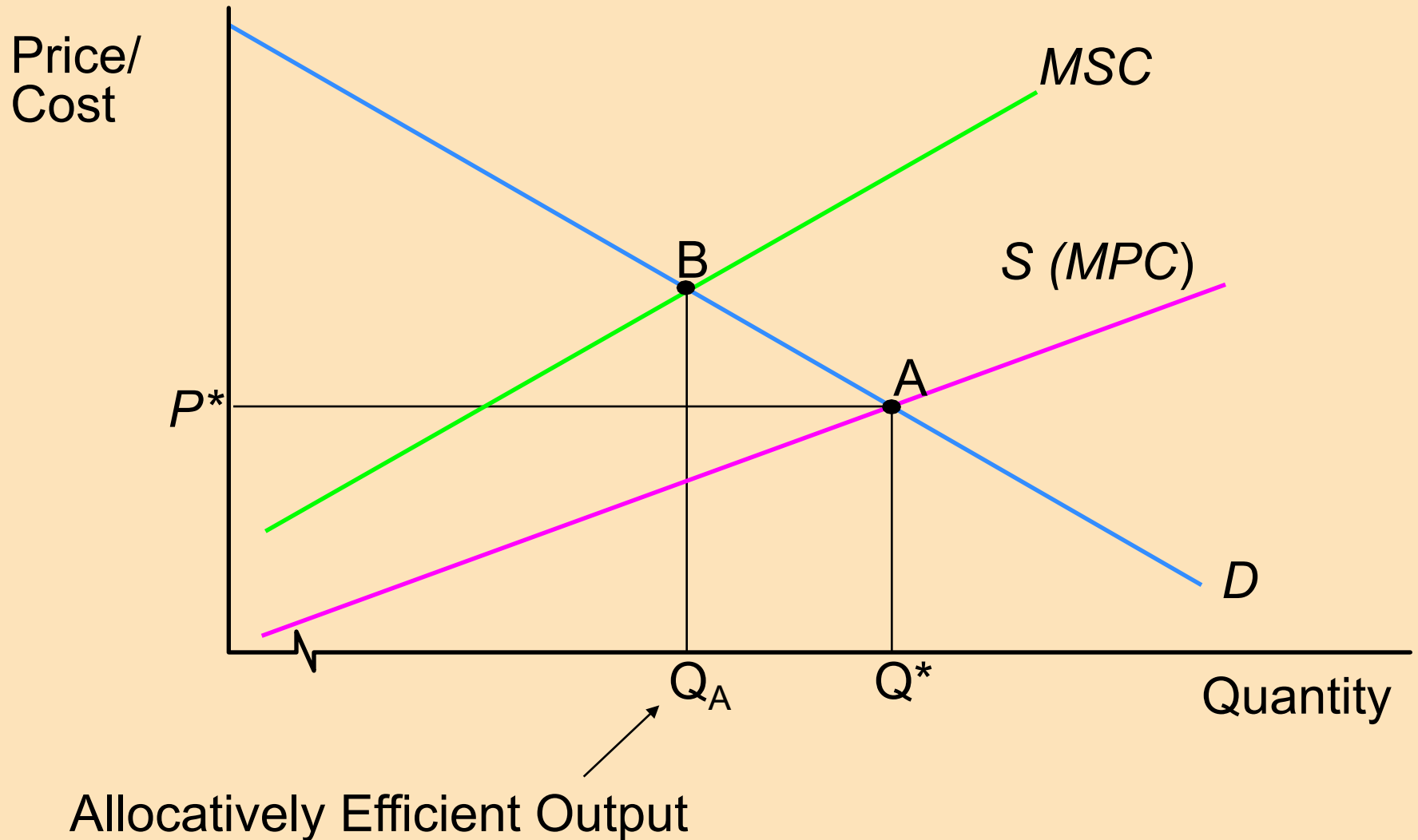
Negative externality



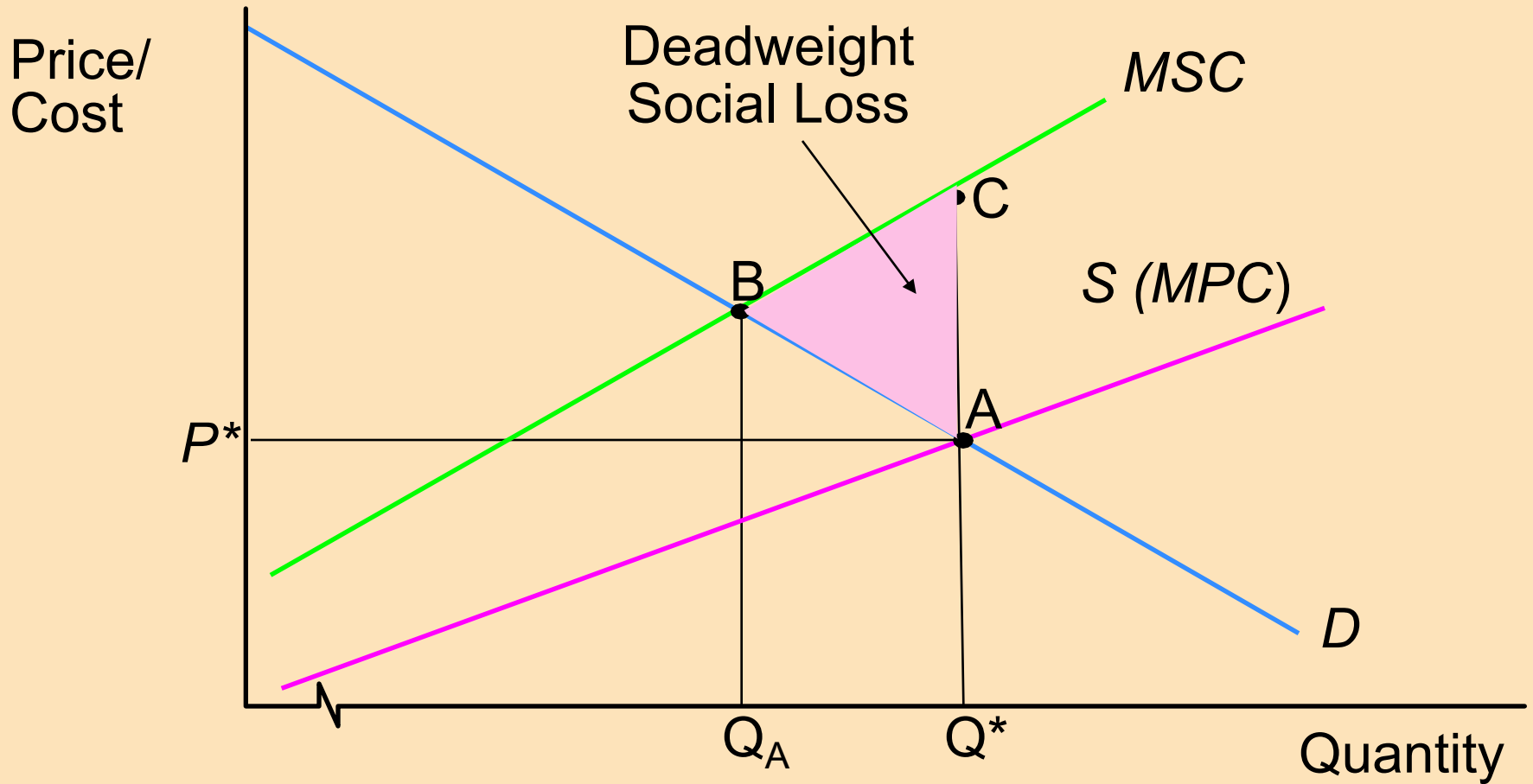
Negative externality



Negative externality



Negative externality



Policy options

- ❑ **Subsidy/tax** to ‘internalize’ benefit/cost
 - changing private benefit/cost so equal social benefit/cost and consumers/producers face the ‘correct’ price

- ❑ **Regulation of quantity produced (or direct provision of good, such as vaccine)**

- ❑ **Property rights** to ‘correct’ market
 - Eg. Permits used in environmental policy for carbon emissions to ‘internalise’ external cost

