

Price system and government intervention

Market failure

Market fails when it does not function well.

Or

An outcome deriving from the self-interested behaviour of individuals in the context of free trade, in which economic efficiency does not result.

Sources of market failure

- 1 public goods
- 2 merit and demerit goods
- 3 externalities
- 4 concentration of economic power (imperfect competition)
- 5 information deficiencies (asymmetric information)

How does government intervene to achieve certain objectives?

- 1 maximum price
- 2 minimum price
- 3 guaranteed price
- 4 taxes & subsidies
- 5 direct provision
- 6 some other government regulations

Externalities

These are spillover effects of an economic activity i.e. production and consumption. It might be positive or negative. It is positive when third party gains benefits and negative when third party incurs loss.

Private cost

This is the cost which incur by an individual due to some economic activity that is production or consumption. For instance if a consumer smokes, what cost he incurs will be the private cost. Similarly cost incur by a firm to produce given quantity of the product will be considered private cost of the firm. These are internal costs like labour cost, raw material cost capital costs, depreciation costs etc. Usually these costs are measurable accurately in monetary terms.

External cost

The cost which is incurred by the third party which is not involved in the economic activity will be considered as external cost. It is the spillover effect of an economic activity. External cost occurs when social cost exceeds private cost. These are called as negative externalities. So it becomes the source of market failure because market forces are unable to add these costs during allocation of resources, therefore, one incurs cost without gaining any benefit. For instance passive smokers suffer due to smoking or people incur the cost in terms of road congestion or noise pollution due to traffic. Similarly, factories emit smoke during production which is also a source of negative externalities.



Social cost

This is the cost which incur by the whole society due to production and consumption. It includes private cost as well as external cost. For instance, during the process of smoking, social cost includes not only the cost of buying cigarettes but also the cost incur by the passer by.

Social Cost = Private Cost + External Cost

Private benefits

Benefits drive by an individual due to some economic activities that is production or consumption. It is an economic gain to an individual due to an economic activity. For example, a consumer uses his computer and drives some satisfactions or a producer gain profit by selling his products.

External Benefits

These benefits are driven by the third party who is not involved in that economic activity. Once again it is a spillover effect of an economic activity. It occurs when social benefits exceed private benefits. These are also called as positive externalities. It is a source of market failure because price mechanism ignores external benefits during production. For instance, if a person spends money on his front garden, not only he derives benefits by himself but also people who live around.

Social benefits

Social benefits include private benefits as well as external benefits. It means all benefits which are driven by the whole society due to an economic activity.

Social Benefits = Private benefits + External benefits

Marginal Private cost (MPC)

It is the change in private cost by producing or consuming an additional unit of a product.

Marginal external cost (MEC)

It is the change in external cost by producing or consuming an additional unit of a product.

Marginal social cost (MSC)

It is the change in social cost by producing or consuming an additional unit of a product.

MSC= MPC+MEC

Marginal private benefit (MPB)

It is the change in private benefits by producing or consuming an additional unit of a product.

Marginal external benefit (MEB)

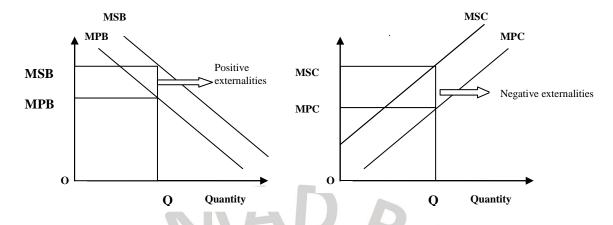
It is the change in external benefits by producing or consuming an additional unit of a product.

Marginal social benefit (MSB)

It is the change in social benefits by producing or consuming an additional unit of a product.

MSB= MPB+MEB





Cost and benefits analysis (For A2 only)

It is an appraisal of a project where all costs and benefits are weighed up. If costs exceed benefits, project will be rejected and, if benefits exceed costs or equal to costs, project will be proceeded with.

For cost and benefit analysis there is a certain framework. In this framework there are four different stages.

