Lecture

INSTITUTE OF ACTUARIAL & QUANTITATIVE STUDIES

Class: BSc

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Chapter: Unit 1 Chapter 1

Chapter Name: Market failure

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1 Introduction

Perfect competition has been used by many economists and policy makers as an ideal against which to compare the benefits and shortcomings of real-world markets.

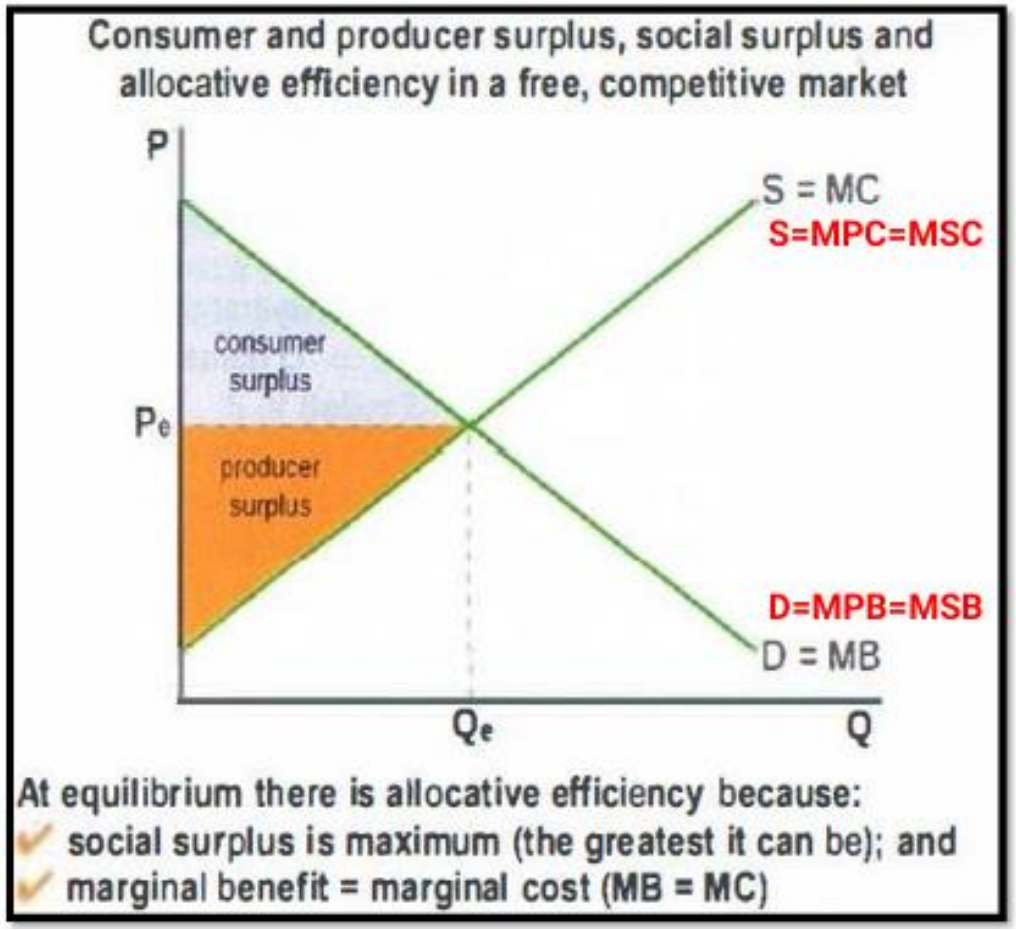
Under perfect competition, firms' supernormal profits are competed away in the long run by the entry of new competitors. As a result, firms are forced to produce at the bottom of their average cost curves. The fear of being driven out of business by the entry of new firms forces existing firms to try to find lower-cost methods of production, thus shifting their AC curves downwards.

Perhaps the most wide-reaching claim for perfect competition is that under certain conditions it will lead to a socially efficient use of a nation's resources.

1.1 Allocative Efficiency

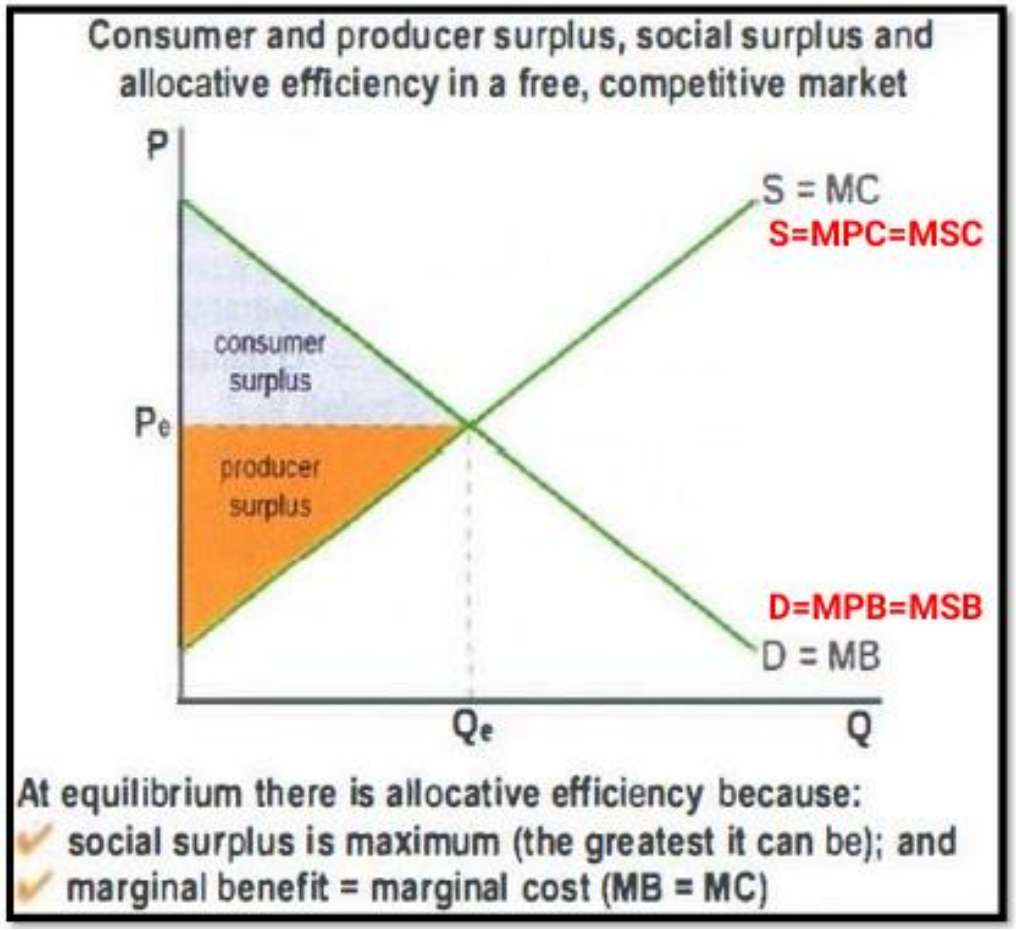
Allocative efficiency is simply the best allocation of resources from society's point of view, occurring in a free, competitive market.

