

UNIT III

Voluntary Exchange Model:

It is an approach to the analysis of the provision of public goods which seeks to establish conditions under which these goods can be provided on the basis of unanimous agreement— i.e. without coercion. This may be contrasted with the generally observed arrangement that the provision of public goods is financed by compulsory taxation and not by voluntary agreement.

- (i) Each public good should be financed by a separate, identifiable tax.
- (ii) The unanimous agreement of all members of the society would be required to decide on the amount of the good to be supplied.

At the outset individuals would be aware of their allotted share of any tax to be levied. The problem would then be to decide the level of provision. The analysis was extended by Lindahl, who presented a model in which both the share of taxes and the amount of good were open to debate.

In Lindahl's model, equilibrium requires each individual to pay a tax rate just equal to the individual's marginal utility from the good. This can be shown for a two-person community (consisting of A and B) in Fig. 1 which has quantity of public good along horizontal axis and the share of tax paid by A and B along vertical axis.

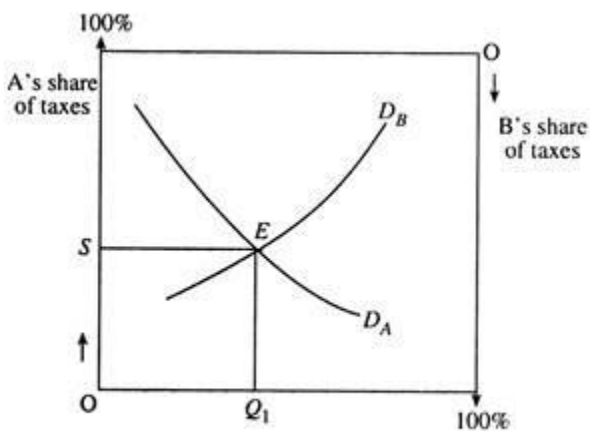


Fig. 1: Lindahl Equilibrium

A's share of taxes increases from the bottom to up and S's share of taxes increases from top to down. The schedule D_A indicates the amount of the good A will wish to demand at different levels of his tax share. As his share of the cost goes down, his desired level of provision increases. D_B indicates B's preferences—again, as his share of the cost falls, his preferred

quantity of the good increases. The Lindahl equilibrium involves producing Q_1 of the good with tax shares as indicated at point S.

In the Lindahl model, public goods are provided in a manner which ensures everyone gains from their provision i.e. The provision of goods is always a Pareto improvement. Lindahl's analysis adds the condition that each individual consumes his most-preferred or 'optimal' amount of the public good given his tax share.

Despite the appeal of the model, difficulties arise in its application. In particular, the problems of reaching unanimous agreement and the possibility that individuals will not indicate true preferences (i.e. they may seek to be free riders) undermine the usefulness of the model.

Let π_{j+k}^i be the price which individual i pays for public good K and let P_{j+k} be the producer price or marginal cost. Then the Lindahl equilibrium would be characterised by the condition:

$$\sum_i \pi_k^i = p_k, (k = J + 1 \dots, J + K)$$

Thus, at first glance, the concept of a Lindahl equilibrium seems to establish an analogue to the competitive markets for private goods with the interesting difference. That the prices should differ from one individual to the other, depending on his marginal willingness to pay.

This also ties in with older notions of the benefit theory of taxation, according to which taxes were seen as payments for public goods to be levied in accordance with the benefits which each individual derived from them.

There is an interesting duality between the definitions of private and public goods on one hand and properties of equilibrium prices on the other. In terms of quantities, for private goods the sum of individual quantities consumed add up to the quantity produced, while, for public goods, individual consumption equals aggregate production. In terms of prices, on the other hand, for private goods each consumer price equals producer price, while for public goods individual consumer prices add up to producer price.

There is, however, one crucial difference between a Lindahl equilibrium and a competitive equilibrium for private goods. With private goods, individuals facing given prices have clear incentives to reveal their true preferences by equating their marginal rates of substitution to relative prices, at least if the economy is sufficiently large relative to the individual. Without paying, the individual is excluded from enjoying the benefits of consumption.

With public goods this no longer holds. Because an individual has the same quantity of public goods available to him whether he pays or not, he has an incentive to misrepresent his preferences and to be a free rider on the supply paid for by others. Moreover, this problem is likely to be particularly severe when the number of individuals is large, since his own contribution will then make little difference to the total supply.