At the first stage, all relevant cost and benefits are identified. It includes private costs, private benefits, external costs and external benefits. Apparently it looks quite simple but in reality it requires some serious thoughts. Private costs and private benefits may be identified easily but spillover effects in terms of external costs and external benefits cannot be identified easily. For example, in the construction of motor way, labour cost, raw material cost etc. can be identified but all spillover costs cannot be identified. Same problems will happen with the benefits.

At the second stage monetary values are given to all costs and benefits. It is relatively straight forward where market prices are given. Once again market prices are not available for certain cost and benefits, especially for external costs and benefits. At this stage technique of shadow pricing is used. These are estimated prices which are given to some of the externalities, for example, valuation of saved time or cost of an accident. These are imputed prices based on opportunity cost.

Third stage is applied when project is having some future usage. At this stage all future costs and benefits are identified. Here, economists use some statistical forecasting techniques. This stage is usually used in mega projects, like, nuclear power station, water dams, motor ways, air ports etc.

At the final stage, all results from the earlier stages are drawn in such a manner that correct decisions can be taken. If costs exceed benefits, project is rejected but if benefits exceed costs or equal to the cost, project will be proceeded with.

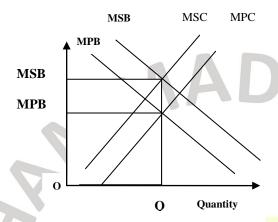
Limitations of cost and benefits analysis

- The first difficulty is the reorganization of all costs and benefits. Private costs and benefits can be recognized but it is impossible to recognize all of the external costs and benefits.
- Secondly, it is difficult to put monetary values on these costs and befits. Usually shadow pricing is used which is not a reliable way to give money values to costs and benefits.
- CBA does not always satisfactorily reflect distributional consequences of certain decisions. For example, during a mega project like water reservoir local people incur more cost where as benefits are driven by people who live in other part of the country.



- CBA is used in mega projects and there is an involvement of the state in such projects. This is why these projects are politicized; therefore, outcome of the analysis is rejected for political reasons.

However, importance of CBA cannot be denied because CBA at least bring out the issues involve so that a decision can be taken on the basis of all information available. CBA is an aid and not a replacement for decision making.



Public goods

In price mechanism only those goods are produced, which bring some benefits for the producer. Public goods are not produced under price mechanism. Government thinks every one ought to have these goods; therefore, it takes the responsibility to produce such goods. These goods have three important features.

- a) None-excludability, which means everyone, can consume the product whether one pays or does not pay for it. This feature creates the problem of free-rider. It means one drives the benefits without paying any price and there is no way to exclude a person from access to such a good if it is produced at all. As no one is willing to contribute then cost cannot be met and there is no production of public goods. This is the primary reason that public goods are not produced in the private sector where major objective is to make profit. This, in the nutshell, the public good dilemma, a form of market failure which requires taxation to overcome it. It solution lies outside the economic calculus.
- b) None-rivalry, which means consumption of one, does not reduce consumption for others. For example, radio broadcasting can be listened by millions of people even at a time.
- c) None-rejectability, which means everyone, will have to accept the good whether one desires or does not desire for the product.

Another important feature of public good is that its marginal cost is zero. So, the initial cost remains the same even there is an increase in number of consumers. An interesting situation is developed in case of public goods i.e. If public goods are not produced there is a market failure but on the other hand if these goods are produces still there is a possibility of market failure due to 'free rider' problem.

Public goods may be classified in pure public goods and quasi public goods. Pure public goods have feature of non excludability and non rivalry, whereas, quasi public goods may have features of public goods and private goods. These goods have partial excludability, partial rivalry, partial diminishability and even partial rejectability. For examples, roads, parks, tunnels etc. markets for these goods are also be considered as incomplete market and their lack of provision by the free market determines inefficiencies and a source of market failure.