- **Private cost (PC)** – Producer's Cost of production
- **Social cost (SC)** = PC + EC (External cost)
- **Private benefit (PB)** – Individual Consumer benefit (satisfaction) upon consumption
- **Social benefit (SB)** = PB + EB (External benefit)



1.1 Allocative Efficiency

- **Marginal benefit (MB)** = the extra benefit to consumers from consuming one more unit of a good, equal to the demand curve.
- **Marginal cost (MC)** = the extra cost to producers of producing one more unit of a good, equal to the supply curve.

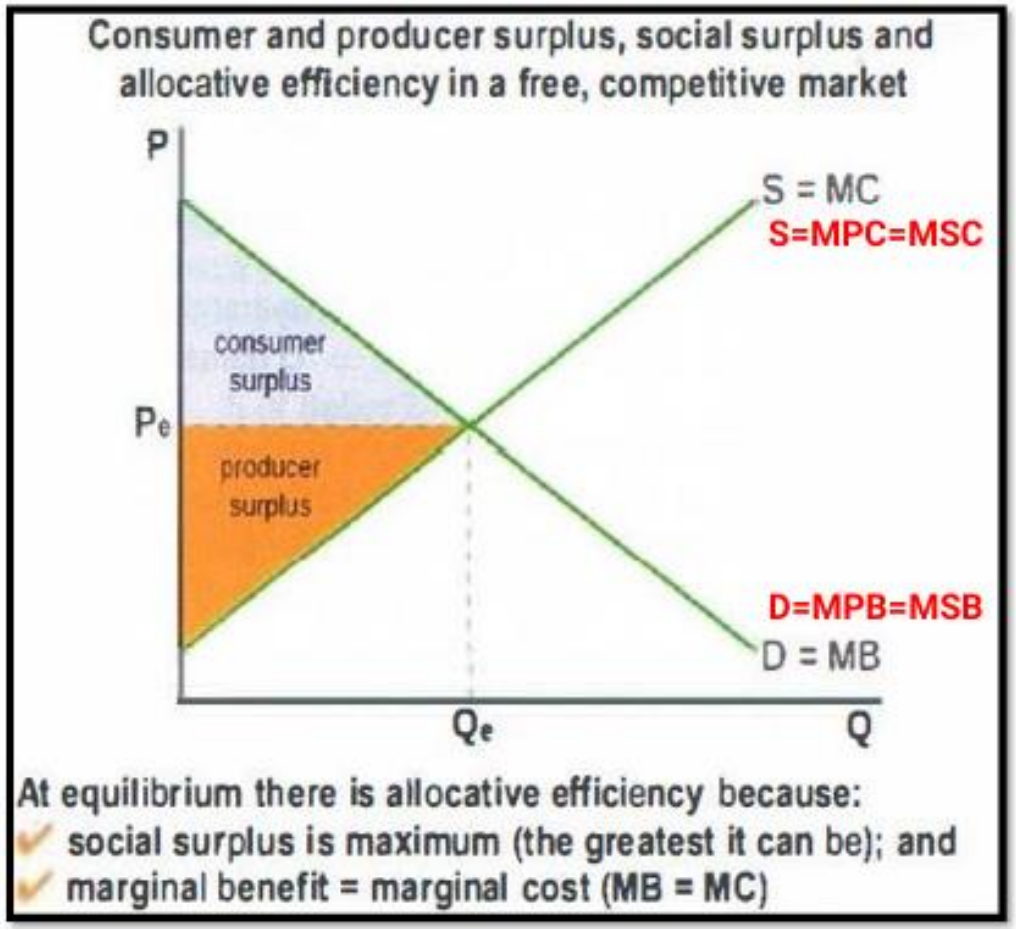


1.1 Allocative Efficiency

Allocative efficiency when:

1. Maximisation of social surplus (consumer S + Producer S) **D = S**
2. Maximisation of Net Social benefit: **MSB = MSC**
3. When resources perfectly follow consumer demand: **D = S**

MPC = MPB – Private efficiency
MSC = MSB – Social efficiency (Allocative efficiency)



1.2 Pareto Optimality

If it were possible to make changes in the economy – changes in the combination of goods produced or consumed, or changes in the combinationof inputs used – and if these changes benefited some people without anyone else being made worse off, economists would describe this as an improvement in social efficiency, or a **Pareto improvement.**

Where all possible Pareto improvements have been made: where, therefore, it is impossible to make anyone better off without making someone else worse off.– the economy is said to be **socially efficient**, or **Pareto optimal.**

1.3 When is Private Efficiency equal to Social Efficiency

Economists argue that under certain circumstances the achievement of private efficiency will result in social efficiency also. Two major conditions have to be fulfilled, however:

- There must be perfect competition throughout the economy.
- There must be no externalities. Externalities are additional costs or benefits of production or consumption experienced by people other than the producers and consumers directly involved in the transaction. They are sometimes referred to as spillover or third-party costs or benefits. Pollution is an example. It is a cost that society experiences from production, but it is not a cost that the individual producer has to pay. In the absence of externalities, the only costs or benefits to society are the ones that the individual producer or consumer experiences: i.e. marginal social benefit (MSB) is the same as marginal private benefit (MB), and marginal social cost (MSC) is the same as marginal private cost (MC).

