A Level

Article: 157

TEACHER NOTES SERIES

AS MICRO ECONOMICS

BOOK-1

Imran Latif

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A Level

Microeconomics Notes
Book-1

2019 – 21 Edition

Article: 157

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Contents

Preface

The idea of writing notes for Cambridge A-level Economics came to me in 2003, when, having already taught for a year, I realized that no single economics book available in the local and international markets covered all the topics with the depth and perspective required by the CIE syllabus. Both students and teachers had to consult 3 to 4 different books to find all the material that they needed—private candidates and new teachers had it even worse. Furthermore, it was really difficult for students to keep having to refer through different books when the exams were close and they were starved for time. I took on the challenge and decided to write a comprehensive text that explicitly followed the syllabus and exam pattern of the CIE. A year and a half later, in the middle of 2004, I had finally written and published four entire volumes of A-level economics notes. Part of them had been hand-written, and part of them had been typed. Soon, word of their usefulness spread, and they were bought all over Pakistan.

The notes had served their purpose well till the end of 2014. Till that point, there had only been minor changes in the syllabus. But now, there was a dire need to update them, for the new syllabus for the 2016 examination introduced some significant changes in course content.

In this new and improved edition, old topics have been revised and new topics have been added. At the end of each topic, a relevant list of essay questions has been added as well, and these contain questions spanning from 1990 to 2015. These questions provide a clear guideline regarding how the examiners assess students' knowledge on the topics for Paper 2 and Paper 4, allowing the student to practice effectively. While writing these notes I kept in mind the way in which the examiner tests MCQs as well. The notes have been divided into four volumes to make it easier for those who are following the AS and A2 track separately and for those who are taking the composite exam; the syllabus division in the following pages has been provided for this express purpose.

I hope my efforts will help to contribute both to the learning of the student, as well as to the inquisitiveness of any teachers of A-level economics, effectively. Your suggestions will help me improve the quality of the content for later editions and will be highly appreciated.

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References

1. Economics, 6th Edition / Sloman, J.
2. Principles of Economics, 10th Edition / Karl E. Case, Ray C Fair and Sharon C Oster
3. Economics, 18th edition / Mcconnell Brue
4. Economics, 9th Edition / Arnold
5. Principles of Economics / N. Gregory Mankiw
6. Cambridge International AS and A Level Economics, 3rd edition / Bamford, Colin and Grant, Susan
7. Cambridge International AS and A Level Economics Revision Guide / Susan Grant
8. Economics A Level 5th edition / Anderton, AG
9. Comprehensive economics guide / Hashim Ali.
10. Stanlake's Introductory Economics/ Susan Grant
11. Economics AS and A Level Through Diagrams / Gillespie, A
12. Penguin Dictionary of Economics / Bannock, Graham et al (eds)
13. Economics: A Student's Guide / Beardshaw, J
14. Essentials of Economic 5th edition / Sloman, John
15. Economics, 9th edition / Begg, David et al
16. Economics, 11th edition / Michael Parkin
17. www.tutor2u.net
18. www.s-cool.co.uk
19. www.wikipedia.com

1 Basic economic ideas and resource allocation (AS Level)	
a) Scarcity, choice and opportunity cost	• the fundamental economic problem • the meaning of scarcity and the inevitability of choices at all levels (individual, firms, governments) • the basic questions of what will be produced, how and for whom • the meaning of the term, '*ceteris paribus*' • the margin and decision making at the margin • short run, long run, very long run
b) Positive and normative statements	• the distinction between facts and value judgements
c) Factors of production	• the rewards to the factors of production: land, labour, capital and enterprise • specialisation and division of labour
d) Resource allocation in different economic systems and issues of transition	• decision making in market, planned and mixed economies • the role of the factor enterprise in a modern economy
e) Production possibility curves	• shape and shifts of the curve • constant and increasing opportunity costs
f) Money	• functions and characteristics in a modern economy • barter, cash and bank deposits, cheques, near money, liquidity
g) Classification of goods and services	• free goods, private goods (economic goods) and public goods • merit goods and demerit goods as the outcome of imperfect information by consumers.

2 The price system and the micro economy (AS Level)	
a) Demand and supply curves	• effective demand • individual and market demand and supply • factors influencing demand and supply
b) Price elasticity, income elasticity and cross-elasticities of demand	• the meaning and calculation of elasticity of demand • the range of elasticities of demand • the factors affecting elasticity of demand • the implications for revenue and business decisions of price, income and cross-elasticities of demand
c) Price elasticity of supply	• meaning and calculation of elasticity of supply • the range of elasticities of supply • the factors affecting elasticity of supply • implications for speed and ease with which businesses react to changed market conditions
d) Interaction of demand and supply e) Market equilibrium and disequilibrium	• meaning of equilibrium and disequilibrium • effects of changes in supply and demand on equilibrium price and quantity • applications of demand and supply analysis • movements along and shifts of the demand and supply curves • joint demand (complements) and alternative demand (substitutes) • joint supply • the workings of the price mechanism; rationing, signalling and the transmission of preferences
f) Consumer and producer surplus	• meaning and significance • how these are affected by changes in equilibrium price and quantity

3 Government microeconomic intervention (AS Level)	
a) Maximum and minimum prices	• meaning and effect on the market
b) Taxes (direct and indirect)	• impact and incidence of taxes • specific and *ad valorem* taxes • average and marginal rates of taxation • proportional, progressive and regressive taxes • the Canons of Taxation
c) Subsidies	• impact and incidence of subsidies
d) Transfer payments	• meaning and effect on the market
e) Direct provision of goods and services	• meaning and effect on the market
f) Nationalisation and privatisation	• meaning and effect on the market

4 Glossary of command words

This glossary should prove helpful to candidates as a guide, although it is not exhaustive and it has deliberately been kept brief. The number of marks allocated for any part of a question is a guide to the depth required for the answer.

Command word	What it means
Calculate	Work out using the information provided
Define	Give the exact meaning of
Describe	Give a description of, explain the main features of
Identify	Name the key knowledge point
Illustrate	Give examples, use a diagram
Outline	Describe the key points without detail
State	Give a concise answer with little or no supporting argument required
Analyse	Explain the main points in detail, examine closely, separate into parts and show how all the parts connect and link
Compare	Explain the similarities and differences between
Explain/how	Give clear reasons or make clear the meaning of, use examples and explain the theory behind the question. This command word requires 'Knowledge and Understanding' as well as 'Application'
Consider	Give your thoughts about, with some justification
Assess	Show how important something is, give your judgement on
Comment upon	Give your reasoned opinion on, with explanations
Criticise	Give an opinion but support it with evidence
Discuss	Give the important arguments for and against, often requires a conclusion. This command word requires 'Analysis' and 'Evaluation'
Justify	Explain why the arguments for an opinion are stronger than the arguments against
Evaluate	Discuss the importance of, judge the overall worth of, make an attempt to weigh up your opinions
To what extent	Give reasons for and against, come to a conclusion with a justification of which arguments are strongest and which are weakest

UNIT 1

Basic Economic Ideas and Resource Allocation

AS Level
Microeconomics
Notes Book 1

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Syllabus 2019 – 21

a. Scarcity, choice and opportunity cost
- the fundamental economic problem
- the meaning of scarcity and the inevitability of choices at all levels (individual, firms, governments)
- the basic questions of what will be produced, how and for whom
- the margin and decision making at the margin

b. Positive and normative statements
- the distinction between facts and value judgements

c. Factors of production
- the rewards to the factors of production: land, labour, capital and enterprise
- specialisation and division of labour (Transferred to Book 2 unit 2)

d. Resource allocation in different economic systems and issues of transition
- decision making in market, planned and mixed economies
- the role of the factor enterprise in a modern economy

e. Production possibility curves
- shape and shifts of the curve
- constant and increasing opportunity costs

f. Money (Transferred to book 2 unit 2)
- functions and characteristics in a modern economy
- barter, cash and bank deposits, cheques, near money, liquidity

Unit 1 Basic Economic Ideas and Resource Allocation

Economy is an area where goods and services are produced and consumed.
Economics is the social science that studies human behaviour between unlimited wants and limited resources with their alternative uses.

In other words, it is a social science that studies how we can make the best use of what we have in order to satisfy our needs and wants.

Or, simply, economics is the study of the economy.

Production and consumption

Resources are combined in the process of **production** to create goods and services. Goods and services have the capacity to satisfy wants. The process through which individuals use up goods and services to satisfy wants is known as **consumption**. Some goods, such as a chocolate bar, are quickly used up to satisfy our wants and are known as **consumer perishables**. Other things satisfy wants over a longer period. These are called **consumer durables**. Examples of consumer durables include television sets, refrigerators and vehicles.

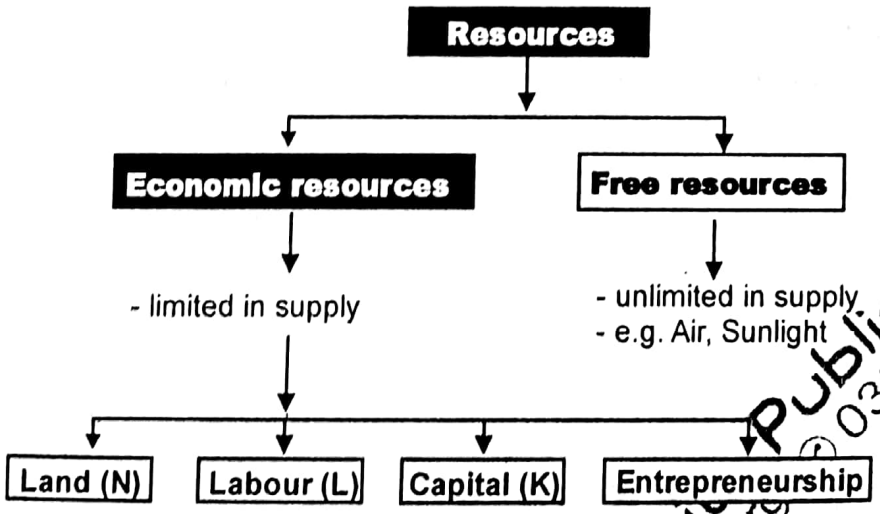
BASIC ECONOMIC PROBLEM

The limitedness of resources to satisfy all human needs and wants in the society is known as **the basic economic problem, fundamental economic problem or problem of scarcity.**

From an individual to a whole society, everyone faces the problem of scarcity. The problem of scarcity arises due to two reasons:

1. Limited nature of resources
2. Unlimited nature of wants

The Limited Nature of Resources



Resources are all those materials and efforts which can be used to produce goods and services, e.g., agricultural area, labour, machines, tools, etc.

Resources are of two types:

A. Unlimited resources or free resources
B. Limited resources or scarce resources

Unlimited Resources or Free Resources:
Resources which are unlimited in supply, e.g. sunlight and sea water. Free resources are not of much concern to economists.

Limited Resources or Scarce Resources:

- Resources which are limited in their supply, e.g., agricultural area that a country can have are limited, number of machines, buildings, oil-reserves, and labour force are limited in supply.
- Scarce resources are also known as **factors of production.**
- There are four major types of factors of production, i.e., land, labour, capital, and entrepreneurship.

i. Land (natural resources):

- All natural and god-gifted resources which can be used to produce goods and services are collectively known as **land,** e.g., agricultural area, oil-reserves, gas-reserves, rivers, lakes, minerals, coal, metals, natural forests, etc.
- If a factor owner lends its factor of production to someone else for use of specific period, the benefit that factor owner will receive for parting with the use of factor he owns, is known as **factor reward, return of factor of production or factor income.**
- Reward for land is known as **rent.**

ii. Labour (human resource):

All human efforts (physical or mental) used to produce goods and services are termed as **labour.** Labour refers to the efforts used in the production process and is not the same as workers.

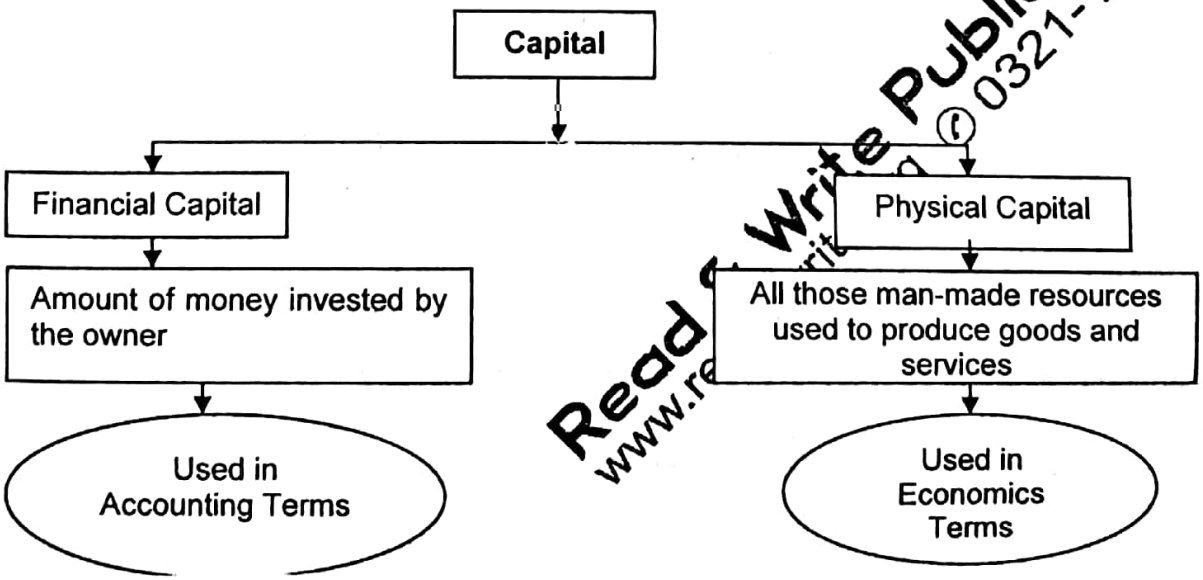
Workers	Labour
Doctor	Medical service
Teacher	Teaching services
Engineer	Engineering services
Security guard	Security Services

Labour = No. of workers × average work hours

- Reward of labour is **wages and salaries.**
- Salaries are offered to permanently appointed staff and paid usually monthly or weekly.
- Wages are offered to the labour hired for a specific period or on task-basis.

iii. Capital (man-made resource):

- All these resources which are man-made and can be used to produce goods and services.
- e.g., machines, building, tools, furniture, roads and vehicles, etc.
- Reward of capital is **interest.**



iv. Entrepreneurship:

Entrepreneur is the person who combines all three factors of production and takes the risk of loss. Combining all factors function may be shared with managerial labour but risk-taking is exclusive function of entrepreneur.
Entrepreneurship is the service of entrepreneur.
Reward for entrepreneurship is known as profit.

	LAND	LABOUR	CAPITAL	ENTREPRENEURSHIP
Symbol	N	L	K	–
Definition	Limited natural resources	Human efforts measured in number of hours.	Man-made resources	• combines all factors of production • takes the risk of loss.
Examples	• Agricultural area • Oil • Minerals • River	• Medical services • Teaching services • Banking services • Labour services	• Roads • Buildings • Machines • Microsoft word	• Sole-trader's services • Partners' services • Shareholder's services
Reward	Rent	Wages or salary	Interest	Profit

Unlimited Nature of Wants

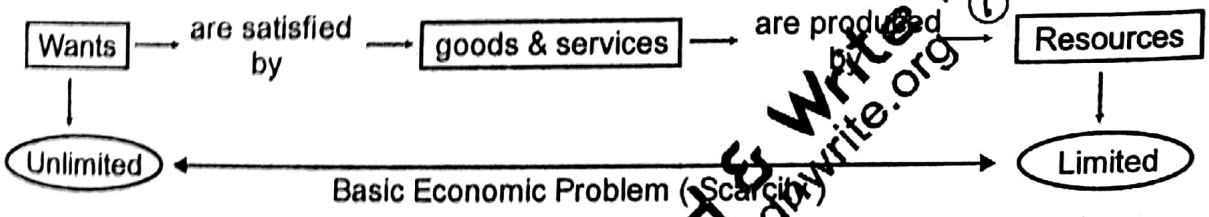
- **Wants** are all those desires which give us pleasure.
- Those desires without which we cannot live are known as **needs.** e.g., food, clothing, shelter, etc
- However, those desires which provide us pleasure but we can survive without then are termed as **wants**.
- Needs are limited but wants are unlimited.

Individuals, firms, or a society have diverse and wide range of wants.

- Individuals may desire better food, luxurious housing, high incomes, better working conditions, and so on.
- Firms may desire for more and more profits, expansion, market-share, and monopoly power.
- Society may desire for improved infrastructure, low un-employment, low inflation, high economic growth, and high standard of living.

There is no limit of wants people, firms, and societies have.

This limited nature of resources and unlimited nature of wants leads to the existence of basic economic problem at all levels. **Scarcity** means inability to satisfy all of the wants with the given level of limited resources.



Relationship between scarcity, choice, and opportunity cost

The existence of scarcity forces people, firms, and societies to choose some of their wants that can be satisfied and other wants to be left unsatisfied. Economics helps us to make wise choices to achieve the

Highest possible satisfaction. Hence, economics is a science of making best choices in order to satisfy our needs and wants.

Where there is scarcity, there is choice, and every choice has its opportunity cost. If there is no scarcity, there is no choice and no opportunity cost, i.e., free goods.

- **Choice** means selection of something for consumption or production. Every "choice" is accompanied by opportunity cost.
- **Opportunity cost** is the benefit of the next best alternative sacrificed due to the current choice having been made.

Examples:

- **At an individual level**

An individual faces the basic economic problem if he has Rs.20 and wants to buy a Pepsi and chips with prices of Rs.15 and Rs.10, respectively. He is unable to buy both due to his limited income; hence, is forced to make a choice. If he chooses Pepsi, the benefit he could have from consumption of chips is his opportunity cost.

- **At a firm's level**

A firm may have to choose either an advertising campaign or instalment of new machinery in the factory because it does not have enough resources to do both. Choice of advertising campaign will have the opportunity cost of new machinery.

- **At the country's level**

A society may face basic economic problem when it does not find enough resources to develop a school network in rural areas as well as wants to strengthen its defence system. Choice of strong national defence will lead to the sacrifice of the benefit she could have from improved education.

- Opportunity Cost is even present between the choice of present or future.
- If a society chooses high standard of living in future, it must invest more today to reap high in future. More investment today means less consumption and lower standard of living in the present.
- Present consumption is the opportunity cost of investment and better future living standards.

Problem of scarcity and its link with choice and opportunity can be best explained through a Production Possibility Curve (PPC).

PRODUCTION POSSIBILITY CURVE

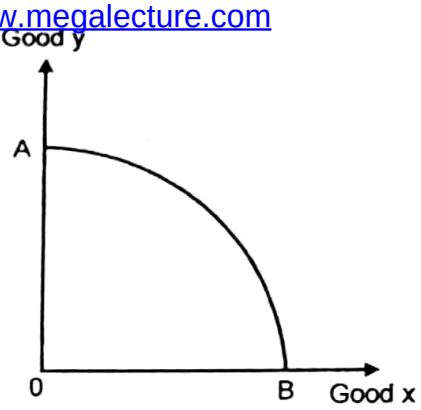
The **Production possibility curve (PPC)** is a curve that shows all maximum possible combinations of two goods and services which a country can produce using all available resources with efficient technique of production at a given state of technology.

Assumptions of PPC

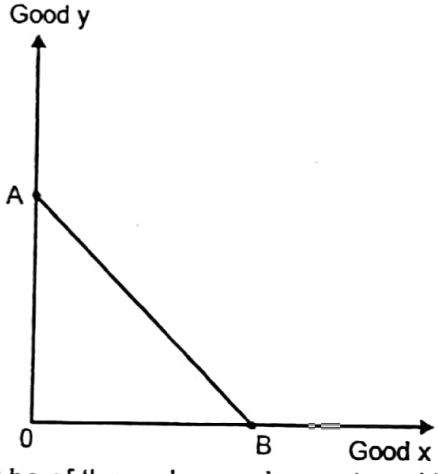
- Suppose there are only two goods produced in a country; **Guns** and **Roses**.
- Suppose the economy is working at **full employment**. All available resources are utilized to produce goods and services and quantity of resources is fixed.
- Assume that country is using best available technique of production i.e., **Productive Efficiency** (a situation where it is impossible to produce more of one good without sacrifice of other.)
- Finally to construct PPC and make it comprehendible, it is assumed that **state of technology** will not change in the given time constraint.

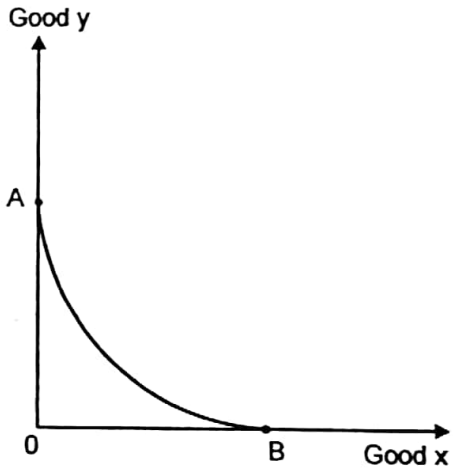
Following diagram shows the production possibility curve of a country producing guns and roses assuming that all available resources are fully employed in the most efficient way at present state of technology.

- If all resources are allocated in guns production the economy will be at point 'A'
- If all resources in roses production the economy will be at point 'B'
- A curve joining 'A' and 'B' is PPC as shown below



Points 'A' and 'B' may be joined by a straight line or an inward bending curve as shown below:





Hence, PPC may be of three shapes, i.e., outward bending, inward bending, or a straight line.

Shape of PPC

There are some concerns about the shape of PPC.

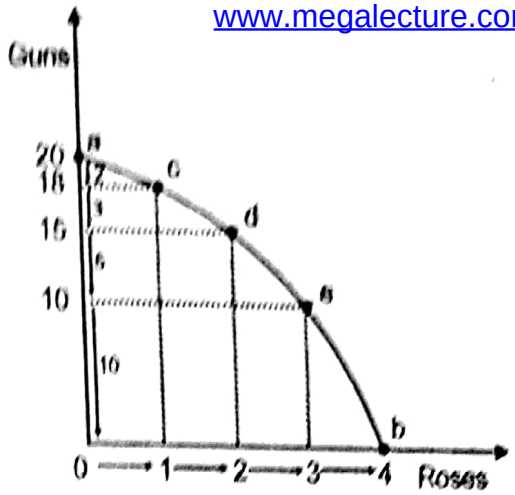
- Why is the PPC downward sloping?
- Why is the PPC outward bending?
- When is the PPC a straight line?
- When is the PPC inward bending?

1. Why is the PPC downward sloping?

PPC is always downward sloping because of presence of trade-off (i.e., opportunity cost) between the two goods because of scarcity. According to basic assumption of PPC, as a country has used all of its available resources with productive efficiency in a given constraint of technology, it is impossible now to increase the production of one good without losing the other. That's why PPC will always be downward sloping. However, scarcity does not provide any information regarding why PPC is straight line, inward bending, or outward bending.

2. Why is the PPC outward bending?

PPC is curved or bowed outward in figure below.



This is because of **non-homogeneity of resources** or **imperfect mobility of resources** from one use to another. In other words, resources are specialized in their nature and can't be equally efficient in production of both goods. Workers who are efficient in roses (farmers) are not equally efficient in guns (factory workers) All resources, like labour are specialized for particular products.

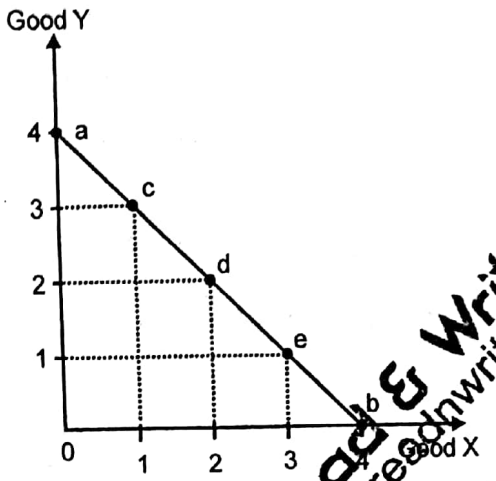
At point "a" in figure, where all available resources are employed in production of guns, economy is using even those resources in guns which were more efficient in roses production. If resources which were more efficient for roses and least efficient in guns are switched to produce some of the roses, we will be at point "c", where a little sacrifice of guns can generate more roses, shown by opportunity cost of 2 units.

- If we move from "c" to "d" in figure, we have to switch those resources in production of roses, which were also efficient in production of guns. Consequently, opportunity cost (i.e., sacrifice of guns) will be greater than before, i.e., 3 units of guns.
- Increase in production of roses beyond the point "d", leads to use those resources in production of roses which were most suitable for guns, resulting into high opportunity cost.

This non-homogeneity of resources and increasing opportunity cost causes the PPC to be curved or bowed outward. This is known as the **law of increasing opportunity costs.**

3. When is the PPC a straight line?

PPC can also be in straight line if resources are **homogenous** or **perfectly mobile** for both goods. Straight line PPC will have **constant opportunity cost.** This is shown in the following diagram.