The equilibrium of Lindahl model is not compatible with individual incentives to reveal preferences truthfully; for this reason Samuelson (1969) has referred to the individual Lindahl prices as pseudo-prices and to the equilibrium as pseudo-equilibrium.

In this case, one would conjecture that because all individuals have the same incentives to understate their true marginal willingness to pay, the Lindahl mechanism would result in equilibrium levels of public goods supply which would be too low relative to the optimum.

But there is really no need to associate the problem of preference revelation with this procedure alone; as another extreme, one might think of the case where individuals are asked to state their preferences on the assumption that the cost to them is completely independent of their stated willingness to pay, but there is a positive association between this and the quantity supplied.

Source: <https://www.economicdiscussion.net/public-finance/theory-of-public-goods-theories-economics/27045>

Ability to Pay Theory:

The ability to pay is another criterion of equity or fairness in taxation. This theory requires that individuals should be asked to pay taxes according to their ability to pay. The rich have greater ability to pay, therefore they should pay more tax to the Government than the poor.

Essentially, the ability to pay approach to fairness in taxation requires that burden of tax falling on the various persons should be the same. In the discussion of various characteristics of a good tax system, we mentioned about the two concepts of equity, namely horizontal equity and vertical equity based on the principle of ability to pay.

According to the concept of horizontal equity, equals should be treated equally, that is, persons with the same ability to pay should be made to bear the same amount of tax burden. According to the vertical equity, unequal's should be treated unequally, that is, how the tax burden among people with different abilities to pay is divided.

In both these concepts of equity, what exactly do we mean by ability to pay and what are the objective measures of ability to pay are crucial. Some have explained the ability to pay treating it as a subjective concept. Others have treated the ability to pay in terms of some objective bases such as income, wealth, consumption expenditure etc. We shall explain below both these approaches to the measurement of ability to pay.

Ability to Pay: Subjective Approach:

In the subjective approach to tax paying ability, the concept of sacrifice undergone by a person in paying a tax occupies a crucial place. In paying a tax, a person feels a pinch or suffers from some disutility. This pinch or disutility felt by a tax payer is the sacrifice made by him. In this subjective approach to ability to pay, tax burden is measured in terms of sacrifice of utility made by the tax payers.

The following three principles of sacrifice have been put forward by various authors:

1. The Principle of Equal Absolute Sacrifice;
2. The Principle of Equal Proportional Sacrifice; and
3. The Principle of Equal Marginal Sacrifice (or Minimum Aggregate Sacrifice).

The principle of equal absolute sacrifice implies that the tax burden in terms of utility sacrificed should be the same for all tax payers. If U stands for total utility, Y stands for income and T for the amount of tax paid, then the principle of equal absolute sacrifice requires that $U(Y) - U(Y - T)$ should be the same for all individuals.

The term $U(Y)$ implies that total utility of a given income Y and $U(Y - T)$ implies the total utility of the post-tax income $(Y - T)$. If the equal absolute sacrifice principle is applied, none will be exempted from taxation and everybody will pay same amount of the tax.

Now, the pertinent question is what type of tax, proportional or progressive, follows from this principle. If marginal utility of money income falls, as is generally believed, and if this fall in marginal utility of money income equals the rate of increase in income, then this principle will suggest proportional income tax. However, if the fall in marginal utility of income is greater than the rate of increase in income, then equal absolute sacrifice principle will suggest progressive income tax.

Equal Proportional Sacrifice:

This principle requires that every person should be made to pay so much tax that the sacrifice of utility as a proportion of his income is the same for all tax payers. In terms of the notation used above, this implies that $U(Y) - U(Y-T)/U(Y)$ of all tax payers should be equal. If a person enjoying higher income is to bear same proportion of sacrifice, then given the falling marginal utility of income, he will have to pay income tax at a higher rate. This means progressive income tax.

Equal Marginal Sacrifice:

According to this principle, tax burden should be so apportioned among various individuals that marginal sacrifice of utility of each person paying the tax should be the same. This approach seeks to minimize the aggregate sacrifice of the society as a whole.

When all persons pay so much tax that their marginal sacrifice of utility is the same, the loss of total utility by the society will be minimum. Thus, the principle of equal marginal sacrifice looks at the problem of dividing the tax burden from the point of view of welfare of the whole society.

