Module 7

General Equilibrium and Economic Welfare

General Equilibrium of Production and Exchange

Professor Bator in his paper "The Simple Analystics of Welfare Maximisation" has presented a more thorough and systematic analysis of the problem of social welfare maximisation. It is a summary of the static long-run general equilibrium conditions of a perfectly competitive economy.

It combines the Pareto optimality conditions with the social welfare function and provides a determinate and unique solution to the problem of maximisation of social welfare.

Assumptions of Maximisation of Social Welfare:

The analysis of maximisation of social welfare is based on the following assumptions:

1. There are two homogeneous and perfectly divisible inputs, labour (L) and capital (K). The two are supplied in fixed quantities.

2. Only two homogeneous goods, X and Y are produced in the economy. The production function for each good is given and does not change. Each production function is smooth, shows constant returns to scale and diminishing marginal rate of technical substitution along any isoquant which means that the isoquants are convex to the origin.

3. There are two individuals, A and B, in the economy. Each has a set of smooth indifference curves convex to the origin which reflect consistent ordinal preference functions.

4. There is a social welfare function that is based on the positions of A and B in their own preference scale, i.e. $W = W(W_A, W_B)$. It presents a unique preference ordering of all possible situations,

Explanation to Maximisation of Social Welfare:

Given these assumptions, the problem is to determine the welfare maximising values of:

(i) The input of labour into the production of X and Y,

(ii) The input of capital into the production of X and Y;

(iii) The total amount of X and Y produced; and

(iv) The distribution of X and Y between the two individuals A and B.

These steps are analysed as under:

From the Production Function to the Production Possibility Curve:

The box diagram Figure 1 explains the general equilibrium of production. There are fixed amounts of two inputs, labour (L) and capital (K), available to the economy for the production of two goods X and Y. O_x is the origin of input capital which is measured along the horizontal axis, and O_y of input labour which is measured along the vertical axis. Ox represents the production of good X and Oy represents the production of commodity Y.

The production function for each good is given by smooth isoquants which are characterised by constant returns to scale and diminishing marginal rates of technical substitution (MRTS). These isoquants are X_1, X_2 and X_3 for good X for which O_x is the origin, and Y_1, Y_2 and Y_3 for good Y.

At points F, G and H an isoquant of good X is tangent to an isoquant of good Y, and so satisfies the condition $MRTS^X_{LK} = MRTS^Y_{LK}$. By joining these tangency points leads to the production contract curve O_xFGHOy. The various points on this contract curve are of efficiency locus where an increase in the production of X implies a necessary reduction in the output of Y.

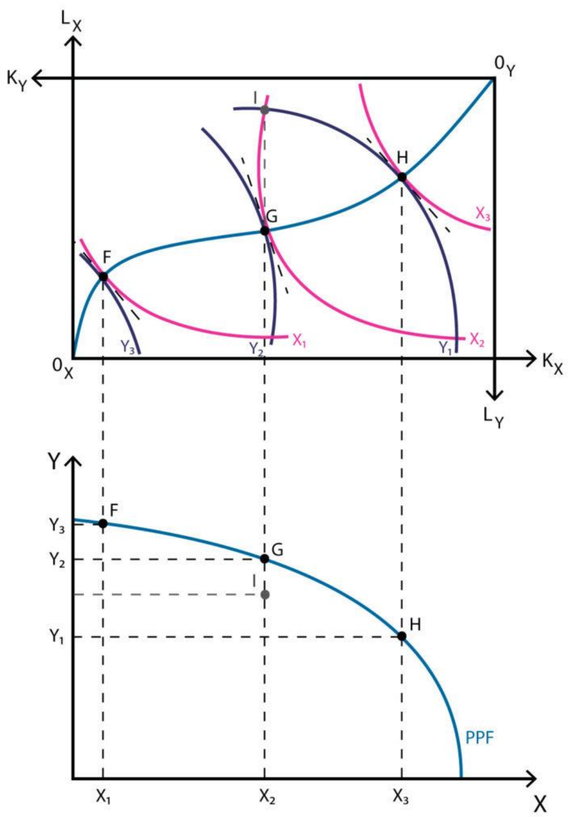

Figure 1

From this production contract curve, we can trace the production possibility curve or transformation curve (PPF). The production possibility curve associated with the contract curve O_XFGHOy of Figure 1 is plotted at the bottom panel. This curve shows the various combinations of X and Y can be produced with fixed amounts of labour and capital.

