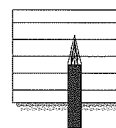By the end of this chapter you should be able to describe the nature of positive and negative externalities, and how they relate to resource allocation in the market. You will be expected to be able to:

- define and give examples of positive and negative externalities
- understand the significance of property rights
- derive social marginal cost curves and social marginal benefit curves
- use social marginal cost and benefit curves to identify and compare the social equilibrium with the private market equilibrium
- explain how subsidies, taxes, regulations, and public provision can be used to internalise positive and negative externalities.

Private Market Equilibrium

An individual consumer's equilibrium for a private good is where the marginal cost of consumption equals the marginal benefit (see Graph A). The MC of consumption is horizontal because the consumer can buy any amount of the good at the same price. The law of diminishing marginal utility determines the slope of the MB. The individual firm's equilibrium for a private good is where the marginal cost of production equals the marginal revenue (see Graph B). The MR is horizontal because the producer is a price taker. The upward sloping MC curve is determined by the law of diminishing returns.

Market equilibrium for a private good is where the marginal cost of all suppliers equates to the marginal benefit of all consumers (see Graph C). Private consumers and producers only look to their own costs and benefits.

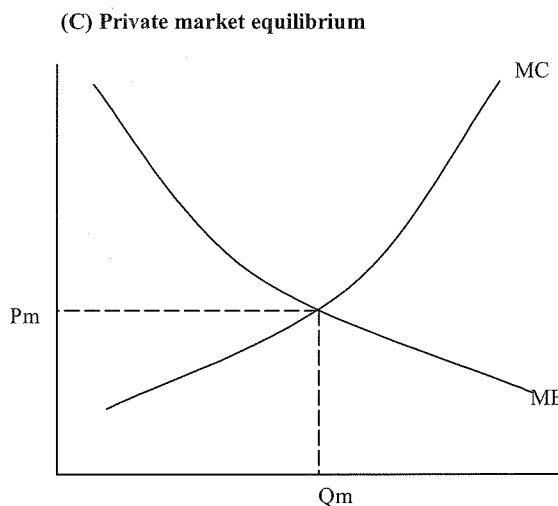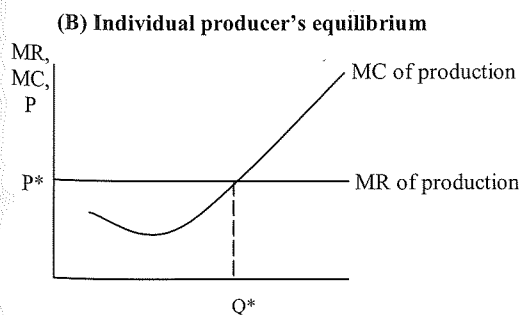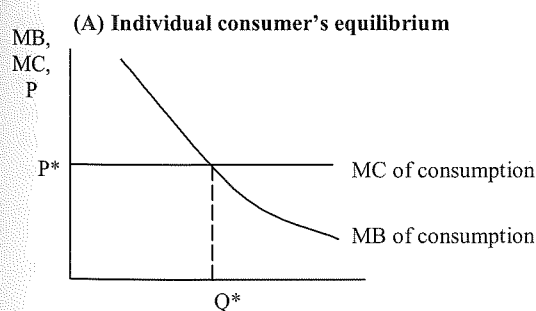Describe the market equilibrium position for a private good.

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(A) Individual consumer's equilibrium

(B) Individual producer's equilibrium

(C) Private market equilibrium

Private equilibrium is allocatively efficient for private goods, but not for mixed goods. **Mixed goods** are those with externalities or side-effects. As explained in the remainder of this chapter, mixed goods will not be produced or consumed in socially desirable quantities: there will be either too much or too little. Thus with mixed goods, **private** and **social preferences** will differ and therefore market failure occurs.
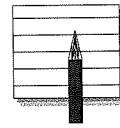
Distinguish between a private good and a mixed good.

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Social Equilibrium

Thus the social equilibrium for a mixed good is where the MSC intersects the MSB, and also where the difference between TSB (total social benefit) and TSC (total social costs) is at a maximum.

Social equilibrium

Social equilibrium
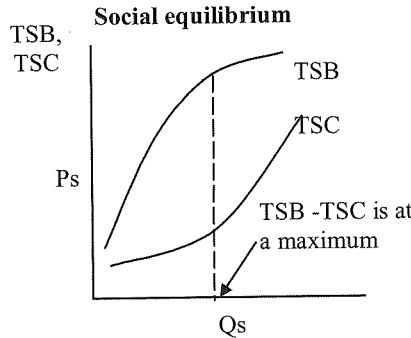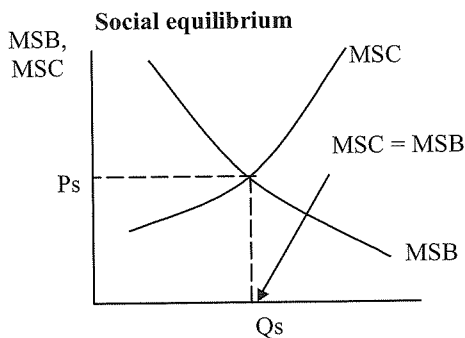
Define social equilibrium.