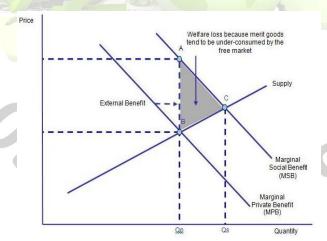


Private goods

These goods are produced under price mechanism. Unlike public goods these goods have characteristics like excludability, which means only those can consume who pay the price. In case of private goods there is a least possibility of free rider problem. Since main objective of all firms is to make maximum of profit, therefore they are not willing to produce even a single unit of a product for those who do not pay because it is not readily available for free. The second feature is rivalry, which means consumption of one, reduces consumption for others. It is because of competition between individuals to obtain the good and definitely if one consumes the good will prevent someone else to consume it. Such goods also incur marginal cost i.e., additional cost will be incurred by the producer if he produces an extra unit of the product. Private goods can be rejected, i.e. if one does not require the private good, it will not be produced for him under price mechanism. For example if a community stops smoking, there might not be any production of cigarettes.

Merit goods

Merit goods are the opposite of demerit goods - they are goods which are deemed to be **socially desirable**, and which are likely to be **under-produced and under-consumed** through the market mechanism due to lack of information about positive externalities. Examples of merit goods include education, health care, welfare services, housing, fire protection, refuse collection and public parks. In contrast to pure public goods, merit goods could be, and indeed are, provided through the market, but **not necessarily in sufficient quantities to maximize social welfare.** Thus goods such as education and health care are provided by the state, but there is also a parallel, thriving private sector provision. Merit goods confer benefits on society in excess of the benefits conferred on individual consumers; in other words, there is a divergence between private and social costs and benefits, as the social benefits accruing to society as a whole from the consumption of such goods tend to be greater than the private benefits to the individual. The problem is that individual consumers and producers make their decisions on the basis of their own, internal costs and benefits, but, from the standpoint of the welfare of society at large, externalities must be considered.



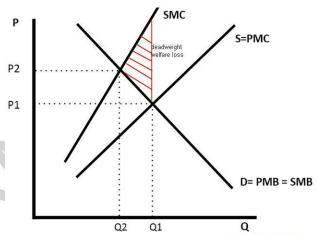
In the fig. market is at its equilibrium at point 'B' and produce Qp, but desirable output is at point 'C' where MSB=MSC. It is assumed that merit goods do not have any negative externality; therefore, supply curve only depicts the private marginal cost (MPC = MSC). If market produces at 'B' then there is a welfare loss which is shown as shaded area.

Demerit goods

Demerit goods are goods which are deemed to be socially undesirable, and which are likely to be **over-produced and over-consumed** through the market mechanism. Examples of demerit goods are cigarettes, alcohol and all other addictive drugs. Government forms certain policies to discourage consumption and production of such goods.



The problem arises from the fact that so long as an effective demand is present, such goods are going to be extremely profitable to produce, hence price mechanism produces them. However, the consumption of demerit goods imposes considerable **negative externalities** on society as a whole i.e. the marginal social cost will exceed the market price and **over-roduction and over-consumption** will occur, causing a **misallocation of society's scarce resources.**



The diagram illustrates how the market fails in the case of demerit goods. At a market price OQ1 quantity of the demerit good is consumed and produced, where demand (private marginal benefit) equals supply (private marginal cost). Once again it is assumed that demerit goods do not have any positive externalities hence private marginal benefits are equal to social marginal benefits. However, at OQ1 the social marginal cost exceeds social marginal benefits by the vertical distance (shaded area), which is called as net welfare loss and source of market failure. Social optimality would require a smaller level of consumption at OQ2, where price = social marginal cost = social marginal benefit.