Note: Point above PPF is not possible with given technology.

The economy must, therefore, be on the PPF curve to maximise the community welfare. Further, the slope of any point on the production possibility curve of reflects the marginal rate of transformation (MRT) of X into Y. In other words, it indicates by how much the output of Y must be reduced by transferring enough capital and labour to produce one more unit of X.

From the Production Possibility Curve to the Grand Utility Possibility Curve:

The next step is to specify general **equilibrium of exchange** in the economy consisting of two individuals A and B and two goods X and Y. For this purpose, we derive the grand utility possibility curve from the production possibility curve. This is done by mapping the consumption contract curve from the output space of the production possibility curve TC of Figure 2. in to a utility space.

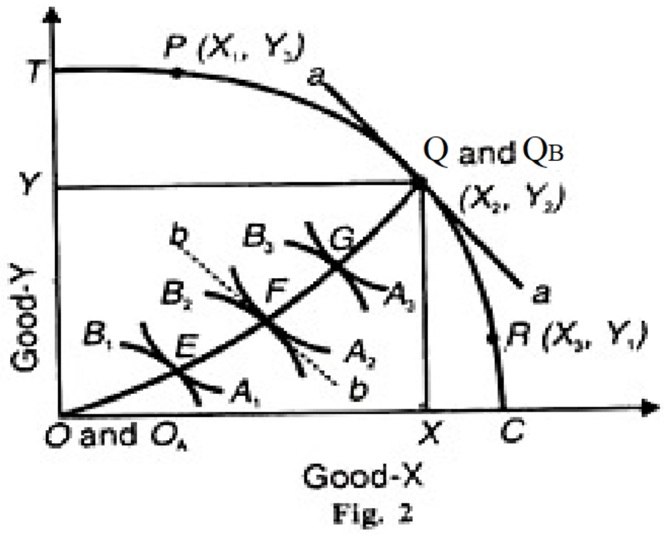

Fig. 2

Select any point Q on the transformation curve TC in Figure 2 so that the total outputs of X and Y are OX and OY respectively. These outputs of X and Y determine the volume of the two goods available to A and B. These outputs, in turn, determine the dimensions of an Edge worth box diagram for exchange.

Drop perpendiculars X and Y from Q on the two axis. Now O becomes the origin of consumer A. Let it be O_A. Similarly, point Q becomes the origin of consumer B. Let it be Q_B. Since each individual has a well-defined preference function, indifference curves of A and B are drawn in the exchange box. Curves A_1, A_2 and A_3 represent A's preference field, and B_1 B_2 and B_3 are B's. The locus of tangencies of the indifference curves of A and B are E, F and G By joining these points, we get a consumption **contract curve** O_AEFGO_B.

This curve is the locus of the various points of tangencies which shows the various positions of exchange that equalize the **marginal rates of substitution** of point of the consumption contract curve satisfies the optimum conditions of exchange. $MRS^A_{XY} = MRS^B_{XY}$. But a movement along the contract curve makes one individual better off than the other. Thus each point on the contract curve is a Pareto optimality point.

At equilibrium $MRT_{XY} = MRS^A_{XY} = MRS^B_{XY}$

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Pareto Optimality

Pareto was the first economist to find out an objective test of social welfare maximum. Often called Pareto optimality, Pareto unanimity rule, Paretian optimum, social or general optimum, the Paretian criterion states that welfare is said to increase (or decrease) if at least one person is made better off (or worse off) with no change in the positions of others.

In other words, any change which harms no one and which makes some people better off (in their own estimation) must be considered to be an improvement.

Given certain rules of distribution, any economic reorganization is said to increase social welfare, if the welfare of some persons is increased without any decrease in the welfare of others. In terms of indifference curve analysis, an optimum position is one in which it is not possible to put any person on a higher indifference curve without causing someone to drop to a lower one.