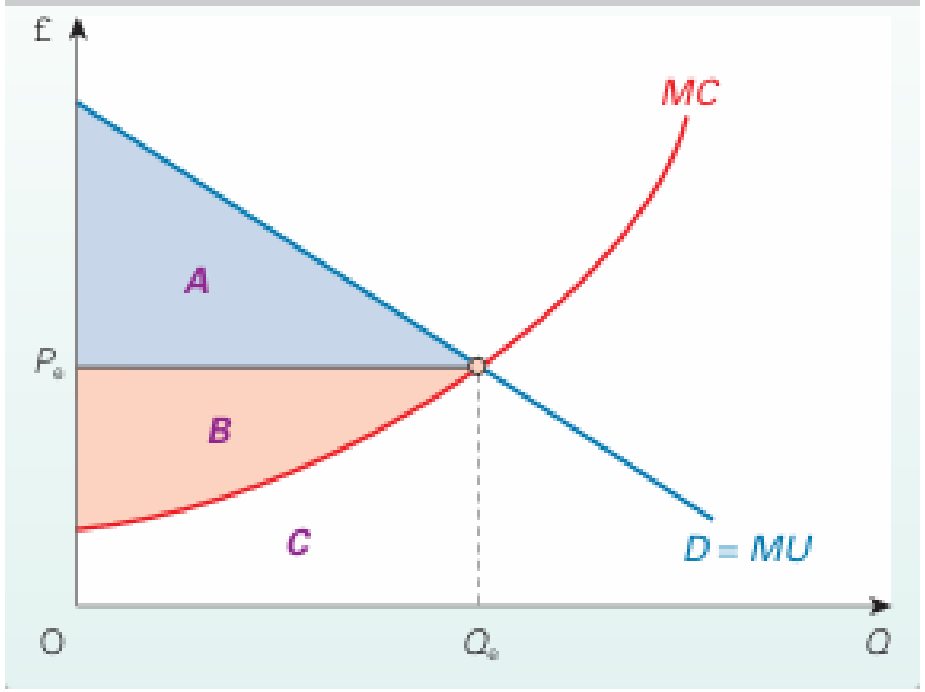
2 Achieving social efficiency through the market

1. Consumption: MU = P

The marginal benefit to a consumer from the consumption of any good is its marginal utility.
The marginal cost is the price the consumer has to pay.

The 'rational' consumer will maximise consumer surplus where MU = P: in other words, where the marginal benefit from consumption is equal to the marginal cost of consumption. As we have seen, an individual's consumer surplus is maximised at the output where MU = P. With all consumers doing this, and all facing the same market price, their collective consumer surplus will be maximised.

Figure 12.1 Maximum total surplus under perfect competition



2 Achieving social efficiency through the market

2. Production: MC = P

The marginal benefit to a producer from the production of any good is its marginal revenue.

The 'rational' firm will maximise its profit where its marginal revenue is equal to its marginal cost of production. This is the same thing as saying that it will produce where the marginal benefit from production is equal to the marginal cost from production. Profit is the excess of total revenue over total costs.

Total producer surplus (TPS) is the excess of total revenue over total variable costs: TPS = TR- TVC. In other words, total producer surplus is total profit plus fixed costs: TPS = TΠ + TFC. But since there are no marginal fixed costs (by definition), both producer surplus and profit will be maximised at the same output.

Total revenue (i.e. total expenditure) is P * Q (areas B + C). Total variable cost is the area under the MC curve (area C): i.e. it is the sum of all the marginal costs of each unit produced. Producer surplus is thus the area between the price and the MC curve (area B)

2 Achieving social efficiency through the market

3. Private efficiency in the market; MU = MC

Both consumer surplus and producer surplus are maximised at output Q_e. This is the equilibrium output under perfect competition.

Thus, under perfect competition, the market will ensure that total surplus (areas A + B), sometimes called total private surplus, is maximised. At this output, MU = P = MC.
At any output other than Q_e total surplus will be less.
- If output were below Q_e, then MU would be above MC: total surplus would be increased by producing more.
- If output were above Q_e, then MU would be below MC: total surplus would be increased by producing less.

2 Achieving social efficiency through the market

4. Social efficiency in the market: MSB = MSC

Provided the two conditions of achieving Pareto optimality
(a) Perfect competition :
Perfect competition will ensure that private efficiency is achieved:

MU = MC (for all producers and all consumers)

(b) The absence of externalities are fulfilled,
In the absence of externalities, MSB = MU (i.e. the benefits of consumption within society are confined to the direct consumers) and MSC = MC (i.e. the costs of production to society are simply the costs paid by the producers). Thus MSB = MU = P = MC = MSC i.e. MSB = MSC With no externalities, the total surplus shown in Figure 12.1 will represent total social surplus.

3 Market Failure

Market failure is the failure of the market to allocate resources efficiently, resulting in overallocation, underallocation or no allocation of resources to the production of a good or service relative to what is socially most desirable.

Thus, simply meaning that due to certain reasons the market does not achieve efficiency.

Market failures provide one of the major justifications for government intervention in the economy.

3.1 Externalities

Externalities are spillover costs or benefits. Where these exist, even an otherwise perfect market will fail to achieve social efficiency.

Externalities are positive effect (benefit) or negative effect (cost) for third parties who are not part of a transaction and whose interests are not taken into account; the market fails to achieve allocative efficiency , because **marginal social benefits MSB ≠ marginal social costs MSC.**

- Whenever other people are affected beneficially, there are said to be **external benefits**.
- Whenever other people are affected adversely, there are said to be **external costs**.
- **Social cost** of the production of any good is the private cost faced by firms plus any externalities of production.
- **Social benefit** from the consumption of any good is the private benefit enjoyed by consumers plus any externalities of consumption.