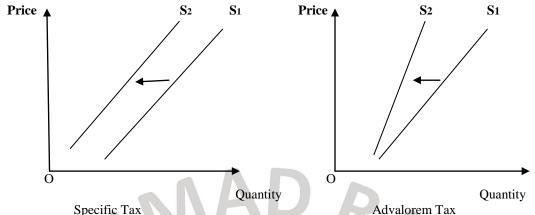
How to correct market failure

Taxes

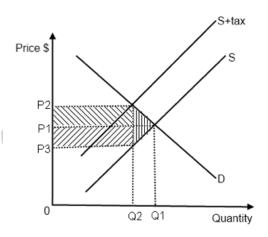
There are two types of taxes, direct taxes which are deducted at the source like income tax, corporate tax or wealth tax. Second type of tax is called as indirect tax, which is usually levied on spending. Sales tax, VAT, excise duties and tariff are common examples. Taxes are the main source of government revenue, however, government also use it to discourage consumption and production of certain goods. Indirect taxes may be specific or advalorem. Specific tax is per unit tax and it is levied on the volume of a good, e.g., \$5 per unit, whereas, advalorem tax is levied on the value of the product, e.g., 5% of the price.

When indirect taxes are imposed, cost of production increases therefore supply curve shift leftwards, which increases prices and causes a contraction in demand. In case of specific tax there is a parallel leftwards shift in the supply curve, whereas, in case of advalorem tax there is a non parallel shift in the supply curve. The gap between the supply curves is narrowed at low prices but widened at higher prices.





Incidence of the tax is borne by producer and consumer; however, it depends on the relative price elasticity of demand (PED) and price elasticity of supply (PES). If PED is higher than the PES, there will be more burdens on producer; however, if PES is greater than the PED, consumer bears the more burdens.



In the diagram, due to the tax, now consumers will pay more prices, which restrict their buying power, therefore they incur the burden of tax which can be shown with the help of upper shaded area (P1P2). Similarly, lower shaded area shows the burden of tax on producer (P1P3).

PED=0 all burden on consumer
PED=∞ all burden on producer
PES=0 all burden on producer
PES=∞ all burden on consumer
PES=PED producer and consumer
Share burden equally

Usually taxes are imposed to discourage consumption and production of demerit goods. It is intended that the amount of tax should be equal to the amount of negative externalities. However, due to lack of information government is unable to determine accurate amount of tax. Therefore, there may be under or over production of certain good. Secondly, it may have an adverse affect on the redistribution of income. Mostly indirect taxes are regressive by nature, hence, low income group pay relatively bigger proportion of their income in terms of taxes. Indirect taxes also increase cost of production; therefore, cost push inflation occurs. Another problem which is arisen is the deadweight loss or net welfare loss which can be shown with the help of triangle (vertical lines shaded area). As tax is levied there is a fall in consumer surplus and producer surplus. A part of the loss of surpluses is recovered by the state in terms of tax revenue but still triangle remains unrecovered and considered as dead weight loss. Elasticity is another important factor which determines effectiveness of taxes. If demand for the product is inelastic then whatever is the amount of tax, there is no considerable change in demand for the product. However if demand is elastic then indirect taxes are effective.



Tax mechanism

Marginal Tax rate vs Average Tax rate

Marginal tax rate determines the change in the tax amount as income changes i.e. the tax rate on addition income, whereas, average tax rate is calculated by dividing total tax amount on total gross income.

Marginal Tax Rate =
$$\frac{change \ in \ tax \ amount}{change \ in \ gross \ income}$$
 Average Tax Rate = $\frac{total \ tax \ amount}{total \ gross \ income}$

Illustration:

Marginal Tax =
$$\frac{\$250 - \$100}{\$2000 - \$1000}$$
 = \$150 on additional \$1000 and Marginal Tax Rate $\frac{\$150}{\$1000}$ x 100 = 15%

Progressive Tax

According to this mechanism rate of tax increases as taxable amount rises. Usually direct taxes are of this nature where the tax rate progresses from low to high, with the result the average tax rate is less than the person's marginal tax rate.

Illustration:

Income	Rate of Tax	Amount
\$1000	10% (+)	\$100
\$2000	15% of additional \$1000	\$ 250 = (\$100 for first \$1000
		and \$150 for second \$1000)

Proportional Tax

According to this mechanism rate of tax is fixed, with no change as taxable base amount increases or decreases. The amount of the tax is in proportion to the amount which is subject to taxation. In this case there is no difference between average rate of taxation and marginal rate of taxation. Proportional tax is usually considered as regressive tax by nature and particularly in case of sales tax which is imposed on mostly all types of goods which are bought by all income groups. Since for low income groups it makes higher proportion therefore, we call them regressive by nature.

