

## CHAPTER 2

1. Explain the economist's definition of the correct or optimal rate of output.

The optimal rate of output occurs when the marginal benefit of the last unit equals the price of that unit, which in turn equals the marginal cost of producing that last unit. Further, in a competitive market when demand equals supply, the industry supply consists of the sum of the individual firm's marginal cost curves and industry demand equals the sum of individual demand curves, each of which represents the marginal benefit curves of the purchaser. At the equilibrium price, therefore, marginal benefit equals marginal cost.

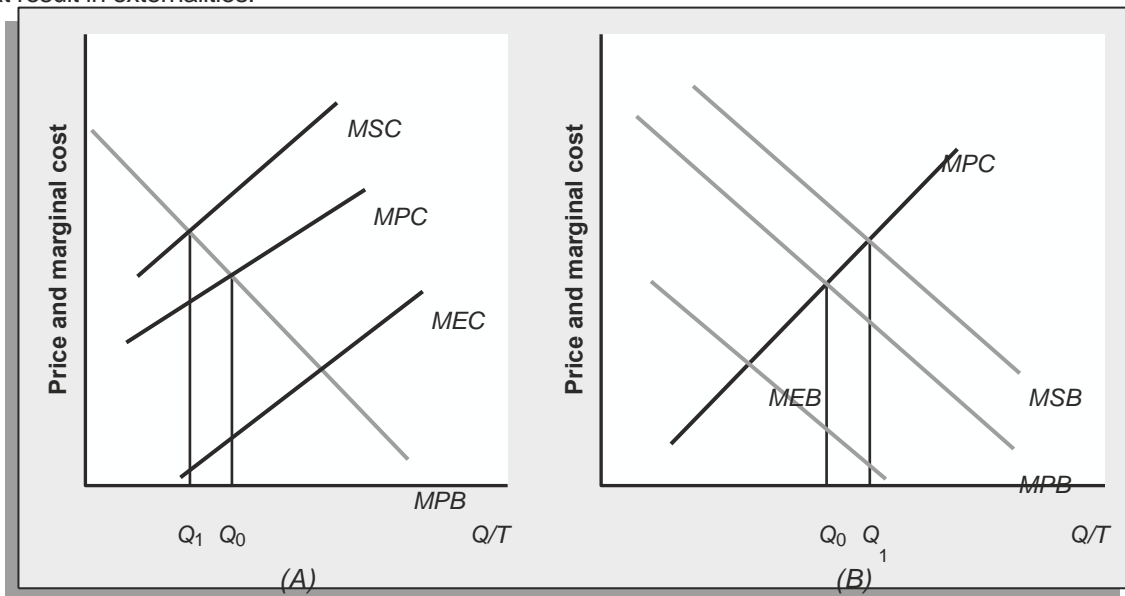
2. Define externalities. Why do they occur? What are examples of externalities in the health field? Explain why the presence of externalities will, in the absence of some collective action, lead to a suboptimal rate of output. What type of collective action is called for?

Externalities arise when an action undertaken by an individual (or firm) has secondary effects on others, which may be favorable or unfavorable. The reason externalities occur is because of a lack of ownership or property rights. Externalities result in a nonoptimal amount of output being produced because individuals or firms consider only their own benefits and costs when making a production or consumption decision.

Vaccination programs, polluted rivers, clean water supplies, air pollution, and medical research are examples of goods that result in externalities.

A nonoptimal rate of output will occur when there are externalities, since output will either be too small (external benefits) or too large (external costs). As shown in the figure below, when there are external benefits (MEB), these will not be taken into account by an individual when (s)he makes a decision based on their own calculation of the (marginal private) benefits (MPB) expected from a purchase. The resulting output level is determined by the intersection of the marginal-private-benefit (MPB) schedule and the marginal private costs (MPC) of producing that service. (The marginal private benefit curve is the demand curve for that service.) The resulting level of output,  $Q_0$ , would be smaller than if the external benefits to others (MEB) were included. If the marginal private benefits and the marginal external benefits were added together (to result in the marginal-social-benefits [MSB] curve), the resulting level of output would be  $Q_1$ , which is greater than  $Q_0$ .

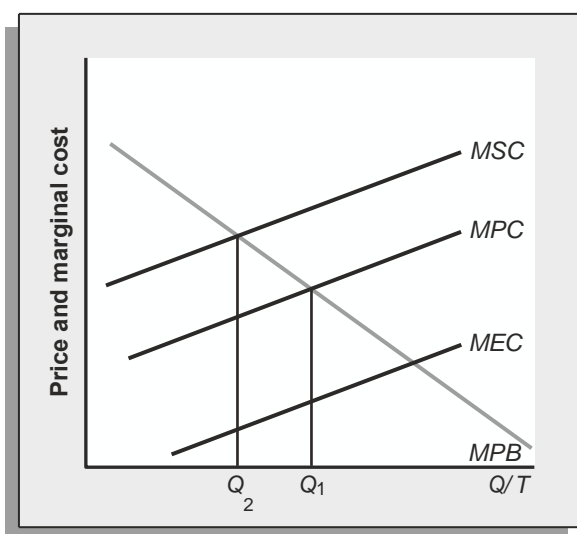
Because of the lack of ownership rights, collective, non-market decision-making is needed to incorporate external costs and benefits into the private decision-making calculus. When large numbers of persons are involved, it becomes difficult to make voluntary arrangements that are satisfactory to all concerned. Group or collective decision-making, in which all persons must abide by the decision, is required to determine both the optimal level of output and to whom the compensation is to be paid (and on whom the taxes should be assessed). It is a legitimate role for government to serve as the group's agent in a nonmarket situation.



Externalities in production and consumption: (A) a case of external costs, (B) a case of external benefits.