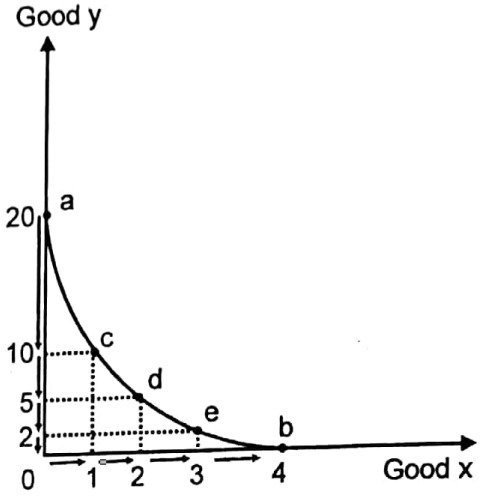


4. When is the PPC inward bending?

If

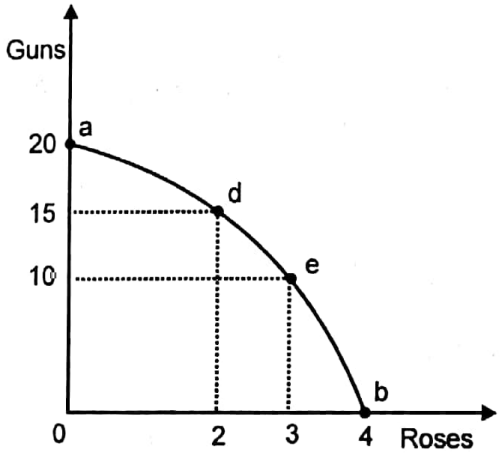
- Non-homogenous resources

- Decreasing opportunity cost
- Least suitable resources for roses are switched to roses production at first and least suitable at the end.



PPC and opportunity cost calculations:

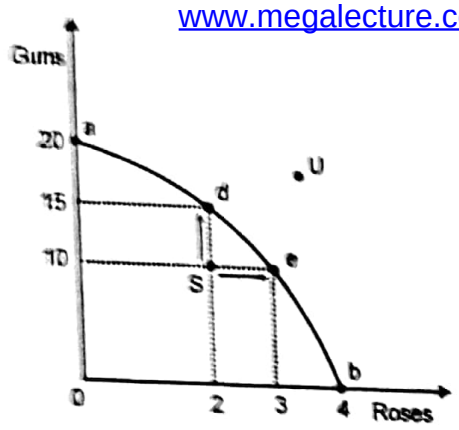
According to the following diagram:



- Opportunity cost of 4 units of roses is 20 units of guns or opportunity cost of 20 units of guns is 4 units of roses
- Opportunity cost of 15 units of guns is 2 units of roses or opportunity cost of 2 units of roses is 5 units of guns
- Opportunity cost of increase in roses from 2 units to 3 units is fall in production of guns from 15 to 10 units, i.e.,5 units of guns and vice-versa

POINTS BELOW, ON, AND BEYOND THE PPC

	Points on the PPC	Points below the PPC	Points beyond the PPC
According to figure	a,b,d, and e	S	U
Attainable	✓	✓	✖
Desirable	✓	✖	✓
Employment of Resources	Full-employment	Unemployment	–
Productive Efficiency	✓	✖	–
Opportunity Cost	✓	✖	–



Points on the PPC

- Point "a" represents the maximum production of guns if all resources are employed in the production of guns and no roses are produced.
- Point "b" represents the maximum production of roses when no guns are produced.
- A curve joining these two extreme points (may be outward bending, inward bending, or a straight line) is the PPC.
- At any point along the curve, such as "d" and "e", there is a trade-off between two goods.
- The production of roses can only be expanded by taking resources away from the production of guns.
- When an economy moves from point "d" to "e", to have an extra unit of roses it must sacrifice "5" units of guns (opportunity cost).

Points below the PPC

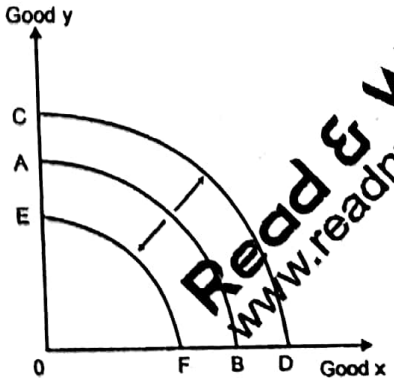
- Point "S" or any other points below the PPC show that the economy is either under-utilizing its scarce resources (i.e., unemployment) or it is using an inefficient technique of production.
- Economy is capable of moving to point "d" without sacrificing roses; more guns can be produced by either employing idle resources or replacing inefficient techniques with efficient ones. It is also possible to produce more roses without sacrificing guns, as shown through a movement from point "S" to point "e" on the PPC.
- This movement of an economy from a point below the PPC to the any of the points on the PPC is also known as **actual economic growth**.

Points beyond the PPC

- Point "U" is unattainable within the current time frame and production capacity. It can be achieved in the long run when some of the assumptions of the PPC are relaxed, e.g., an increase in quantity of land, labour, and capital or an improvement in technology.

Shifts in the PPC

The production possibility curve can shift parallel inward or outward:



Causes of Shifts in the PPC

There are three major causes of shifts in the PPC.

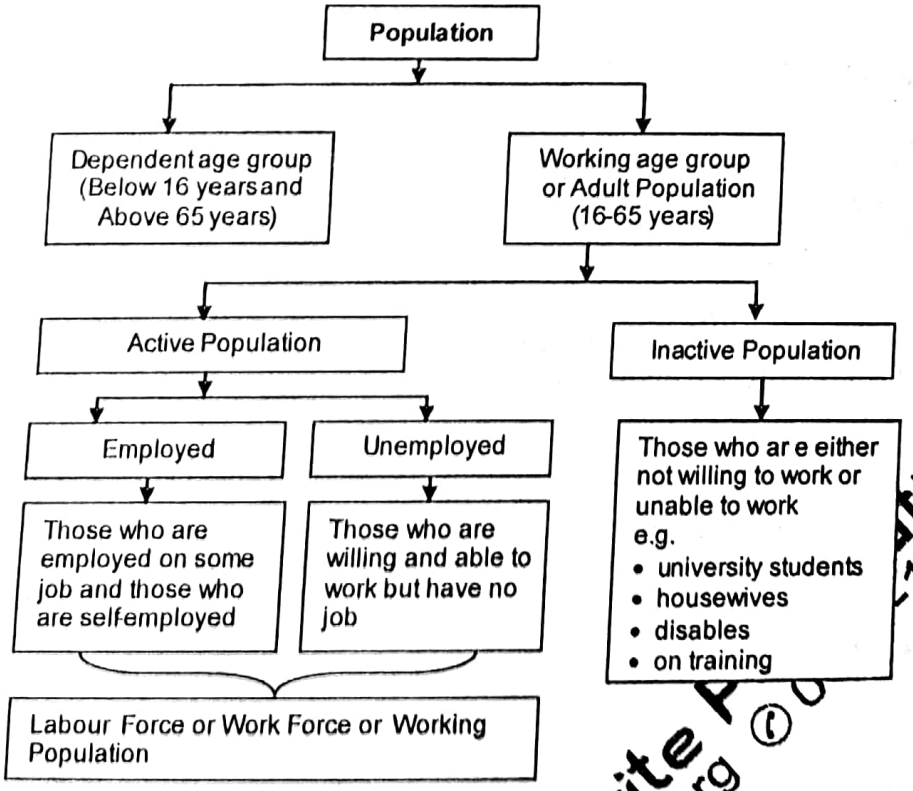
1. A change in the quantity of resources.
2. A change in the productivity (quality) of existing resources.
3. A reallocation of resources.

1. A Change in the Quantity of Resources

Land:

- Land may increase because of:
- Discovery of oil, metal or mineral reserves by active search.
- Eroded, water-logged land may be made usable for agricultural purposes (Reclamation of land) -It shifts the PPC outward.
- Land may decrease because of:
- Depletion of non-renewable natural resources .e.g., oil-reserves may exhaust by over utilization.
- Erosion caused by deforestation will reduce agricultural land.
- Water-logging may reduce agricultural usage of land.
- Natural disasters (floods, earthquakes, etc.) may reduce the quantity of land for a country. -It shifts the PPC inward.

Labour:



i. Labour may increase by:

- Increase in total population, especially in the working population.
- Change in structure of population from less dependent population to more working population, even without an increase in total population.
- Immigration is greater than emigration.
- Increased women-participation in jobs.
- Lower school-leaving age.
- Higher retirement age.
- It shifts PPC outwards.

ii. Labour may decrease by:
- Decrease in total population, especially in the working population.
- Change in structure of population from working population to more dependent, population even without a decrease in total population.
- Emigration is greater than immigration.
- Decreased women-participation in jobs.
- Higher school-leaving age.
- Lower retirement age.
- It shifts PPC inwards.

Capital:

- **Capital stock** means total value of capital goods (buildings, factories, roads, bridges, etc.) at a point in time.
- **Investment** is the total spending on capital goods and services in given period of time usually one year (Gross investment).
- **Net investment** is the increase in capital stock of a country in one year.

Net Investment = Gross Investment–Depreciation

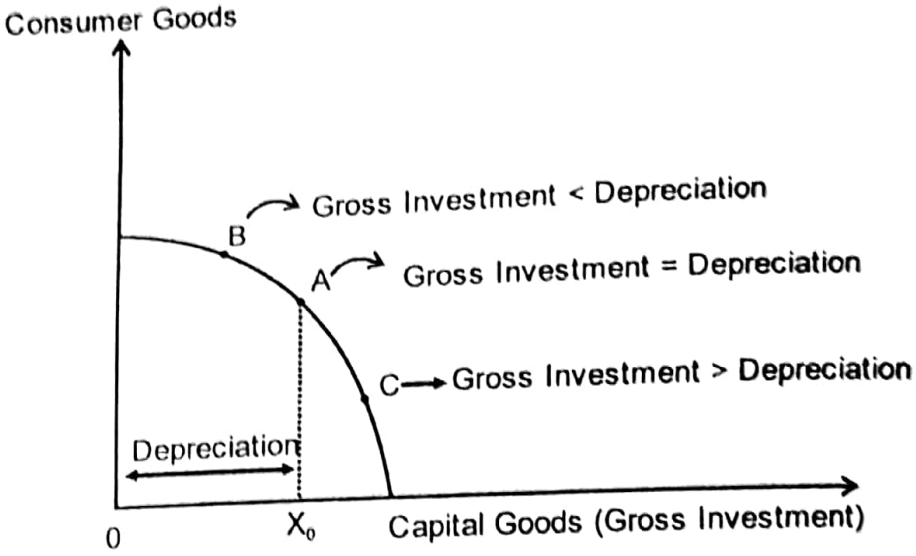
- **Depreciation or capital consumption** is a loss in value of an asset due to wear and tear, obsoleteness, or just the passing of time.

Investment itself depends on various factors, including:
- Rate of return on Capital
- Interest rate
- Business optimism and pessimism
- Government policies about taxation and subsidies
- Political stability
- Technology
- Infrastructure

Example:
Suppose there is a software house having a capital stock of 10 computers at the beginning of year 1. During year 1, the software house bought 5 new computers (gross investment), but 2 out of existing 10 ten computers became obsolete and are discarded. In year 2, software house will have 13 computers capital stock.

Capital stock in year 1	= 10 computers
Gross investment in year 1	= 5 computers
Depreciation in year 1	= 2 computers
Net investment	= 5 – 2 = 3 computers
Capital stock in year 2	= capital stock in year 1 + Net Investment
	= 10 + 3 = 13 computers

Gross Investment Vs. Depreciation	Net investment	Capital stock	PPC
Gross Investment > Depreciation	>0	Increases	Shifts outward
Gross Investment = Depreciation	0	Unchanged	Unchanged
Gross Investment < Depreciation	<0	Decreases	Shifts inward



2. Change in Quality (Productivity) of Resources:

Productivity is the efficiency of factors of productions used.
Productivity is defined as output per unit of input (per unit of time).

$$\text{Productivity} = \frac{\text{Output}}{\text{Labor}}$$

Example:

If '5' workers produce 10,000 goods in '5' hours, then:

Q. What is total production?
Ans: 10,000

Q. What is the productivity of labour?

Ans: $\frac{\frac{10,000}{5}}{5} = \frac{2000}{5} = 400$ goods per worker per hour

Determinants of the productivity of labour:

- Wage rate
- Education and training
- Technology
- Work conditions
- Length of working hours
- Fringe benefits\perks\non-monetary benefit\ non-pecuniary benefits
- Bonuses and commissions
- Promotional opportunities
- Health

Determinants of the productivity of capital:

- Technology
- Skilled labour
- Depreciation, etc.

Determinants of the productivity of land:

- Technology
- Skilled labour
- Fertility rates, etc.

Determinants of productivity of entrepreneurship:
- Communication
- Management techniques, etc

Improved technology makes capital more productive and increases the productive capacity of a country. Education and training contributes to human capital (labour) and improves their productivity. Educated and skilled labour also uses capital more efficiently.

Research and development (R&D) also contributes towards the productivity of land. Better technique of extraction, improved methods of farming and fishing, development of new breeds of plants and animals, and the use of fertilizers can enhance the productivity of existing land, shifting the PPC outwards.

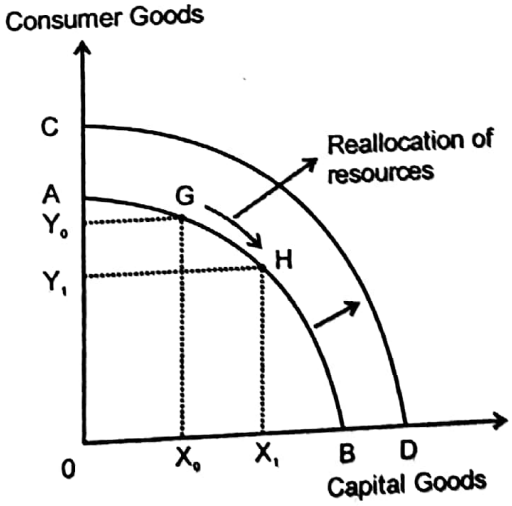
Better technology can also help the entrepreneurial abilities of a country. Improved communication, transportation, and new management techniques can contribute a lot towards the productivity of entrepreneurship. The PPC will shift outwards in this case.

3. The Reallocation of Resources:

Switching resources (land, labour, capital, etc.) from the production of one product to another product's is known as **reallocating resources.**

a. Different sectors of an economy have different levels of productivity. The services sector is the most productive sector, but the manufacturing sector is comparatively less productive, and the agricultural sector is the least productive sector of an economy. When resources are reallocated from agricultural to manufacturing and services sector, an increase in productivity leads to an outward shift in the PPC, and vice-versa.

b. The reallocation of resources from consumer goods to capital goods will also increase the productive capacity of a country in the future, shifting the PPC outwards. The opposite will be true if resources are switched to more consumer goods, as shown in the following figure.



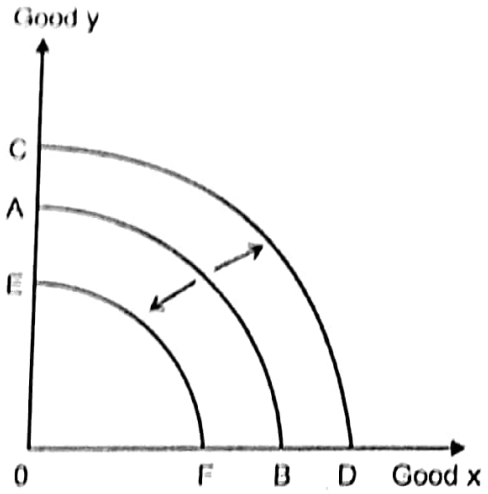
Initially, the economy was producing at "A" with Y_0 consumer goods and X_0 capital goods. When resources are reallocated to "B", where more capital goods (X_1) and fewer consumer goods (Y_1) are produced, there will be a high rate of economic growth and the PPC will shift outward.

Types of Shifts in PPC

- Parallel shift.
- Pivotal shift.
- Non-parallel shift.
- Intersecting shift.

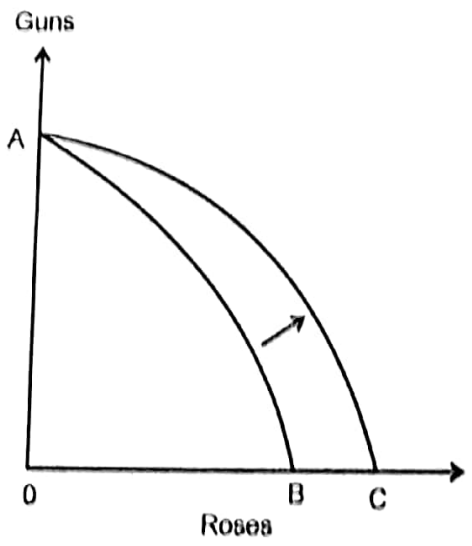
1. Parallel Shift:

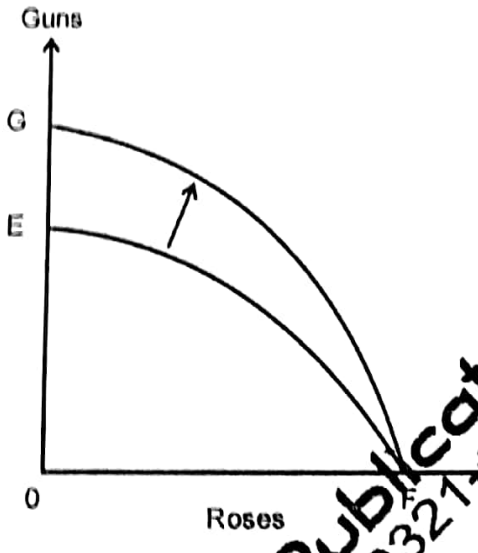
A parallel shift in the PPC occurs when an increase or decrease in the quantity and quality of resources is equally suitable or disastrous for both goods, as shown in the diagram below.



2. Pivotal Shift:

A pivotal shift in the PPC occurs when a change in the quantity and quality of resources affects only one good, or affects one good more than other. This is shown in the diagrams below.



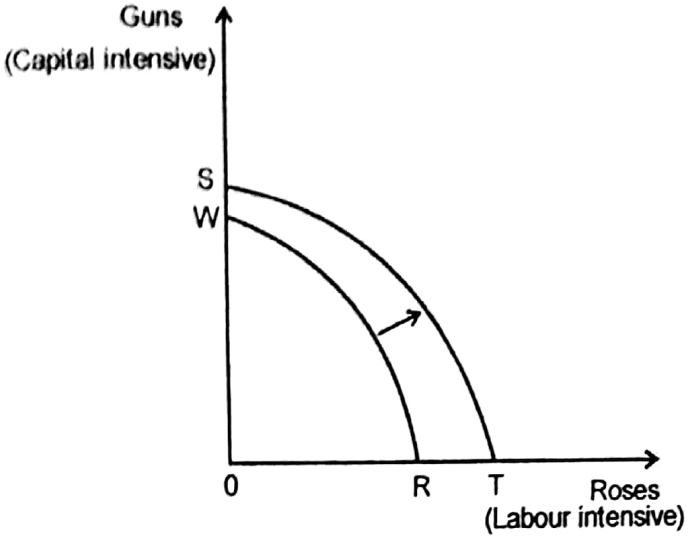


To illustrate: A genetic breakthrough in the productivity of roses will only increase the productive capacity of a country for roses, and have no effect on the productive capacity of a country for guns. This will shift the PPC from AB to AC in above left diagram. Similarly, when new gun metal reserves are discovered, it will do nothing for the productive capacity of roses, and the PPC will shift from EF to GF in above right diagram. The PPC will pivot outward toward the good in which its productivity has increased.

A decline in the quantity or productivity of resources will cause an inward pivotal shift of the PPC from KL to KM or LN, as shown in the figure below.

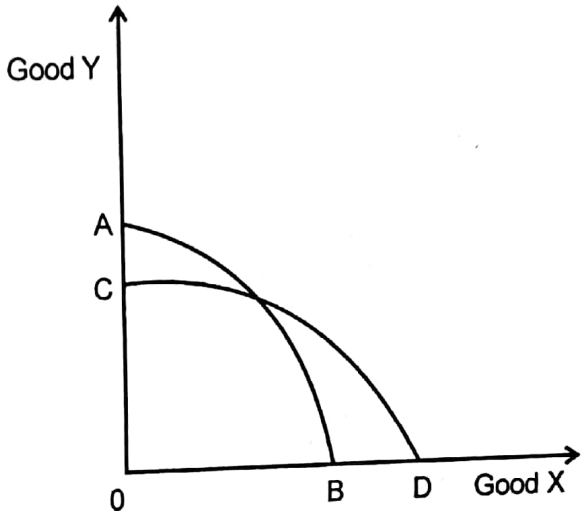
3. Non-parallel Shift:

Unequal suitability will lead to different rate of growth in different goods and the PPC will shift as shown in the diagram below.



4. Intersecting Shift:

There may be a case in which the production capacity of one product rises and the production capacity of the other product falls. In this scenario the PPC will shift from XY to UV, as shown in the diagram below.



Uses and Limitations of the PPC

The PPC represents both microeconomic (the study of economics in segments) and macroeconomic (the study of the economy as a whole) issues.

Microeconomic Issues:

The PPC shows the microeconomic issues of:

- The basic economic problem, i.e., **scarcity** , choice, and opportunity cost.
- **Productive efficiency**.
- **Allocative efficiency** (Production according to the desires of society) but cannot do this alone. Social preferences are needed to determine the allocatively efficient point on the PPC.

However, the PPC does not show the microeconomic issues of:

- The provision of **merit** (e.g., education and healthcare) and **public goods** (e.g., national defence, light houses, etc.)
- **Externalities** (e.g., noise, pollution, congestion, etc.)
- **Competition**, etc.

Macroeconomic Issues:

The PPC shows the macroeconomic issues of:

- **Actual growth** (an increase in real GDP) by a movement of the point of production from below the PPC to on the PPC.
- **Potential growth** (an increase in potential GDP) by an outward shift of the PPC.
- Employment and unemployment in the economy.

However, PPC does not show the macroeconomic issues of:

- Rate of inflation (A persistent rise in the general price level)
- Balance of payments (A record of all transactions of a country with the rest of the world)
- Even distribution of income

ECONOMIC STRUCTURE

The term economic structure refers to the way in which an economy consists of various sectors i.e. primary, secondary, tertiary and quaternary sector.

1. Primary sector:

This consists of agriculture, fishing and activities such as mining and oil extraction.

2. Secondary sector:

Secondary sector includes manufacturing activities that are found in an economy e.g. food processing, textiles and clothing, iron and steel production, vehicle manufacturing, and electronics, etc.

3. Tertiary sector:

This is the service sector and covers a range of diverse activities such as retailing, transport, logistics, banking, insurance, and education, etc.

4. Quaternary sector:

A relatively new term to denote the knowledge-based part of the economy—especially the provision of information. Typical examples are scientific research and product development, computing, and ICT. As economies develop their economic structure changes and there is a progression from primary to secondary to tertiary activities. In developed economies, the tertiary sector tends to be the principal employer.

POSITIVE AND NORMATIVE STATEMENTS

Positive Statements

Positive statements are based on facts or established principles. These statements can be tested and verified from the information available. They can be also used in construction and explanation of theories and concepts in economics. For example: Pakistan is experiencing a 4% rate of inflation; this statement is positive because the data on inflation trends can be retrieved from the government of Pakistan.

Normative Statements

Normative statements are based on opinions and cannot be tested or verified because they are not meant to relate to a particular point, or they can be regarded as statements that are generalized. For example: inflation should be low at any cost. Statements like these cannot be proven and they are not a fact as they are generalized.

Normative statements usually include words like:

- Should be/ought to be
- Desirable/undesirable
- Fair/unfair
- Good/better/best/bad/worse
- Harmful/beneficial
- Welfare/happiness/well-being/standard of living
- Deserves/doesn't deserve, etc.

BASIC ECONOMIC QUESTIONS

There are three basic questions that explain the process of production of goods and services that arise due to the concept of scarcity. The three basic questions are: what to produce, how to produce, and for whom to produce.

1. What to Produce

Limited resources do not allow us to produce everything, so we have to decide what to produce and in what quantities. We have to decide whether we have to produce consumer goods and services or non-consumer goods and services such as military hardware and defense systems.
The second part of this question asks: "how much of each good is to be produced?" Society's point of view may categorize it as;

- **Socially optimum** (at a point where social welfare is maximized)
- **Under-production** (less than socially optimum)
- **Over-production** (more than socially optimum)

The Private Sector:

- Aims to maximize profit.
- Produces fewer **necessities** and more **luxuries**.
- Under-produces **merit goods**, i.e., goods whose actual private benefits is not realized by the consumers who consume them because of imperfect knowledge; e.g., education, healthcare, seat belts, helmets, etc.
- Over-produces **de-merit goods**, i.e., goods which are harmful to society but the consumers who consume them do not realize the actual private cost of such goods; e.g., cigarettes, alcohol, drugs, etc.
- Does not produce **public goods**, which are non-excludable and non-exhaustible (non-rivalry in consumption) and, most times, non-rejectable as well.

a. The Public Sector:

- Aims for collective welfare of the society.
- Fewer luxury goods and more merit goods and public goods are provided.
- Socially optimum merit goods
- Socially optimum demerit goods.
- Socially optimum public goods.