Illustration:

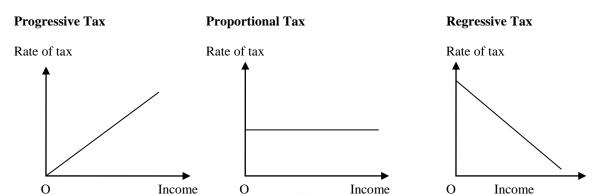
Income	Rate of Tax	Amount
\$1000	10% (+)	\$100
\$2000	10% of additional \$1000	\$200 = (\$100 for first \$1000)
	9 7 7 4 1	and \$100 for second \$1000)

Regressive Tax

According to this mechanism rate of tax decreases as taxable amount rises. However, amount subject to taxation increases. It may take large proportion from low income groups than from high income groups. In this case average tax rate is more than the marginal tax rate. Illustration:

Income	Rate of Tax	Amount
\$1000	10% (+)	\$100
\$2000	7% of additional \$1000	\$170 = (\$100 for first \$1000)
		and \$70 for second \$1000)





Canons of good tax

Canons of taxation refer to the administrative aspect of a tax. They relate to the amount, rate and method of levy of a tax as well as collection of taxes. In fact, canons describe features of a good tax, therefore, it must be noted that canons just describe features of an isolated tax but not the whole tax system.

Adam Smith identified four canons of good tax these are:

(a) Equality or Equity

According to this feature a good tax should have equality and most appropriately equity i.e. 'Fairness'. It means a tax should be charged according to the ability to pay and must ensure justice. For instance, income tax is a good example which is mostly progressive by nature where rate of tax increases as income rises and the ability to pay tax is also risen.

(b) Canon of Certainty

Taxations must have an element of certainty i.e. the tax which a tax payer is bound to pay must be certain and not arbitrary. Secondly, the time of payment, the amount of payment, the manner of payment etc. must be clear and plain for not only to tax payers but to all individuals. Element of certainty not only make it certain that what will be the amount generated as tax revenue but also assure the incidence of the tax.

(c) Canon of Economy

This rule suggests that cost of collection of taxes must not be extravagant and excessive. An expensive machinery of collection of tax cannot be justified because it will take a large chunk of tax revenue as expenses and bring little into the public treasury of the state.

(d) Canon of Convenience

According to this canon, tax should be collect in convenient manner. For instance, every tax should be levied at the time or in the manner in which it is most likely to be convenient for the contributor to pay it." For example, it is convenient to pay a tax when it is deducted at source from the salaried classes at the time of paying salaries (Pay As You Earn Policy). Secondly, tax documentation procedure should be simple and understandable for a layman.

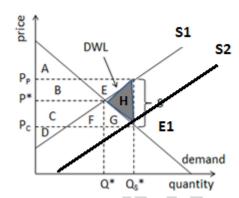
Subsidies

Subsidies are negative of taxes. Usually subsidies are given on merit goods or necessities to encourage consumption and production of certain goods. In some cases it is given to that industry (ies) which maintain employment in an economy. As results of subsidy lower prices are charged to consumers to encourage consumption, whereas, firms are allowed to charge high prices to encourage production. The differences between the prices are given by the government as subsidies.

In the following diagram, as subsidy is given, the supply curve shifts from S1 to S2 and new equilibrium is formed at point E1. Now consumers are charged 'OPc' price whereas,



producers are given ' $OP_{p'}$ price and the difference which is ' $PcP_{p'}$ per unit is given by the state.