The social philosophy underlying this principle is that the total sacrifice imposed by taxation on the community ought to be minimum.

Assuming that marginal utility of income falls, the principle of equality of marginal sacrifice implies very high marginal rates of taxation. Indeed, in the extreme this principle can be used to recommend 100 per cent rate of tax on the people in highest income bracket in the society. Thus this principle recommends a highly progressive tax structure.

This principle of taxation has been recommended among others by Edgeworth, Pigou and Musgrave who consider this as the ultimate principle of taxation. It is worthwhile to quote Edgeworth, a chief exponent of this principle. "The minimum sacrifice is the sovereign principle of taxation.

If one is utilitarian and believes not only in the measurability of utility but also in the view that the law of diminishing utility is applicable to money also, then this principle would involve a high level of minimum exemption and a very steep progression as income increases. The less the aggregate sacrifice, the better the distribution of tax burden in the community. The State exists to maximize human welfare. This it will be able to do by minimizing the sacrifices involved."

The whole subjective approach to ability to pay based on the sacrifice of utility has been termed as invalid because utility being a subjective entity cannot be measured in cardinal sense. Further, it is alleged there is no definite evidence that marginal utility of money income falls as income increases.

Interpersonal comparison of utility which the sacrifice approach requires is held to be unscientific. However, in the view of the present author, these objections against ability to pay or sacrifice principle are not valid. We may not be able to measure utility of money income in exact absolute terms but a sufficiently good measure of utility of income can be obtained and this is enough for the application of this principle of ability to pay in terms of sacrifice.

Observations in the world clearly indicate that people in the lower income brackets spend most of their incomes on buying necessities, while people in the higher income groups spend a relatively greater proportion of their incomes on luxuries and non-essential goods. In view of this it is quite valid to assume diminishing marginal utility of money for purpose of taxation.

Ability to Pay: Objective Approach:

The objective approach to the ability to pay principle considers what should be objective base of taxation which measures ability to pay correctly. There is even no agreement on this question also. However, income is generally considered to be the best measure of ability to pay.

This is because a person's income determines a person's command over resources during a period to consume or to add to his wealth. However, it may be noted that ability to pay does not increase in direct proportion to money income.

Ability to pay increases more than proportionately to the amount of income. Justification of progressive income tax is based on this. Further, in order to ensure equity in taxing income distinction ought to be made between earned income and unearned income, and considerations should also be given for a number of dependents on the person paying the tax.

Wealth of a person is another objective measure of ability to pay that has been suggested as a tax base. The ownership of the property or wealth of an individual determines how much resources he has accumulated. Saving from every year's income adds to his wealth. The wealth or property is therefore said to be a better index of taxable capacity.

It may however be noted that wealth alone is not considered to be adequate measure of taxable capacity and instead a combination of income and wealth taxes is regarded as a better measure from the viewpoint of ability to pay.

Thus, according to Prof. Kaldor, "Only a combination of income and property taxes can give approximation to taxation in accordance with ability to pay". Arguing the case for levying annual wealth tax in India, he writes "income taken by it is an inadequate yardstick of taxable capacity as between income from work and income from property, and also as between different property owners". He further writes, "The ownership of property in the form of disposable assets endows the property-owner with a taxable capacity as such quite apart from the money income which that property yields."

It follows from above that a combination of income tax and wealth tax will be a better measure of ability to pay.

Prof. Kaldor has also advocated another base for taxation. He has been a strong advocate of levying of expenditure tax in both the developed and developing countries. It should be noted that his expenditure tax is in fact a tax on consumption, that is, income minus saving. He claims that, it is consumption that is a fair or equitable base of taxation.

According to him, it is consumption that measures the resources that a person actually withdraws from the economy for his personal use. The part of his income not consumed, that is, savings lead to the increase in the capital stock and thus adds to society's productive capacity. If a person consumes more than his income, he should be made to pay a higher tax because he reduces the capital stock of the country.

The imposition of expenditure tax, according to Kaldor, is particularly relevant for developing countries where high consumption expenditure of richer classes reduces the rate of capital accumulation. Imposition of expenditure tax will discourage consumption by taxing it heavily and promote savings by exempting it.

In 1958 on the recommendation of Kaldor expenditure tax was levied in India. But after some years it was withdrawn on the ground that it was difficult to administer it and also that the revenue from it was very small.