3. Is there an optimal amount of pollution? What would occur if the government were to mandate the elimination of all pollution?

Yes, there is an optimal amount of pollution. As shown in the figure below, when the MEC of pollution is added to the MPC of producing that product, the optimal rate of output occurs at the point where the MSC equals the MPB (= MSB). At that rate of output, some pollution is being produced. It is that quantity of pollution to the left of  $Q_2$ , indicated by that part of the MEC curve.



If all pollution were eliminated, then possibly none of the product would be produced or the amount produced would be too little, since it would be less than at the point where  $MSC = MSB$ . To achieve the optimal rate of output for automobiles or electricity might require the production of some pollution. To eliminate all pollution might require eliminating all electricity or autos.

4. If a cost-benefit analysis is "favorable," does this suggest that the government should always undertake such an expenditure? In your answer, discuss the criteria that should be used, who should undertake such projects, and how they should be financed.

It is not appropriate for the government to undertake *any* program that has "favorable" cost-benefit ratios. For example, with respect to personal medical programs that have no external effects, the analyst may propose government subsidies based solely on a finding of a favorable cost-benefit ratio. If there are no external effects and the individuals involved do not wish to spend their own funds on the program, it is inappropriate to have the government intervene, unless one is willing to declare that the individuals making the decision are not rational. More likely, the individuals do

not share the same values or perception of benefits as does the analyst.

When externalities exist, it is important to determine how the externalities should be financed—who will be compensated and who will be taxed. For example, air pollution is an external cost imposed on others. The government should determine the magnitude of the external costs and then place a unit tax (equivalent to the size of the external costs) on those who are producing the particular product that is causing the pollution. The per unit tax will cause an increase in the polluters' costs of production and a consequent decrease in production and pollution. The proceeds of the tax can then be used to reimburse those who bear these external costs. Similarly, when there are external benefits, as in the case of medical research, those receiving the external benefits should be similarly taxed and the proceeds used to subsidize an increase in medical research.

The principal underlying financing should attempt to affix the taxes and subsidies to those who generate the external costs and benefits. A system of financing based on ability to pay would be inappropriate unless such a system reflected the extent of the external benefits and costs. Further, not all nonmarket decision-making should be at a federal level. For some health programs, the benefits and costs are purely local in character (e.g., water fluoridation); the appropriate level of financing, therefore, should be local.

5. What are the economic rationales for different types of government intervention in health care?

There are two traditional areas where government is acknowledged to have a role in a market-oriented system. The first is when there are inefficiencies in the marketplace. An important example is when there are barriers to entry. Similar in its effects are attempts by providers to monopolize the market. Both of these imperfections will result in too small a rate of output. The role of government when there are market imperfections is to attempt to have the market approximate a competitive market.

The second role of government is when there is market failure. Even if the market could be competitive, the existence of externalities is likely to result in government intervention to achieve an optimal rate of output.

6. Explain the rationale for requiring everyone who can afford it to purchase, at a minimum, catastrophic health insurance.

Requiring everyone to purchase at least catastrophic health insurance can be justified on grounds of externalities. If a person who can afford it decides not to buy insurance, other persons are bearing part of the cost of that decision. If the person who self-insures is unfortunate enough to incur catastrophic medical expense that (s)he is unable to pay, the



community (through welfare payments) will have to reimburse the medical providers for that person's medical services. The rest of the community will have to bear part of the cost (in terms of higher taxes) of that individual's decision to self-insure (or purchase less than catastrophic insurance). It would be more equitable, therefore, if these costs were borne in full by individuals at risk.

7. What economic arguments support government financing of personal health services to certain population groups?

The "externalities in consumption" argument supports financing of personal health services to low-income families. If healthier and wealthier individuals do not want to see persons less fortunate than themselves go without necessary medical care and are willing to contribute to their medical care, an externality in consumption is said to exist. This is because the utility of individuals depends not only upon the quantity of goods and services they themselves purchase, but also upon the amount of certain goods and services (such as medical care) purchased by others. Under such circumstances, if some contribute to the medical services of the less fortunate, then other persons, who similarly would have been willing to contribute, receive an external benefit; everybody receives the benefit of seeing the less fortunate receive medical care, even though everybody did not necessarily contribute. Theoretically, each person who receives an external benefit should contribute according to the size of the external benefit. Unless there is some form of non-market decision-making, it will not be possible to collect from all the persons who receive an external benefit.

8. If the objective is one of redistribution, what are the welfare implications of achieving this redistribution by providing

cash supplements versus medical care to the desired beneficiary group?

If the objective of the subsidies were the redistribution of income, direct cash supplements would be a more efficient means to this end. The recipients of the subsidy would always prefer cash, which can be used to satisfy their most important needs (housing, nutritional foods, or medical services), rather than a subsidy that can be used for only one of their needs, a need that may not represent their highest priority. When in-kind subsidies are provided to low-income groups, the objective is not to maximize the utility or satisfaction of the recipient but instead the donors.

9. "We all benefit by having physicians available in case we need them. Therefore the government should subsidize medical education." Critique this justification of governmental subsidies based on an externalities argument.

Not all externalities require government intervention. Externalities may exist in a market, however, they may be relatively small so that, when the MEB is added to the MPB curve, the sum of the two curves intersect at a point to the left of the intersection of the MPB and MPC curves. Thus, the private market will produce the optimal rate of output; it will produce more than the amount demanded by the MEB curve. For example, with reference to the figure below, adding the MEB curve to the MPB curve (which is also the MSB curve) does not change the optimal rate of output, which is  $MSB = MSC$ . Thus, the optimal rate of output is unaffected by including the MEB. When the market produces more than the amount demanded by the MEB, then this is referred to as "infra-marginal" externalities.