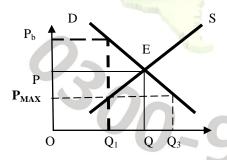


	Free Market	Subsidy
Consumer Surplus	A+B	A+B+C+F+G
Producer Surplus	C+D	B+C+D+E
Government Revenue	0	-(B+C+E+ F+G+H)
Total Surplus	A+B+C+D	A+B+C+D-H

However it may damage some of the other objectives of the government, like redistribution of income to reduce inequalities may be ineffective because subsidies are available to all mostly. It also increases government spending hence government will have to forego many of its other projects and incurs opportunity cost. As spending increases government will have to increase taxes which are disincentive for workers and producers and may cause market failure. It may deter allocation of resources because firms prefer to produce subsidized product so as a result there is a possibility of over production of certain goods at the cost of other goods which may not be produced or under produced. In subsidies there is a possibility of dead weight loss which can be shown in the above diagram with shaded area 'H'.

Maximum price

It is a kind of regulation of a regulatory authority to control and stabilize prices of certain goods. Maximum price control is usually valid on the prices of staple food, rents on certain type of housing, utilities like water and gas and on public transport fares. Maximum prices are set to increase buying power of consumers to improve their living standard. Maximum prices are set below then the equilibrium prices. However if these prices are above then the equilibrium prices, they become ineffective.

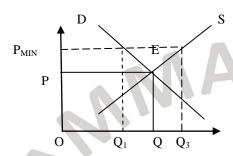


In the above diagram, at the maximum price demand is extended to OQ_3 , because of increase in the buying power of consumers. But this policy further enlarges the problem of scarcity, because at maximum price producer is willing to produce up to OQ_1 and there is a possible shortage of Q1 to Q3. Now firms may opt different methods to deal with such problems, like first come first serve policy where who comes first, will be entertained, Secondly, queuing where a consumer waits for her turn. However, situation will be worsened if firms start charging 'black market price'. This price is even above than the equilibrium price. For instance, in the above diagram OP_b price is charged by firms for OQ_1 quantity in the black market.



Minimum prices

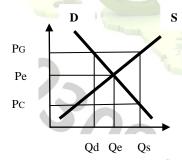
These prices are charged, usually above then the equilibrium price. Government thinks market forces are unable to determine right price for a particular good or service and it should be relatively higher. Minimum prices are usually introduced to protect small scale producers or workers who earn low incomes. Minimum prices are also introduced to discourage consumption of goods which cause negative externalities or a kind of demerit goods like alcohol.



In the above diagram, market is equilibrium at point E, which determines the price OP for OQ quantity. Government sets the price P_{MIN} ; it increases production to OQ3 and reduces demand to OQ1. Therefore Q1 to Q3 will be the surplus. If minimum price is below then the equilibrium price, it becomes ineffective.

Guaranteed price

Guaranteed prices are usually introduced in agricultural sector to bring stability in prices and output. Guaranteed prices work like minimum prices however in guaranteed prices all excess is purchased by the government whereas, in minimum price policy, there is no such provision. Government usually set the price which is above then the equilibrium price. Since not only producers get high prices but at the same time there is least possibility of excess supply problems therefore, they are encouraged to produce more and stable the supply side.



As guaranteed prices are introduced, firms increase their production, where as demand is contracted as a result there is an excess supply in the market. This excess supply is held by the government and release whenever there is an increase in demand to bring stability in prices. However at the end of the year when there is a time for new crops government lower prices to Pc to clear the stock.

Other Regulations

Permits

It means permission which should be taken by any firm before setting up and conduct the business within the geographical jurisdiction of a government. Usually permits are given by the local, provincial or federal authorities depending on size and nature of the firm. The basic



idea behind permits is not only see the overall trend in business but also control activities of firms which operate under price mechanism.

Ouotas

It is a physical limit on production or import of certain goods. Government usually use quotas to avoid over production of certain goods and more preferably to reduce negative externalities.

License to pollute

According to this license regulatory authorities give legal rights to a firm to pollute a certain amount

For example a firm can pollute the environment up to 100 units of carbon dioxide per year. Once the regulatory authority issues the license to pollute, after that it can be bought and sold in the market so, there is a market for pollution permits. Usually less pollution producing firms sell license to high pollution producing firms. Price of the permit depends on respective demand for and supply of the license.