3.2 Negative Externalities of Production

Producers impose external costs on society: social costs of production are greater than private costs, therefore **MSC > MPC:**

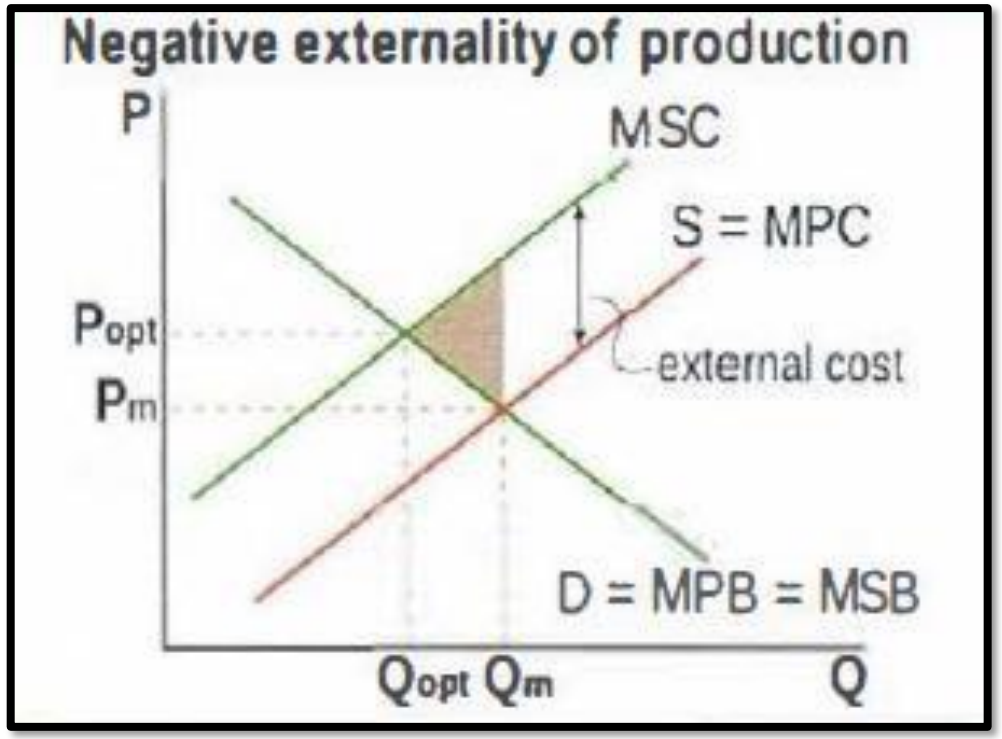
MSC curve lies above MPC curve.

Vertical difference between MSC and MPC curves = value of external costs.

Demand is not affected therefore D = MPB = MSB.

Qm > Qopt: the market over allocates resources: too much is produced.

Welfare loss (deadweight loss) is the brown shaded triangle.



3.2 Negative Externalities of Production

List down examples (other than mentioned below) of negative externalities of production that occur in real life:

3.

Example: Negative production externalities include the external costs of pesticides used in intensive farming and damage to ocean beds from industrial fishing. The over-use of pesticides will pollute rivers and streams which then causes harm to those who use them.

3.3 Negative Externalities of Consumption

Consumers impose external costs on society: private consumption creates negative effects on others, therefore **MSB < MPB:**

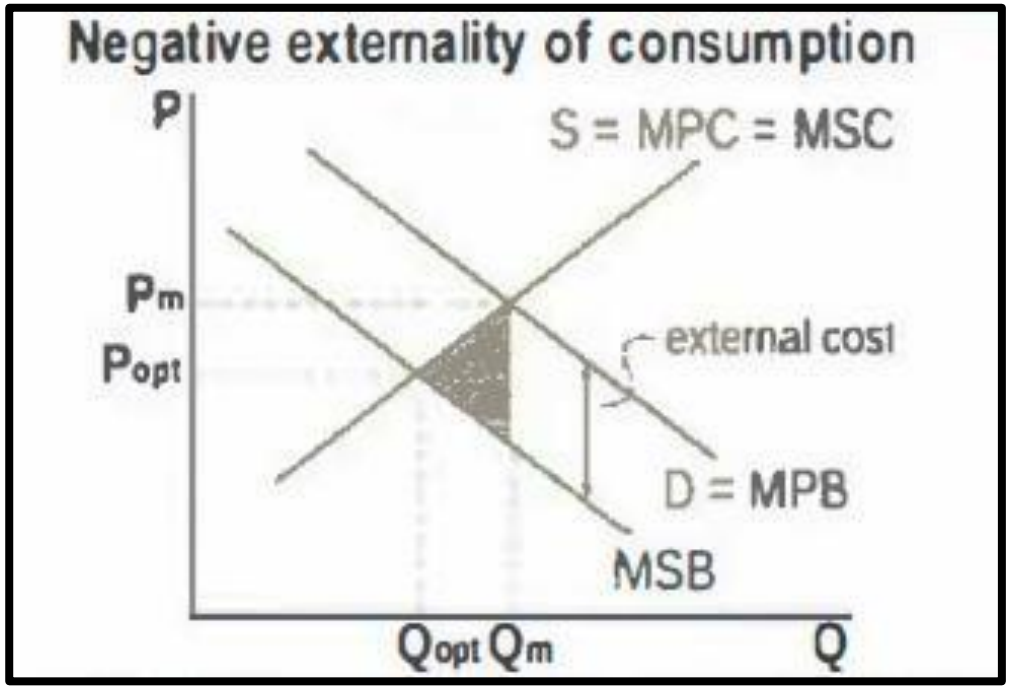
MSB curve lies below MPB curve.

Vertical difference between MPB and MSB curves = value of external costs.

Supply is not affected therefore S = MPC = MSC.

Qopt > Qm : the market resources: too much is produced

The shaded region shows the deadweight loss.



3.3 Negative Externalities of Consumption

List down examples (other than mentioned below) of negative externalities of consumption that occur in real life:

Example: Cigarette smoking, which can create passive smoking dangerous for non-smokers and also lead to increase health care costs. Consuming loud music late at night keeps your neighbours awake.

