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MEC-106

Public Economics

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By: **Kshyama Sagar Meher**

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PUBLIC ECONOMICS

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QUESTION PAPER

June – 2024

(Solved)

PUBLIC ECONOMICS

MEC-106

Time: 3 Hours]   **[Maximum Marks: 100**

Note: *Attempt questions from each Section as per instructions given.*

SECTION-A

Note: Attempt any two questions from this Section.

Q. 1. Define Public Economics. Critically examine how it is also called applied welfare economics.

Ans. Ref.: See Chapter-1, Page No. 1, 'Public Economics and Welfare Economics: Interface' and Page No. 2, 'Application of Welfare Criteria in Public Economics'.

Q. 2. How far the principles of fiscal federalism are observed in India? Point out the problems in central and state financial relations in India.

Ans. Ref.: See Chapter-19, Page No. 135, 'Federalism' and Page No. 137, 'Inter-Governmental Transfers in India'.

Q. 3. Distinguish between fiscal policy and monetary policy. Explain the role of different instruments of fiscal policy in achieving the high growth.

Ans. Ref.: See Chapter-21, Page No. 149, 'Fiscal Policy' and Page No. 150, 'Monetary Policy'.

Q. 4. What is debt redemption? Explain the different methods adopted by governments to repay their debts.

Ans. Ref.: See Chapter-15, Page No. 112, Q. No. 5 and Q. No. 6.

SECTION-B

Note : Attempt any five questions from this Section.

Q. 5. What do you mean by negative externalities? Explain the various policy instruments to meet the challenges of negative externalities.

Ans. Ref.: See Chapter-5, Page No. 34, 'Negative Externalities' and Page No. 35, 'Policy Instruments'.

Q. 6. Write notes on the following:

(a) **Voting by foot.**

Ans. Ref.: See Chapter-7, Page No. 51, 'Voting Mechanisms'.

(b) **Progressive taxation.**

Ans. Ref.: See Chapter-10, Page No. 70, 'Progressive, Proportional and Regressive Taxation'.

Q. 7. Discuss Tiebout model, explaining its assumptions.

Ans. Ref.: See Chapter-6, Page No. 43, 'Tiebout Model'

Also Add: Key Assumptions of the Tiebout Model

1. Consumer Mobility: The model assumes individuals are highly mobile and can move freely across jurisdictions. This allows them to "shop" for the location that best meets their preferences for public goods and tax levels.

2. Perfect Information: Consumers are assumed to have perfect information about the characteristics of each community, including public goods, services, and taxes. This allows them to make fully informed decisions about where to live.

3. A Large Number of Jurisdictions: The model assumes a variety of jurisdictions, each offering different mixes of public goods and tax rates, creating a diverse 'market' of community options. This variety increases the likelihood that individuals can find a jurisdiction that matches their preferences.

4. No Interjurisdictional Externalities: Tiebout assumes that public goods provided by one jurisdiction do not spill over to affect neighboring jurisdictions. Each community operates independently, and residents only enjoy public goods provided within their own jurisdiction.

5. Non-Restrictive Housing Market: The model presumes that housing is available in all jurisdictions,

allowing people to move without facing significant housing shortages or cost barriers. This assumption is essential for mobility and choice.

6. Head Tax Financing: Tiebout's model assumes that each jurisdiction finances its public goods through a head tax (a fixed tax per resident). This head tax is not based on income or wealth but is a standard rate per person, simplifying funding for public services.

7. Preference for Local Public Goods: The model assumes individuals value public goods and services, such as schools, parks, and policing, which are provided at the local level rather than national or regional levels. People's choice of residence is based on these public goods, along with the taxes needed to finance them.

Q. 8. What do you mean by Market Failure? What measures would you suggest to correct market failure?

Ans. Ref.: See Chapter-2, Page No. 9, 'Market Failure'.

Also Add: Measures to Correct Market Failure:

1. Government Intervention:
- **Taxes and Subsidies:** Imposing taxes on negative externalities (e.g., pollution) and providing subsidies for positive externalities (e.g., education).
- **Regulation:** Implementing regulations to limit harmful activities, such as pollution controls, or mandating minimum standards.
- **Public Provision of Goods:** Direct provision of public goods and services, like defense and public healthcare, to ensure access and equity.