Ban

It is a formal, legal and complete prohibition on production or consumption of certain goods which are totally undesirable for the society. For instance there is a complete ban on production and consumption of narcotics.

Public sector production

Under price mechanism merit goods are under produced, where as there is no production of public goods. These goods must be produced for the welfare of the society, therefore, government produces them. Such goods are important to reduce inequalities as well as to improve over all living standards. However public sector production has its own limitations. For instance, public sector production may crowd out private sector production. Private sector firms are reluctant to enter in such industries where public sector organizations are already operating. Secondly, profit is not the motive, therefore, efficiencies are very much low and even these organizations are run by bureaucrats who do not have special knowledge to run a business. Thirdly, there is no free lunch, so, to finance public sector production, government levies direct or indirect taxes which are ultimately paid by consumers.

Transfer payments

These payments are made by the state to individuals through certain programs like social security benefits or unemployment benefits. These payments are considered as non-exhaustive since they do not directly absorb resources or create output. It is the mean of redistribution of income and these payments are made in price mechanism to reduce inequalities. Government makes these payments to reduce poverty and improve living standards. It is also helpful to increase aggregate demand in an economy to achieve macroeconomics objectives like reduction in unemployment and to increase economic growth rate. However, it increases government spending, therefore, either government has to forgo many of other projects (opportunity cost) or levies more taxes to meet the deficit.

Nationalization and Privatization

Nationalization is an act where ownership of business organization is transferred from individuals and other legal entities to the state. On contrary, in privatization ownership of business organization is transferred from the state to individuals and other legal entities of private sector.



Reasons for Nationalization

Reduce inequalities: As money makes money, therefore, those who have resources will become richer and other remains poor. It increases the gulf between rich and poor. So, to reduce inequalities state takes the ownership of firms to provide equal opportunities to all income groups.

Stability and security: in private sector main objective is profit maximization hence operation of price mechanism depends on profit. If a firm makes profit, will continue its operation and if there is no profit there is no production. It makes the market very much vulnerable. Since government does not have the objective of profit therefore it takes the ownership of such firms to avoid vulnerability.

To raise economic size and efficiency: By combining small private enterprises into a large, possibly monopolistic organisation, economies of scale can be achieved and a more competitive organisation created. So, not only undue duplication is avoided but at the same time efficiencies will rise.

To protect consumers and employment: In certain cases natural monopolies are formed even in private sector. These firms may exploit consumers by charging high prices and provide sub-standard product. Similarly, these firms are very important to maintain certain level of employment in the economy and, if firms stop production due to any reason it will have deter employment considerably therefore, government takes the ownership to protect employment.

Reasons for privatization

Encourages competition: Competition is the driving force of innovation and efficiency. Private firms are reluctant to enter in such market where public sector firms operate. However, as firms are privatized, doors are opened for new firms and competition begins. Due to competition firms raise their efficiencies to reduce cost of production but also improve quality of product to attract more customers. So it improves allocation of resources.

Source of Revenue: As businesses are sold in private sector, not only the government is able to generate a handsome amount once but also private firms become permanent source of tax revenue for the state. So government can use these resources to produce more merit goods and public goods.

Less political interference: In public sector mostly decisions are taken on political basis to win people's favour which produce undesirable outcomes. To earn political favour usually firm are over employed which not only increase per unit cost of production but also incur huge losses which are met by the state to levy more taxes. After privatization all decisions are taken by specialist managers who are able to change the situation by increasing efficiencies.

Disadvantages of privatization

- There is a danger of conversion of public sector monopoly into private sector monopoly.
- Secondly, there are many firms which perform important public services like education, health and even transport services. Profit should not be the primary objective in such industries but due to privatization, private sector firms may emphasize more on profit instead of provision of these services.
- Many of public sector firms make good profit and if these firms are privatized than government may lose some potential sources of revenue.
- Sometimes large size firms are broken down in relatively small units; therefore, firms may lose many of the economies which they can gain otherwise.
- As private monopolies are formed, government needs to regulate them to prevent abuse of monopoly power. Once again economic activities are under state control and in addition government also incurs administrative costs.