By defining a welfare position in terms of ordinal utility, Pareto rejected the notion of cardinal measurement of utility and by so doing he dispensed with the need for interpersonal comparison of utility. Let us explain Pareto's criterion with the help of utility possibility curve, as in Fig. 1

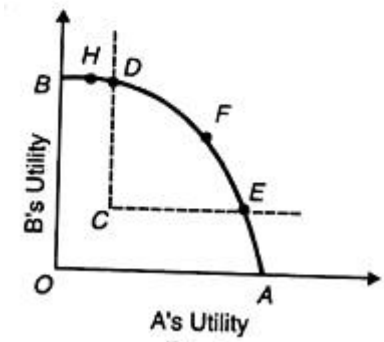

Fig. 1

Suppose there are two individuals A and B sharing a given bundle of good X. A's utility is represented on the horizontal axis and B's utility on the vertical axis. Thus BA represents utility possibility curve of all combinations of the individual utilities.

The Paretian criterion shows that any change which causes a movement from C to F on the production possibility curve BA is an improvement because it makes both individuals better off thereby maximising their welfare.

Similarly, a movement from C to D or E on the BA curve is an improvement for it makes at least one person better off without making the other worse off. But any point outside the segment DE is not a Pareto improvement. For instance, any movement from C to H increases B's welfare at the expense of A's welfare.

Its Criticism:

The Pareto criterion, as pointed out by Dr. Graaf, is free from making any interpersonal comparisons. It is based on a very broad ethical positive view that 'one should always do well to all'. But it has its weaknesses.

(1) There can be an infinite number of Paretian Optima, each with a different level of welfare. As pointed out by Pareto himself, there are an "infinite number of points at which maxima of individual optimalities are attained." This criterion explains little or nothing as to how it can be determined, whether one optimum position is better or worse than another optimum position. To take Boulding's smile of the Paretian criterion 'as a mountain having many peaks'.

If 'height' denotes welfare, each peak represents an optimum position. If one were to choose the highest peak, it involves interpersonal comparisons. It is, therefore, not possible to find out the best of the optimum points of welfare.

According to Dr. Dobb the **"so-called Pareto-conditions are quite insufficient to characterize a position as optimum. A situation where they are fulfilled may well be inferior to a number of other situations where they are not fulfilled."** Strictly speaking, each Paretian optimum is sub- optimal. The Pareto optima are, thus, comparatively unimportant, accordingly to Dr Little.

(2) Not Possible to Judge Many Policy Proposals. There are many policy proposals which cannot be judged with the help of this criterion. It does not apply to any policy proposal which benefits some and harms others. According to Baumol, **"The Pareto criterion works by sidestepping the crucial issue of interpersonal comparison and income distribution, that is, by dealing only with cases where no one is harmed so that the problem does not arise."**

(3) The Paretian Criterion is not free from Value Judgements. To say that it is possible to make every person better off without making any other person worse off is a value judgement in itself. Though Pareto used the method of ordinal measurement of utility, yet he could not present a value-free criterion.

(4) Pareto evaluates only Unambiguous Changes in Welfare. In his efforts to avoid interpersonal comparisons, Pareto evaluates only 'unambiguous' changes in welfare. The Paretian welfare criterion is, thus, of little use in making policy recommendations. For instance, in terms of Figure 1, a movement from C to any points on the segment DE is not always an unambiguous increase in welfare.

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Social Welfare Function

The concept of social welfare function was first introduced by Prof. Bergson and later on developed by Samuelson, Tintner and Arrow. They are of the view that no meaningful propositions can be made in welfare economics without introducing **value judgments**. The concept of social welfare is an attempt at providing a scientifically **normative study of welfare economics**.

A social welfare function shows the factors which the welfare of a society is supposed to depend. Bergson defines it "as a function either of the welfare of each member of the community or of the quantities of products consumed and services rendered by each member of the community."

In its original form the Bergson social welfare function is formulated in a completely general manner. It is a function which establishes a relation between social welfare and all possible variables which affect each individual's welfare, such as a services and consumption of each individual. **It is an ordinal index of society's welfare and is a function of individual utilities**. It is expressed as

$W = F (U_1, U_2, \ldots.. U_n)$

Where W is the social economic welfare, F is for function, and U_r U_2……………… Un is the levels of utilities of 1, 2,…n individuals. W is an increasing function of these utilities.

