Public Goods and Market Failure

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Concept of Public Goods

Public goods are commodities or services that benefit all members of society and are provided by the society or the government. Public goods are socially valuable but, for some characteristics listed below, cannot be supplied by private sector. Two essential characteristics of public goods i.e. non-rivalry and non-excludability makes it difficult for market to achieve Pareto-optimality or economic efficiency. Let us see these characteristic in detail:

Non-Rivalry: A rival good is that good whose when one unit is consumed by an individual, that very unit cannot be consumed by another. Two consumers cannot consume the same pack of a commodity; consumption by one individual excludes others to consume it. Rival goods cannot be public goods, they are private goods. Public goods are non-rival in consumption. In case of non-rival goods consumption by an individual does not reduce its consumption by others.

Non-Excludability: The characteristic of non-excludability relates with distribution of consumption benefits. In case of private goods such as car, shirt etc, those who do not pay for them can be easily prevented from consuming them because the producer simply does not provide them these goods, if they have not paid their price. On the other hand, in case of public goods, either it is not possible or it is very costly to prevent from consuming those people who do not pay for these goods.

Public Goods and Market Failure

Generally perfectly competitive market ensures Pareto optimality or economic efficiency. Under some circumstances the market system cannot lead to this optimum situation of Pareto efficiency i.e. state of maximum social welfare. This situation where market fails to achieve economic efficiency is being called as market failure. Main causes of market failure:

- Existence of monopoly or imperfect competition
- Presence of externalities
- Consumption of public goods

Existence of public goods causes market failure. Although they are socially valuable but they are not supplied by private sector.

Free – Rider's Problem

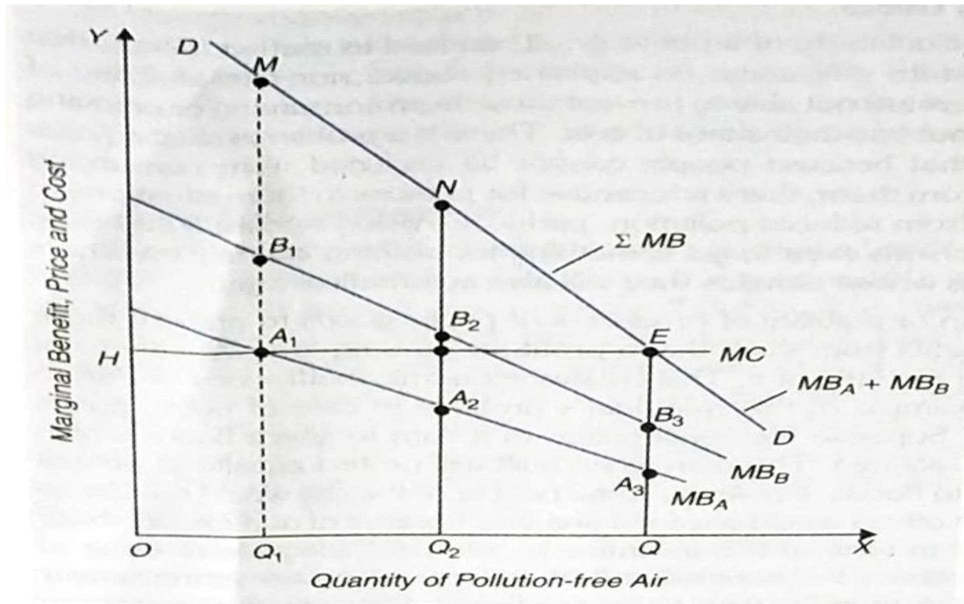
The property of non-excludability of public goods often leads to market failure. This property arises because producers are not able to prevent those from consuming the commodity who have contributed in the cost of production of that commodity. This is what is known as Free – Rider's problem. The problem states that because people cannot be excluded from consuming public goods, there is incentive for persons in these situations to free ride and tries to enjoy benefits from those public goods without paying from them. Due to free – rider's problem the producer of public commodity will either not produce it pr produce too little of it creating economic inefficiency of Pareto non – optimality.

Condition of market failure

The occurrence of free-rider problem results in less than socially optimal production of public goods. To understand how public goods causes market failure let us consider the following graph. Let us consider a society consisting of two individuals A and B only and the public good offered is pollution control project. The valuation of this pollution control project is valued differently by these two consumers.

The figure below depicts marginal benefits obtained by the two consumers from the supply of this particular public commodity. In other words this curve shows the price which the individuals are willing to pay for the different quantities of pollution free air. MB_A denotes marginal benefits obtained by individual A and MB_B denotes the marginal benefits obtained by individual B. Since the two consumers value this public commodity differently, consumer A is willing to pay Q_1A_1 for OQ_1 quantity of pollution-free air and individual B is willing to pay Q_1B_1 for same OQ_1 quantity of pollution-free air.

Further, market demand curve is derived by summing up vertically the demand curves of the individual consumers because each individual consumes the same units of the good at the same time.



OH curve shows the marginal cost of production of pollution-free air. In this case MC is taken to be constant.

E is the point of equilibrium where the market demand curve denoted by D intersects the marginal cost curve MC denoted by OH. Thus it is observed that aggregate marginal benefit curve and marginal cost of production are equal at OQ level of output of pollution-free air. Here OQ is Pareto-efficient level of output of the public good.

A private firm will produce Pareto optimum output OQ only if each individual pays a price equal to the marginal benefit. At this level of output price paid by A is QA_3 and that by B QB_3. If both individuals pay price equal to their marginal benefits then together they will pay for Pareto-efficient quantity OQ. **But due to inability of the producer of a public good to exclude those who do not pay and want to be free-riders, the cost of optimal level of output cannot be covered by private producer.** Thus private production and functioning of market in case of public good do not lead to Pareto-efficiency in the provision of public goods and thus market failure emerges.