2. How to Produce

The question of how to produce arises due to limited resources and unlimited wants. We have to decide a way in which we can produce enough goods and services that can satisfy maximum wants, and that the resources are used efficiently and to their maximum capacity. The private and public sectors help in deciding how to produce the goods and services.

a. **The Private Sector:**
   - Produces efficiently.
   - Minimizes its costs by whichever method is the least-cost one, i.e., labour or capital intensive.

b. **The Public Sector:**
   - Produces inefficiently
   - Prefers labour intensive methods because of employment.

3. For Whom to Produce

As we cannot satisfy all the wants because of scarcity, we have to decide which group of people must be satisfied and which is left unsatisfied, or which goods and services must be produced that can satisfy maximum wants. Under the private sector the problem is solved by using the price mechanism, which decides the quantity of goods and services to be produced and for which group these goods and services will be produced; whereas under the public sector the decision is made through the rationing mechanism. This concept allows more equal distribution then the price mechanism.

MEANING OF THE TERM 'CETERIS PARIBUS'

This Latin term is widely used by economists to refer to a situation where 'other things remain equal'. The idea behind this is to be able to simplify an actual situation by assuming that apart from a single change of circumstances, everything else is unchanged. In this way, economists can model one change at a time.

DECISIONS AT THE MARGIN

Like *ceteris paribus,* this is another tool that is used by economists to simplify a situation. Many aspects of microeconomics involve analyzing decisions at the margin'. By this we mean that a small change in one economic variable will lead to further (small) changes in other variables.

Decision making characterized by weighing the additional (marginal) benefits of a change against the additional (marginal) costs of a change with respect to current conditions.

According to economists, for most decisions, you think in terms of additional, or marginal, costs and benefits, not total costs and benefits. That's because most decisions deal with making a small, or additional, change.

To illustrate, suppose you just finished eating a burger and drinking a soda for lunch. You are still a little hungry and are considering whether or not to order another burger. An economist would say that in deciding whether or not to order another burger, you will compare the additional benefits of the additional burger to the additional costs of the additional burger. In economics, the word marginal is a synonym for additional. So we say that you will compare the marginal benefits of the (next) burger to the marginal costs of the (next) burger. If the marginal benefits are greater than the marginal costs, you obviously expect a net benefit to ordering the next burger, and therefore, you order the next burger. If, however, the marginal benefits are less than the marginal costs, you obviously expect a net cost to ordering the next burger, and therefore, you do not order the next burger.

Condition	Action
Marginal Benefit of next burger > Marginal Cost of next burger	Buy next burger
Marginal Benefit of next burger < Marginal Cost of next burger	Do not buy next burger

What you don't consider when making this decision are the total benefits and total costs of burgers. That's because the benefits and costs connected with the first burger (the one you have already eaten) are no

longer relevant to the current decision. You are not deciding between eating two burgers and eating no burgers; your decision is whether to eat a second burger after you have already eaten a first burger.

SHORT RUN, LONG RUN AND VERY LONG RUN

The **short run** is a time period in which it is possible to change some inputs but not all of them. Typically it is when labour, a variable factor of production, can be increased or decreased to change output. So, with all other factors of production remaining the same (ceteris paribus), a firm taking on more workers may be able to increase its output.

In the **long run**, it is possible for all factors of production or resources to change. So, in the long run, a firm may improve the quality and quantity of its capital by building a new factory to increase its output. This will usually allow it to be more efficient since the firm has had time to evaluate how best this can be done successfully and efficiently.

The very **long run** is where not only all factors of production variable are, but all other key inputs are also variable. These key inputs can include technology, government regulations and social considerations.

Specialization

Specialization refers to performing a specific of the whole production by an individual worker, or producing one or few products rather than a number of goods & services, by a firm, region or country.

Specialization at Individual Level (Division of Labour)

When the whole production process is divided into several individual tables and each task is carried out by a single worker, it is said that division of labour is there.

Advantages of division of labour

The main advantage of division of labour is that production is increased and there are lower costs per unit of output produced. This is because of the following factors:

1. **Specialists can be employed:** No individual is good at everything. For instance, some people are good at doing electrical work, some are good at plumbing, and some are good teachers. Division of labour allows people to specialize in doing a job at which they can become both proficient and efficient.

2. **Leads to grater skill among workers:** By doing the same task day after day an individual becomes efficient at performing that task. This is a development of the idea that 'practice makes perfect'. However, repetition of certain jobs might make the job tedious and boring. We deal with this point when discussing the disadvantages of division of labour.

3. **Saves time:_** Individuals need only train for one job and this obviously saves time and effort in training people. Individuals can learn a single skill very quickly.

4. **Economy the use of skills/tools:** If a person has trained to does only one specific job, then they only need to possess the tools to do that particular job. These tools will be in constant use.

5. **Allows the use of specialist**: Machinery can be quite easily developed to perform a specific task in the production process. It would be very difficult, for example, to construct a machine to manufacture a whole car. On the other hand, a machine could be developed to perform a specialized task, such as welding.

Most producers in developed economies accept the advantages of division of labour. However, division of labour does have its disadvantages.

Disadvantages of division of Labour

1. **Boredom and monotony:** People can become bored by doing the same job day after day and this may, among other things, have a bad effect on the quality of the product. It may lead also to other problems such as alienation, industrial unrest and absenteeism.
2. **Decline in crafts work:** Workers lose their skills and crafts in doing the same job every day. Indeed, many workers become little more than extensions of the machines, simply pressing a button or pulling a lever.
3. **Interdependence:** For the good to be produced, workers are dependent on other workers to do their job efficiently. If this does not happen at every stage of the production process, then the production chain will break down. For instance, the paint sprayer in a car factory is dependent on the body builder having produced the car body. Indeed, whole firms might be dependent on other firms to produce their particular item for the production of the finished good.
4. **Alienation:** Workers sometimes feel alienated from fellow workers and the management. They see themselves as being regarded as little more than machines and have little contact with the people making the decisions. This feeling of alienation may develop into a high level of industrial unrest (strikes) or absenteeism.
5. **A greater risk of unemployment:** Workers specialize in performing a particular task as part of the production of a particular good. However, if demand for that good declines some workers might have difficulty finding other jobs because they have only been trained to perform one specific task.
6. **Standardized products and a lack of variety:** Due to division of labour, the finished products will be indistinguishable one from another. Consumers will face with a lack of variety or choice because each product has passed through exactly the same process.
7. **Occupational diseases:** Certain jobs are dangerous and workers doing these jobs run the risk of disease or accident. For example, asbestos workers run the risk of cancer, paint workers may get lead poisoning, or fishermen might drown.

These disadvantages have certain firms to break away from traditional division of labour is going to be successful in an economy then the baker would have plenty of bread but no clothes. The tailor would have clothes but no bread. The exchange of goods and services must takes place and is facilitated, in a developed economy, by a good transport system and a sophisticated system of money and banking. Indeed, money is characterized by being a medium of exchange.

Thus, the provision of road, rail, sea and air links allows the goods to be distributed from producers to consumers very efficiency.

ECONOMIC SYSTEMS

A system by which an economy allocates its scarce resources in production of various goods and services to satisfy the needs and wants of a society i.e. deal with basic economic problem.
The problem of scarcity, which in turn requires choices to be made, is one that is common to all economies, rich and poor. The choices that are made and which can realistically be made are determined by the economic system of a particular country. Traditionally, economists have recognized three distinct types of economic system - these are the market economy, the command or planned economy and the mixed economy.

FEATURES	MARKET ECONOMY	COMMAND ECONOMY	MIXED ECONOMY
Ownership of property:	Private ownership	Government ownership	Private + Public (government) ownership
Motive or objective:	Profit maximization	Collective social welfare	Private Sector: Profit maximization. Public Sector: Social welfare.
Allocative mechanism:	**Price mechanism** (demand and supply)	Rationing mechanism (central planning & quotas)	Private Sector: Price mechanism. Public sector: Rationing mechanism.
Freedom of choice (regarding production and consumption):	Yes	No	Private Sector: Yes. Public sector: No.
Competition:	Yes	No	Private Sector: Yes. Public sector: No.
The role of the government (in the allocation of resources):	Minimum government intervention in economic affairs. Only limited to maintaining law & order in the country.	All economic & non-economic affairs are in the hands of government.	The government limits its role to the provision of necessary goods & services & to regulate the private sector for social welfare.
Variety of goods & services:	Yes	No	Private Sector: Yes. Public sector: No.
Quality of goods & services:	High quality	Usually poor quality	Private sector: High quality. Public sector: Usually poor quality.
Response to changes in demand (Consumer sovereignty):	Quick response to changes in consumers' preferences.	Slow or no response.	Private Sector: Quick response. Public sector: Slow response.
Efficiency [Producing most desirable goods (allocative efficiency) with least-cost methods(productive efficiency)]:	*Usually efficient allocation of resources because of existence of profit motive *Sometimes inefficient, e.g., in the case of private monopolies.	Inefficient allocation of resources because of the absence of a profit motive.	The inefficiency of the private sector is minimized by government policies.
Shortages & surpluses (shortage=demand>supply; surplus=supply>demand):	The price mechanism clears the market and there are no shortages or surpluses.	Central planning is unable to guess exact quantities demanded; shortages & surpluses are present.	Private sector: No shortages and surpluses Public sector: Shortages and surpluses are present.
Merit goods (e.g., healthcare, education, etc.):	Under-production & under-consumption.	Socially optimum	*private sector: Under-provides *Missing markets of merit goods will be supplied through government provision.
Public goods (e.g., street lighting and national defense):	Non-marketable and, therefore, missing	Provides public goods through government expenditure.	The public sector provides public goods.
Demerit goods (e.g., alcohol, drugs, cigarettes, etc.):	Over-production & over-consumption.	Fewer or no demerit goods	The government discourages consumption by applying high taxes and other imposing other legislative actions.
Distribution of income & wealth:	Unequal distribution	Equal distribution	Progressive taxation and welfare payments to the poor will reduce the disparity between the rich & poor.

Useless duplication of goods & services:	Yes	No	May occur in the private sector, but not in the public sector.
Negative externalities (e.g., noise, pollution, congestion, etc.):	More than socially optimum level	Socially optimum	The government will regulate negative externalities through taxes and legislative impositions.
Necessities & luxury goods:	Fewer necessities & more luxury goods	More necessities & fewer luxury goods	The public sector will provide necessities, even to those who can't pay for them.
Private monopolies:	Develop and exploit consumers by setting high prices	No private monopolies are exist in a command economy.	The government regulates private monopolies and protects consumers from exploitation.
Existence in real world:	No pure market economy.	No pure command economy.	All economies are mixed, but their proportion of private & public sectors vary from country to country.
Other terms:	Free economy, Capitalism, free market economy, laissez faire.	Communism, socialism, planned economy, centrally planned economy.	–

DIFFICULTIES FACED BY TRANSITION ECONOMIES:

Eastern European countries, such as Poland, Ukraine, or those forming the Soviet Union, etc., were command economies throughout the 1940s and the 1950s. However, during the 1990s these economies started transforming themselves into market-oriented economies. These countries, while they were in a process of transition, were known as transition economies. This transition created a lot of problems for the people living in these nations, and also for the government itself.

1. **Sharp fall in GDP:**
   The first immediate problem that an economy may face will be a sharp fall in its GDP because of the reduction in its output. The fall in output of each East European country during the transition period was because of the fact that the state-owned businesses lost customers as the old network between businesses fell apart. This was because it was all based on state planning—the government told each firm which other firm would receive their output and they would be paid accordingly. They would also be told where it should buy their inputs. During the transition period firms had to actively seek customers, whereas before they didn't need to do so.

2. **Lack of entrepreneurial abilities:**
   Entrepreneurs, due to a lack of experience, may not run firms efficiently. They may not choose the right production methods or output levels to maximize profits. Workers may be dogmatic in setting minimum wage levels, and may demand wages from firms that might be deemed as being excessive in relation to firm revenue. As a result, the relations between a firm and the labour that it employs will deteriorate and resource wastage will occur in nearly all industries in the economy.

3. **High rate of unemployment:**
   Due to the transition, now that there is no central planning, the factories can produce whatever they want. They will start cutting back on investment because they do not want to take too many risks, which will lead to reduced demand in the economy. Furthermore, because of this, the suppliers will also cut off workers, leading to large scale unemployment and this leads to the reduced demand which will have an impact on the decrease in the output of the country.

   One of the strengths of a planned economy is that there is virtually no unemployment. However, during the transition many enterprises will be forced out of business because of the lack of funds and demand to support them.

Another reason was that some of the firms were forced to become efficient after the transition, due to the competition from other firms and foreign enterprises. The easiest way of becoming efficient for these firms was by laying-off workers and making the remaining workforce work harder and more productively. All the countries in the transition process found unemployment as one of the heaviest burdens they had to bear.

In a state economy the central planning body determines the output level of each industry and specifies the amount of resources to be allocated; consumer preferences are given little importance. As the market economy develops, demand for certain goods may fall, while for others it may rise rapidly. Certain industries may become inept and shut down, while market-oriented businesses will thrive but still face a shortage of resources. Therefore, the economy will produce inside the PPC as an inefficient allocation of resources prevails.

4. **Rise in the informal sectors:**
The countries worst affected by the GDP fall may have a rise in their informal sectors. For example, in 1988, countries like Uzbekistan and Georgia had informal sectors that were greater than their formal sectors. This also affects GDP because the revenue earned in the informal sector is not included in a country's GDP.

5. **High inflation:**
The transformation is also associated with high inflation. A rise in price is almost inevitable if an economy moves towards a free-market system. In a market system resources are allocated by price. The free market price is inevitably higher than the old state price, since consumers have been rationed in the past, so demand will be greater. So, when a market system is introduced, the price will rise until demand equals supply. There is no shortage because some consumers have been priced out of the market. Higher prices can spark a wage-price spiral. Workers will react to higher prices of goods by demanding higher wages. If firms give higher wages, then they must make up for the cost by increasing the price of their goods, which will, in turn, gives rise to further wage demands. The government must then give firms money to pay the workers and to prevent them from going bankrupt. If they don't, they will have protests, strikes, and civil unrest to deal with; whereas if they print too much money it will simply make it worthless.

6. **Process of privatization:**
In a command economy land and capital is owned by the state, whereas in a market economy it is predominantly owned by the public sector. So the move from one type of economy to the other involves the sale of state assets to private individuals—privatization. This can be done through a number of ways, such as by giving property and capital away to individuals and companies currently employing them (e.g., tenants of council housing could be given their accommodation). The problem with this is that it is a very arbitrary and unfair way of sharing out the state-owned businesses and capital. This would divide society into the rich and poor. The state could also sell its assets to the highest bidder and use the proceeds to reduce tax or reduce government debt.

7. **Merit, demerit, and public goods:**
In addition, as consumers gain power in the allocation of resources, certain goods which may be deemed good for society (merit goods) will be produced below the socially optimum level whilst those reckoned as harmful (demerit goods) will be produced in greater numbers. Due to the problems of non-excludability and non-rivalry, public goods, although necessary, will no longer be produced in the country.

8. **Negative externalities:**
There may be a time gap before a new framework of government controls can be developed to offset the disadvantages of a market economy. In this period firms seeking to keep their costs low may create pollution by disputing their waste in an unsafe manner.

9. **Market imperfections:** Imperfect competition is also likely to develop like monopoly (single dominant seller), with consequences for prices output, quality, and consumer sovereignty.

These problems are likely to be faced by transitioning economies, yet the impact of these problems can be reduced. The government primarily needs to ensure that its assets are distributed fairly among the people. In order to avoid large income gaps among the population, the government can maintain its net social security safety net system and introduce tax reforms (such as VAT).

Although the transition will be quite problematic, the long term benefits should not be overlooked. By taking certain measures governments may be able to avert certain difficulties, and by ensuring a healthy environment for free market operations, the government may help the economy to immensely improve its citizens' level of comfort.

TOPICAL PAST PAPER ESSAY QUESTIONS

Scarcity

(Nov 2014/P23/Q2/a)
Show how the economic problem can be explained with the use of a production possibility curve. [8]

(Nov 2011/P22/Q2/b)
Discuss whether the combination of improved technology and globalisation will result in solving the basic economic problem. [12]

(June 2010/P23/Q2/a)
With the help of examples, explain why different economic decision makers face the problem of scarcity. [08]

(Nov 2002/P2/Q2/a)
Explain the link between the basic economic problem of scarcity and opportunity cost. [08]

(June 2000/a)
What is meant by the basic economic problem of scarcity? [08]

(June 1999/a)
The study of economics centers upon the problem of scarcity. Explain what is meant by this problem and assess whether the use of economics can solve the problem. [08]
Explain the link between opportunity cost and the production possibility curve. [08]

(June 1991/a)
Explain the concept of opportunity cost. [08]

Shifts of PPC

(Nov 2015/P23/Q2/b)
Discuss whether an outward shift in an economy's production possibility curve is more likely to occur in a free market economy or a centrally planned economy. [12]

(June 2012/P22/Q2/b)
Discuss whether an economy's production possibility curve is more likely to move inward or outward over time. [12]

(June 2010/P22/Q2/a)
Explain how a country's production possibility curve depends upon its factors of production. [08]

(June 2009/Q2/a)
An economy can produce agricultural and industrial goods. Explain the possible effects on its production possibility curve if there is an increase in the productivity of its agricultural workers. [08]

(June 2004/P2/Q2/a)
An economy is faced by the exhaustion of an important natural resource at a time when it is introducing improved technology.

Explain how these events will affect the economy's production possibility curve. [08]

(Nov 2000)
Discuss whether economic growth solves the problem of scarcity. [12]

Uses of PPC

(Specimen Paper 2016/P2/Q2/a)
With the help of a diagram, explain how a production possibility curve can illustrate the concepts of opportunity cost and economic growth. [8]

(Nov 2014/P23/Q2/b)
Discuss whether an outward shift in a country's production possibility curve will always raise the welfare of the citizens of that country. [12]

(June 2013/P23/Q2/a)
With the help of a diagram, explain how a production possibility curve can illustrate the concepts of opportunity cost and economic growth. [8]

(Nov 2011/P22/Q2/a)
Show how production possibility curves may be used to explain any **two** economic ideas. [08]

(Nov 2010/P21/P22/Q2/a)
Explain how microeconomic and macroeconomic issues may be represented using production possibility curves. [08]

(Nov 2006/P2/Q2/a)
Explain how production curve might be used to show a country's economic performance. [08]

(Nov 2015/P2/Q2/b)
Discuss whether an outward shift in an economy's production possibility curve is more likely to occur in a free market economy or a centrally planned economy. [12]

Basic Economic Questions

(June 2011/P23/Q2/a)
(a) Explain the role that a government must fulfil in a mixed economy. [08]

(June 2008/P2/Q2/a)
Explain the three economic questions that all economies face because of the basic economic problem. [08]

(Nov 2007/P2/Q3/a)
Explain how resources are allocated in a market economy. [08]

Types/Advantages/Disadvantages/Transition of Economic Systems

(June 2017/P23/Q3/b)
Discuss whether resources are more effectively allocated in a planned economy or in a market economy. [12]

(Specimen Paper 2016/P2/Q2/a)
Discuss whether free market economies or centrally planned economies are more likely to make choices that will maximise the benefits for consumers. [12]

(June 2014/P21/Q3/b)
Discuss the view that a market economy is always preferable to a planned economy because of the existence of the price mechanism. [12]

(June 2013/P23/Q2/b)
Discuss whether free market economies or centrally planned economies are more likely to make choices that will maximise the benefit for consumers. [12]

(Nov 2012/P22/Q2/b)
Discuss the ease with which a planned economy may be changed into a market economy. [12]

(June 2012/P21/Q2/b)
Discuss the difficulties involved in changing a planned economy to a successful market economy. [12]

(Nov 2011/P23/Q2/b)
Discuss the effectiveness of free market economies in raising the level of welfare. [12]

(June 2011/P21/Q2)
(a) Explain the functions of an economic system. [06]
(b) Discuss possible reasons why mixed economic systems have replaced most of the former planned economic systems. [12]

(June 2010/P23/Q2/a)
Discuss why the mixed economy is the most common economic system. [12]

(June 2009/P21/Q2/b)
Discuss whether a market economy can solve the problem of scarcity more effectively than a command economy. [12]

(June 2008/P2/Q2/b)
Discuss whether the price mechanism is an effective way to solve the basic economic problem. [12]

(June 2007/P2/Q2/b)
Discuss the desirability of the worldwide movement towards the market economy and away from the planned economy. [12]

(Nov 2006/Q2/b)
Discuss whether a mixed economy is the best way for a country to deal with the basic economic problem. [10]

(June 2005/Q2/a)
Explain the differences in the features of a market economy and a planned economy. [08]

(Nov 2004/Q4/b)
Discuss whether economic actions by individual always result in a net benefit to society. [12]

(June 2004/Q2/b)
Discuss whether the operation of a market economy always produces a desirable outcome. [12]

(June 2001/a)
Explain the principle characteristics of a free-market economy. [10]

(Nov 1996)
(a) Show how a government may make its economy more dependent on the market system. [10]
(b) Do you think such changes will increase economic welfare? [10]

(Nov 1995/a)
Explain what is meant by a market economy and consider the extent to which it is inaccurate description of your country's economy. [12]

(Nov 1995/b)
Discuss the economic problems that are likely to occur as a country moves from central planning towards a market economy. [12]

(Nov 1993/a)
In a number of countries in recent years there has been a movement towards a greater reliance on the market system.
Assess the advantage and disadvantages of this trend. [12]

(Nov 1992)
Describe the basis of resources allocation in planned economy and discuss why some planned comities hone recently tried to place greater emphasis on market forces. [12]

Uses of Factors of Production

(June 2017/P22/Q2/a)
Explain the role of the factor enterprise in allocating resources in a market economy when there is an increase in the demand for a good. Use a diagram to support your answer. [8]

(June 2015/P2/Q3/a)
Explain how the contribution of each factor of production differs in an agricultural economy from that in an industrialised economy. [08]

(June 2015/P2/Q3/a)
Discuss whether entrepreneurs or governments are more likely to cause economic growth in a mixed economy. [12]

Classification of Goods

(June 2017/P22/Q2/b)
Discuss two methods of increasing the provision of merit goods in a mixed economy. Consider which is more likely to be effective. [12]

(June 2017/P21/Q2/a)
Using examples, explain the difference between a merit good and a public good. Explain why a profit can be made from the provision of one of these types of good, but not the other. [8]

(June 2017/P21/Q2/b)
Discuss whether it is better to impose an indirect tax or conduct an awareness campaign to deal with the problem of demerit goods such as alcohol. [12]

(June 2016/P22/Q2/a)
Use examples to illustrate the difference between private goods and public goods and explain why only private goods will be supplied in a free market economy. [8]

(June 2016/P22/Q2/b)
'The factor enterprise and the free working of the price mechanism always ensure a satisfactory outcome for consumers even when imperfect information exists.' Discuss this view. [12]

(June 2016/P21/Q3/b)
Discuss why some goods and services are provided by private enterprise and others are provided by the government in a mixed economy. [12]

(March 2016/P22/Q2/a)
Explain, using examples, why the prices charged for merit goods and demerit goods in a free market do not reflect the value to consumers. [8]

(Nov 2015/P23/Q3/a)
Most governments provide both defence and education services.
Explain why defence and education services would not be provided in sufficient quantities if the government did not provide them. [8]

(Nov 2015/P23/Q3/b)
Discuss how taxation and subsidies could improve the provision of defence and education services in an economy and consider the likely success of such policies. [12]

(June 2015/P23/Q3/b)
Discuss any two policies that might be used to deal with the problems caused by the consumption of demerit goods and consider which might be the more effective policy. [12]

(June 2015/P2/Q3/a)
Using examples, explain the difference between merit goods and public goods and show why it is possible for profit to be made in the supply of one of these types of good but not the other. [08]

(Nov 2015/P2/Q3/a)
Most governments provide both defence and education services.
Explain why defence and education services would not be provided in sufficient quantities if the government did not provide them. [08]

UNIT 2

Demand, Supply and Equilibrium

AS Level
Microeconomics
Notes Book 1

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Syllabus 2019 – 21

a. Demand and supply curves

- effective demand
- the meaning of the term, '*ceteris paribus*'
- individual and market demand and supply
- factors influencing demand and supply

b. Interaction of demand and supply

c. Market equilibrium and disequilibrium

- meaning of equilibrium and disequilibrium
- effects of changes in supply and demand on equilibrium price and quantity
- applications of demand and supply analysis
- movements along and shifts of the demand and supply curves
- joint demand (complements) and alternative demand (substitutes)
- joint supply
- the workings of the price mechanism; rationing, signalling and the transmission of preferences

Unit 2 Demand, Supply & Equilibrium

DEMAND

Definition

Demand refers to the quantity of a product that purchasers are willing and able to buy at various prices per period of time, all other things being equal

- Quantity
- Product
- Purchasers/Consumers
- Willingness
- Ability
- At various prices
- Over a certain period of time

- **Quantity:** This refers to the numerical quantity of a product that is being demanded.