2. Market-Based Solutions:
- **Tradable Permits:** Establishing cap-and-trade systems for pollution, allowing firms to buy and sell emission allowances, which incentivizes lower emissions.
- **Corrective Taxes (Pigovian Taxes):** Setting taxes that reflect the true cost of externalities, like carbon taxes to account for environmental damage.

3. Encouraging Competition:
- **Antitrust Laws:** Implementing laws to prevent monopolies and promote competition to prevent firms from restricting output or raising prices unfairly.
- **Deregulation in Key Sectors:** In sectors with excessive regulation limiting competition, reducing barriers to entry can enhance efficiency and innovation.

4. Improving Information:
- **Transparency and Disclosure Requirements:** Requiring firms to disclose relevant information (e.g., health warnings on tobacco products) to enable informed consumer choices.
- **Education and Awareness Programs:** Educating the public about the risks and benefits of certain goods (e.g., healthy lifestyle programs).

5. Provision of Merit Goods and Limiting Demerit Goods:
- **Subsidizing Merit Goods:** Government subsidies for healthcare, education, and other socially beneficial services to encourage consumption.
- **Restrictions on Demerit Goods:** Implementing restrictions, such as age limits or sin taxes on tobacco and alcohol, to reduce over-consumption.

Q. 9. State and prove the Arrow Impossibility Theorem.

Ans. Ref.: See Chapter-7, Page No. 51, 'Arrow's Impossibility Theorem' and Page No. 56, Q. No. 6.

Q. 10. Discuss the 'Ability to Pay' theory in taxation.

Ans. The 'Ability to Pay' theory in taxation is a fundamental principle in public finance, arguing that individuals and businesses should contribute to government revenue based on their capacity to bear the tax burden. Developed by economists like Adam Smith and furthered by others, this theory suggests that taxes should be progressive, meaning those with greater income or wealth should pay a higher proportion in taxes.

Key Principles of the Ability to Pay Theory

1. Progressive Taxation: Under this principle, tax rates increase with the taxpayer's income or wealth. The theory posits that individuals with higher incomes or larger wealth should pay more, not only in absolute terms but also in terms of a higher percentage, because they have a greater ability to bear the tax burden without significantly affecting their standard of living.

2. Equity and Fairness: The theory emphasizes fairness in taxation. Vertical equity, a core element, requires that people with more resources contribute a larger share, aligning with the idea that people should contribute to public services in proportion to their financial capability. This ensures that those with lower incomes aren't disproportionately affected.

PUBLIC ECONOMICS

BLOCK-I : BASIC CONCEPTS OF PUBLIC ECONOMICS

Welfare Foundations of Economic Policies | 1

INTRODUCTION

Policy interventions by the government is needed for welfare of individuals in both competitive market economy as well as command economy. In this chapter, we will study about the welfare foundations of economic policies in a competitive market economy.

CHAPTER AT A GLANCE

PUBLIC ECONOMICS AND WELFARE ECONOMICS: INTERFACE

Public economics provide understandings for policy interventions by the government to rectify any distortion in the decision-making of various agents. The distortions may be in monopoly or monopsony power for sellers or buyers, taxes on or subsidies, existence of public goods and external economies or diseconomies. In such cases, the individual agents fail to achieve optimal welfare levels. Thus, the aggregate welfare of the economy also fails to attain its optimum.

In such cases, the government devises suitable policy interventions to correct the outcome leading the economy to achieve its maximum. Thus, welfare considerations become the backbone of all economic policies. Public economics which focuses on representative individual buyer or seller overlaps with welfare economics. In public economics, welfare is measured as the sum of consumer's surplus in terms of utility, producer's surplus in terms of profit and government's surplus in terms of net tax revenue. In public economics, any kind of surplus is welfare enhancing.

CONCEPT OF WELFARE

The economic policies in a competitive market economy start with an assumption that individuals derive utility from their own consumption of goods and services. The social welfare function is thus individual centric.