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Define an externality.

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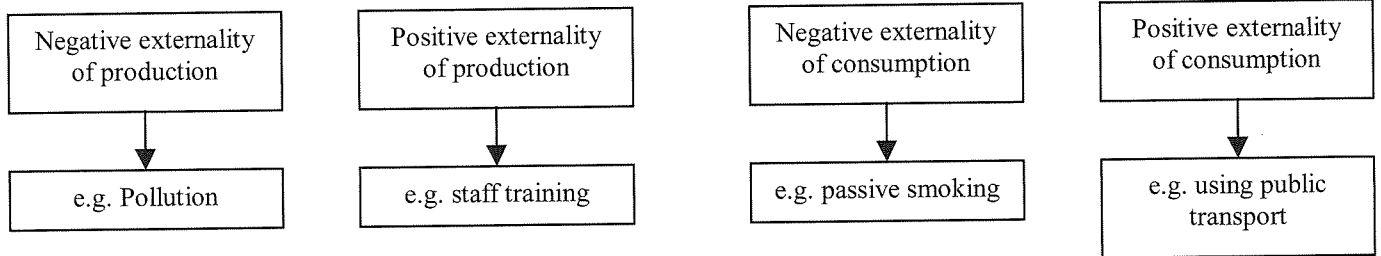
Externalities

Externalities are unintended spill overs or side-effects that result from production or consumption. They affect others (third parties) not directly involved in the production or consumption process.

Negative externality of production	Positive externality of production	Negative externality of consumption	Positive externality of consumption
e.g. Pollution	e.g. staff training	e.g. passive smoking	e.g. using public transport

Negative Externality of Production

This is a cost a firm imposes on others, eg. pollution.

Negative externality of production

A negative externality *increases* the costs from MC to MSC (marginal social costs). MSC = MC + spillover costs. The diagram shows the market equilibrium at Pm, Qm and the social equilibrium at Ps, Qs. Note that at the private market equilibrium the good is **under** priced and **over** supplied / produced. This externality can be internalised if the government intervenes by taxing or fining the producer. The effect of the tax is to shift the supply curve vertically up so that private preferences now match social preferences.

Explain why pollution is considered a negative externality of production.

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Explain how the MSC is derived.

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What government policy measures are used to internalise a negative externality of production?

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Positive Externalities of Production

These are benefits a firm's activities have for others, eg. research and development (R&D). R&D can reduce costs for other producers.

Positive externality of production
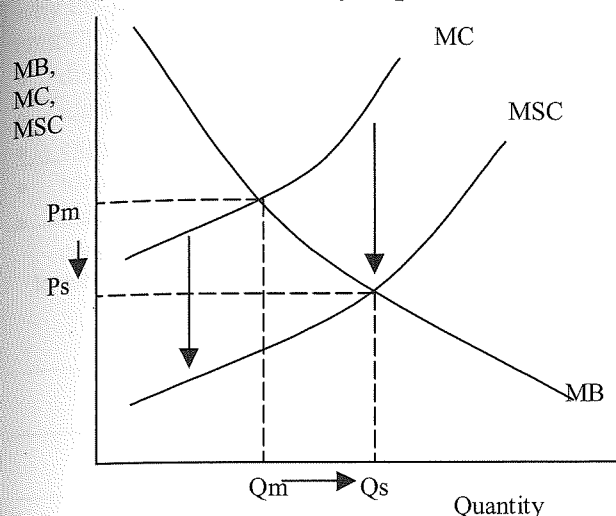
Positive externalities of production reduce the costs from MC to MSC. Equilibrium moves from Pm, Qm to Ps, Qs, which means that at the private market equilibrium the good is **over** priced and **under** supplied / produced. These benefits can be internalised if the government provides subsidies, or in some other way rewards the producer. The effect of the subsidy is to shift the supply curve vertically downwards so that private preferences now match social preferences.
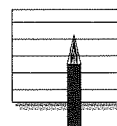
Negative Externalities of Consumption

Consumption by the individual reduces benefits to others, eg. passive smoking.