- **Product:** This is a general term that simply refers to the item that is being traded. It can be used for goods or services. We could also stretch this to include tradable items like money or other financial assets such as shares.

- **Purchasers:** These are the buyers of the product and are often referred to as 'consumers', although they may simply be intermediaries in the supply chain, e.g., Nestle purchasing large amounts of cocoa to be used in the production of chocolate for sale to the final consumer. We can consider an individual's demand for a product or, more usefully, we can aggregate this to look at the demand for the market as a whole.

- **Willing to buy:** Purchasers must want a product if they are going to enter into the market with the intention of buying it.

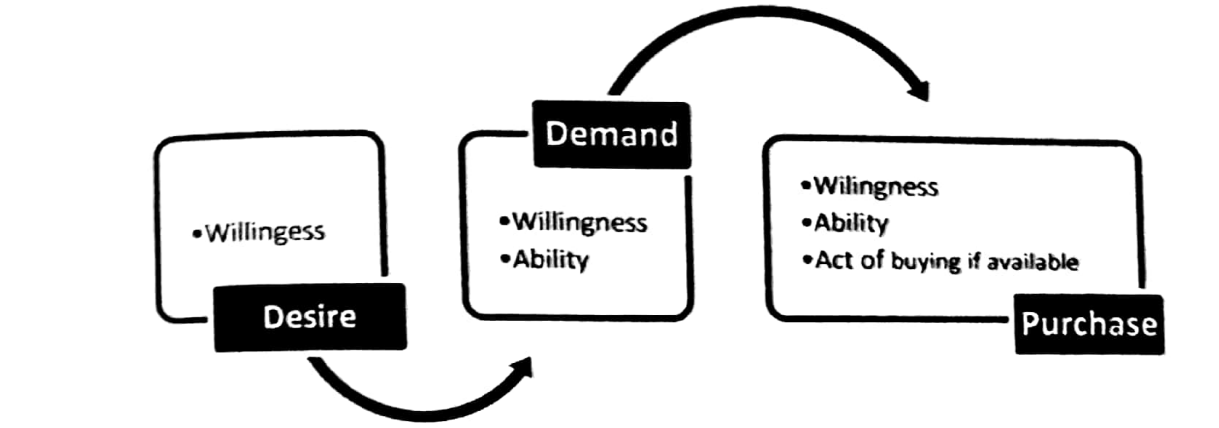
- **Able to buy:** To an economist, the **notional demand** (speculative and not always backed up by the ability to pay) for a product, which emerges from wanting it, must be backed by purchasing power if the demand is to become an **effective demand**. Sellers are only willing to sell a product if the purchaser has the money to pay for the product. It is this effective demand that is of particular importance for economists.

- **Various prices:** Prices are crucial to the functioning of a market. Although many things influence demand for a product, it is at the time of purchase, when we have to hand over our money and pay the price that we really judge whether the product is value for money - in other words, whether we really are willing and able to buy it. As the price goes up, and provided no other changes have occurred, more and more people will judge the product to be less worthwhile.

- **Per period of time:** Demand must be time related, it is of no use to say that the local McDonald's sold 20 Big Macs to consumers unless you specify the time period over which the sales occurred. If that was per minute then demand is high, but if that was per week then this would show there is little demand for Big Macs in this particular market.

- **Other things being equal:** There are numerous potential influences on the demand for a product. Understanding the connections between the various influences is very difficult if many of these

elements are changing simultaneously. This is why it is necessary to apply the **ceteris paribus** assumption.



Individual Demand
- demand for a product by single consumer

Market Demand
- demand for a product in a market by all consumers

Aggregate Demand
- demand for all products by all households in a country

Law of demand or demand function:

If other things are held constant (i.e., **ceteris paribus**), a higher quantity will be demanded at lower prices and a lower quantity will be demand at higher prices. Demand has an inverse (i.e., negative) relationship with price.

Ceteris Paribus

$P\downarrow \quad Qd\uparrow$
$P\uparrow \quad Qd\downarrow$

Mathematical formula to derive demand curve is shown as below:

$$Q_d = f(P)$$
$$Q_d = a - bP$$

Demand Schedule:

A table that shows inverse relationship between price and quantity demanded is known as a demand schedule.

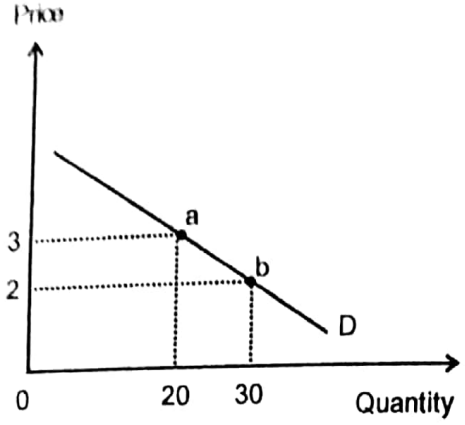
If a = 50 and b = 10

Then following table shows negative relationship between price (P) and quantity demanded (Qd) of a product.

Price	Qd = 50–10P
$3	=50–10(3)=20
$2	=50–10(2)=30

Demand Curve

A curve that shows a relationship between price and quantity demanded. Graphical representation of a demand schedule is known as demand curve—as shown in the diagram below.



Taking price on y-axis and quantity demanded on x-axis, a downward sloping (negative) curve is known as a demand curve. This demand curve has been drawn as a straight line (a linear relationship). However, it is perfectly acceptable for price and quantity demanded to be related in a non-linear manner in the form of a type of curve.

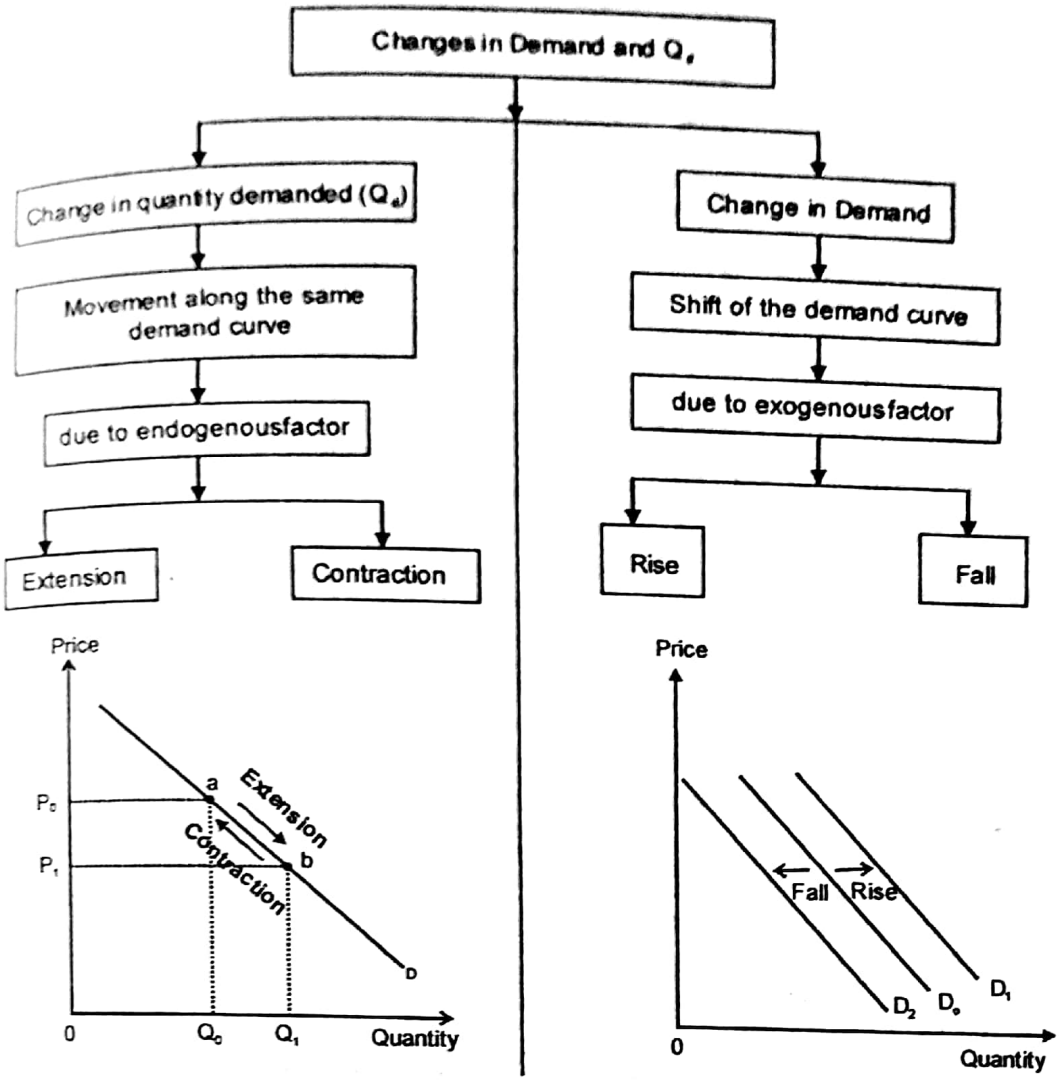
Law of demand is only applicable when all other factors are held constant. Assuming ceteris paribus, the law of demand holds these factors constant:

- Income of consumers.
- Fashion/taste.
- Advertising.
- Population.
- Prices of substitutes (alternatively demanded goods which satisfy some desire, e.g., Pepsi & Coke).
- Prices of complements (jointly demanded goods, e.g., car & fuel, pen, & ink, etc.).
- Future expectations of income and prices of the product.
- Seasons.
- Health linkages with the use of product.
- Income tax.
- Interest rates (cost of borrowing).
- Availability of credit.
- Hire purchase facilities.

Changes in demand:

Demand can change:

- by movement along the same curve (change in quantity demanded).
- by shift of the whole demand curve (change in demand).



Endogenous and Exogenous Factors:

Endogenous factor is an internal factor of given theory and can be identified by looking at the axes, e.g., price is given on the y-axis when constructing the demand curve and will be considered as an endogenous factor.

Exogenous factors are those which are external factors and are not given on the axis, e.g., income, fashion, advertising, etc., are exogenous factors for demand.

Any change in endogenous factors brings about a movement along the same curve, but any change in exogenous factors creates a shift in the curve, as explained below:

1. Movement along the same curve:

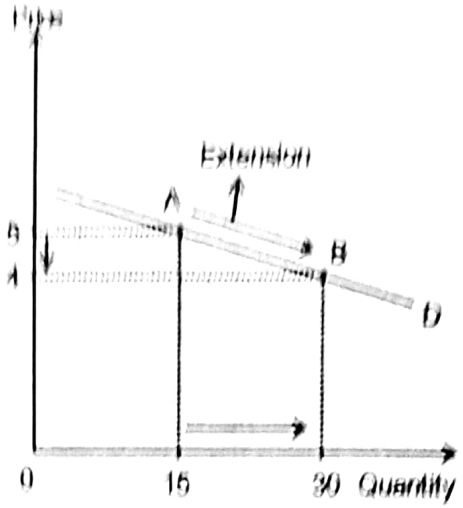
All those changes in quantity demanded of a product which arise from the change in the price of a product are known as change in quantity demanded or movement along the same curve.

Movement along the same curve can be:

- An extension in demand.
- A contraction in demand.

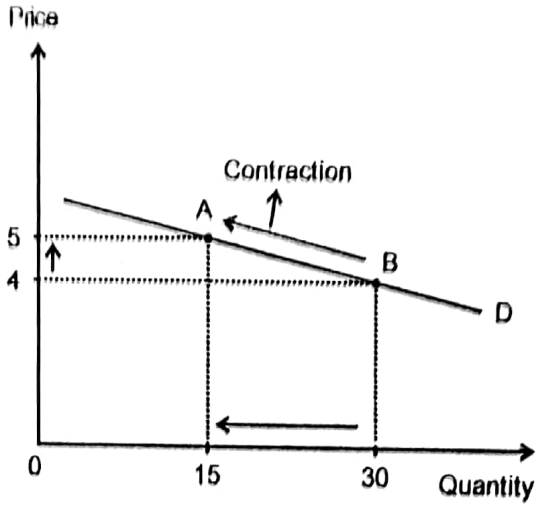
Extension in Demand:

It is an increase in quantity demanded due to a decrease in price, keeping all other things constant. Extension in demand is shown by a rightward movement along the same demand curve.



Contraction in Demand:

It is a decrease in quantity demanded due to an increase in price, keeping all other things constant. A contraction in demand can be shown by a leftward movement along the demand curve.



2. Shift of the demand curve:

When the demand for the product changes due to changes in any of the exogenous factors (e.g. income of consumers, advertising, fashion, etc.), it causes shifts in the demand curve.

Demand curve can shift

- Rightward, i.e., rise.
- Leftwards, i.e., fall.

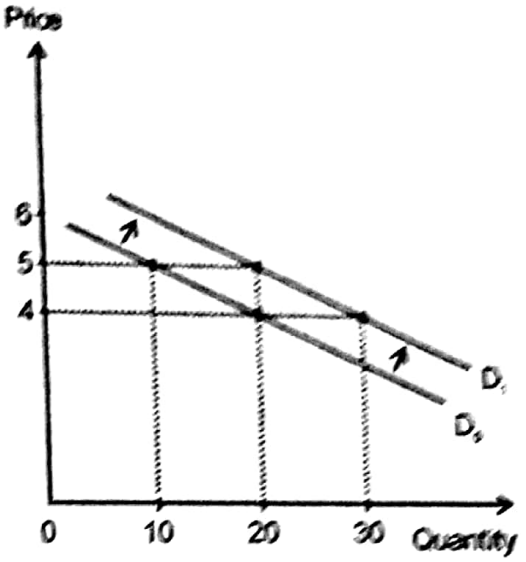
Rise in Demand:

Increase in demand due to some exogenous factors (such as consumers' income, fashion, etc.) is known as a rise in demand.

Price ($)	Off-season Demand (D_0)	Peak-season Demand(D_1)
5	10	20
4	20	30

Demand will rise when:

- Income of consumers ↑
- Fashion/taste ↑
- Advertising ↑
- Population ↑
- Season ↑ e.g., demand for winter clothing.
- Health-friendly. ↑
- Prices of substitutes ↑
- Prices of complements ↓
- Expectations of future income ↑
- Expectations of future prices ↑
- Income tax. ↓
- Interest rates. ↓
- Availability of credit ↑
- Hire purchase facilities ↑



Rise in demand can be identified by the rightward shift of the whole demand curve, as shown in the diagram above.

Rise in Demand	Extension in Demand
• Quantity demanded increases	• Quantity demanded increases
• Due to exogenous factors. • Whole demand curve shifts rightward	• Due to increase in price. • Demand curve remains same—rightward movement along the same curve.

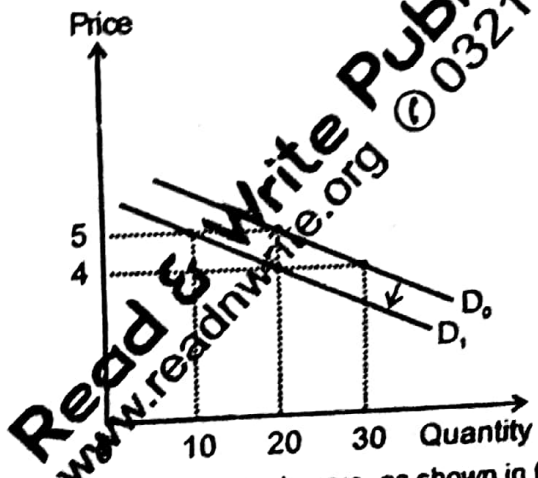
Fall in Demand:

Decrease in demand due to any of the exogenous factors (like consumers' income, fashion, etc.) is known as a rise in demand.

Price ($)	Initial Demand (D_0)	Demand (D_1) if income falls
5	20	10
4	30	20

Demand will fall when:

- Income of consumers ↓
- Advertising ↓
- Population ↓
- Season (out)
- Health-friendly ↓
- Prices of substitutes ↓
- Prices of complements ↑
- Expectations of future income ↓
- Expectations of future prices ↓
- Income tax ↑
- Interest rates ↑
- Availability of credit ↓
- Hire purchase facilities ↓

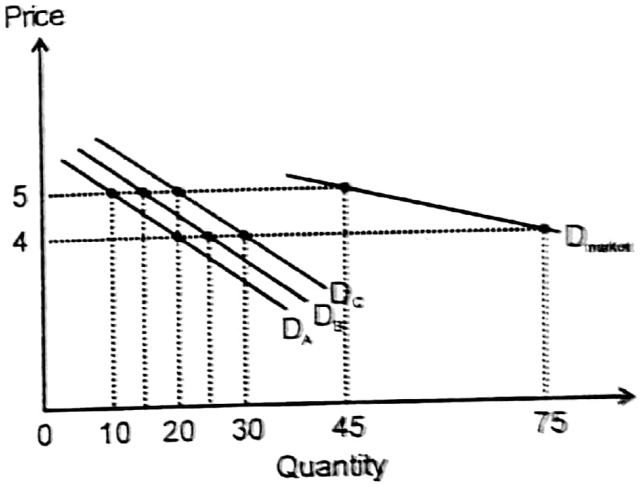


Fall in demand can be identified by the leftward shift of the whole demand curve, as shown in figure above.

Derivation of market demand from individual demand curves:

The market demand for a product at a certain price is obtained by summing all of the quantities demanded by individuals at that price. The market demand curve can be obtained through the horizontal summation of all the individual demand curves for the product. Market demand curve is normally flatter (elastic) than individual demand curves. For example, let us assume that there are only three consumers who demand the product according to the following schedule:

Price	Demand of A	Demand of B	Demand of C	Market Demand = A+B+C
5	10	15	20	10 +15 +20 = 45
4	20	25	30	20 +25 +30 = 75



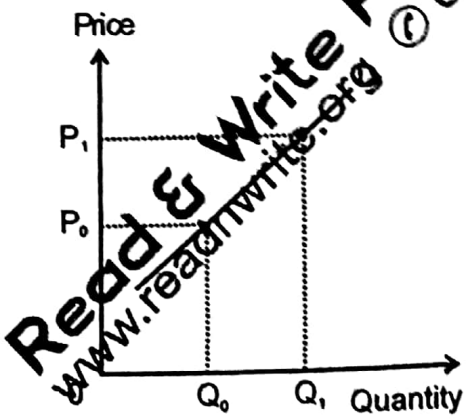
Exceptions to the law of demand:

Law of demand (economic theory of consumer behavior) is not true for all sorts of goods and situations. Some exceptions exist where people demand more goods and services at higher prices and vice-versa, ceteris paribus. Examples are:

1. Speculative goods:
Speculators are those who buy assets not for investment purposes; rather, they make profit by the difference in sale and cost of an asset for the short period of time. Examples of speculative goods are shares and currencies.

2. When quality is judged by prices:
Sometimes the quality of your product is judged by the price it costs to the consumer. High price is taken as an indicator of good quality and vice-versa. In this situation demand would increase with the rise in price and vice-versa

In these cases:
P↑ → Qd↑
P↓ → Qd↓

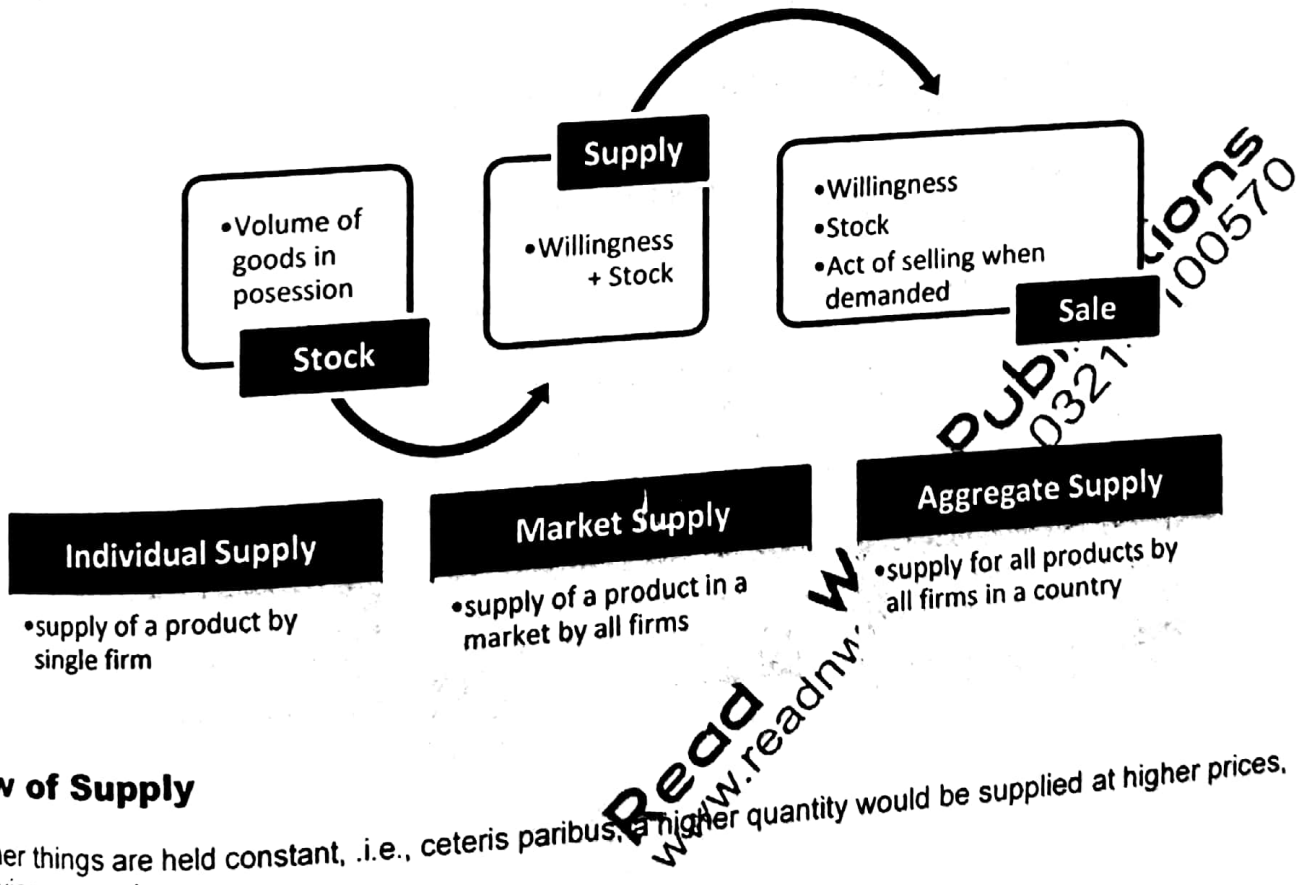


SUPPLY

Definition

Supply is the quantities of a product that suppliers are willing and able to sell at various prices per period of time, ceteris paribus.

- **Quantities:** Economists often deal with numerical values and very often try to represent information in a quantitative way.
- **Product:** As with demand we are using the term to refer to any item that is being traded. It can be used for goods or services. We could also stretch this to include tradable items like money or financial assets such as shares.
- **Suppliers:** These are the sellers of the product and are often referred to as 'producers', although they may not be manufacturers of the product, they may simply be an intermediary in the chain or selling services. We could look at an individual company's supply of a product or, more usefully, we can aggregate to look at the supply for an overall market.
- **Willing and able to sell at various prices:** In a market economy, companies must gain from selling their products. They are also in the fortunate position that in many cases they can withhold supply if the price is too low. When price rises in the markets, it is assumed companies will be more willing and able to supply more to the market.
- **Per period of time:** Supply must also be time related. It is of no use to say that Acer supplied 200 computers unless you specify the relevant time period. Clearly this needs to be consistent with the time period being used for demand.
- **Other things being equal:** There are numerous potential influences on the supply of a product. Analyzing the connections between the various elements is very difficult if lots of these elements are changing simultaneously. So, we assume these other factors affecting



Law of Supply

If other things are held constant, .i.e., ceteris paribus, a higher quantity would be supplied at higher prices, and vice-versa, i.e.

Mathematically: $Q_s = f(P)$
$Q_s = a + bP$

Ceteris Paribus

$P\uparrow \rightarrow$ Profit Margin $\uparrow \rightarrow Q_s \uparrow$
$P\downarrow \rightarrow$ Profit Margin $\downarrow \rightarrow Q_s \downarrow$

Supply has a positive relationship with price.

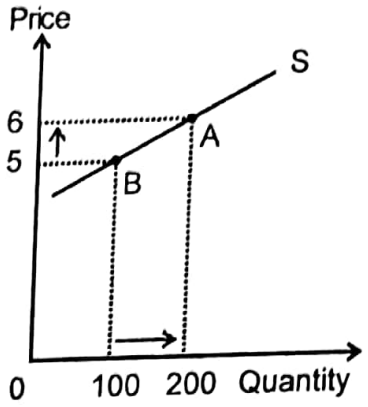
Supply schedule

It is a table that shows the positive relationship between the price and quantity supplied of a product, e.g.