Social Welfare Function (SWF)

In welfare economics, a social welfare function is a function that ranks social states as less desirable, more desirable, or indifferent for every possible pair of social states. Inputs of the function include any variables considered to affect the economic welfare of a society. In using welfare measures of persons in the society as inputs, the social welfare function is individualistic in form. One use of a social welfare function is to represent prospective patterns of collective choice as to alternative social states. The social welfare function provides the government with a simple guideline for achieving the optimal distribution of income. It is explained diagrammatically in Q&A section.

Utilitarian SWF

According to Jeremy Bentham, social welfare would be viewed as the simple addition of individual valuations of utility. However, individual utilities are not readily comparable or additive.

Scitovsky-Bergson's SWF

It shows that if a poor individual loses utility, the rich gains more utility in order that the society can be indifferent for the re-distribution. A transfer of income from the rich to the poor increases the utility values more for the poor. It is explained diagrammatically in Q&A section.

Rawlsian SWF

The Rawlsian approach to social welfare measures the welfare of a society by the well-being of the worst-off individual (the maximin criterion). A utilitarian measures the welfare of a society by the sum of the individuals' utilities. Rawls accepts that utilitarianism is the single most important ethical theory with which he has to contend. It is further explained diagrammatically in Q&A section.

EFFICIENCY AND PARETO OPTIMALITY

Pareto efficiency or Pareto optimality is a situation where no individual or preference criterion can be better

off without making at least one individual or preference criterion worse off or without any loss thereof. The concept is named after Vilfredo Pareto (1848-1923), Italian civil engineer and economist, who used the concept in his studies of economic efficiency and income distribution. Edgeworth's original two-axis depiction was developed into the now familiar box diagram by Pareto in his 1906 *Manual of Political Economy* and was popularized in a later exposition by Bowley. The modern version of the diagram is commonly called the Edgeworth-Bowley box. Edgeworth-Bowley box is a graphical representation of a market with just two commodities and two consumers. The main use of the Edgeworth box is to introduce topics in general equilibrium theory in a form in which properties can be visualised graphically. It is further explained with diagram in Q&A section.

UTILITY POSSIBILITY FRONTIER

A utility possibility frontier shows the maximum amount of one person's utility given each level of utility attained by all others in society. The frontier can also be explained as the utility maximisation by consumers given an economies' endowment and technology. Points on the curve are, by definition, Pareto efficient, while points that do not lie on this curve are not Pareto efficient. The curve also represents a social optimum, as any point on the curve is a maximisation of the given social welfare function. However, based on the extent of society's preferences for an equal distribution of real income, a point off the curve may be preferred. All points on or below the Utility-Possibility Frontier are attainable by society; all points above it are not attainable. The utility-possibility frontier is derived from the contract curve. The Utility-Possibility Frontier (UPF) is the upper frontier of the utility possibilities set, which is the set of utility levels of agents possible for a given amount of output, and thus the utility levels possible in a given consumer Edgeworth box. The slope of the UPF is the trade-off of utilities between two individuals. The absolute value of the slope of the utility-possibility frontier showcases the utility gain of one individual at the expense of utility loss of another individual, through a reallocation of outputs. It is further explained with diagram in Q&A section.

Compensation Principles

Compensation principles are used when some individuals lose out due to re-distribution. Under the compensation principles, the gainers compensate the losers and still have a net gain.

The three most well-known compensation principles are:

The Kaldor Criterion: Allocation α is preferred to allocation β if the gainers from a re-distribution from α to β can compensate the losers but still stay gainers.

The Hicks Criterion: Allocation α is preferred to allocation β if the losers cannot profitably bribe the gainers in not making such a re-distribution.

The Scitovsky Criterion: Allocation α is preferred to allocation β if the gainers could compensate the losers to make the change while the losers cannot profitably bribe the gainers in not making the change. It is also called as Scitovsky's double criteria because it combines both the principles of Kaldor and Hicks.