The general properties of the social welfare function are similar to those of an individual utility function. In particular, the value of the welfare index increases whenever the utility level of one individual is increased without lowering that of the other individual. Thus the **social welfare function is consistent with the Pareto optimality criterion**, but it goes much further, since it assigns a value to every economic state, including those which according to the Pareto criterion are regarded as non-comparable. **The existence of a social welfare function, therefore, implies a comparison of the welfare position of the individual members of society**.

Assumptions:

The Bergson social welfare function is based on certain assumptions:

(a) It assumes that social welfare depends on each individual's wealth and income and each individual's welfare depends, in turn, on his wealth and income and on the distribution of welfare among the members of the society.

(b) It assumes the presence of external economies and diseconomies with their consequent effects.

(c) It is based on **ordinal ranking** of combinations of those variables which influence individual welfare.

(d) Interpersonal comparisons of utility involving **value judgments** are freely permissible.

Explanation:

Given these assumptions, it is possible to depict the social welfare function on a diagram by drawing a series of 'well-behaved social indifference curves' with commodities measured along the two axes. Each indifference curve shows various distributions of utility among individuals which have the same level of social welfare. Such curves help the policy maker to find out whether a particular policy brings an improvement or not. If a change moves individuals to a higher indifference curve, social welfare is said to have increased.

The social welfare function is explained diagrammatically in terms of Figure 4. FF_1 is the utility frontier which represents the boundary of all utility combinations possible with the given resources of the economy. It is an envelope of a number of overlapping utility possibility curves. W, W_1 and W_2 form the family of curves representing the social welfare function. Each welfare curve shows a locus of welfare combinations of the utilities of two individuals A and B who are indifferent.

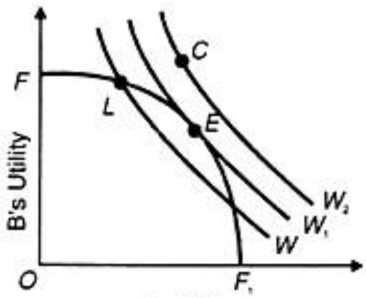

Fig. 4

Each welfare curve represents a level of social welfare. The welfare curve W_1 depicts a higher level of social welfare than curve W and W_2 higher level than W_1. The point of maximum social welfare or optimum position is one where the utility frontier curve FF, is tangent to the welfare curve. In the figure, point E clearly represents the situation of maximum social welfare or the **bliss point**.

Within the constraints of given technology and fixed quantities of inputs, of all the welfare combinations open to society, E has the highest social value. Point L is on a lower welfare curve W and represents a lower level of social welfare, whereas point C on the W_2 curve is beyond the utility frontier FF, of the society. Thus point E represents maximum social welfare.

It's Criticism:

The assumptions of the Bergson criterion have tended to make the social welfare function 'as broad and empty as language itself —and as necessary,' according to Samuelson. Others have hailed it 'as a major contribution to welfare economics', while for Dr. Little, it completes the formal mathematical system of welfare economics. Scitovsky regards it as 'completely general'.

Baumol judges it as 'right, not very helpful,' while to Robertson it is a 'vast partly coloured mathematical balloon'. Paul Streeten praises it as 'a device which is supposed to purify economic investigation of all vestiges of unscientific matter'. In the intermingling of these approvals and half- approvals are to be found the following limitations of these criterions.

(1) Not Applicable either to a Totalitarian State or a Democratic One:

The social welfare function is analogous to the individual consumer's utility function which provides a ranking-'from the point of view of a benevolent despot, or a complete egoist, or all men of goodwill'— of alternative utility levels enjoyed by different individuals. But Little regards it as inapplicable in a totalitarian state and more so in a democratic one "where there would be as many (vague) welfare functions as there are individuals. It can be regarded only as 'a formal device necessary to a perfectly general abstract system of welfare,' which bears no relation to practical policy."

(2) Construction of Welfare Function Difficult:

Another difficulty arises with regard to the construction and shape of the welfare function. The social welfare function is constructed by aggregating each individual's preferences. But the problem is whether individual preferences should be given equal or different weights. This makes the construction of the social welfare function a difficult task.