P	Qs
10	100
11	200

Supply Curve

It is a curve that shows relationship between price and quantity supplied of a product. The graphical representation of a supply schedule is known as a supply curve.

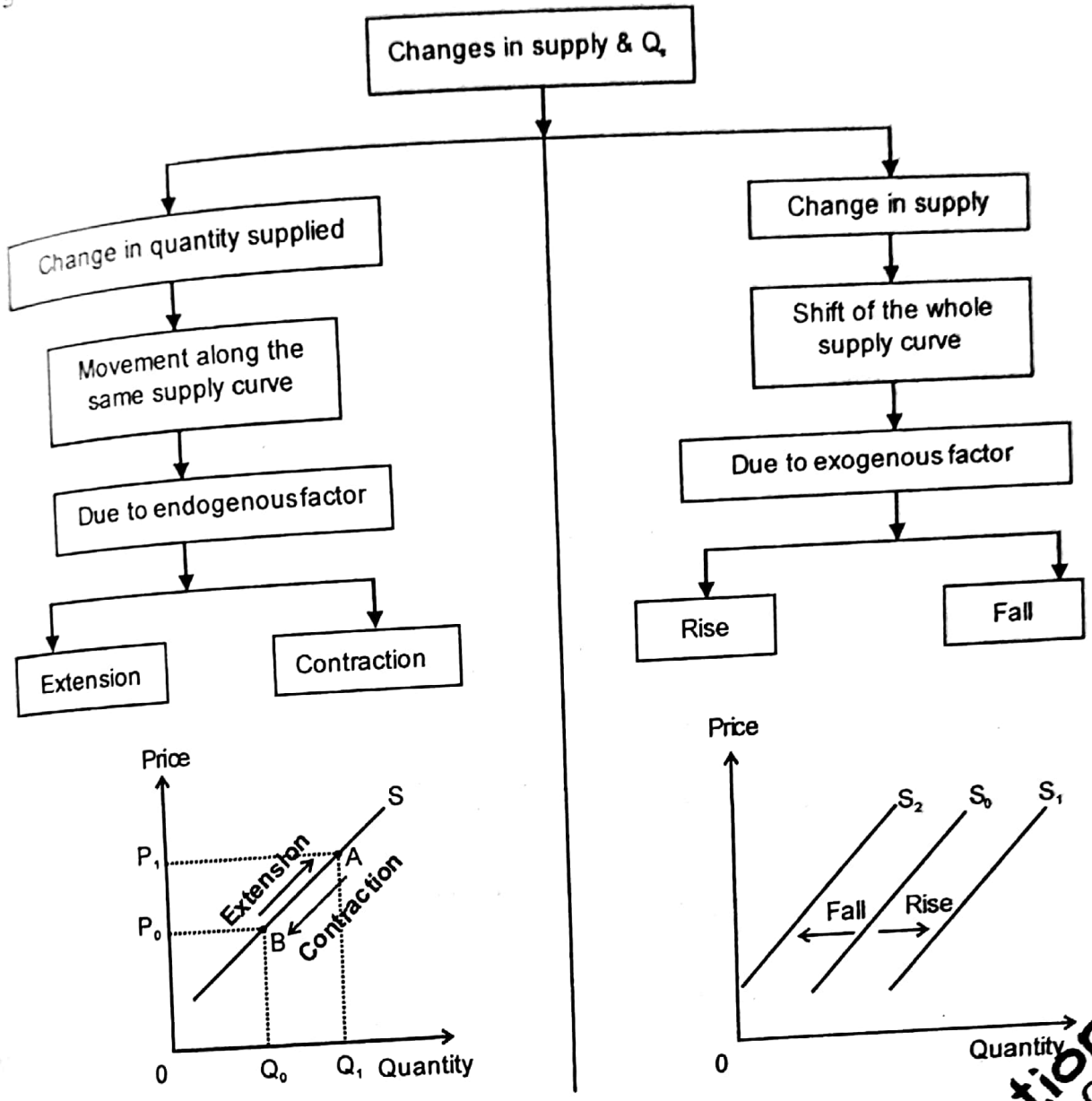


Taking price on y-axis and quantity supplied on x-axis, an upward sloping (positively sloped) curve is known as a supply curve—as shown in the figure above.

The law of supply is only applicable when all other factors are held constant. Assuming ceteris paribus, the law of supply holds these constant:

- Cost of production (i.e., cost of raw materials, cost of fuel, cost of rent, cost of insurances, cost of electricity, etc.).
- Climate\weather (especially for agricultural products).
- Taxes (e.g., corporation tax, sales tax, VAT, etc.).
- Subsidies (these are grants given to privately owned firms by the government).
- Technology (which in turn influence the productivity of factors of production).
- Education and training by the government.
- Number of producers in the market.
- Price of jointly supplied goods (e.g., beef and cattle hide).
- Price of alternatively supplied goods (e.g., leather jackets and leather gloves; brown and black shoes).
- Techniques of production.

Changes in supply:



Movement along the same supply curve.

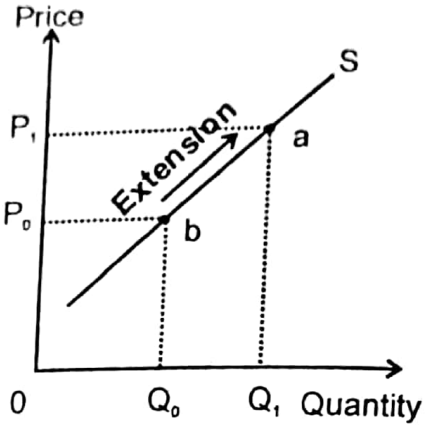
All those changes in the quantity supplied of a product which arise from the change in its market price are known as movements along the same supply curve.

A movement along the same supply curve can be:

- An extension in supply.
- A contraction in supply.

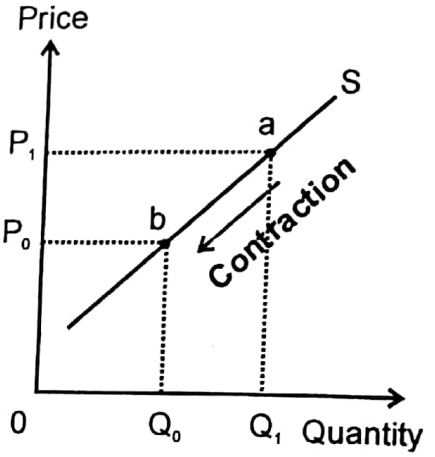
Extension in Supply:

It is increase in quantity supplied due to an increase in the market price of a product, assuming all other things are held constant.



Contraction in Supply:

It is a decrease in quantity supplied due to a decrease in the market price of a product, assuming all other things are held constant.



Shift of the supply curve:

When the supply of a product changes due to some exogenous factors (e.g., tax, cost of production, etc.), it causes a shift in the supply curve.

The supply curve can shift:

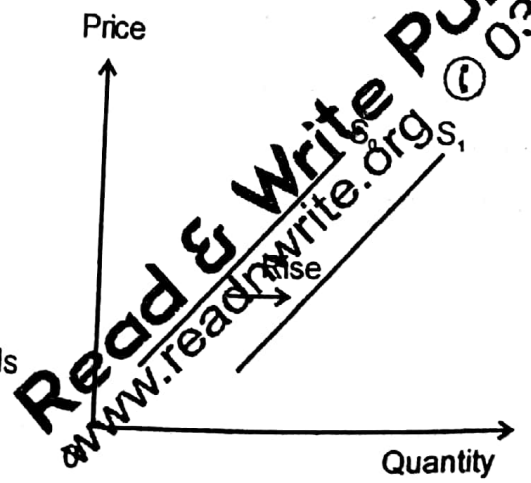
- Rightward .i.e., rise
- Leftward .i.e., fall

Rise in Supply:

An increase in the supply of a good due to any of the exogenous factors (e.g., reduction in tax, improvement in technology, etc.) is known as a rise in supply.

Supply will rise when:

- Cost of production falls.
- Climate is favorable.
- Taxes fall.
- Subsidies rise.
- Technology improves.
- The number of producers rises.
- The price of jointly supplied goods rises.
- The price of alternatively supplied goods falls.

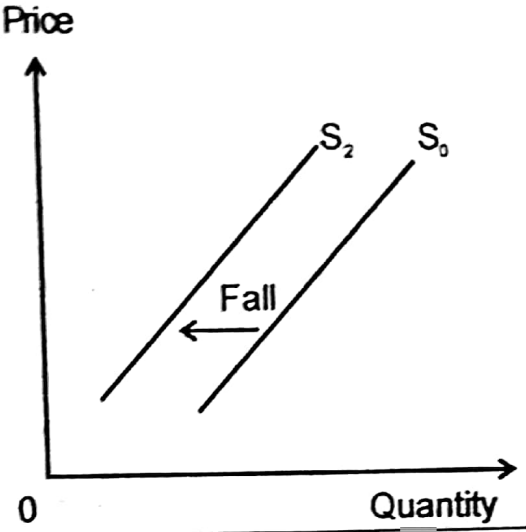


Rise in Supply	Extension in Supply
• Quantity supplied increases	• Quantity supplied increases
• Due to exogenous factors	• Due to increase in price.
• Whole supply curve shifts rightward	• Supply curve remains same- rightward movement along the same curve.

Fall in Supply:

It is a decrease in quantity supplied due to a change in any of the exogenous factors (like an increase in taxes, etc.), even if the price of the product remains the same.

Supply will fall when:
- Cost of production rises.
- Climate is unfavorable.
- Taxes rise.
- Subsidies fall.
- Technology declines.
- The number of producers falls.
- The price of jointly supplied goods falls.
- The price of alternatively supplied goods rises.

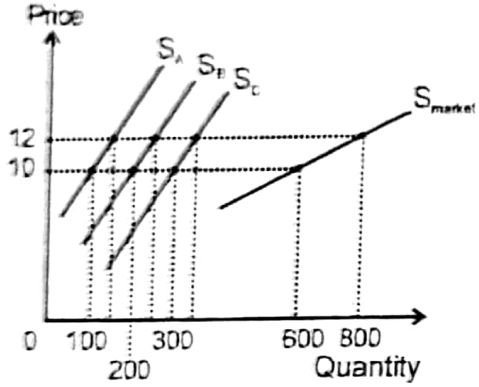


Fall in Supply	Contraction in Supply
– Quantity supplied decreases	– Quantity supplied decreases
– Due to exogenous factors. – Whole supply curve shifts leftward	– Due to decrease in price. – Supply curve remains same—leftward movement along the same curve.

Derivation of Market Supply from Individual Supply Curves

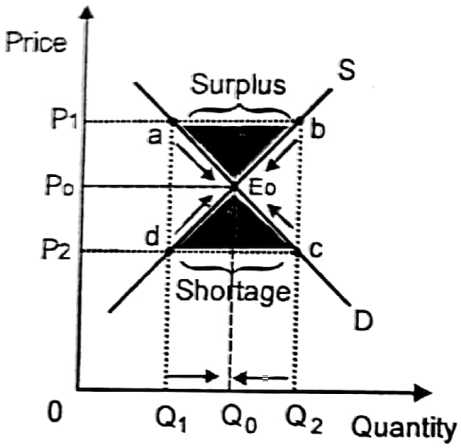
The market supply is the sum of all producers' supply at a given price of a product. The market supply curve can be derived from the horizontal summation of all producers or sellers supply curve.
For example, let us assume that there are only three producers in the market who supply according to the following supply schedules:

Price	Supply of A	Supply of B	Supply of C	Market Supply = A+B+C
10	100	200	300	100 +200 +300 = 600
12	150	250	350	150 +250 +350 = 750



EQUILIBRIUM

Equilibrium is a situation when there is no tendency to change. Price is the value of a product determined by the interaction of demand and supply. Equilibrium price is a position when quantity demanded equals quantity supplied—it is established at the point where the demand and supply curves intersect. The equilibrium price, P_0, is shown in the diagram below.



Disequilibrium positions: Quantity demanded (Q_d) is either more or less than quantity supplied (Q_s). These are corrected by consumer and producer responses, which alter prices.

If the price is greater than P_0: That is, when Q_s is greater than Q_d, this will cause a surplus. The excess supply pushes price downwards, forcing producers to reduce their production and to dispose unsold stocks at low prices while simultaneously encouraging consumers to demand large quantities. Prices will fall until the equilibrium is restored at P_0, as shown in the diagram above.

Similarly, if price is less than P_0: Q_s is less than Q_d; there will be a shortage of the commodity. In this case producers will push prices upwards and increase production while some consumers are deprived of the good. The prices continue to rise till equilibrium price is restored at P_0, as shown in the diagram above.

Changes in equilibrium:

1. Demand ↑
2. Demand ↓
3. Supply ↑
4. Supply ↓
5. Demand ↑ & supply ↑
6. Demand ↑ but supply ↓
7. Demand ↓ & supply ↓
8. Demand ↓ but supply ↑

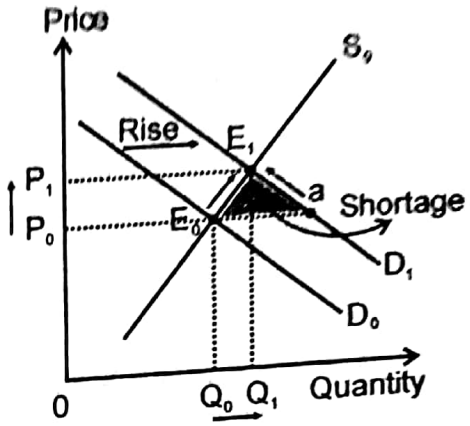
Demand Shifts:

Demand shifts and equilibrium.

1. Demand Rises.

- Consumers' income increases and demand shifts right to D_1.
- Shortage at old price P_0.
- Price increase.
- New equilibrium at E_1 (Q_1,P_1).
- An extension in supply.

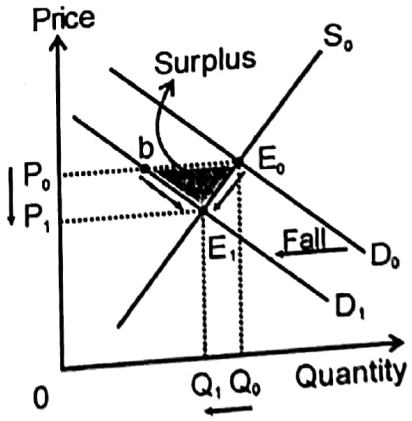
Note: When demand rises, price and quantity increases.



2. Demand Falls.

- Consumers' tastes change and demand shifts left to D_1.
- Surplus at old price P_0.
- Price decreases until $S_0 = D_1$.
- New equilibrium at E_1 (Q_1,P_1).
- A contraction in supply.

Note: When demand falls, price and quantity decreases.

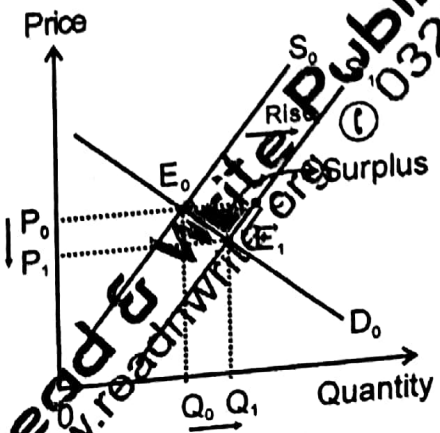


Supply shifts

3. Supply Rises.

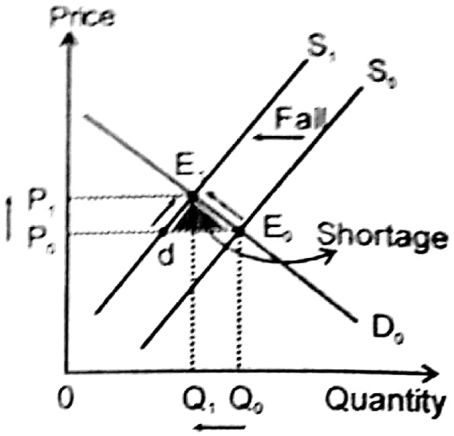
- Subsidies are given by the government, shifting supply rightwards to S_1.
- Surplus at old price P_0.
- Price decreases until $D_0 = S_1$
- New equilibrium at E_1 (Q_1,P_1).
- An extension in demand.

Note: When supply rises, price falls and quantity increases.



4. **Supply Falls.**

- Fuel costs increase, shifting supply leftwards to S_1
- Shortage at old price P_0
- Price increases until $D_0 = S_1$
- New equilibrium at E_1 (Q_1, P_1)
- A contraction in demand

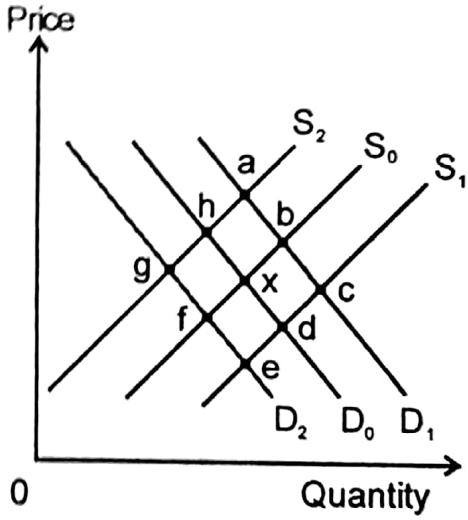


Note: When supply falls, price rises and quantity decreases

Simultaneous shift of demand and supply and their effect on equilibrium

According to figure:

1. $D\uparrow$ → 'x' to point 'b'
2. $D\downarrow$ → 'x' to point 'f'
3. $S\uparrow$ → 'x' to point 'd'
4. $S\downarrow$ → 'x' to point 'h'
5. $D\uparrow$, $S\uparrow$ → 'x' to point 'c'
6. $D\downarrow$, $S\downarrow$ → 'x' to point 'g'
7. $D\uparrow$, $S\downarrow$ → 'x' to point 'a'
8. $D\downarrow$, $S\uparrow$ → 'x' to point 'e'

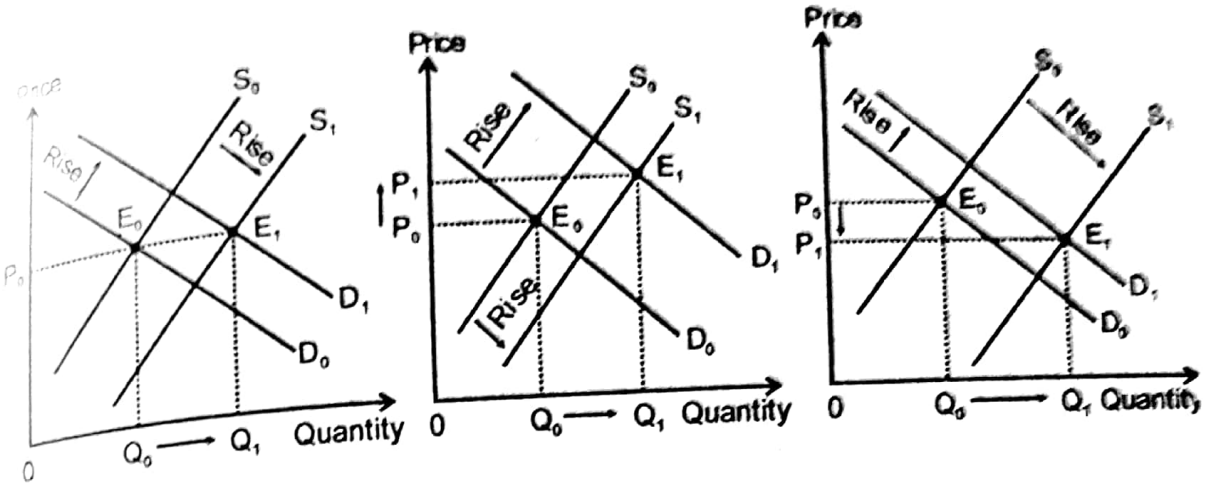


A simultaneous shift in both demand and supply may lead to an increase or decrease in price and cause an uncertain outcome of quantity traded—or vice-versa, depending on the relative strength of the shifts in demand and supply, as explained below.

	$D\uparrow$	$D\downarrow$
$S\uparrow$	P=Uncertain Q=↑	P=↓ Q=Uncertain
$S\downarrow$	P=↑ Q=Uncertain	P=Uncertain Q=↓

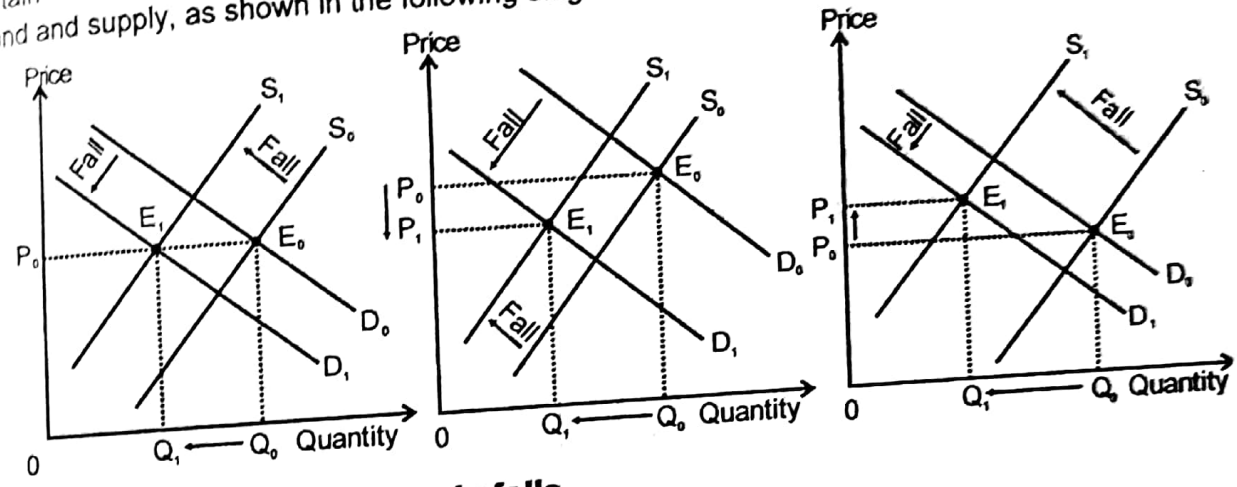
5. When both demand and supply rise.

When demand and supply both rise, quantity traded will definitely increase, but the change in price is uncertain. The price may remain the same (when both demand and supply rise equally), may increase (when the rise in demand is greater than the rise in supply), or may fall (when the rise in supply is greater than the rise in demand), as shown in following diagrams.



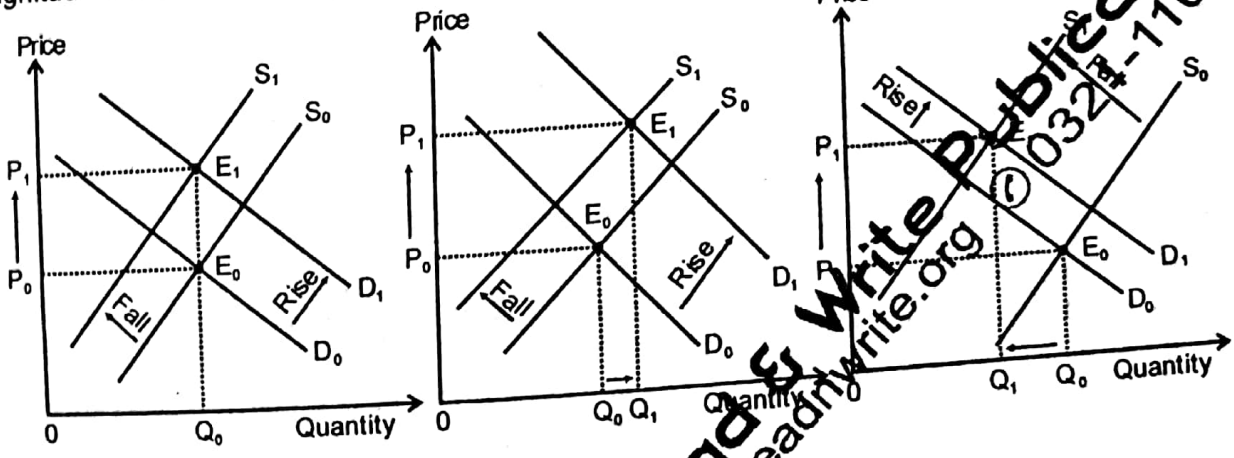
6. When both demand and supply fall.

When demand and supply both fall, quantity traded definitely decreases, but the change in price is uncertain—i.e., it may stay the same, fall, or rise, depending on the relative magnitudes of the shifts in demand and supply, as shown in the following diagrams.