APPLICATION OF WELFARE CRITERIA IN PUBLIC ECONOMICS

The most efficient solution to distribution of goods depends on meeting *Pareto Optimality* condition. If some Pareto optimal situation is preferred among the many possible ones, we need to apply some compensation principle. Some application of these principles in specific economic contexts are discussed below:

Monopoly Power

In case of monopoly by a seller, there will be inefficient outcome and the consumers will lose some utility. Policy intervention by the government can solve this. In case the monopoly is a 'natural monopoly', the government can control the utilities. If the monopoly is for other reasons like patents, government can constitute price regulatory bodies to oversee the pricing. This ensures monopolist cannot earn too high profits by taking away some utility from the consumers. A cartel may be formed by some producers. The govern-ment can subsidise the consumers.

If such a situation arises on the buyers side as well. For example, if the price of labour becomes much lower than competitive wages and cause the workers to lose utility to the buyers of their labour services, government may intervene to legally enforce minimum wage. Such cases also occur when the labour market becomes unorganised so that buyers wield considerable bargaining power.

Public Goods

In case of public goods, competitive market mechanism does not work and the Edgeworth-Bowley diagram does not provide a correct solution. Defence force of the country service is enjoyed equally by all citizens of a nation can be an example. In the absence of a market determined price, the optimal point on the

contract curve or utility possibility frontier cannot be determined rendering welfare based Pareto optimal criterion redundant. In such cases, government has to devise a tax system that shows true preferences of the individuals towards the public good. The taxes will act similar to price but determination of correct tax rate is difficult.

Externalities

Externalities affects an individual's utility but utility of many others. Externalities may be positive and negative. Positive externalities increase the utility of all others in that neighbourhood. Negative externalities adversely affect others. Thus, the indifference curves of one individual are not independent of movement in such curves of another individual. As a result, the whole mechanism by which optimal welfare is determined becomes questionable. Since the individuals (or firms) who create such externalities in many cases think about their private costs and benefits, there would be significant difference between private and social benefits. In such cases, the government can intervene through tax and subsidies.

Imperfect Information

The consumers get utility from consumption of goods with perfect information of the product so that the pricing of the goods does not deviate from its competitive optimum nor the quality of the product causes lower than the desired utility from the consumption of the goods. In such cases, government needs to intervene for course correction. Drug control by government agencies is an example. The US Food and Drug Administration oversees the introduction and the efficacy of all drugs in United States and sets a benchmark for the world. Another example is information provided by the weather bureau of a country which helps sellers and buyers in various ways.

CHECK YOUR PROGRESS

Q. 1. What is the basic tenet of Public Economics?

Ans. Public economics provides a framework for thinking about whether the government should take part in economic markets and to what extent it should do so. The welfare in an economy is measured as the sum of consumers surplus, producers surplus and the government's surplus. Any kind of surplus is welfare enhancing. Keeping this in view, the government make policies in an economy. The government also intervene when there is a failure in market because of various factors like monopoly, externalities and public goods.

Q. 2. Why is Social Welfare Function said to be 'individualistic'?

Ans. Social Welfare Function is individualistic because the welfare of the society depends on the individual utility levels. In a competitive market economy, it is assumed that individuals derive utility from their own consumption and are not affected by consumption of others. Thus, in social welfare function other aspects such as social networks prevalent in many developing economies are ignored. In social networks, the actions of groups affect individual's utility. Thus, the predominant ideas in public economics are governed by welfare concepts rooted in individualistic utility levels.

Q. 3. How does the Utilitarian Social Welfare Function deviates from its individual centric character?

Ans. In utilitarian Social Welfare Function as suggested by Jeremy Bentham, the gain and loss of the individuals are independent of their wealth positions. On the other hand, in individualistic SWF, the welfare of the society depends on the individual utility levels. It is assumed that in a competitive market economy, individuals derive utility from their own consumption and are not affected by consumption of others.

Q. 4. Why is the Rawlsian Welfare Function L-shaped?

Ans. Rawlsian Welfare Function is L-shaped because the fixing the utility of the poor will cause no rise in social welfare no matter how much utility is increased for the rich. It shows the welfare of the society depends on the welfare of the worst-off individual. Even if the rich gains, the welfare of the society will not increase if the poor remains the same.