Negative externality of consumption
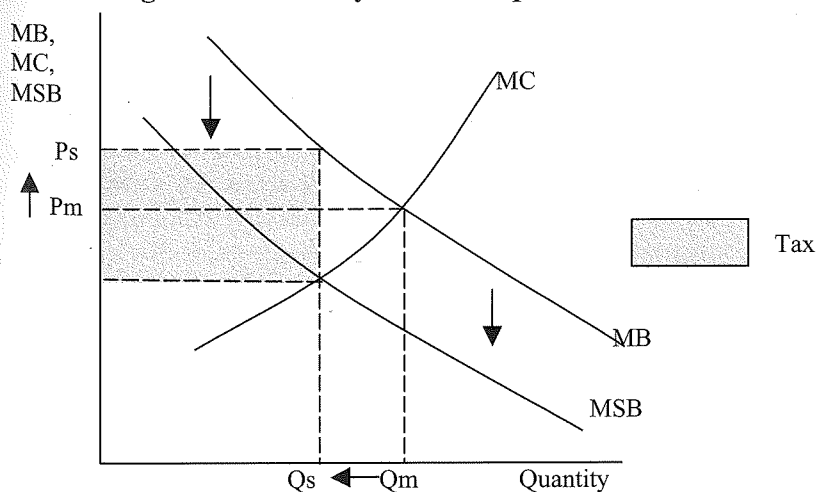
Negative externalities of consumption will move MB to MSB. At the private market equilibrium Pm and Qm the good is **under** priced and **over** consumed. This externality can be internalised if the government taxes the commodity, or alternatively consumption can be regulated or prohibited. The tax shifts will mean that the private preferences now match social preferences at equilibrium of Ps and Qs.

Define a positive externality of production and give an example.

Suggest why R&D is considered a positive externality of production.

Explain which government policy measures can be used to internalise a positive externality of production.
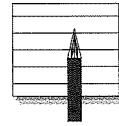
Define a negative externality of consumption.

Explain why excess consumption of alcohol is considered to have negative externalities of consumption.

What government policy measures are used to internalise a negative externality of consumption?

Positive Externalities of Consumption

These occur when consumption has benefits to others, eg. using public transport rather than a private vehicle to get to town.
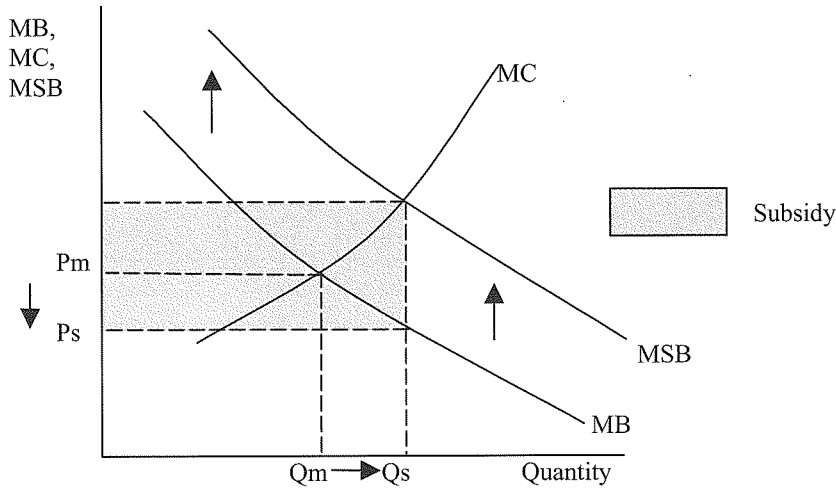
Positive externality of consumption

The spill-over benefits at each level of consumption increase the benefits from MB to MSB. Equilibrium moves from Pm, Qm to Ps, Qs. These benefits can be internalised (paid to the consumer) if the government subsidises the consumer, or provides the good free, eg. child immunisation, etc.

Using the Market to Correct for Externalities

The existence of externalities means that property rights are unclear. **Property rights** give the owner of a resource the exclusive right to exploit, sell or conserve that resource in whatever way the owner wishes. Where property rights are clear, resource allocation is relatively straight-forward.

Take the case where a factory that discharges its waste into the sea wishes to expand. The sea is polluted in the vicinity of the factory, and a previously healthy commercial fishery is badly affected. Clearly, this is a negative externality of production. This externality could be internalised without the use of government intervention if property rights could be established.

The factory has the right to produce and to discharge a certain amount of waste (pollution). On the other hand, the fishers have the rights to catch fish. In this case the factory's activities are ruining the property rights of another group. For the expansion to go ahead, the community may require the factory to purchase tradeable pollution rights and the money raised could be used to compensate the fishers. Alternatively the factory could avoid having to purchase the pollution rights if it adopted less environmentally-damaging technologies. In either case, the externality has been internalised by establishing property rights, without the need for direct intervention by government.

Define a positive externality of consumption.

Explain why using public transport is considered to have positive externalities of consumption.

What government policy measures are used to internalise a positive externality of consumption?

Explain how establishing property rights can help correct for externalities.