(3) Arbitrary and Imaginary:

The representation of the social welfare function in terms of either equations or social an indifference curve does not help solve the problem because individual welfare functions cannot be known. Therefore, all equations and curves representing the social welfare function are arbitrary and imaginary.

(4) The Concept of "Maximum 'without any Empirical Significance:

According to Little, "The maximum is a concept without any possible empirical significance, and therefore it seems preferable not to use it. It is more meaningful to derive the 'optimum' conditions as sufficient conditions for an improvement with- out attempting to define a maximum position."

(5) Contradictory Results:

Prof. Arrow points out that the construction of a social welfare function on the basis of ordinal preferences leads to contradictory results if individuals are required to make choices from among more than two alternatives.

(6) Not Helpful in Solving Problems:

According to Prof. Baumol, "The social welfare function does not come equipped with a kit and a set of instructions for collecting the welfare judgments which it requires." Thus it is not of much help in solving the main problems of welfare economics.

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Externalities

Introduction to Externalities:

The conditions for economic efficiency in consumption and production involve marginal rates of substitution (MRS) and marginal rates of product transformation (MRPT). The conditions were derived on the assumption that there were no external effects in consumption and production.

However, this may not be so always. Consumption and production may be subject to externalities. The externalities could be positive (these involve external benefits) or negative (these involve external costs).

We may first give some examples of positive and negative externalities and then discuss how they change the marginal conditions of efficiency:

(i) Positive Externality in Consumption:

An example of this is **vaccination**. The welfare of any person in a particular neighbourhood depends not only on whether he is vaccinated but also on whether the people in the said neighbourhood have been vaccinated so that the contagious diseases are not spread.

(ii) Negative Externality in Consumption:

The welfare of any person in a particular neighbourhood depends not only on his avoidance of **riding a noisy motor cycle**, but also on other people's avoidance of doing this.

(iii) Positive Externality in Production:

The example which is often cited here is that of the **production of honey**. Beekeepers try to put their beehives on farms because nectar from the plants increases the production of honey. The farmers also receive advantages from the beehives because the bees help pollination of the plants.

(iv) Negative Externality in Production:

A very suitable example is that of a paper mill that produces paper and the **waste** is dumped into a river. The riverside residents and the fishes are hurt by the waste.

Consequences of Externalities:

We may now analyse the consequences of these externalities. The British economist A. C. Pigou was the first to deal with externalities in a systematic way. Pigou argued that in the presence of externalities we do not achieve a Pareto optimum even under perfect competition. If the externalities are present, the social benefit or cost resulting from the production of goods becomes a combination of private and external benefits or costs.

Let us use the following notations:

MPC = marginal private cost

MEC = marginal external cost

MSC = marginal social cost and, by definition,

MSC = MPC + MEC

MPB = marginal private benefit

MEB = marginal external benefit

MSB = marginal social benefit and, by definition,

MSB = MPB + MEB

Now, overall economic efficiency requires MSC = MSB for each product. For, as long as MSB > MSC, production should be expanded, because additional benefit exceeds additional cost; on the other hand, if MSB < MSC, then production should be decreased in order to avoid the marginal inefficiencies.

Consequently, we should have, for each pair of products, equality between the marginal social rate of product transformation (MSRPT) and the marginal social rate of substitution (MSRS) between the goods. In the presence of externalities, if only the marginal private costs are considered, the economy will not reach economic efficiency.

That is, for economic efficiency, consumers and producers must weigh the full social benefits and costs of consumption and production. **One way to achieve this is to impose taxes and subsidies which bring private benefits or costs into line with social benefits or costs**. We will now illustrate how these taxes and subsidies would work.

Negative Externality in Production:

The case of a negative externality in production has been illustrated with the help of Fig. 21.11. Here we are assuming that there are no externalities in consumption. That is why the demand curve DD shows the marginal private and social benefits (MPB = MSB).

On the other hand, owing to the presence of externalities in production, the marginal social cost (MSC) curve is different from the marginal private cost (MPC) curve, the latter representing the competitive supply curve.

In the case of a negative externality, MSC would be greater than MPC, i.e., the MSC curve would lie above the MPC curve as has been shown in Fig. 21.11. The optimal output here is q_0 with the price p_0. But the competitive market, if left alone, will produce q_1 at the price p_1. Thus, there would be a tendency to overproduce in the absence of any market intervention.

