Chapter 5
Market failure

In this chapter we will see why the market economy fails to achieve many of its promises, and how government intervention can help markets overcome their failures.

5.1 The meaning of market failure: allocative inefficiency

♦ Analyse the concept of market failure as a failure of the market to achieve allocative efficiency, resulting in an over-allocation of resources (over-provision of a good) or an under-allocation of resources (under-provision of a good) relative to the social optimum.

The failure to achieve allocative efficiency

Our discussion so far has shown that a free, competitive market economy gives rise to a number of highly desirable outcomes. In Chapter 2 we learned that in a free competitive market, when the price of a good adjusts to make quantity demanded equal to quantity supplied, the equilibrium quantity reflects the 'best' or optimal allocation of resources to the production of that good (page 42). This condition is known as allocative efficiency, achieved when marginal benefit equals marginal cost ($MB = MC$), or when social surplus is maximum.

However, the achievement of these outcomes depends on very strict and unrealistic conditions that are practically never met in the real world. Therefore, in reality, the free market fails to achieve these highly desirable results. The study of market failure focuses on one particular failing: the free market's inability to realise allocative efficiency in a variety of circumstances.

Market failure does not necessarily lessen the market's signifcance as a mechanism that can advance the well-being of societies; instead, it suggests that for markets to realise their potential, they must be supported by appropriate government policies. Allocative efficiency is a concept used by economists to identify real-world situations that differ from the ideal of a perfect allocation of resources. Once these are identified, it is possible to design government policies aimed at reducing the extent of the inefficiencies.

Market failure refers to the failure of the market to allocate resources efficiently. Market failure results in allocative inefficiency, where too much or too little of goods or services are produced and consumed from the point of view of what is socially most desirable. Overprovision of a good means too many resources are allocated to its production (overallocation); underprovision means that too few resources are allocated to its production (underallocation).

Test your understanding 5.1

1 Using a diagram, and the concepts of consumer and producer surplus, and marginal benefits and marginal costs, explain the meaning of allocative efficiency.

2 Explain, in a general way, the meaning of market failure.

5.2 Externalities: diverging private and social benefits and costs

The meaning of externalities

♦ Describe the concepts of marginal private benefits (MPB), marginal social benefits (MSB), marginal private costs (MPC) and marginal social costs (MPC).
♦ Describe the meaning of externalities as the failure of the market to achieve a social optimum where MSB = MSC.

Understanding externalities

When a consumer buys and consumes a good, she or he derives some benefits. When a firm produces and sells a good, it incurs costs. Sometimes the benefits or costs spill over onto other consumers or producers who have nothing to do with consuming or producing the good. When this happens, there is an externality.

> An **externality** occurs when the actions of consumers or producers give rise to negative or positive side-effects on other people who are not part of these actions, and whose interests are not taken into consideration.

The other people feeling the effects of an externality are often referred to as 'third parties'. If the side-effects on third parties involve benefits, there arises a **positive externality**, also known as external (or spillover) benefit; if they involve costs, in the form of negative side-effects, there arises a **negative externality**, also known as external (or spillover) costs.

Externalities can result either from consumption activities (consumption externalities) or from production activities (production externalities).

Marginal private benefits and costs, and marginal social benefits and costs

To fully understand externalities, let's return to the demand and supply curves we studied in Chapter 2. As we know, the demand curve is also a 'marginal benefit curve' where marginal benefit is the benefit received by consumers for consuming one more unit of the good (see Figure 2.1(b), page 21). Since the benefits derived from consuming the good go to private individuals, who are the consumers buying the good, the demand curve represents marginal *private* benefits, shown as *MPB* in Figure 5.1.

The standard supply curve reflects firms' costs of production, specifically marginal costs. Marginal cost is the cost to producers of producing one more unit of the good. The supply curve therefore represents marginal *private* costs, appearing as *MPC* in Figure 5.1.

Now, if there are no externalities, so the actions of buyers and sellers do not produce side-effects on third parties, the marginal private benefit (*D*) curve and marginal private cost (*S*) curve determine an equilibrium price and quantity that reflect a **social optimum**, where there is allocative efficiency. In Figure 5.1, these are P_{opt} and Q_{opt}. A social optimum
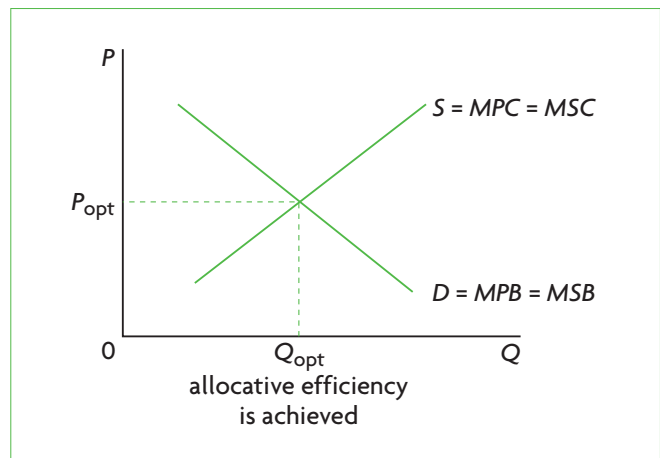
Figure 5.1 Demand, supply and allocative efficiency with no externalities

refers to a 'best' situation from the point of view of allocative efficiency.