Issues arising from options

- ❑ May not internalize all externalities (demand subject to other influences)
- ❑ Can internalize externalities only if transactions costs are sufficiently low
- ❑ Costs may differ between firms and/or consumers which may not be accounted for
- ❑ Uncertainty over extent of external cost/benefits (required to set 'price')
- ❑ Political costs

Public goods and health (care)

- ❑ Goods which 'the market' will not provide:
- ❑ non-excludable (non-exclusive)
 - benefits of good freely available to all (or prohibitively costly to provide only to people who pay for it and exclude others)
- ❑ non-rival in consumption (inexhaustible)
 - quantity available for other people does not fall as someone consumes it, such that total cost of production does not increase as the number of consumers increases (MC of additional user = 0)

Examples of public goods

□ Defence

- Given size of armed forces may protect population of 10, 20, 50 or 100 million people

□ Law & order

- Foreign visitor benefits from crime-free streets as much as local residents

□ Information

- Discovery of food additive that causes cancer – cost borne once, then cost of dissemination so that all can benefit is (virtually) zero
- Infect. disease surveillance (prevent epidemic)

Is health (care) a public good?

- ❑ Health *per se* is **NOT** a public good:
 - one person's health status mostly benefits them
- ❑ Most health *care* is rival and excludable
 - **BUT**: are aspects that have public good aspects (e.g. communicable disease control)
- ❑ Public goods are **NOT** goods provided by the state (e.g. **NOT** public health systems!)

Quasi-public goods

- ❑ Public goods are rarely 'pure' - often:
 - non-excludable but rival = 'common pool goods'
 - Beach on a bank holiday
 - non-rival but excludable = 'club goods'
 - Satellite television signals, polio vaccination

- ❑ Technology and geography determine the degree of 'publicness' of a good (e.g. television & radio signals, street lights)

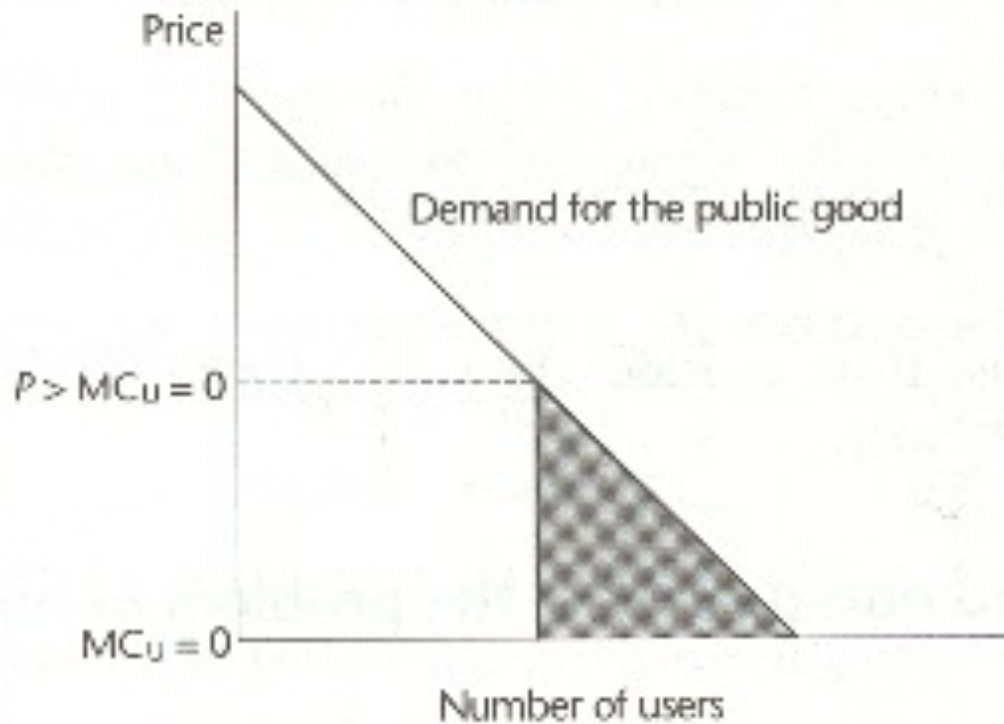
Public-private spectrum


Rivalry	Low	Club goods	Public goods
	High	Private goods	Common pool goods
		High	Low
		Excludability	