Q. 5. Define a contract curve.

Ans. The contract curve is the set of points representing final allocations of two goods between two people that could occur as a result of mutually beneficial trading between those people given their initial allocations of the goods. All the points on this locus are Pareto efficient allocations, meaning that from any one of these points there is no reallocation that could make one of the people more satisfied with his or her allocation without making the other person less satisfied. The contract curve is the subset of the Pareto efficient points that could be reached by trading from the people's initial holdings of the two goods.

Q. 6. How are Utility Possibility Frontier and Contract Curve related?

Ans. The utility possibilities frontier represents all allocations that are efficient and shows the level of

satisfaction that each person achieves when he has traded to an efficient outcome, on the contract curve. In an Edgeworth box the contract curve is the set of tangency points between the indifference curves of the two consumers. It is termed the contract curve because the outcome of negotiation about trade between two consumers should lead to an agreement that has an outcome on the contract curve. The competitive equilibrium of an economy is always located on the contract curve.

Q. 7. How does the second welfare theorem envisage scope for policy intervention by the government?

Ans. The second welfare theorem says in a competitive market economy, given that the indifference curves of individuals satisfy the standard properties, for any initial distribution of goods among the individuals, any point on the utility possibility frontier is a point of equilibrium. This implies that if the existing equilibrium point is not the one which is desirable from society's point of view, then a re-distribution of income can lead to a more desirable outcome at some other Pareto optimal point.

Q. 8. State the limitation of compensation principles.

Ans. The limitation of the compensation principles is that they are all potential and not actual. It is possible that the gainers do not compensate the losers in reality or the losers do not try to thwart the move of re-distribution though they could.

Q. 9. Why does the government need to intervene in case of a patented product?

Ans. The government needs to intervene in case of a patented product because there may be monopoly by a seller and there will be inefficient outcome and the consumers will lose some utility. Policy intervention by the government can maximize the utilities for the consumers.

Q. 10. What problem does a public good pose for welfare maximisation?

Ans. For public goods, competitive market mechanism does not work and the Edgeworth-Bowley diagram does not offer a correct solution. Take Defence force as an example. The service is enjoyed equally by all citizens of a nation can be an example. In the absence of a market determined price, the optimal point on the contract curve or utility possibility frontier cannot be determined rendering welfare based Pareto optimal criterion redundant. In such cases, government has to devise a tax system that shows true preferences of the individuals towards the public good.

Q. 11. In case of household enterprises being set up in densely populated area, what is expected in terms of policy intervention?

Ans. In case of household enterprises being set up in densely populated area, the government can intervene through tax. The reason: Such an enterprise is an externality which adversely affects others. Thus, the indifference curves of one individual are not independent of movement in such curves of another individual. As a result, the whole mechanism by which optimal welfare is determined becomes questionable. Since the individuals (or firms) who create such externalities in many cases think about their private costs and benefits, there would be significant difference between private and social benefits.

Q. 12. For what reason do drugs need regulation?

Ans. Drugs need regulation because of imperfect information. The consumers get utility from consumption of goods with perfect information of the product. Government needs to intervene for course correction.

OTHER IMPORTANT QUESTIONS

Q. 1. What is the essence of Rawlsian approach to social welfare?

Ans. The Rawlsian approach to social welfare, built on the foundation of the "Veil of Ignorance", measures the welfare of a society by the well-being of the worst-off individual (the maximin criterion). A utilitarian measures the welfare of a society by the sum of the individuals' utilities. Starting from such different perspectives, the optimal income distribution chosen by a Rawlsian social planner usually differs from the optimal income distribution chosen by a utilitarian social planner. Rawls accepts that utilitarianism is the single most important ethical theory with which he has to contend. In utilitarian ethics, the maximization of general welfare may require that one person's good is sacrificed to serve the greater good of the group of people. Rawlsian ethics, however, would never allow this. As Rawls' *Difference Principle* states, social and economic inequalities should be tolerated only when they are expected to benefit the disadvantaged. Rawls argues that his principles are more morally justified than the utilitarian principles because his will never condone institutions such as slavery, whereas this need not be the case with utilitarian ethics. In such a situation, a utilitarian would simply weigh all the benefits and all the losses, so a *priori* we cannot exclude a configuration