3.4 Positive Externalities of Production

Producers create external benefits for society: their production activities are beneficial for third parties, therefore **MSC** < **MPC.**

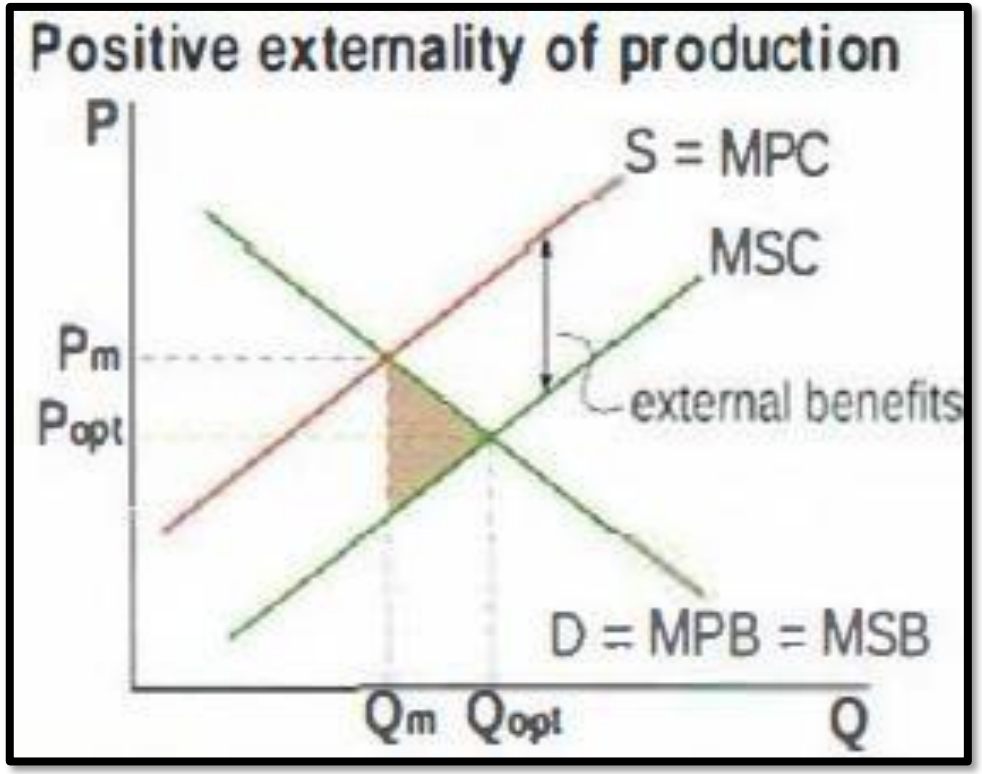
MSC curve lies below MPC curve.

Vertical difference between MPG and MSC curves = value of external benefits.

Demand is not affected therefore D = MPB = MSB.

Qm < Qopt: the market under allocates resources: too little is produced

Welfare loss (deadweight loss) is the brown shaded triangle



3.4 Positive Externalities of Production

Try to think of positive production externalities that take place in and around us!

Example: If a company develops new technology, such as a database programme, this new technology can be implemented by other firms who will gain a similar boost to productivity.

Tim Berners Lee who developed the World Wide Web, made it freely available, creating a very large positive externality.

3.5 Positive Externalities of Consumption

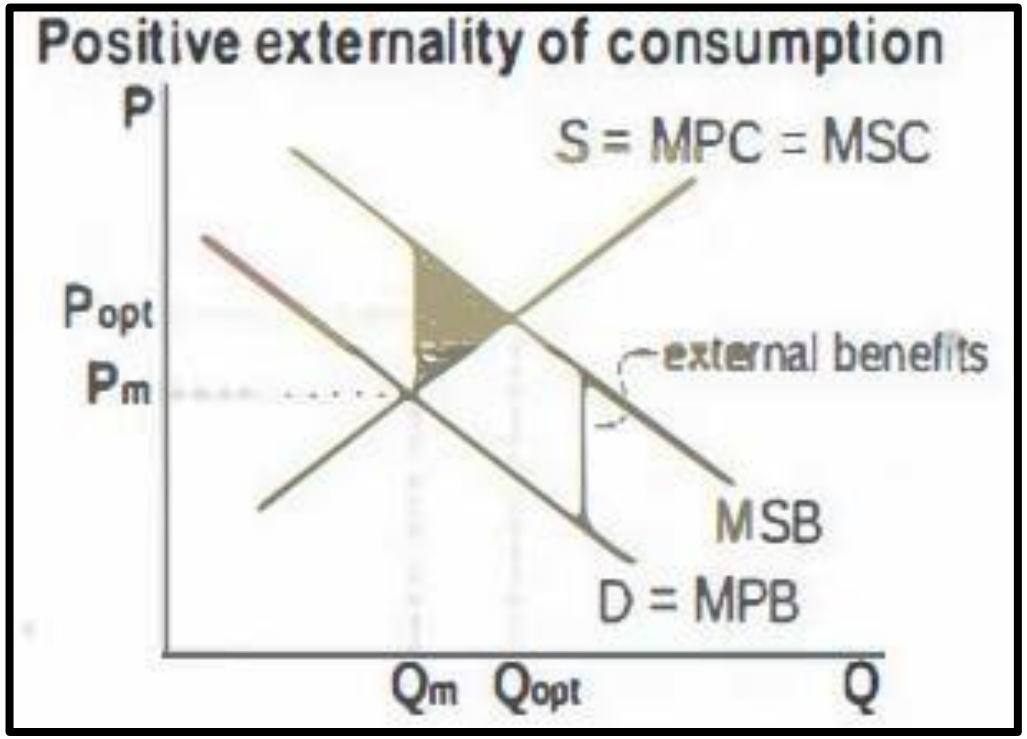
Consumers create external benefits for society: private consumption is beneficial for third parties, therefore **MSB > MPB.**

MSB curve lies above MPB curve.

Vertical difference between MSB and MSC curves = value of external benefits.

Supply is not affected therefore S= MPC = MSC.

Qm < Qopt : the market under allocates resources: too little is produced.



3.5 Positive Externalities of Consumption

Now try to think of positive consumption externalities that we see!