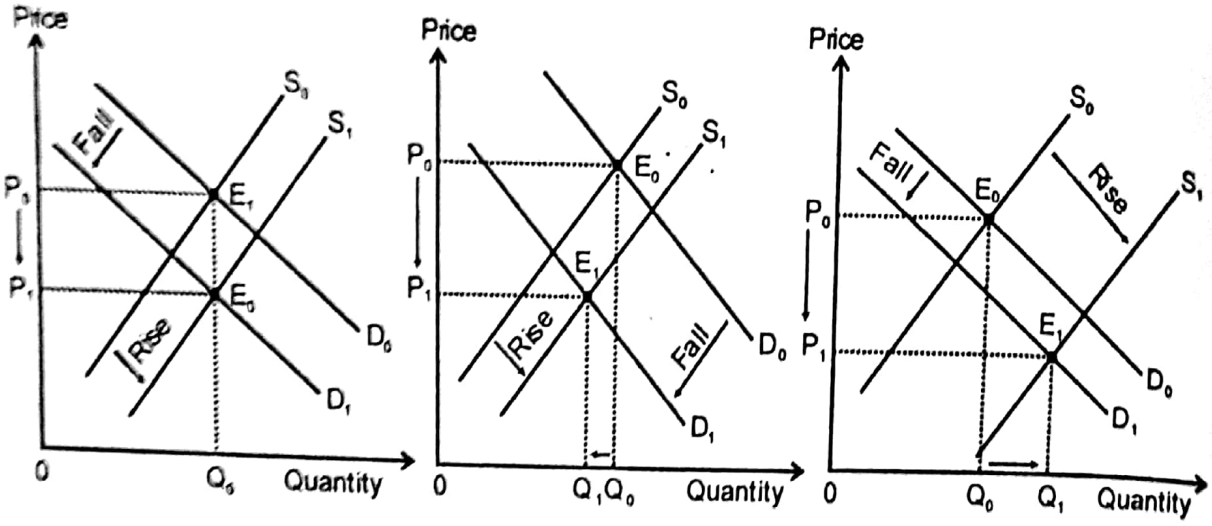
7. When demand rises and supply falls.

When demand rises but supply falls, price will always rise, but the quantity traded may vary according to the magnitudes of the changes in demand and supply, respectively.



8. When demand falls and supply rises.

When demand falls and supply rises, price definitely decreases, but the quantity traded may vary according to the relative magnitudes of the changes in demand and supply, respectively.



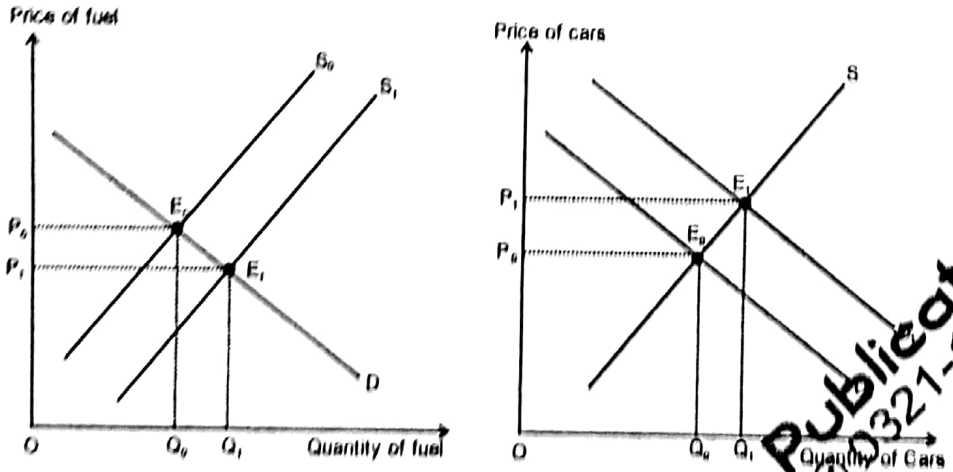
INTERDEPENDENT MARKETS & PRICES

1. Joint Demand or Complementary Goods

Some products are jointly demanded. This means that they are complementary, in the sense that the use of one requires the use of the other.

For example: The demand for fuel is associated with the demand for cars, and the demand for mobile phone networks is linked to the demand for mobile phone sets.

$P_{fuel}\downarrow \rightarrow D_{cars}\uparrow$

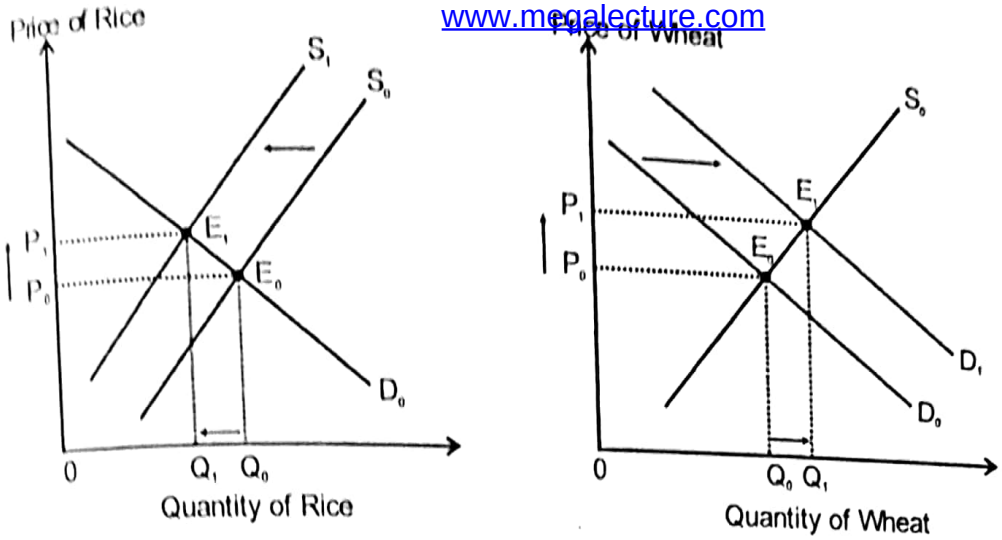


2. Substitute Products

Substitutes are goods which satisfy the same desire. Other things being equal, the demand for a product will tend to vary directly with the price of its substitute.

$P_{rice}\uparrow \rightarrow Qd_{wheat}$

The figure below explains this relationship between products and their substitutes. In the left diagram, a decrease in the supply of rice has caused an increase in the price of and a decrease in the quantity demanded for tea. In the right diagram, the changes in the market for rice has caused an increase in the price of and demand for wheat, and an extension in its quantity supplied.



3. Demand For Several Uses

The demands for such products are the totals of the demands of various users.
For example:

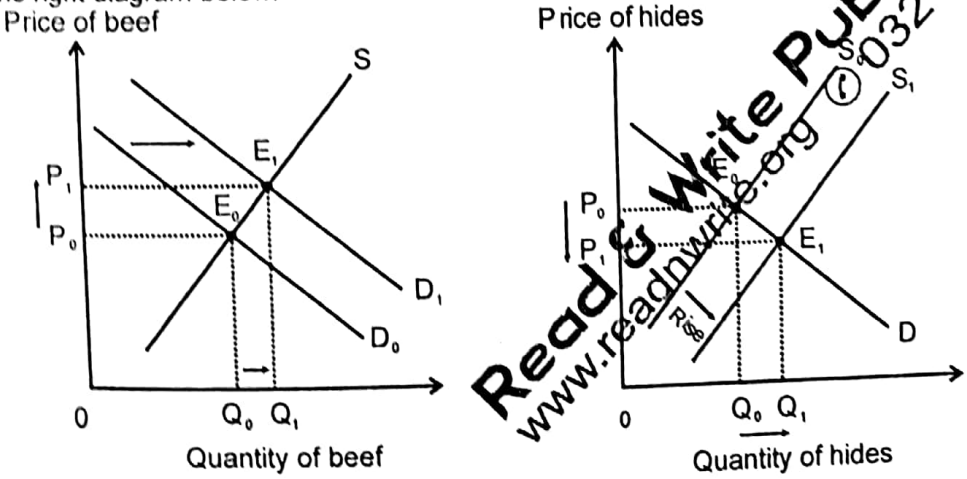
- Wool will be demanded by the textile industry, carpet manufacturers, blanket manufacturers, the hosiery industry, and many others. An increase in the demand for wool by one industry will raise the price and affect the prices of all other products made from wool.
- Copper provides a good example of a basic commodity widely used in many different industries. A large increase in the demand for central heating (copper pipes) might increase prices in the electrical components industries (printed circuits and cables).
- Nylon
- Rubber

4. Joint Supply

Joint supply occurs where the production of one product automatically leads to the production of another.

- Lead and zinc are found in the same ore, so the extraction of one automatically leads to the extraction of the other.
- The production of beef also results in the production of hides and the production of mutton leads to a supply of wool.
- An oil refinery produces many different fuels from crude oil, and an increased output of any one product, say petrol, will automatically increase the output of the others (benzene, diesel, oil, etc.).
- Rent-a-car firm does not normally supply a weekday travel without supplying a weekend travel.

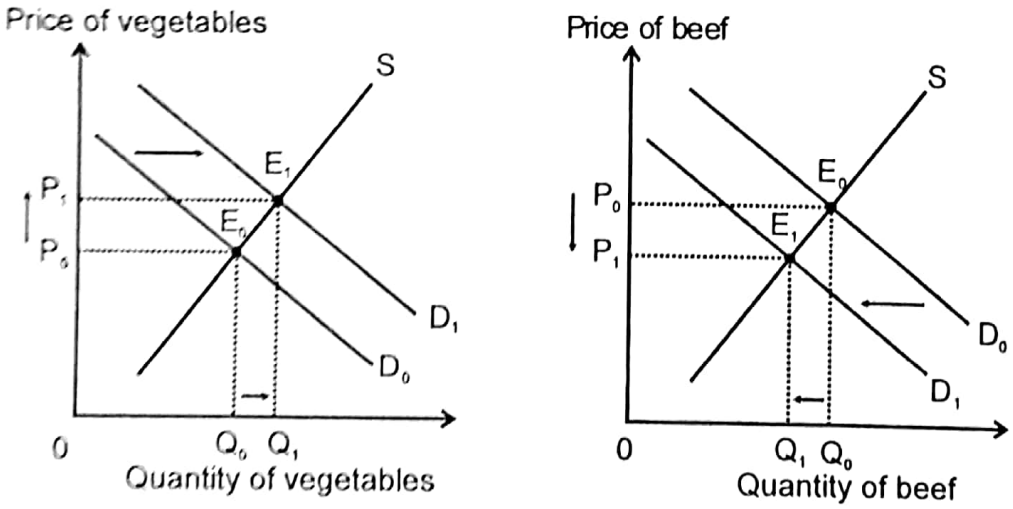
Where products are in joint supply, an increase in the demand for one of them will cause a fall in the price of the other. This is shown in the figure below. In the left diagram, the demand for beef increases, causing an extension in supply and the price of beef to rise from P_0 to P_1. This also increases the supply of hides as shown in the right diagram below.



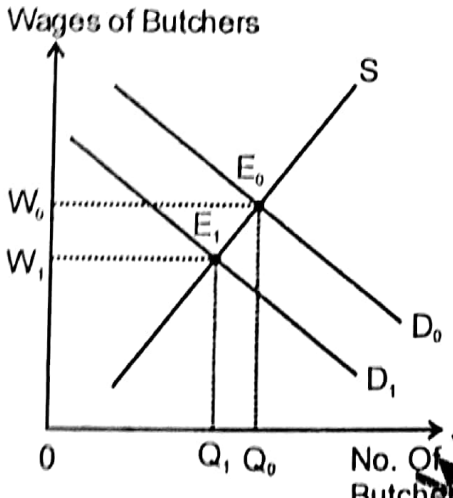
5. Relationship between Product and Factor Markets

A change in the demand for and/ or supply of a product will not only affect the market for that product, but will also affect all involved factor markets (i.e., the markets for the resources that produce the product). Similarly, changes in factor markets will have effects on product markets.

These relationships can be examined by looking at two examples. If, in a country, there is a trend towards vegetarianism, the price of vegetables will increase and the price of meat will fall. The figure below shows how an increase in the demand for vegetables will cause their price to rise and supply to extend, whilst the decrease in demand for meat will cause its price to fall and supply to contract.



If a rise in the price of vegetables leads to an increase in their profitability, the demand for green houses, for workers in the vegetable industry, for vegetable processing equipment, for vegetarian restaurants, etc., will increase as well. On the other hand, if the profitability of meat production falls, the demand for land to graze cattle, for lorries to transport animals, for hot dog stalls, etc., will decrease. The figure below shows the likely effects of this on the market for butchers.



Changes in factor markets also affect product markets. For example, if the wages for brick makers increases, then the cost of producing bricks will increase as well. This, in turn, is likely to raise the price of bricks due to a reduction in their supply.

ECONOMIC AGENTS IN A MARKET ECONOMY

There are three main types of actors or agents in the market system. Consumers and producers interact in the goods markets of the economy. Producers and owners of the factors of production (land, labour, and capital) interact in the factor markets of the economy.

1. The Consumer

In a pure free market system, it is the consumer who is all-powerful. Consumers are free to offer their money however they want and the market offers a wide choice of products in return. It is assumed that consumers will allocate their scarce resources so as to maximize their welfare, satisfaction, or utility.

2. The Firm

In a pure free market, the firms are the servants of the consumers. Their motive is to make high profits. This means maximizing the difference between revenue and costs.

Revenues
If they fail to produce goods which consumers wish to buy, they will not be able to sell them. Consumers will buy from companies which produce the goods they want. Successful companies will have high revenues; unsuccessful ones will have a low or no revenue.

Costs
If firms fail to minimize costs, they will fail to make a profit. Other, more efficient firms will be able to steal their market by selling at a lower price. The price of failure will be the exit of the firm from its industry.

3. Owners of the factors of production

Owners of land, labour, and capital are motivated by the desire to maximize their returns.

- A landlord wishes to rent his or her land at the highest possible price.
- A worker wishes to hire him or herself at a maximum wage, all other things being equal.
- An owner of capital wishes to receive the highest rate of return on the capital he or she owns.

These owners will search the marketplace for the highest possible reward, and only when they have found it will they offer their factor for employment. Firms, on the other hand, will seek to minimize costs. They will only be prepared to pay the owner the value of the factor in the production process.

THE FUNCTION OF PRICES IN THE MARKET

Market prices tend to direct individuals pursuing their own interests to engage in activities that promote the economic well-being of society. Adam Smith, the father of economics, refers to this as the "**INVISIBLE HAND**". The working of this "invisible hand" may be explained by four important functions that the price performs in the market.

1. Rationing

Consumer wants are infinite, but we live in a world that is scarce of resources, and, therefore, scarce of commodities as well. Somehow, these commodities have to be rationed among the members of society. Price acts as a rationing tool in a market economy, and is used to distribute limited goods and services produced by scarce resources.

a) If many consumers demand a good, but its supply is relatively low, then prices will be high.
   - Some consumers (from low income groups) may stop their consumption;
   - Some (such as some from middle income groups) may reduce their consumption;
   - Some (usually from high income groups) may continue consuming the same amount or more.

Limited supply will be rationed to those buyers prepared to pay a high enough price.

b) If demand is relatively low and supply is relatively high, then prices will be low. The low price ensures a large number of goods will be bought, reflecting the lack of scarcity of the good.

2. Signal

The price of the good is a key piece of information to both buyers and sellers in the market. Prices are determined by the transactions that take place between buyers and sellers. They reflect market conditions and, therefore, act as a signal to those in the market. Decisions of buying and selling are based on those signals.

- ↑P is a signal of shortage which may arise from ↑D or ↓S or both
- ↓P is a signal of surplus which may arise from ↓D or ↑S or both

3. Incentive

Prices act as an incentive for buyers and sellers.

- Low prices encourage buyers to purchase more goods and services. For consumers, this is because the amount of satisfaction or utility gained per unit of currency spent increases relative to other goods. Higher prices discourage buying because consumers get fewer goods per unit of currency spent.
- On the supply side, higher prices encourage suppliers to sell more to the market. Firms may have to take on more workers and invest in new capital equipment to achieve this. Low prices discourage production. A prolonged fall in prices may drive some firms out of the market because it is no longer profitable for them to supply.

4. Allocation of Resources

Allocation of Resources
The term 'resource allocation' refers to the way in which the available factors of production are distributed among the various uses to which they might be put. There are always insufficient resources to produce all the goods and services that could be consumed. It is therefore necessary to allocate resources efficiently between the various possible uses, and, in so doing, to choose what and what not to produce.

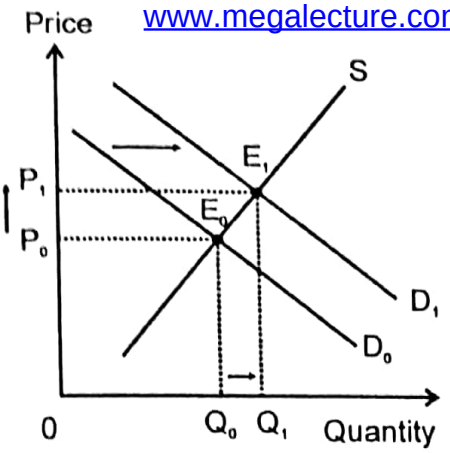
Maximizing behavior
In the market mechanism, everyone is assumed to be motivated by self interest. Consumers are motivated by the desire to maximize their welfare or utility. Producers wish to maximize profits. Workers, renters and owners of capital seek to maximize the returns from the factor that they own. This maximizing behavior determines the way in which resources are allocated.

Consumers, for instance, will spend to maximize their satisfaction or utility. They cast spending votes on different products and different firms. If consumers' tastes change so that they want more ice cream and lesser coffee, then they will spend more on ice cream and less on coffee. Ice cream manufacturers will collect more money from the sale of ice cream which they will produce to expand production. Manufacturers of coffee will be forced to lay off staff, buy few raw-materials and in long-run shut factories.

Profit and not revenue is the motive for firms to change levels of production. When consumers demand more ice cream, firms will expand production only if it is profitable to do so. Coffee manufacturers will shut down manufacturing plants only if the resources could be used to produce higher profit levels elsewhere. In a free market, changes in consumer demand are met by changes in patterns of production by firms because of their desire to maximize profit.

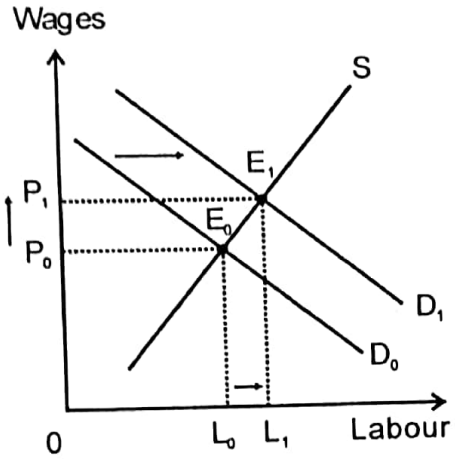
Price Mechanism
In a market there are buyers who demand goods and sellers who supply goods. The interaction of demand and supply fixes the price at which exchange takes place. A mechanism in which price plays the key role in the allocation of goods and services and resources in the market is known as the 'price mechanism'.

Example
If there is an increase in the demand for corn due to a change in consumer tastes, the demand curve for corn will shift to the right from D_0D_0 to D_1D_1 (see diagram below). With supply remaining unchanged, the price will increase from OP_0 to OP_1. This increase in the price of corn will act as a signal and incentive for producers to produce more corn. The quantity supplied will then increase from OQ_0 to OQ_1.



At the new price, the profits of existing firms will increase in the short run. So, in the long run, some firms will enter the industry, raising supply.

Factors market too will be affected. The demand by firms in the corn industry for workers and equipment will rise. So, the wages for corn workers may rise. The rise in wages (.i.e., the price of labour), acts as a signal to workers. The incentive to work in the corn industry will have risen so more workers will want jobs in corn production. Some worker from elsewhere in the economy will enter the corn industry, motivated by high wages. Similarly, capital-owners and land-owners will be attracted to the corn industry.



Therefore, with an increased demand of a product by consumers, there will be an increase in the resources used in the production of that good.

TOPICAL PAST PAPER ESSAY QUESTIONS

Determinants of Demand

(Nov 2015/P22/Q2/b)
Explain the factors that might cause a fall in demand for chocolate and discuss the extent to which chocolate producers have the power to stop this fall in demand happening. [12]

(Nov 2013/P21/Q3/b)
Explain the factors that would lead to an increase in the demand for all types of yoghurt and discuss the extent to which the firm can influence these factors. [12]

(Nov 2011/P22/Q3/a)
Explain the influences which determine the level of demand for healthcare in an economy. [08]

(June 2011/P22/Q3/a)
(a) Using economic analysis, explain the possible causes of the increase in the sales of electronic goods such as mp3 players in recent years. [08]

(Nov 1998/a)
Discuss the factors that influence the market for a product such as mobile telephones. [10]

(June1995/a)
Describe the factors that influence the market demand for a product such as personal computers. [10]

Equilibrium Price & Changes in Equilibrium

(June 2017/P21/Q3/a)
Explain how equilibrium price and equilibrium quantity change to allocate resources when there is a successful advertising campaign for a normal good. [8]

(June 2016/P21/Q3/a)
Outline the functions of the factor enterprise in a modern economy, and explain how enterprise responds to a rise in the demand for a good. [8]

(June 2016/P21/Q2/a)
Explain the meaning of the term 'equilibrium price and quantity' in the market for a good or service, and show how a new equilibrium position is established when there is a decrease in demand. [8]

(June 2014/P22/Q2/a)
Explain the meaning of the term 'equilibrium price and quantity' in the market for a good or service and show how a new equilibrium is established when there is an increase in demand. [8]

(June 2011/P22/Q3/a)
Using economic analysis, explain the possible causes of the increase in the sales of electronic goods such as mp3 players in recent years. [8]

(Nov 2009/P22/Q2/b)
Discuss how reduced air fares on low-cost budget airlines might affect the air travel market and the markets for related goods and services. [12]

(Nov 2009/P21/Q2/a)
Explain, with the help of a diagram, how the price of a product moves to a new equilibrium following a decrease in its supply. [08]

(Nov 2007/P2/Q2/a)
Explain how an equilibrium price for a product is established in the market and how it may change. [08]

(Nov 2005/P2/Q3/a)
Explain the meaning of the 'equilibrium price' of a good and how it is set in a free market. [08]

(Nov 2015/P2/Q3/b)
Explain the factors that might cause a fall in demand for chocolate and discuss the extent to which chocolate producers have the power to stop this fall in demand happening. [12]

Functions of Price

(June 2017/P23/Q3/a)

(Nov 2015/P2/Q2/a)
Explain the functions of price, enterprise and profit in a free market economy. [08]

(June 2010/P21/Q3/a)
A free market price operates as a rationing and allocating mechanism. Explain how it does this. [08]

(June 2003/P2/Q2/a)
Explain the functions of price in a market economy. [10]

UNIT 3

Elasticity of Demand and Supply

AS Level
Microeconomics
Notes Book 1

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Syllabus 2019 – 21

a. Price elasticity, income elasticity and cross-elasticities of demand

- the meaning and calculation of elasticity of demand
- the range of elasticities of demand
- the factors affecting elasticity of demand
- the implications for revenue and business decisions of price, income and cross-elasticities of demand

b. Price elasticity of supply

- meaning and calculation of elasticity of supply
- the range of elasticities of supply
- the factors affecting elasticity of supply
- implications for speed and ease with which businesses react to changed market conditions
  short run, long run, very long run

Unit 3 ELASTICITY

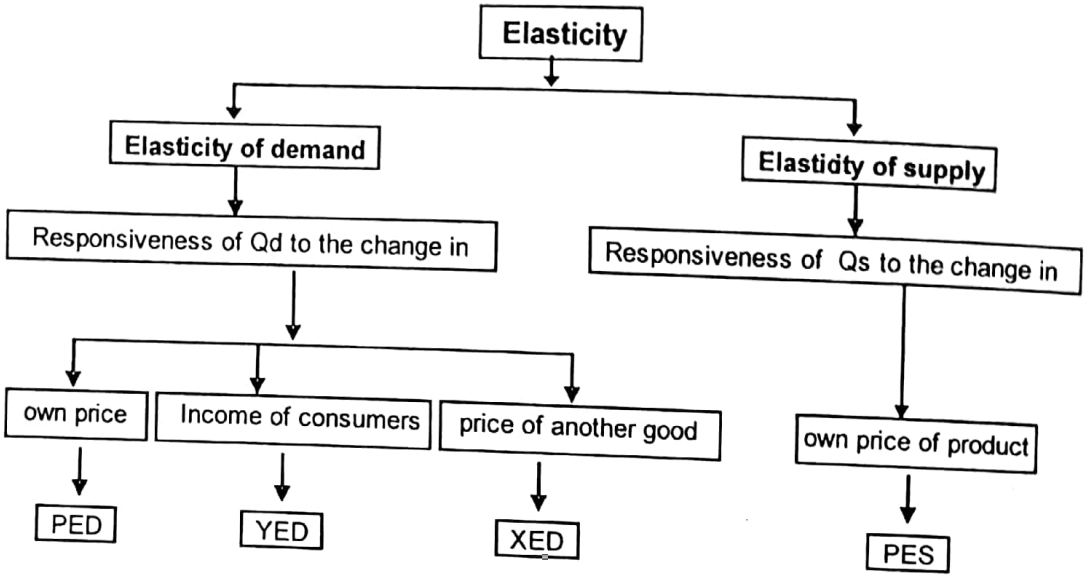
Definition

Elasticity is the degree of responsiveness (numerical measure) of one dependent variable to changes in another independent variable, ceteris paribus.