Problem posed by public goods

- ❑ 'Market' under-supply public goods as:
 - non-excludability leads to 'free-riding'
 - someone willing (hoping) to let others pay for a good they will consume (e.g. cure for cancer)
 - if everyone tries to be a free-rider, no one pays for the good to be produced (loss of social welfare)!
 - non-rivalry leads to lower than socially optimal consumption
 - non-rival means $MC=0$, but excludability means price can be set $> MC$ hence consumers who would have consumed good do not do so

Non-rivalry causes inefficiency



For a pure public good, the MC of an additional user is zero, $MC_U = 0$, so the Pareto optimal price is $P = MC_U = 0$. If a private firm charges $P > MC_U = 0$, then there is a loss of consumer surplus 

Example: medical research

- ❑ Discovery of bacteria by Louis Pasteur began revolution in treatment of disease, saved wool industry from anthrax, improved brewing and dairy products
- ❑ No single beneficiary (firm or consumer) obtains benefits sufficient to cover costs
- ❑ Cost of research supported by government
- ❑ Underinvestment if beneficiaries do not pay

Central problem

- ❑ Core policy issue is ensuring *collective action* to facilitate production/consumption of goods which are *largely* non-excludable and non-rival in consumption
- ❑ Role *usually* assigned to government
 - 'Privatizing' (excluding) a public good through establishing property rights (eg patent system)
 - Direct finance, funded through general tax
 - Other financial incentives (eg permits)

Problems facing government

- ❑ There are drawbacks associated with governmentally provided public goods
 - There may still be welfare loss from 'free' goods (depending on actual cost)
 - Level of provision may be hard to determine - problems in obtaining 'social value' (incentive to over/under state value as 'cost-benefit analysis' replaces market pricing)
 - Government programs may reflect political pressure to benefit special-interest groups

Uncertainty and insurance market

- ❑ A condition of a 'perfect' market was 'perfect' information, but uncertainties:
 - Do not know when we will be ill, what will be wrong with us, what treatments we might need, how much this will cost, etc.
- ❑ Insurance markets develop as 'solution' to uncertainty around magnitude and timing
 - Third party pays for care from central fund that individuals pay into through a premium
- ❑ But insurance markets can also 'fail' due to 'adverse selection' and 'moral hazard'

Adverse selection

- ❑ Adverse selection arises because:
 - Individuals may have better idea of their risk status than does the insurance company
 - Individuals with a low risk of requiring health care may find it difficult to obtain "actuarially fair" insurance – premium equal to expected cost of future consumption
 - Those with **lower** risk will not purchase insurance priced to cater for those with **average** risk, whereas higher risk individuals will, SO...

Adverse selection

- ... average risk level of those remaining will rise (as will premium) (continually)
- Result: those at low risk (and high risk with low income) not insured (as premium rises)