Example: The most recent positive externality is due to the consumption of face masks in the pandemic of 2020. People use face masks for their own security so that they do not get contacted to the Covid virus. But while doing this, they also protect the health of others around them. This has proved to a very great positive consumption externality.

4 Public Goods

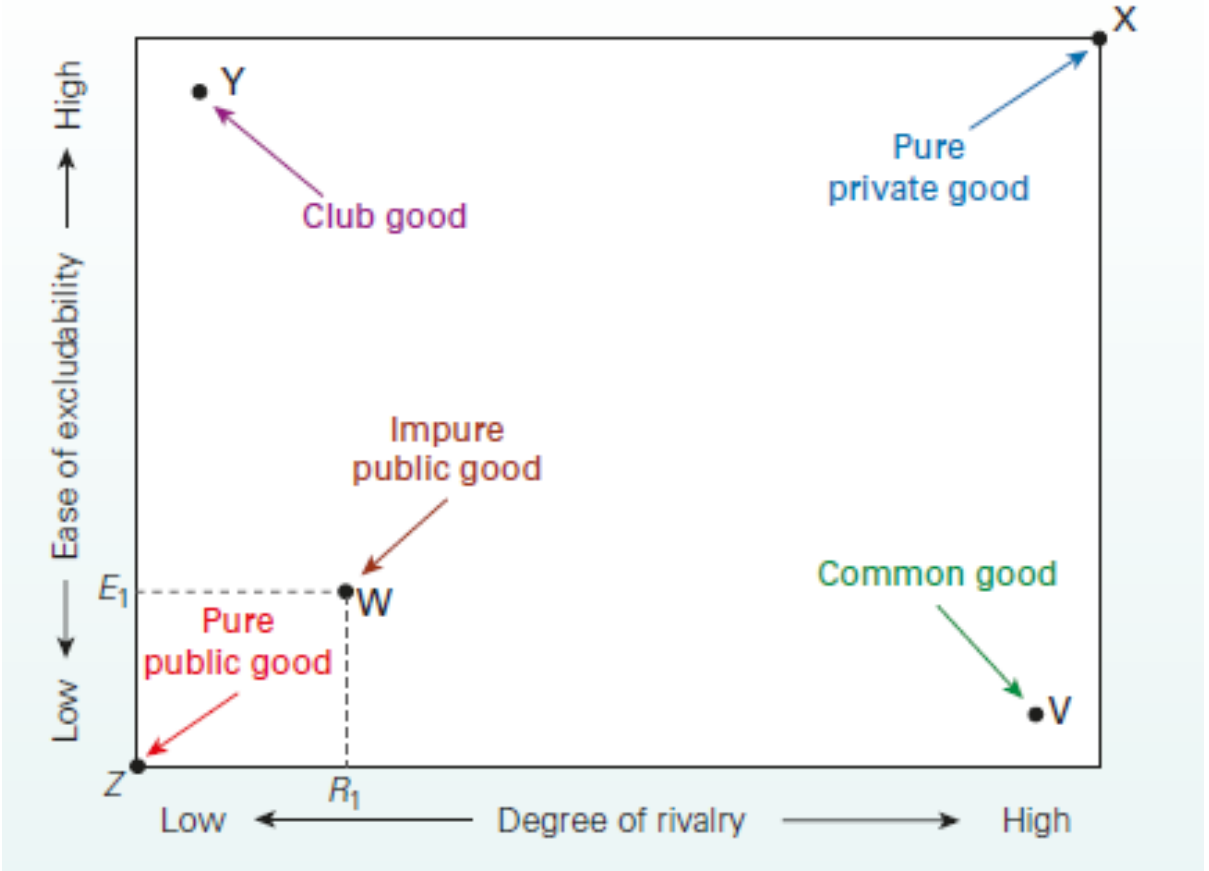
A good or service that has the features of non-rivalry and non-excludability and as a result would not be provided by the free market.

- **Non-rivalry** Where the consumption of a good or service by one person will not prevent others from enjoying it.
- **Non-excludability** Where it is not possible to provide a good or service to one person without it thereby being available free for others to enjoy.

4.1 Pure and Impure public goods

Pure private good

- Good X is a pure private good. It is very easy to exclude any non-payers from the consuming the product, which is perfectly rivalrous. A pure private good is one where the benefits can be enjoyed only by the consumer who owns (or rents) it.
- In reality, many goods will be close to point X and have significant degrees of rivalry and ease of excludability. Products that fall into this category can normally be provided by the market mechanism