Types

Elasticity is of two types:

- Elasticity of demand
- Elasticity of supply



INTERPRETING THE ELASTICITY FIGURES:

To understand the elasticity figures, there are three aspects that should be kept in mind while interpreting them:

1. The use of percentages
2. The use of signs (positive or negative)
3. The significance of the value

The use of percentage

a. The use of percentages allows us to compare the changes in two different variables measured in different types of units—e.g., in PED, we measure the responsiveness of quantity demanded (which is measured in pounds, kg, etc.) to changes in the price of the product (which is measured in $, PKR, etc.), so the use of percentages helps remove these differences.

b. The use of percentages removes the problems associated with the size of the units used—e.g., if the price of a product rises from $2 to $4, there is a change of $2, but if the same change is measured in 'cents', it would be 200 cents. Apparently, $2 and 200 cents might be confusing while solving problems, but the use of percentages will remove this problem as described in the example below.

P_0	P_1	ΔP	$\%\Delta P$
$2	$4	2	$= \frac{4-2}{2} \times 100 = 100\%$
200 cents	400 cents	200	$= \frac{400-200}{200} \times 100 = 100\%$

c. Percentage change is the only suitable way to decide how big a change in price or quantity is—e.g., if the price of a product rises by $1, is this a large increase or small increase? We can answer only if we

know what the original price was. For a bottle of Pepsi whose original price is 20 cents, a $1 increase is a big increase because price has increased by 500%; but in the case of a house whose original price is $5000, an increase $1 is a small increase in price, because the price has just increased by 0.2%. Therefore, it is the percentage or the proportionate increase in price that we look at when deciding how big a price rise it is.

The use of sign (positive or negative)

The sign with an elasticity number shows the relationship between two variables. For instance, price elasticity of demand will have a negative number because quantity demanded has a negative relationship with the price of a product. According to the law of demand (ceteris paribus):

$$P\uparrow \rightarrow Qd\downarrow$$
$$P\downarrow \rightarrow Qd\uparrow$$

The value of price elasticity of demand will always be negative, whereas price elasticity of supply will always have a positive value since price and quantity supplied have a positive relationship.

$$P\uparrow \rightarrow Qs\uparrow$$
$$P\downarrow \rightarrow Qs\downarrow$$

But, the signs have important significance when considering the values of income elasticity of demand and cross elasticity of demand, since the signs explain the relationship between the variables involved.

The negative sign of price elasticity of demand is usually ignored because it is assumed to be universally understood that quantity demanded always has negative relationship with price.

Significance of value

If we ignore the sign and just concentrate on the value of the figure, then we can determine the elasticity of demand or supply. The five types of elasticities are:

- Elastic demand or supply (Elasticity >1)
- Inelastic demand or supply (Elasticity <1)
- Unit elastic demand or supply(Elasticity =1)
- Perfectly elastic demand or supply(Elasticity = ∞)
- Perfectly inelastic demand or supply (Elasticity = 0)

Formula

$$\text{Formula} = \frac{\text{Effect}}{\text{Cause}}$$

$$PED = \frac{\%\Delta Qd}{\%\Delta P}$$

$$PES = \frac{\%\Delta Qd}{\%\Delta P}$$

$$YED = \frac{\%\Delta Qd}{\%\Delta Y}$$

$$XED = \frac{\%\Delta Qd \text{ of good 'x'}}{\%\Delta P \text{ of good 'y'}}$$

As we know

$$\%\Delta Q = \frac{\Delta Qd}{\Delta Q_1} \times 100$$

$$\%\Delta P = \frac{\Delta Pd}{\Delta P_1} \times 100$$

Substituting values of % ΔP and % ΔQd into the formula

$$PED = \frac{\%\Delta Qd}{\%\Delta P} = \frac{\frac{\Delta Q}{Q_1} \times 100}{\frac{\Delta P}{P_1} \times 100}$$

$$PED = \frac{\Delta Q}{Q_1} \times \frac{P_1}{\Delta P}$$

$$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$$

ELASTICITY OF DEMAND

Elasticity of demand can be defined as the degree of responsiveness of quantity demanded (Q_d or Q^d) to changes in the price of a product, changes in the price of its substitutes or complements, or changes in the incomes of consumers. The different elasticities of demand can be categorized as follows:

1. Price elasticity of demand (PED)
2. Income elasticity of demand (YED)
3. Cross elasticity of demand (XED)

Price Elasticity of Demand

Price Elasticity of Demand (PED) is defined as the degree of responsiveness of quantity demanded to changes in the price of a product.

PED is always negative because price and quantity demanded have a negative relationship. In the example below, the value of PED is −2.5, but by ignoring the sign we can determine the type of elasticity. In this example, the demand is elastic.

$$PED = \frac{\%\Delta Q}{\%\Delta P} = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$$

Example

$P_1 = \$10$ $\quad Q^d_1 = 1000$ units $\quad PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$

$P_2 = \$12$ $\quad Q^d_2 = 500$ units

$$PED = \frac{500 - 1000}{12 - 10} \times \frac{10}{1000} = \frac{-500}{2} \times \frac{10}{1000} = -2.5$$

Types of PED:

There are five types PED that determine the elasticity of demand. These are:

1. Price elastic demand (PED > 1)
2. Price inelastic demand (PED < 1)
3. Unitary price elastic demand (PED = 1)
4. Perfectly price elastic demand (PED = ∞)
5. Perfectly price inelastic demand (PED = 0)

1. Price elastic demand (PED > 1):

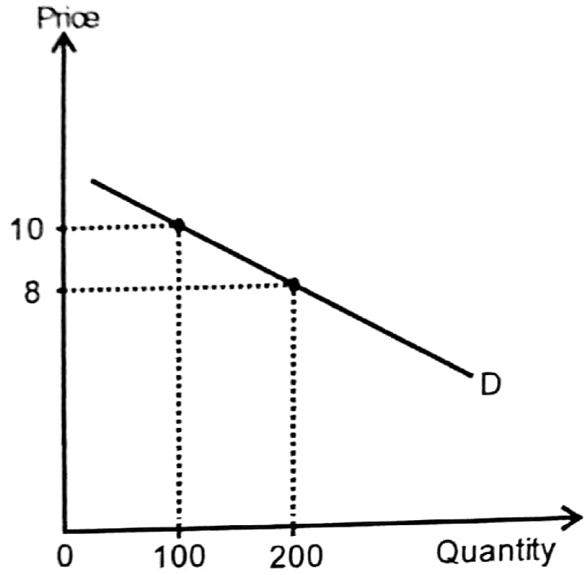
When a small proportionate change in price generates a large proportionate change in quantity demanded, it is known as **price elastic demand**. In the example below, PED is "−5" ignoring the negative sign, the value is greater than 1, so demand is considered to be price elastic.

$$PED = \frac{\%\Delta Q}{\%\Delta P} > 1$$

$P_1 = \$10$ $\quad Q^d_1 = 100$ units $\quad PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$

$P_2 = \$8$ $\quad Q^d_2 = 200$ units

$$PED = \frac{200-100}{8-10} \times \frac{10}{100} = \frac{100}{-2} \times \frac{10}{100} = -5$$



Relationship of price elastic demand with total revenue or total expenditure:

Revenue is the money received from the sales of goods and services. Total revenue can be calculated using the following formula:

$$TR = P \times Q$$

Total revenue (TR) received by the seller is very important because it determines the level of profits earned by the seller; the following formula shows the calculation of profit earned:

$$\text{Profit} = \text{total revenue} - \text{total cost}$$

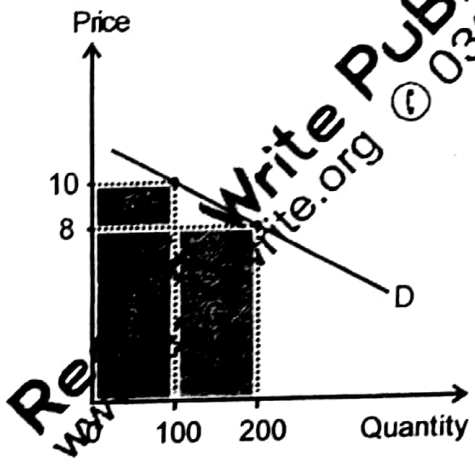
Maximum total revenue (TR) or minimum total cost (TC) means more profit for the business. Knowledge of PED would be very useful for the seller as goods whose demand is elastic, any reduction in price of product will generate proportionately greater increase in quantity demanded, and therefore total revenue will rise and vice-versa.

$$P\downarrow \rightarrow Q\uparrow\uparrow \rightarrow TR\uparrow$$
$$P\uparrow \rightarrow Q\downarrow\downarrow \rightarrow TR\downarrow$$

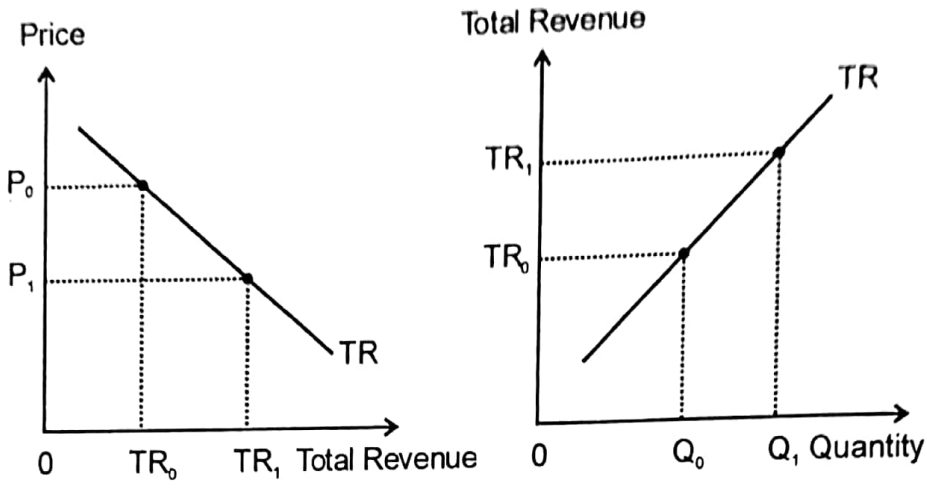
At "P_0 = 10$
TR = A + B area
= 10×100 = $1000

At "P_1 = 8$
TR = B + C area
= 8×200 = $1600

Hence
Loss = "A" area
Gain = "C" area
Net gain= C–A area
= 800–200 = $600



The following diagrams show the relationship between total revenue and quantity demanded, and the relationship between total revenue and price.



Price inelastic demand (PED < 1):

When a large proportionate change in price generates a small proportionate response in quantity demanded, demand is said to be **price inelastic**.

$$PED = \frac{\%\Delta Q}{\%\Delta P} < 1$$

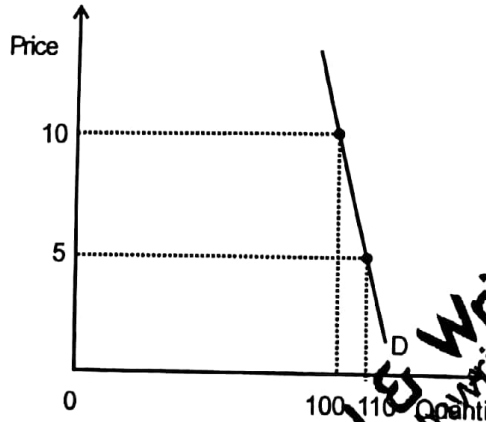
In the example below, PED is "−0.2". Ignoring the negative sign, the value is less than 1, so demand is price inelastic.

Example

$P_1 = \$10$ $\quad$ $Q^d_1 = 100$ units $\quad$ $PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$

$P_2 = \$5$ $\quad$ $Q^d_2 = 110$ units

$$PED = \frac{110-100}{5-10} \times \frac{10}{100} = \frac{10}{-5} \times \frac{10}{100} = -0.2$$



The demand curve for inelastic demand would be steeper, as shown in above.

Relationship of price inelastic demand with total revenue or total expenditure:

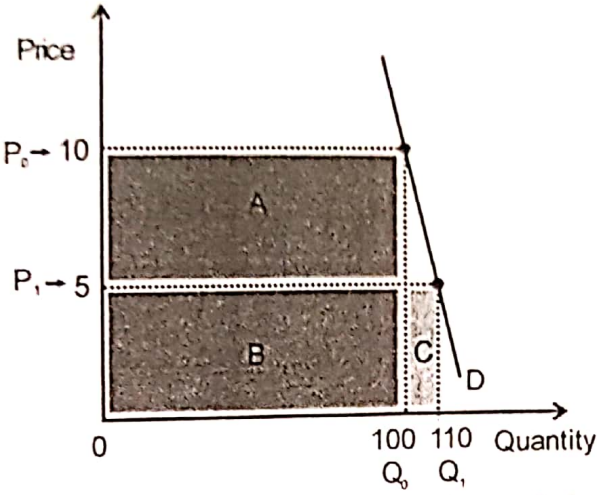
For goods whose demand is inelastic: any reduction in price will generate a proportionately smaller increase in quantity demanded; therefore, total revenue will fall, and vice-versa. Refer to the diagram below.

$P\uparrow\uparrow \rightarrow Q\downarrow \rightarrow TR\uparrow$
$P\downarrow\downarrow \rightarrow Q\uparrow \rightarrow TR\downarrow$

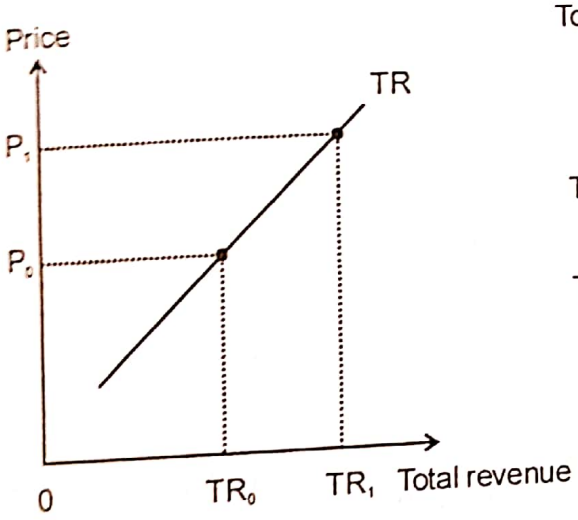
At P_0 = 10$
TR = A + B area
= 10×100 = $1000

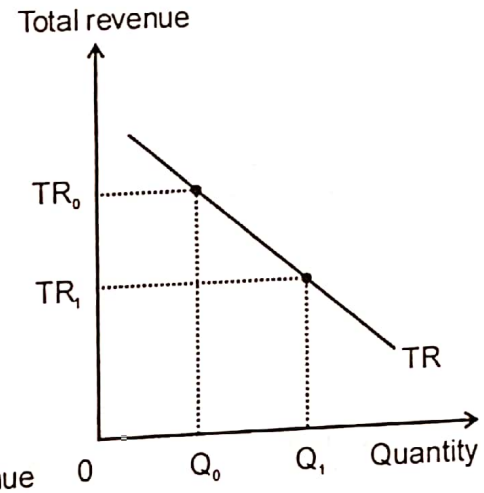
At P_1 = 5$
TR = B + C area
= 5×110 = $550

Hence
Loss = 'A' area
Gain = 'C' area
Net loss = A–C area
= 500–50 = $450



The diagrams below show the relationship between total revenue and quantity demanded, and the relationship between total revenue and price.



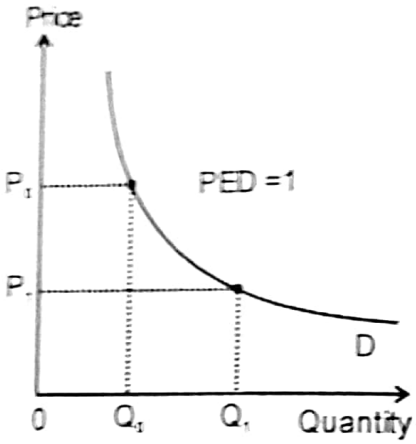


Unitary price elastic demand (PED = 1):

When an equal proportionate change in price generates an equal proportionate response in quantity demanded, demand is said to be **unitary price elastic**.

$$PED = \frac{\%\Delta Q}{\%\Delta P} = 1$$

A demand curve with unitary price elasticity is shaped like a rectangular hyperbola, as shown in the diagram below.



Elasticity Formula

$$PED = \frac{\%\Delta Q}{\%\Delta P}$$

For Straight Line

Uses original price and original quantity for calculation of %age changes

$$\%\Delta Q = \frac{\Delta Q}{Q_1} \times 100$$

$$\%\Delta P = \frac{\Delta P}{P_1} \times 100$$

For Hyperbola

Uses average price and average quantity for calculation of %age changes

$$\%\Delta Q = \frac{\Delta Q}{(Q_1 + Q_2)/2} \times 100$$

$$\%\Delta P = \frac{\Delta P}{(P_1 + P_2)/2} \times 100$$

Example:

$P_1 = \$10$ $Q^d_1 = 100$ units
$P_2 = \$5$ $Q^d_2 = 200$ units

$$\%\Delta Q = \frac{100}{\frac{100+200}{2}} \times 100 = 66.67\%$$

$$\%\Delta P = \frac{5}{\frac{10+5}{2}} \times 100 = 66.67\%$$

$$PED = \frac{66.67\%}{66.67\%} = 1$$

$TR_1 = 10 \times 100 = \$1000$
$TR_2 = 5 \times 200 = \$1000$

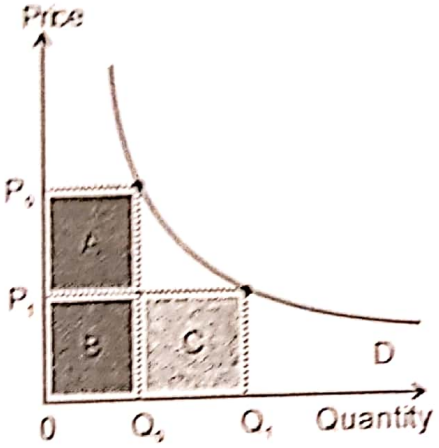
Relationship of unitary price elastic demand with total revenue or total expenditure:

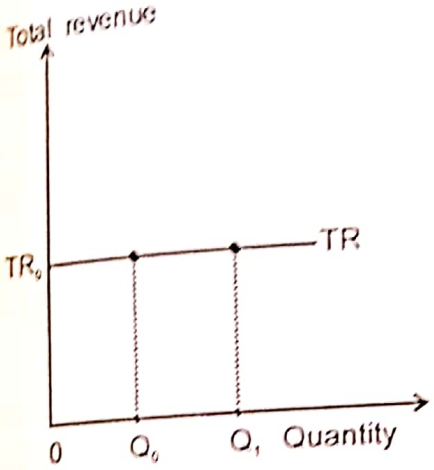
Any price increase or decrease will cause the quantity demanded to change with equal proportion; thus, there will be no change in total revenue—as shown in the diagram below.

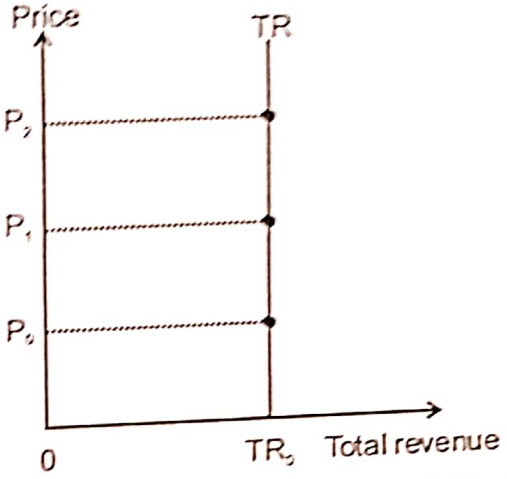
At "P_2" TR = A + B area

At "P_1" TR = B + C area

Loss = "A" area
Gain = "C" area







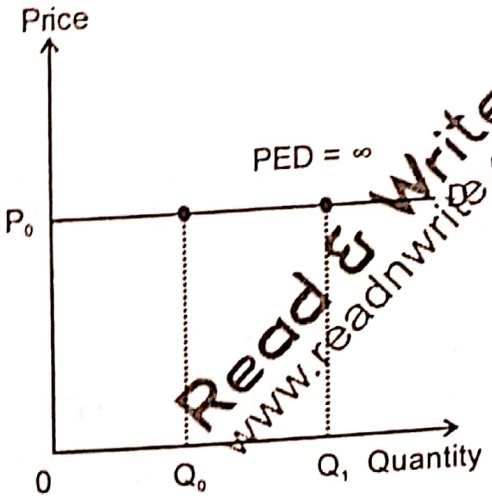
The diagrams above show the relationship between total revenue and quantity demanded, and the relationship between total revenue and price.

Perfectly price elastic demand (PED = infinity):

When a small proportionate change in price generates an infinite response in quantity demanded, demand is said to be **perfectly price elastic**.

$$PED = \frac{\%\Delta Q}{\%\Delta P} = \text{Infinity}$$

The demand curve for a perfectly price elastic good is parallel to the "quantity" axis, as shown in the diagram below.



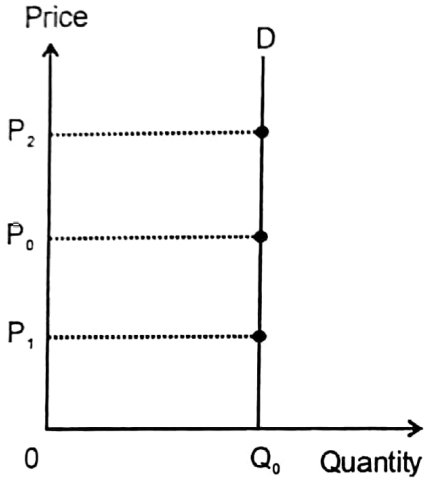
Relationship of perfectly price elastic demand with total revenue or total expenditure:

In perfectly price elastic demand there is no or little change in the price, so total revenue is positively related to quantity demanded. Therefore, when quantity demanded will increase, total revenue will also increase with equal percentage—and vice-versa.

Perfectly price inelastic demand (PED = 0):

When a large percentage change in price leads to no change in quantity demanded, demand is said to be **perfectly price inelastic.** The demand curve of a perfectly price inelastic good will be parallel to the "price", axis as shown in the diagram below.

$$PED = \frac{\%\Delta Q}{\%\Delta P} = \text{Zero}$$

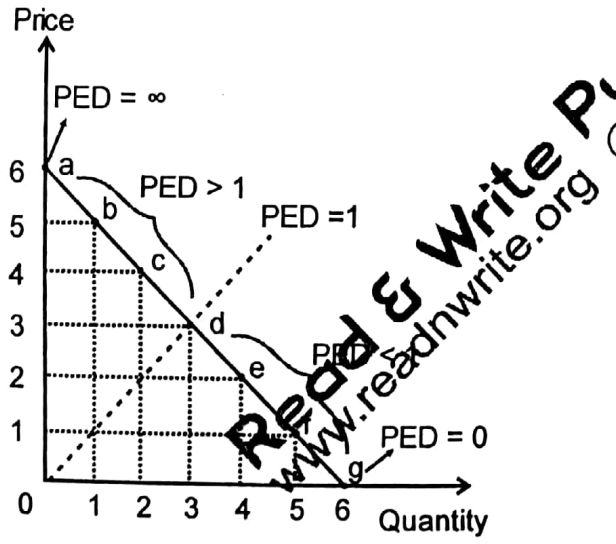


Relationship of perfectly elastic demand with total revenue or total expenditure:

In perfectly price inelastic demand quantity demanded remains constant where as any change in price cause equal proportionate change in total revenue, refer to diagram above.

Varying PED Along The Downward Sloping Straight Line Demand Curve:

A downward-sloping straight-line demand curve has different elasticities along the same curve. It has a high price elasticity before the mid-point, a unitary elasticity in the middle, and a price inelasticity after the mid-point—as shown in the diagram below:



At Point 'a'

$\Delta Q = 1$ $\Delta P = 1$ $P_1 = 6$ $Q_1 = 0$

$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1} = \frac{1}{1} \times \frac{6}{0} = \infty$ – Infinity – (Perfectly Elastic)

At Point 'b'

$\Delta Q = 1$ $\Delta P = 1$ $P_1 = 5$ $Q_1 = 1$

$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1} = \frac{1}{1} \times \frac{5}{1} = 5$ (Elastic)

At Point 'c'

$\Delta Q = 1$ $\Delta P = 1$ $P_1 = 4$ $Q_1 = 2$

$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1} = \frac{1}{1} \times \frac{4}{2} = 2$ (Elastic)

At Point 'd'

$\Delta Q = 1$ $\Delta P = 1$ $P_1 = 3$ $Q_1 = 3$

$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1} = \frac{1}{1} \times \frac{6}{0} = 1$ (Unitary Elastic)

At Point 'e'

$\Delta Q = 1$ $\Delta P = 1$ $P_1 = 2$ $Q_1 = 4$

$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1} = \frac{1}{1} \times \frac{2}{4} = 0.5$ (Inelastic)

At Point 'f'

$\Delta Q = 1$ $\Delta P = 1$ $P_1 = 1$ $Q_1 = 5$

$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1} = \frac{1}{1} \times \frac{1}{5} = 0.2$ (Inelastic)

At Point 'g'

$\Delta Q = 1$ $\Delta P = 1$ $P_1 = 0$ $Q_1 = 6$

$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1} = \frac{1}{1} \times \frac{0}{6} = 0$ (Perfectly Inelastic)

Actually, PED is a relationship between proportional, not absolute, changes in price and quantity demanded. As price falls, people become less sensitive to price changes.