At the optimal quantity q_0, the price would be p_0, but the MPC would be c_0. Thus, the government could levy a per unit tax of $(p_0 – c_0)$ on the firm, and thereby increase the MPC by $(p_0 – c_0)$, i.e., to the level of MSC. Consequently, the output of the firm would diminish to q_0 (from q_1). The consumers would pay the price p_0 = MSC.

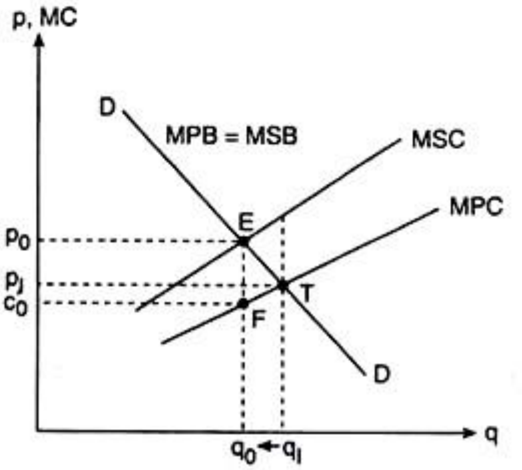

Fig. 21.11 Negative externality and effects of government intervention

Now, the revenue from the tax could be used to pay for the external damage caused by the production of the commodity. Let us note, however, that the tax revenue could be more or less than the external damage.

The **revenue** would be equal to $(p_0 – c_0)$ x q_0 = □p_0EFc_0 whereas the total external cost would be equal to the area between MSC and MPC curves up to q = q_0. Finally, the **net gain** to society from the tax is given by ΔEFT which is the excess of MSC over MPC over the range of output from q_0 to q_1.

Positive Externality in Production:

This case has been illustrated in Fig. 21.12. In this case, since there are external benefits, the MSC would be less than MPC and the MSC curve would lie below the MPC curve. In the absence of any externality in consumption, the demand curve for the good gives us the marginal social and private benefits (MSB = MPB).

Therefore, the optimal output would be given by the point of intersection E between the demand curve DD and the MSC curve.

This optimal output is q_0 at the price p_0. At this output, we have MSB = MSC. However, if there is no market intervention, the competitive market will produce $q = q_1$ at the point of intersection T between the demand curve DD and the competitive supply curve MPC.

In this case of external benefits in production, the free market will produce less than the optimal output ($q_1 < q_0$). At the optimal level of output, the producers will receive a price $p = p_0$, but their marginal cost is MPC = c_0.

Since c_0 is greater than p_0, the producers would have to be paid a **subsidy** of ($c_0 - p_0$) if they are to increase the output level from q_1 to the optimal level q_0. In the earlier case of external cost a per-unit tax equal to the marginal external cost needed to be imposed to arrive at the optimal output level.

On the other hand, in the present case of external benefit, a per-unit subsidy equal to the marginal external benefit has to be given to the producers.

Now, the government may collect the money to be paid as subsidy from the people enjoying the external benefit. But here again, the expenditure on the subsidy [- $(c_0 - p_0) \times q_0 = \square P_0EFC_0$] may not be equal to total external benefit [= the area between the MPC and MSC curves up to $q = q_0$].

Finally, the **net benefit** to society from the subsidy would be equal to ΔSTE which is the excess of social benefit over social cost over the range of output from q_1 to q_0.

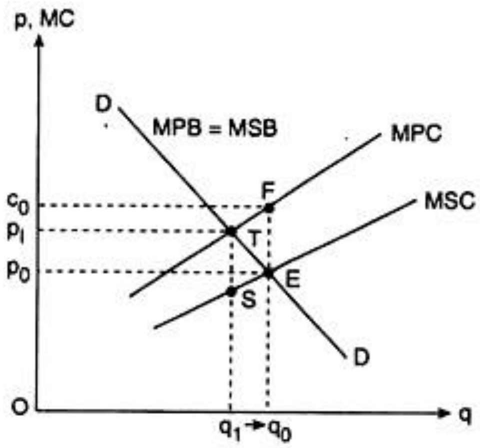

Fig. 21.12 Positive externality in production and the effects of government intervention

Negative Externality in Consumption:

This case has been illustrated in Fig. 21.13. Since there are no externalities in production, MSC and MPC curves are identical and either of them represents the competitive supply curve. However, on the demand side, the demand curve DD reflects only the marginal private benefit (MPB).