If, however, there is an externality, additional benefits or additional costs affecting third parties arise, and the full benefits or full costs to society differ from the private ones. These involve *marginal social benefits* (*MSB*) that differ from marginal private benefits; or *marginal social costs* (*MSC*) that differ from the marginal private costs.

When this occurs, the equilibrium price and quantity determined by the intersection of the demand (*MPB*) curve and supply (*MPC*) curve is no longer a social optimum, because *allocative inefficiency* is introduced by social benefits or costs that differ from private ones.

In a diagram, social benefits appear as a marginal social benefit curve, *MSB*, representing the full benefits to society from the consumption of a good, and social costs as a marginal social cost curve, *MSC*, representing the full costs to society of producing the good. When *MSB* and *MSC* are equal to each other, there is a social optimum in which allocative efficiency is realised.

Figure 5.1 shows the case where there are no external benefits or external costs (no externalities). Therefore *D* = *MPB* = *MSB*, and *S* = *MPC* = *MSC*.

> **marginal private costs** (*MPC*) refer to costs to producers of producing one more unit of a good
>
> **marginal social costs** (*MSC*) refer to costs to society of producing one more unit of a good
>
> **marginal private benefits** (*MPB*) refer to benefits to consumers from consuming one more unit of a good
>
> **marginal social benefits** (*MSB*) refer to benefits to society from consuming one more unit of a good

Allocative efficiency is achieved when *MSC* = *MSB*. When there is no externality, the competitive free market leads to an outcome where *MPC* = *MSC* = *MPB* = *MSB*, as in Figure 5.1, indicating allocative efficiency. An externality creates a divergence between *MPC* and *MSC* or between *MPB* and *MSB*. When there is an externality, the free market leads to an outcome where *MPB* = *MPC*, but where *MSB* is not equal to *MSC*, indicating allocative inefficiency.[1]

We will examine four types of externalities: negative production externalities; negative consumption externalities; positive production externalities and positive consumption externalities.

These are some points to bear in mind as you read about externalities:

- All negative externalities (of production and consumption) *create external costs*. When there are external costs, *MSC* > *MSB* at the point of production by the market.
- All positive externalities (of production and consumption) *create external benefits*. When there are external benefits *MSB* > *MSC* at the point of production by the market.
- All production externalities (positive and negative) create *a divergence between private and social costs (MPC and MSC)*.
- All consumption externalities (positive and negative) create *a divergence between private and social benefits (MPB and MSB)*.

5.3 Negative externalities of production and consumption

- Explain, using diagrams and examples, the concepts of negative externalities of production and consumption, and the welfare loss associated with the production or consumption of a good or service.

- Explain that demerit goods are goods whose consumption creates external costs.
- Evaluate, using diagrams, the use of policy responses, including market-based policies (taxation and tradable permits) and government regulations, to the problem of negative externalities of production and consumption.

Negative production externalities (external or spillover costs)

Illustrating negative production externalities

Negative externalities of production refer to external costs created by producers. The problem of environmental pollution, created as a side-effect of production activities, is very commonly analysed as a negative production externality.

Consider a cement factory that emits smoke into the air and disposes its waste by dumping it into the ocean. There is a production externality, because over and above the firm's private costs of production, there are additional costs that spill over onto society due to the polluted air and ocean, with negative consequences for the local inhabitants, swimmers, sea life, the fishing industry and the marine ecosystem. This is shown in Figure 5.2, where the supply curve, *S* = *MPC*, reflects the firm's private costs of production, and the marginal social cost curve given by *MSC* represents the full cost to society of producing cement. For each level of output, *Q*, social costs of producing cement given by *MSC* are greater than the firm's private costs. The vertical difference between *MSC* and *MPC* represents the external costs. Since the externality involves only production (the supply curve), the demand curve represents both marginal private benefits and marginal social benefits.
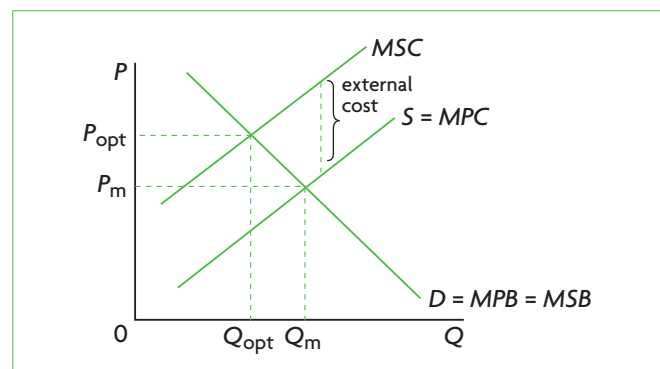

Figure 5.2 Negative production externality

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[1] The condition *MSC* = *MSB* is the same as *MC* = *MB* when there are no externalities. In Chapters 2 and 4, we repeatedly referred to *MC* = *MB* as the condition for allocative efficiency because we were considering markets with no market failures.