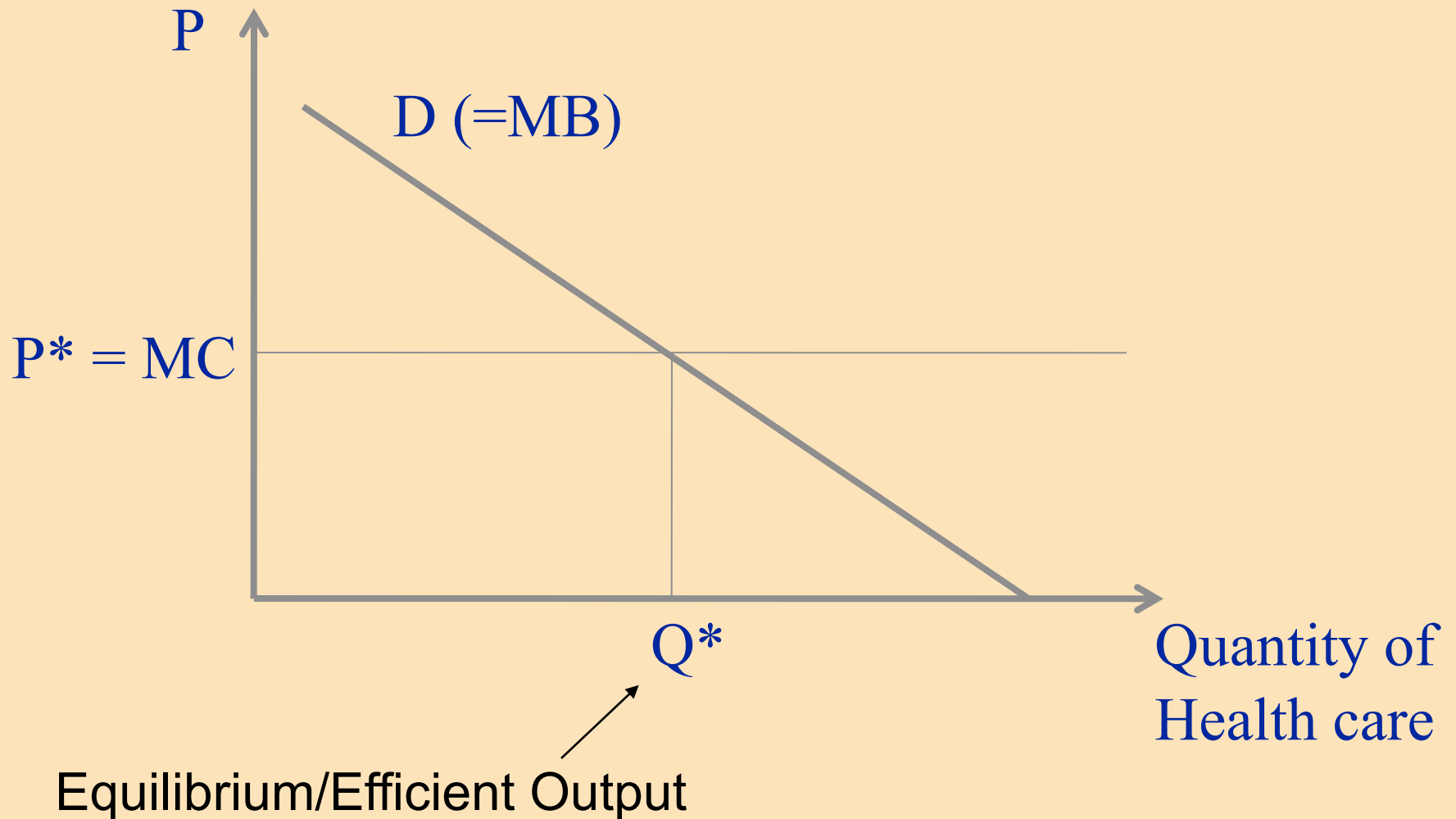
□ Solutions:

- Private insurance may 'experience rate' (set a different premium for different risk groups)
- Compulsory public insurance. Stops low risk leaving market (forced cross-subsidisation of those at high risk by those at low risk)