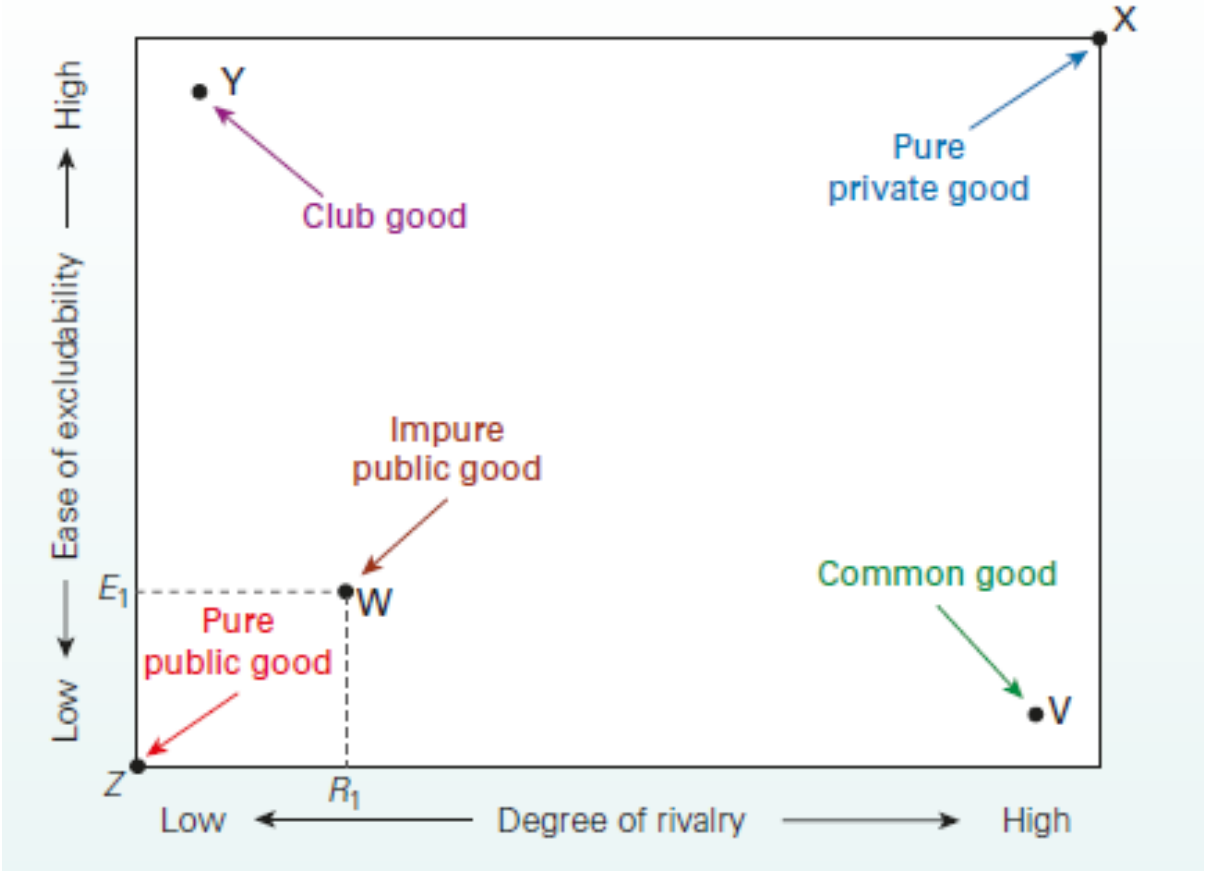


4.1 Pure and Impure public goods

Pure public good

- A good or service that has the characteristics of being perfectly non-rival and completely non-excludable and, as a result, would not be provided by the free market.

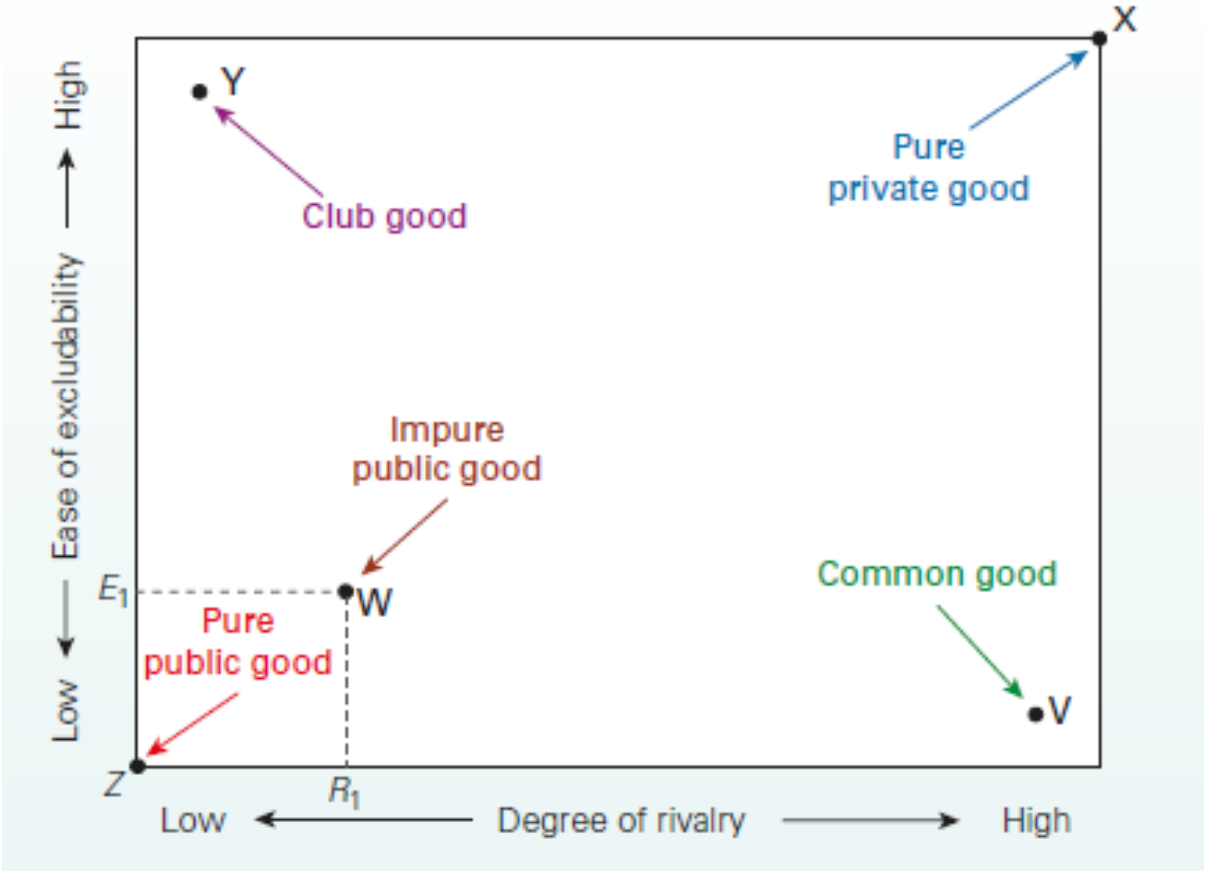
- Eg: One of the closest real-world examples is that of national defence. Once a given investment in national defence has been made, additional people can often benefit from the protection it provides at no additional cost. It would also be very difficult to exclude anyone within a country from obtaining the benefits from the increase in security.



4.1 Pure and Impure public goods

Impure public good

- It has a low level of rivalry, without being perfectly rivalrous, and it is difficult, but not impossible, to exclude non-payers.
- **Club good:** Good Y has a low degree of rivalry but exclusion is relatively easy. Examples include subscription TV services, such as Netflix or Amazon Prime.
- **Common good or resource:** Good V has a high degree of rivalry but the exclusion of non-payers is very difficult. Examples include the felling of trees in the rainforests and the use of the atmosphere as a common 'dump' for emissions.