Conclusion:

In conclusion it may be said that it is better to levy taxes on various bases instead of a single base. As explained in the section of characteristics of a good tax system, diversity of tax bases is preferable not only from the viewpoint of a measure of ability to pay but also because-it will have less adverse economic effects.

Eckstein rightly points out, “Excessive reliance on any one base may produce adverse economic effects because the rates may become too high. Therefore, a tax system may do less economic damage if it raises moderate amounts from several bases rather than larger amounts from one or two.”

Perhaps it is because of these reasons that in actual practice, a good variety of taxes are levied. In India, income tax, corporation tax, wealth tax and union excise duties are the most important taxes levied by the central Government, while sales tax, land revenue, and certain excise duties are the important taxes at the state level.

Source: <https://www.yourarticlelibrary.com/economics/taxation/the-principle-of-equity-in-taxation-explained-2/38118>

Effects of Taxes:

The most important objective of taxation is to raise required revenues to meet expenditures. Apart from raising revenue, taxes are considered as instruments of control and regulation with the aim of influencing the pattern of consumption, production and distribution. Taxes thus affect an economy in various ways, although the effects of taxes may not necessarily be good. There are some bad effects of taxes too.

Economic effects of taxation can be studied under the following headings:

1. Effects of Taxation on Production:

Taxation can influence production and growth. Such effects on production are analysed under three heads:

Taxation on rich persons has the least effect on the efficiency and ability to work. Not all taxes, however, have adverse effects on the ability to work. There are some harmful goods, such as cigarettes, whose consumption has to be reduced to increase ability to work. That is why high rate of taxes are often imposed on such harmful goods to curb their consumption.

But all taxes adversely affect ability to save. Since rich people save more than the poor, progressive rate of taxation reduces savings potentiality. This means low level of investment. Lower rate of investment has a dampening effect on economic growth of a country.

Thus, on the whole, taxes have the disincentive effect on the ability to work, save and invest.

3. Effects on the will to Work, Save and Invest:

The effects of taxation on the willingness to work, save and invest are partly the result of money burden of tax and partly the result of psychological burden of tax.

Taxes which are temporarily imposed to meet any emergency (e.g., Kargil Tax imposed for a year or so) or taxes imposed on windfall gain (e.g., lottery income) do not produce adverse effects on the desire to work, save and invest. But if taxes are expected to continue in future, it will reduce the willingness to work and save of the taxpayers.

Taxpayers have a feeling that every tax is a burden. This psychological state of mind of the taxpayers has a disincentive effect on the willingness to work. They feel that it is not worth taking extra responsibility or putting in more hours because so much of their extra income would be taken away by the government in the form of taxes.

However, if taxpayers are desirous of maintaining their existing standard of living in the midst of payment of large taxes, they might put in extra efforts to make up for the income lost in tax.

It is suggested that effects of taxes upon the willingness to work, save and invest depends on the income elasticity of demand. Income elasticity of demand varies from individual to individual.

If the income demand of an individual taxpayer is inelastic, a cut in income consequent upon the imposition of taxes will induce him to work more and to save more so that the lost income is at least partially recovered. On the other hand, the desire to work and save of those people whose demand for income is elastic will be affected adversely.

Thus, we have conflicting views on the incentives to work. It would seem logical that there must be a disincentive effect of taxes at some point but it is not clear at what level of taxation that crucial point would be reached.

4. Effects on the Allocation of Resources:

By diverting resources to the desired directions, taxation can influence the volume or the size of production as well as the pattern of production in the economy. It may, in the ultimate analysis, produce some beneficial effects on production. High taxation on harmful drugs and commodities will reduce their consumption.

This will discourage production of these commodities and the scarce resources will now be diverted from their production to the other products which are useful for economic growth. Similarly, tax concessions on some products are given in a locality which is considered as

backward. Thus, taxation may promote regional balanced development by allocating resources in the backward regions.

However, not necessarily such beneficial effect will always be reaped. There are some taxes which may produce some unfavourable effects on production. Taxes imposed on certain useful products may divert resources from one region to another. Such unhealthy diversion may cause reduction of consumption and production of these products.

5. Effects of Taxation on Income Distribution:

Taxation has both favourable and unfavourable effects on the distribution of income and wealth. Whether taxes reduce or increase income inequality depends on the nature of taxes. A steeply progressive taxation system tends to reduce income inequality since the burden of such taxes falls heavily on the richer persons.