In the presence of negative externality in consumption, the marginal social benefit (MSB) is less than the MPB. That is why the MSB curve lies below the MPB or the DD curve. The socially optimal quantity again is q_0 at the MSC = MSB point, E, and the price is p_0.

However, in the absence of any intervention, the quantity supplied and demanded is q_1 at the point of intersection T of the DD (or MPB) curve and the MPC = MSC curve, and the price here is p_1. Thus, there is an overproduction of the commodity ($q_1 > q_0$) as compared to the socially optimal level.

If the output is to be restricted to the optimal level, q_0, the price has to be raised to p_0. But the supply price at $q = q_0$ is c_0. Hence, a tax equal to ($p_0 - c_0$) per unit needs to be levied. Then the consumer would pay the price p_0 including the tax which is equal to MPB, i.e., c_0, plus the cost of externality in consumption which is ($p_0 - c_0$).

Here the revenue generated from the tax may be used to compensate those who are harmed by the negative externality of the consumption of the product. Also, the area ΔEST represents the **net benefit** of the tax to society. This area is equal to the excess of MSC over MSB over the range of output from q_1 to q_0.

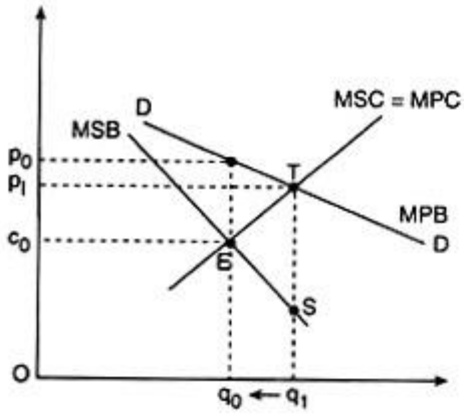

Fig. 21.13 Negative externality in consumption and effects of government intervention

Positive Externality in Consumption:

This case is illustrated by means of Fig. 21.14. In the absence of externality in production, the MSC and MPC curves are identical and either of them represents the competitive supply curve. But on the demand side, the demand curve DD represents only MPB. In the case of positive externality in consumption, we have MSB > MPB, i.e., the MSB curve would lie above the DD curve or the MPB curve.

Given all this, the socially optimal level of output in Fig. 21.14 is obtained to be q_0 at the MSB = MSC point E, the price of the output being p_0. Without any intervention, the quantity produced would be q, at the MPB = MPC (= MSC here) point T.

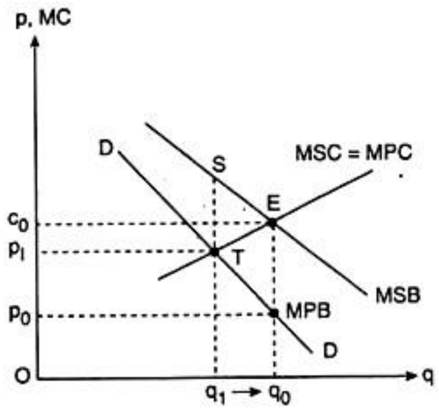

Fig. 21.14 Positive externality in consumption and the effects of government intervention

Since $q_1 < q_0$, there would be underproduction of output (as compared to the socially optimal level) in this case of positive externality in consumption. At $q = q_0$, the market price would be p_0 but the marginal cost (both private and social) would be c_0. Since the marginal cost (c_0) is greater than the price (p_0), the producers have to be given a per unit subsidy of ($c_0 - p_0$) if the output is to be maintained at the optimal level, q_0.

Then the producers will get c_0 per unit of output and the consumers would pay p_0. At least part of the subsidy $(c_0 - p_0) \times q_0$ could possibly be collected from those who reaped the external benefits arising from the consumption of the good. Again, the **net benefit** to the society from the subsidy is measured by the area ΔEST which is the excess of social benefit over the social cost over the range of output from q_1 to q_0.