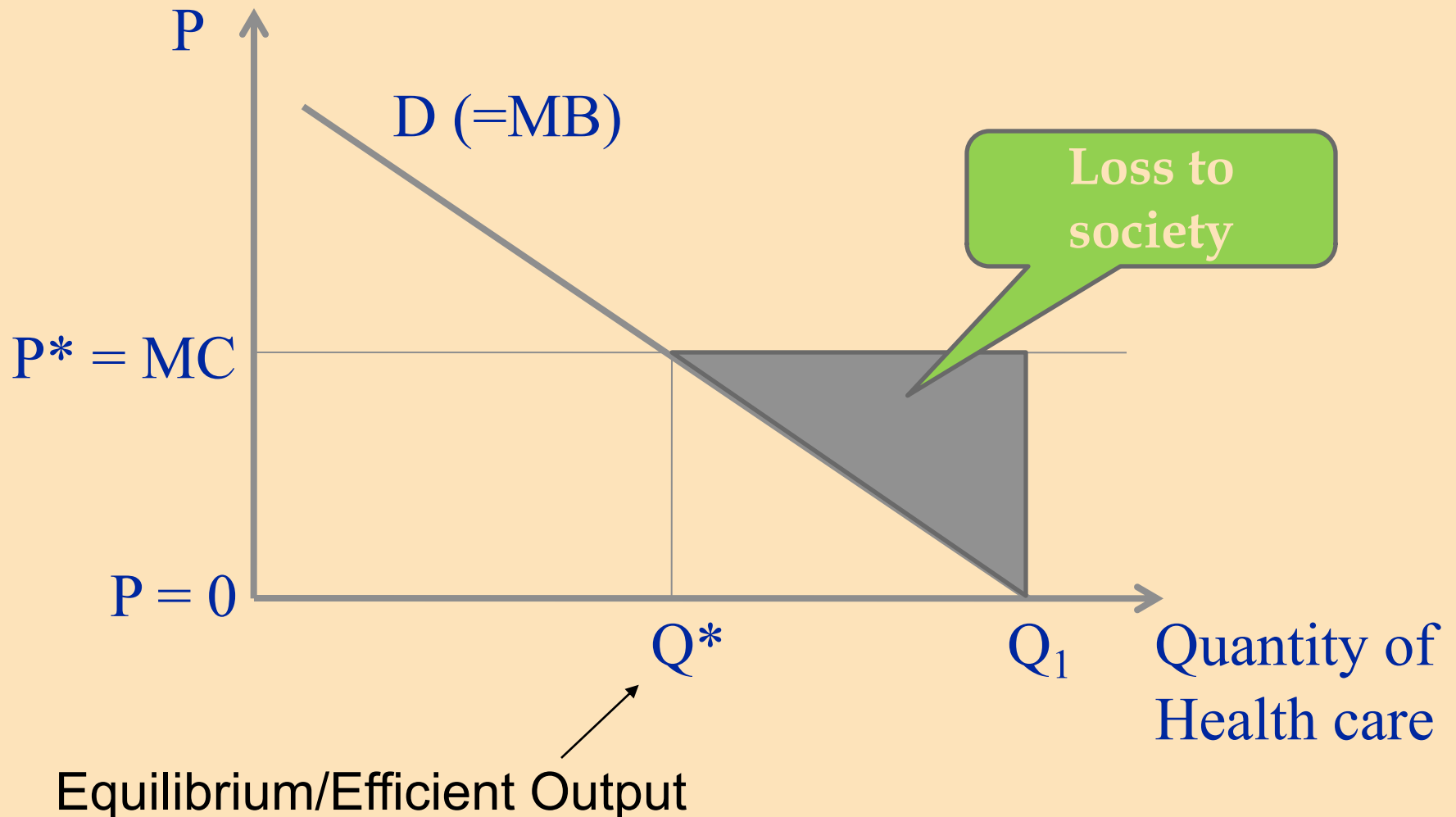
Consumer moral hazard

- ❑ Over-use of services because insurer will pay and consumer does not face the full cost
 - May lead to less effort being made to avoid the need for health care (*ex ante* moral hazard)
 - May lead to over-consumption of health care when ill (*ex-post* moral hazard)
- ❑ A welfare loss can arise as a result of providing health care at a zero or subsidised price
 - Consumption up to point where their marginal benefit equals the marginal cost *to them* (the price)
 - This can happen in a private insurance, social insurance or tax funded system

Potential loss from moral hazard



Potential loss from moral hazard



User charges and moral hazard

- ❑ User charges (co-payments) can be viewed as a means of reducing moral hazard
 - Reduces utilisation of health care by patients
- ❑ But there are problems:
 - Disproportionately affects lower income groups
 - Demand is reduced for effective treatments as well as trivial health care
 - May not reduce consumption if doctors induce demand

A final word...

- ❑ Perfectly competitive markets are 'optimal'
- ❑ But markets fail for various reasons, incl:
 - Externalities, public goods, adverse selection, moral hazard
- ❑ Possible responses by government involve differing degrees of market regulation
- ❑ BUT: governments can also 'fail', and it is an empirical question as to which set of arrangements will produce the 'best' (most efficient) outcomes