But a regressive tax system increases the inequality of income. Further, taxes imposed heavily on luxuries and nonessential goods tend to have a favourable impact on income distribution. But taxes imposed on necessary articles may have regressive effect on income distribution.

However, we often find some conflicting role of taxes on output and distribution. A progressive system of taxation has favourable effect on income distribution but it has disincentive effects on output.

A high dose of income tax will reduce inequalities but such will produce some unfavourable effects on the ability to work, save, investment and, finally, output. Both the goals—the equitable income distribution and larger output—cannot be attained simultaneously.

6. Other Effects of Taxation:

If taxes produce favourable effects on the ability and the desire to work, save and invest, there will be a favourable effect on the employment situation of a country. Further, if resources collected via taxes are utilized for development projects, it will increase employment in the economy. If taxes affect the volume of savings and investment badly then recession and unemployment problem will be aggravated.

Again, effect of taxes on the price level may be favourable and unfavourable. Sometimes, taxes are imposed to curb inflation. Again, as an imposition of commodity taxes lead to rising costs of production, taxes aggravate the problem of inflation.

Thus, taxation creates both favourable and unfavourable effects on various parameters. Unfavourable effects of taxes can be wiped out by the judicious use of progressive taxation.

Source: <https://www.economicdiscussion.net/government/taxation/economic-effects-of-taxation-top-6-effects/17454>

The Modern Theory of Taxation

Modern theory of taxation is one of the important contributions of Dalton to economics. This theory is also known as the Modern theory of shifting and incidence. In this theory Dalton shows the relationship between the burden of taxation with elasticity of demand and supply.

This theory is based on the assumption of "ceteris- paribus" means other things being unchanged.

According to this theory

1. There is direct relationship between the elasticity of demand of the taxed good and the burden borne by the seller.
2. There is negative relationship between the elasticity of demand of the taxed good and the burden borne by the buyer.
3. There is positive relationship between supply elasticity of the taxed good and the burden borne by buyer.

Elasticity of demand and supply of the taxed good has effect on the tax burden of both the seller and the buyer. It can be explained with the help of the following diagram.

In the above diagram, DD is demand and SS is supply curve. At the point E, the demand and the supply of the commodity is equal and thus this point represents the market equilibrium of the commodity. Hence, the equilibrium price is OP and equilibrium quantity is OQ.

Now, because of the imposition of tax at E1R, the supply curve shifts to S1S. The price also shifts to OP1. Therefore, the burden borne by buyer is E1T and the rest TR is borne by seller.

Symbolically,

$$\begin{aligned} E_d &= \Delta Q_d / \Delta p * P/Q \\ &= QQ_1/PP_1 * OP/OQ \\ &= QQ_1/E_1T * QE/PE \end{aligned}$$

$$\begin{aligned} E_s &= \Delta Q_s / \Delta P \times P/Q \\ &= QQ_1/PP_1 \times OP/OQ \\ &= QQ_1/TR \times QE/PE \end{aligned}$$

NOW,

$$Ed/Es = \frac{QD}{QD1} \times \frac{QE}{PE} \times \frac{TR}{QD1} \times \frac{PE}{QE} = TR/E1T //$$

Therefore, Burden of seller (related to Ed) = TR

Burden of buyer (related to Es) = E1T

PROPOSITIONS OF THE THEORY

1. If elasticity of demand and supply of the taxed good is equal, then the burden of tax is also equal on both the seller and buyer.
2. In case of elasticity of supply > elasticity of demand, the burden falls on buyer > burden falls on seller.

In the following diagram, burden of tax is ER

Burden borne by seller = TR

Burden borne by buyer = E1T

E1T > TR

3. If elasticity of demand > elasticity of supply, the burden borne by seller > burden borne by buyer.
4. If demand is perfectly elastic, the whole burden of tax is borne by the seller.

In the following diagram, we see that the price is unchanged. Therefore buyers don't bear any burden. The whole burden has to be borne by the seller.

5. If demand is perfectly inelastic and supply is elastic, then the whole burden of tax is borne by the buyer. In the diagram, DD is the inelastic demand curve. We see that demand of a commodity remains the same. So price of the commodity rises. Therefore the whole burden of tax has to be borne by the buyer.

Source: <http://3gecopks.blogspot.com/2014/02/the-modern-theory-of-taxation.html>