4.1 Pure and Impure public goods

Tragedy of the commons - When resources are commonly available at no charge, people are likely to overexploit them. As seen above in the example.

4.2 Market Failure due to Public goods

Free rider problem occurs when people use a good without paying for it; it is closely related to non excludability.

When it is not possible to exclude people from using a good (ex a lighthouse) by charging a price for it, they take a "free ride", i.e. they use it without having to pay for its use.

Public goods represent market failure because of the free rider problem.

Since it is not possible to charge a price for the good, private firms will not produce it, even though it may be socially desirable and consumers may have a demand for it. Firms will not produce it because without a price it will be impossible for them to cover their costs.

Public goods are therefore a type of market failure because the market (i.e. private firms) fail to produce it at all.

4.3 Merit and Demerit Goods

- **Merit goods** are goods whose consumption creates positive consumption externalities. They are socially desirable but underprovided by the market and under consumed. It requires government policies to increase their provision (production) and consumption. Ex: education, health care, infrastructure roads, sanitation, sewerage systems .
- **Demerit goods** are goods whose consumption creates negative consumption externalities. They are socially undesirable but are overprovided by the market and over consumed. It requires government policies to reduce their provision (production) and consumption. Ex: cigarettes, gasoline as fuel for cars .

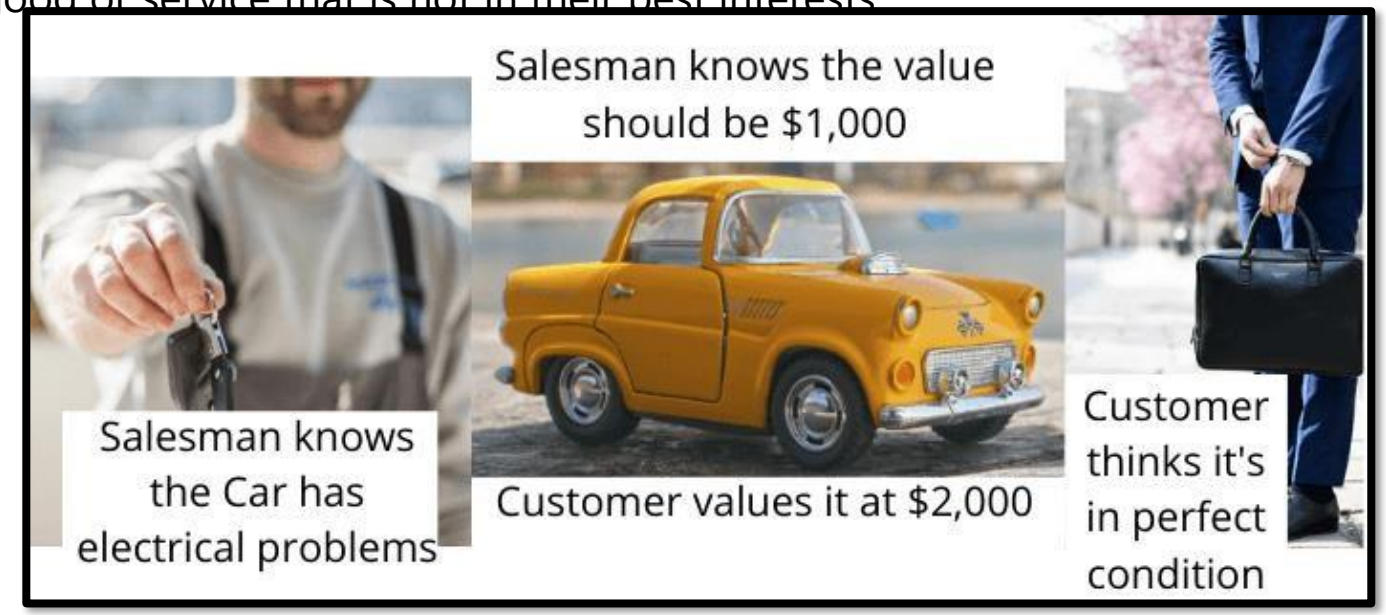
5 Asymmetric information

Asymmetric information is a type of market failure occurring when one party to a transaction (buyer or seller) has more information than the other party, leading to allocative inefficiency.

5.1 When sellers have more information than buyers

Examples: Sellers of used cars know more about the car's condition than the buyer; sellers of food and medicines (or in general, items important to human health) know more about the products they are selling than buyers etc.

In a free, unregulated market, these knowledge asymmetries usually result in an **underallocation of resources** to the production of the good or service, because buyers try to protect themselves against the risk of purchasing a good or service that is not in their best interests.



5.2 When buyers have more information than sellers

Two kinds of problems arise when the buyers know more, basically in the insurance industry.

1. The problem of adverse selection: the buyer of health insurance knows more about the condition of his/her health that the seller; this results in an underallocation of resources to health insurance, as sellers try to protect themselves against high-risk (i.e. unhealthy) insurance buyers, and also results in high prices for health insurance policies.

2. The problem of moral hazard: the buyer of insurance changes his/her behaviour after the purchase of insurance, increasing the chances of risky behaviour. Ex: the purchase of car theft insurance may make the buyer less careful about locking his/her car.

5.3 Abuse of monopoly power

Monopoly power is the ability of a firm to influence the price of the good that it produces and sells; it is type of market failure because it results in an underallocation of resources to the production of the good in question, and hence in allocative inefficiency and welfare loss.

Market failure in a monopoly can occur because not enough of the good is made available and/or the price of the good is too high. Without the presence of market competitors it can be challenging for a monopoly to self-regulate and remain competitive over time.

For example, De Beers is known around the world for creating the finest diamond engagement rings, wedding rings and other elegant diamond jewellery you'll treasure.
De Beers used its monopoly power to control the supply of diamonds in the 20th century. As a result, customers paid higher prices, leading to an inefficient allocation of resources.

6 Deadweight welfare loss of monopoly

The loss of consumer plus producer surplus in monopoly or other imperfect markets (when compared with perfect competition).