Summary:

In the cases of externalities discussed above we have obtained the following results:

(i) In the presence of externalities, the socially optimal level of output q_0 is given by the condition MSB = MSC.

(ii) The private production of output q_1 is given by the condition MPB = MPC.

(iii) To obtain the optimal level of output q_0, we can use some appropriate tax and/or subsidy programmes.

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Asymmetric Information – Moral Hazard and Adverse Selection

Asymmetric Information:

The model of perfect competition is based on the assumption of perfect information. But, in reality, no economic participant can have full, efficient, and perfect information. This means that consumers and producers make decisions under **uncertainty**.

In other words, mistakes and errors in business decisions appear if information is incomplete and imperfect. Earlier market failures were ascribed to public goods and externalities. Today a new theory, known as **"Economics of Information"** has been developed that relates market failure to imperfect and costly information.

As uncertainty is the permanent feature of an economic system, economic participants may at least develop imperfect information. By **'imperfect information'** we mean absence of certain knowledge about the probability of an outcome.

On the other hand, information is asymmetric when one participant, say, a seller, has better information than others, say, a buyer, about the probability of an outcome. However, asymmetric information is closely related to the concept of incomplete information. The idea of asymmetric information is at the core of **"Economics of Information".**

Informational asymmetry arises when economic agents to a transaction have different information about the transactions. It may happen that the suppliers may have better information than the buyers about the quality of the product. Here, as the buyers have little or no knowledge about the quality of the product, informed agents (i.e., sellers) have the tendency to exploit the uninformed or under-informed buyers.

The most frequently cited example of asymmetric information is the market of automobiles where both defective and second-hand cars and good or brand-new cars are sold. In the case of second-hand cars, an asymmetry of information arises between buyers and sellers since the seller has the full information about the quality of the car than the prospective buyers.

Another example: Healthcare services. Health insurance.

Since information is a **'costly commodity'**, sellers usually do not give all kinds of information to the buyers. Authors of this theory have demonstrated that bad cars tend to drive the good cars out of the market. The man who popularized this new branch of economics in 1970 was the Nobel Prize winning economist George Akerlof.

Implications of Asymmetric Information: Adverse Selection and Moral Hazard:

The problems of adverse selection and moral hazard may arise in the case of incomplete and imperfect information such as old car market, insurance market, and health market.

Market participants, i.e., buyers and sellers, may have different levels of information. One party may have more information about the hidden or unobservable qualities of the product than other participants. For instance, in the second-hand car market, a seller is more informed about the true quality of his car.

He does not like to communicate the true quality of the car to the uninformed or less informed buyers. Sellers have the tendency to exploit the uninformed buyers and, in the process, the buyer draws a selection of goods with relatively less attractive features.

Thus, **adverse selection** arises in market transactions when one party knows more about the quality of the product than the second party, and, as a result, **low quality goods are sold in large numbers than high- quality goods**. In other words, adverse selection is a tendency of an informed agent to gain more from trading with less informed agent. Adverse selection may, thus, be called a "**hidden information**" problem.

Let us consider the example of the health insurance market. Unhealthy people have the tendency to buy health insurance against any illness. Insurance companies may not have full knowledge about the state of health of the party concerned. Unhealthy people are eager to insure more than the healthy people.

Insurance companies go on insuring the health of these people to enlarge their business, Low-risk healthy persons are not anxious to have this kind of transaction with the insurance companies. This is called adverse selection in the insurance market.

Moral hazard is something different from adverse selection. Moral hazard exists when an individual alters his or her behaviour after buying the product. People who purchase health or car or fire insurance face the problem of moral hazard.

Everybody knows that 'Smoking is injurious to health'. An insured person may be induced to go on smoking more cigarettes in a day since in case of any eventuality he knows that his costs of treatment will be borne by the insurance company.

Because of moral hazard, people act less carefully since they do not have to bear the cost for their carelessness. Moral hazard refers to situations where one of the parties cannot observe the actions of the other party because of incomplete information. Moral hazard may thus be called a **"hidden action"** problem.

It is impossible to know everything about the behaviour of the party concerned as well as the true quality of the product. Under the circumstance, market exchanges are not efficient. Cheating and fraudulent practices take place. Ultimately, this leads to inefficient resource allocation in the market.