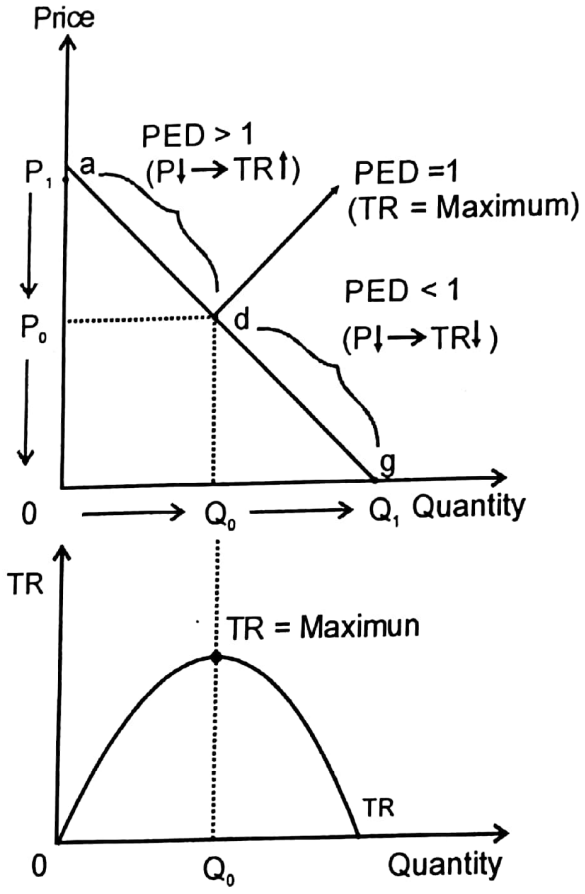
Another explanation of varying PED along the same downward sloping demand curve is shown in the diagram above. The change in quantity and the change in price are both constant. So $\frac{\Delta P}{\Delta Q}$ remain the same

whether we measure PED at any point on the demand curve. However it is $\frac{P_1}{Q_1}$ that will change and finally determine the value of PED As we move down along the demand curve, initial price (P_1) falls and initial quantity (Q_1) rises. Hence, the ratio of $\frac{P_1}{Q_1}$ will yield lower values with the fall in price. Consequently, there will be a reduction in the value of PED along the curve from left to right. Refer to the diagram above,

$$P\downarrow \rightarrow Qd\uparrow \rightarrow PED\downarrow$$
$$P\uparrow \rightarrow Qd\downarrow \rightarrow PED\uparrow$$

Relationship between Downward Sloping Demand Curve and Total Revenue:

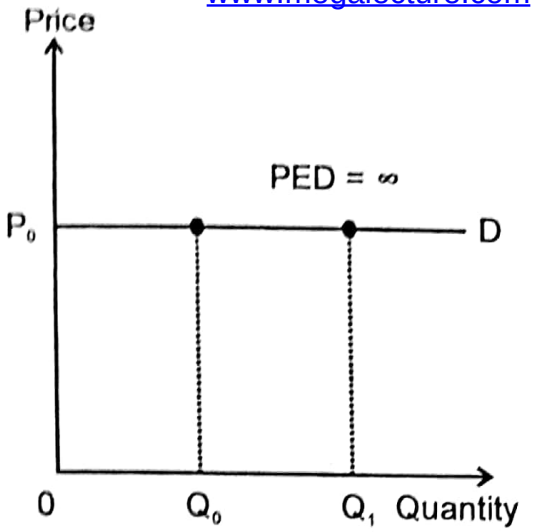
The diagram below shows the relationship between the demand curve and the total revenue curve. The diagram shows that, at price "P_0", PED is unit elastic, and total revenue is at its maximum. When the price is above "P_0", total revenue is rising. When the price is below "P_0", total revenue is falling.



Constant PED along the Demand Curves:

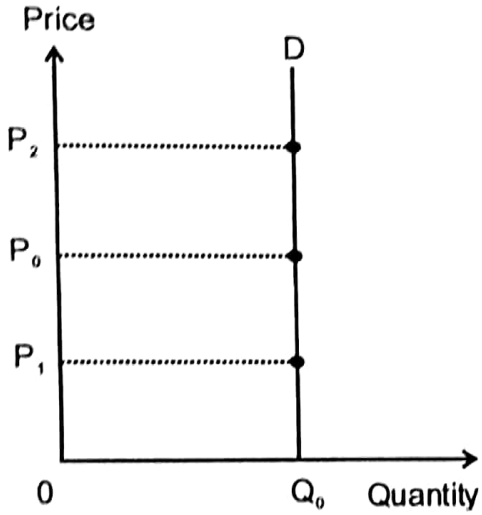
Perfectly elastic, perfectly inelastic, and unit elastic demand curves are special cases where the PED remains constant along the same demand curve.

a) **Perfectly elastic demand curve:**
The amount of quantity demanded is infinite at price P_0, as shown in the diagram below.



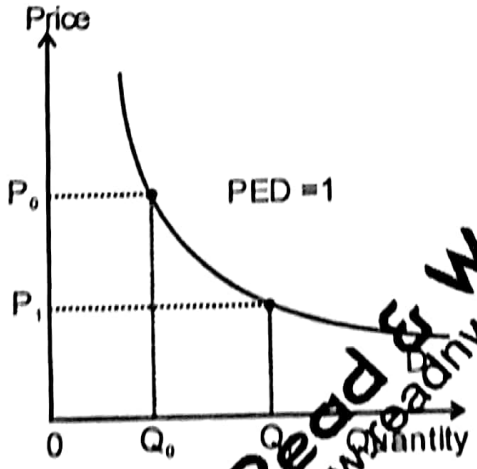
b) Perfectly inelastic demand curve:

Quantity demanded does not change as price changes at any point. This is shown in the diagram below.

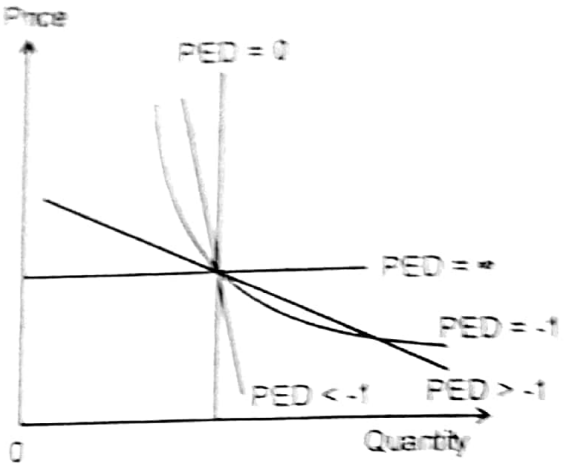


c) Unitary elastic demand curve:

The percentage change in quantity demanded is the same as the percentage change in price. Refer to the diagram below.



Summary of PED types:



Determinants of PED:

Price elasticity of demand is determined by the ease with which consumers can change their demand. Some of the factors that determine that ease are:

1. **The nature of the good:**

   - Necessities → Inelastic demand
   - Luxuries → Elastic demand

Goods and services which are necessities, e.g., food, clothing, etc., have inelastic demand. Those which are termed luxuries, e.g., Lexus, Nike shoes, etc., have elastic demand.

2. **Definition of a good:**

   - Broadly defined → Inelastic demand
   - Closely defined → Elastic demand

Broadly defined goods are inelastic in nature because they have relatively fewer close substitutes. On the other hand, if a good or service is more closely defined, its potential substitutes will increase, causing its demand to become elastic—e.g., on the whole, a car would have an inelastic demand, but a Honda civic would have an elastic demand. This is because it is hard to find a substitute for a car but very easy to find substitutes for a Honda civic.

3. **Number of substitutes:**

   - Less substitutes → Inelastic demand
   - More substitutes → Elastic demand

The more substitutes for a product, the more easily consumers can shift from one product to another, the more elastic will be the demand—e.g., a bathing soap, 'LUX' has many substitutes, such as Rexona, Palmolive, Dove, etc. On the other hand, fewer substitutes for a product means that it will be more difficult for consumers to shift to another product—e.g., in Pakistan electricity is only available from WAPDA and there are virtually no substitutes for it; hence, demand for electricity would be inelastic in Pakistan.

4. **Habit forming or consumer loyalty:**

   - Addictive → Inelastic demand
   - Non-addictive → Elastic demand

Some goods and services are addictive in nature—e.g. alcohol, drugs, cigarettes, etc. Any rise in the prices for these products would not inhibit the use of these goods by addicted consumers, so their demand would be inelastic. Similarly, the more a consumer is loyal to a brand, the more inelastic its demand will be.

5. **Time:**

- In emergency → Inelastic demand
- More time available → Elastic demand

Some goods are demanded during an emergency—e.g., life saving medicines. Those goods for which demand cannot be postponed are inelastic. However, the demand for goods like 'houses' is elastic, because consumers can take their time to make decisions before they buy these good.

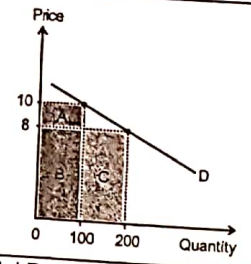
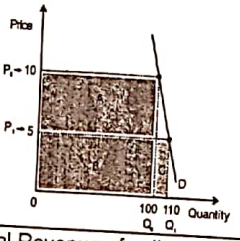
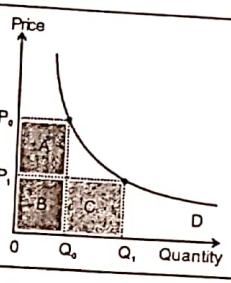
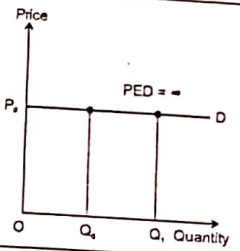
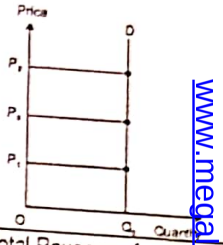
6. **Proportion of income spent on the good:**

- Small proportion of income → Inelastic demand
- Large proportion of income → Elastic demand

Goods like match boxes are those which the consumer will spend a very small proportion of income on. Therefore, consumers remain indifferent to any change in their prices, causing their demand to be inelastic. But goods like cars are those which consumers spend a major proportion of their income on. Therefore, the demand for these goods is elastic.

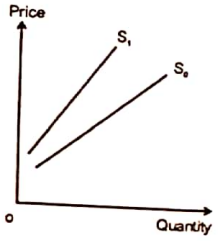
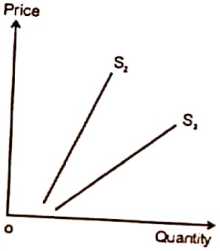
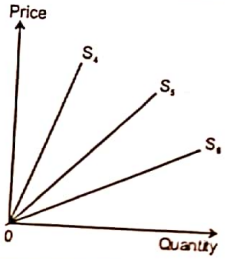
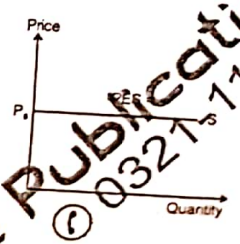
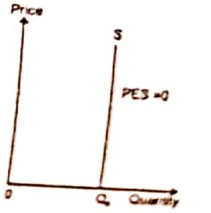
PRICE ELASTICITY OF DEMAND (P.E.D)

$$PED = \frac{\%\Delta Qd}{\%\Delta P} = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$$

	Elastic Demand	Inelastic Demand	Unitary Elastic Demand	Perfectly Elastic Demand	Perfectly Inelastic Demand
Value	P.E.D > 1	P.E.D < 1	P.E.D = 1	P.E.D = Infinity	P.E.D = Zero
Definition	Small $\%\Delta P \rightarrow$ Large $\%\Delta Q_d$	Large $\%\Delta P \rightarrow$ Small $\%\Delta Q_d$	Equal $\%\Delta P \rightarrow$ Equal $\%\Delta Q_d$	Small $\%\Delta P \rightarrow$ Infinity $\%\Delta Q_d$	Large $\%\Delta P \rightarrow$ Zero $\%\Delta Q_d$
Example	Luxury good with many substitutes	Necessities	–	–	–
Curve					
Relationship With TR or TE	Total Revenue of seller or Total consumer expenditure increases with a decrease in price and vice versa.	Total Revenue of seller or Total consumer expenditure increases with an increase in price and vice versa.	Total Revenue of seller or Total consumer expenditure remains constant with any change price.	Total Revenue of seller or Total consumer expenditure increases with an equal proportion of quantity increase.	Total Revenue of seller Total consumer expendi increases with an equ proportion of price increa

PRICE ELASTICITY OF SUPPLY (P.E.S)

$$PED = \frac{\%\Delta Qs}{\%\Delta P} = \frac{\Delta Q}{\Delta P} \times \frac{P_1}{Q_1}$$

	Elastic Supply	Inelastic Supply	Unitary Elastic Supply	Perfectly Elastic Supply	Perfectly Inelastic Supply
Value	P.E.S > 1	P.E.S < 1	P.E.S = 1	P.E.S = Infinity	P.E.S = Zero
Definition	Small $\%\Delta P \rightarrow$ Large $\%\Delta Q_s$	Large $\%\Delta P \rightarrow$ Small $\%\Delta Q_s$	Equal $\%\Delta P \rightarrow$ Equal $\%\Delta Q_s$	Small $\%\Delta P \rightarrow$ Infinity $\%\Delta Q_s$	Large $\%\Delta P \rightarrow$ Zero $\%\Delta Q_s$
Example	Manufactured goods	Agricultural goods	–	–	Number of seats in stadium
Curve					
Shape	Originate from y-axis	Originate from x-axis	Starts from origin	Horizontal	Vertical

PRICE ELASTICITY OF SUPPLY (PES)

The degree of responsiveness of quantity supplied (Q_s or Q^s) to changes in the price of the product is known as **elasticity of supply** or **price elasticity of supply (PES)**.

$$PES = \frac{\%\Delta Qs}{\%\Delta P} = \frac{\Delta Qs}{\Delta P} \times \frac{P_1}{Q_1}$$

Price elasticity of supply is always positive because quantity supplied and price have a positive relationship.

Example

$P_1 = 100$ $\quad Q^s_1 = 1000$

$P_2 = 200$ $\quad Q^s_2 = 2500$

$$PES = \frac{1500}{100} \times \frac{100}{1000} = +1.5$$

Types of PES:

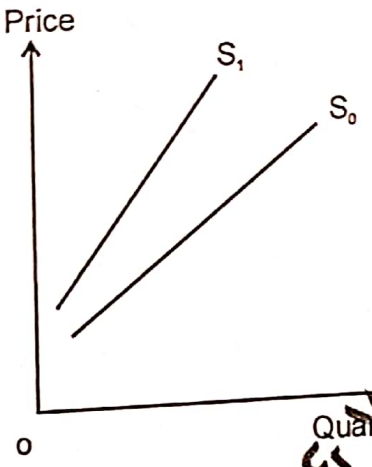
There are five types of PES:

1. Price elastic supply (PES > 1)
2. Price inelastic supply (PES < 1)
3. Unitary price elastic supply (PES = 1)
4. Perfectly price elastic supply (PES = ∞)
5. Perfectly price inelastic supply (PES = 0)

1. Price Elastic Supply (PES > 1):

When a small change in price generates a proportionately larger response in quantity supplied, supply is said to be **price elastic**.

$$PES = \frac{\%\Delta Qs}{\%\Delta P} > 1$$

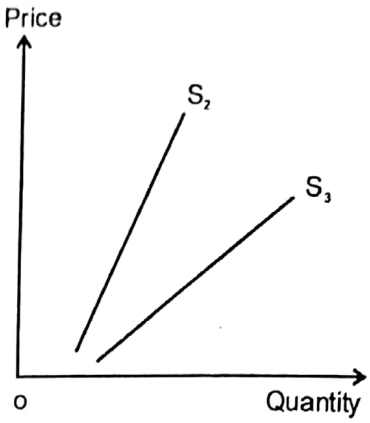


The elastic supply curve originates from the y-axis regardless of whether it is steep or not. Both S_0 and S_1 are elastic supply curves.

2. Price Inelastic Supply (PES < 1):

When a large change in price generates a proportionately smaller response in quantity supplied, supply is said to be **price inelastic**.

$$PES = \frac{\%\Delta Qs}{\%\Delta P} < 1$$

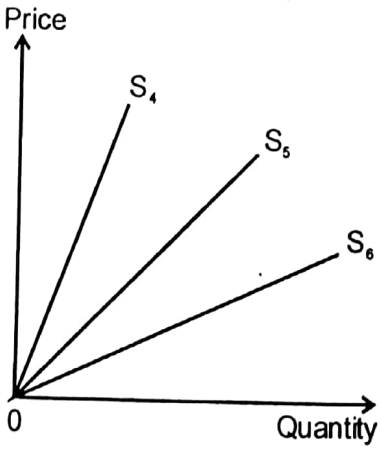


An inelastic supply curve originates from the x-axis, regardless of whether it is steep or not. Both S_2 and S_3 are inelastic supply curves.

3. Unitary Price Elastic Supply (PES = 1):

When a change in price generates an equally proportionate change in quantity supplied, supply is said to be characterized by **unitary price elasticity**. Any curve that originates from the origin will be unitary price-elastic supply, irrespective of the gradient that it has. Therefore, in the diagram below, S_4, S_5 and S_6 all are unitary price elastic.

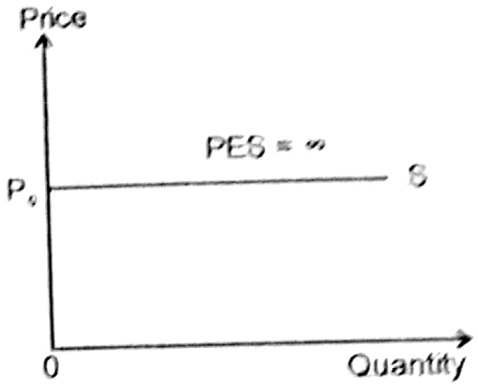
$$PES = \frac{\%\Delta Qs}{\%\Delta P} = 1$$



4. Perfectly Price Elastic Supply (PES = infinity):

When a very small proportionate change in the price of the product leads to an infinite response in quantity supplied, supply is said to be **perfectly price elastic or infinite price elastic**.

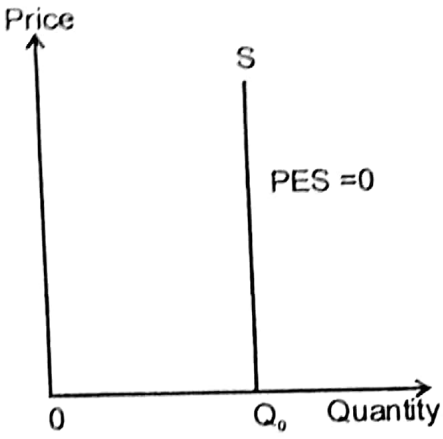
$$PES = \frac{\%\Delta Qs}{\%\Delta P} = \infty = \text{Infinity}$$



5. Perfectly Price Inelastic Supply (PES = 0):

When a change in price generates no change in quantity supplied, supply is said to be **perfectly price inelastic** or to have a **price elasticity of supply of zero**.

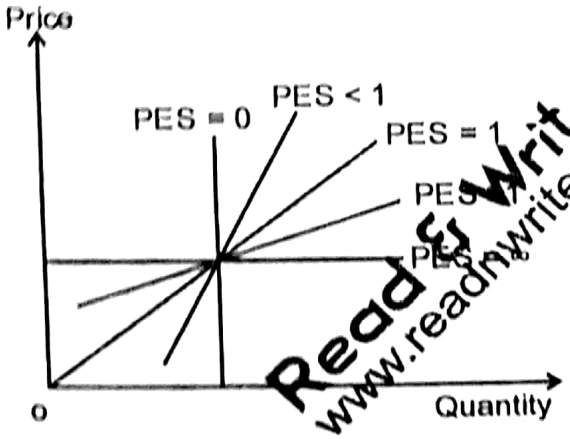
$$PES = \frac{\%\Delta Qs}{\%\Delta P} = 0$$



Varying Price Elasticity of Supply along the Supply Curve:

Normal upward sloping supply curves (both elastic and inelastic) have different elasticities at different points on the curve. However, PES will be constant along unitary, horizontal, and vertical straight-line supply curves.

Summary



DETERMINANTS OF PES

The extent to which the supply of a product is elastic depends upon the flexibility and mobility of factors of production. If production can be expanded easily and quickly and/or products can be easily brought out of storage in response to an increase in demand (and the resulting rise in price), supply will be elastic; if not, supply will be inelastic. Similarly, when demand (and price) falls, supply will be elastic if production can be cut back easily and/or products can be taken off the market and stored. The factors that can influence the degree of responsiveness of supply to price changes are as follows:

- Level of spare capacity
- Time period.
- Level of employment.
- Storability of a product.
- Agricultural vs. manufactured products.
- Time required to increase capacity.
- Ability to import inputs.

1. Level of Spare or Excess Capacity

When the industry is operating below full capacity

Excess capacity ➡ Industry can expand easily by using previously unused variable and fixed assets. ➡ Supply will be elastic

When the industry is operating at full capacity:

At full capacity ➡ Industry cannot expand easily ➡ Supply will be inelastic

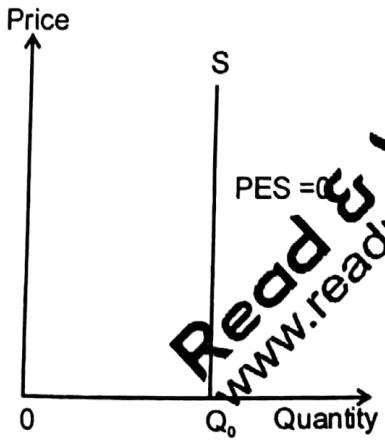
2. Time Period.

Time period is directly linked with PES The more time the producer has to make adjustments, the more elastic the product's supply will be. With respect to time, supply can be of three types:

- Momentary supply
- Short-run supply
- Long-run supply

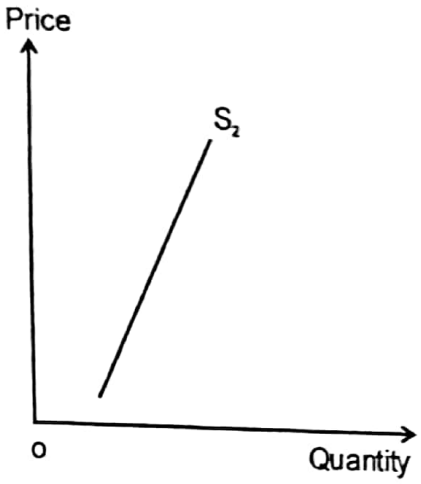
i. Momentary Supply

A momentary time period is that during which supply is restricted to the quantities actually available in the market. The momentary time period is too short to change any factors of production and, therefore, alter the supply in response to changes in price and/or demand of the product in the market. Supply is fixed (perfectly inelastic) during the momentary time period. An example can be of the supply of fish, fruit, and vegetables in the local market.



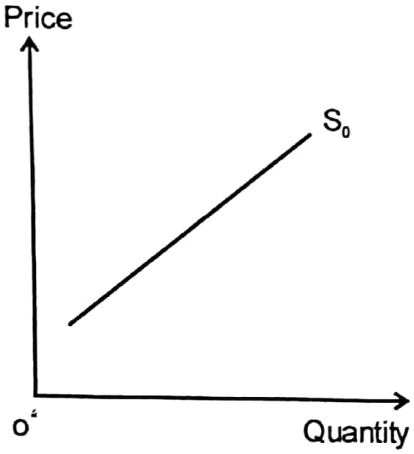
i. Short-run Supply

The short run is a time period long enough to change one or two factors of production—usually labour—but not enough to change all factors of production and, therefore, alter the supply in response to changes in price and/or demand of the product in the market. In the short run at least one factor of production is kept fixed. Supply in the short run varies with respect to price and demand, but is price inelastic, as shown by the following supply curve drawn below.



ii. Long-run supply

The long run is the time period long enough to change the quantity of all factors of production employed and, therefore, alter the supply in response to changes in price and/or demand of the product in the market. Supply in the long run is more elastic than in the short run.



1. Level of Employment.

<u>At full employment</u>:
No significant increase in output is possible in the short run (because idle resources are not available and efficiency and technology can only be improved in the long run). Supply will, therefore, be inelastic.

<u>At below full employment</u>:
Output can be increased easily by using the idle resources in the economy. Supply will, therefore, be elastic.

2. Storability of a Product.

If the product can be stored easily and cheaply, supply can be stopped by adding to inventory stocks during periods of low price. When the price rises, the quantity offered for sale can be increased quickly and easily by drawing from inventory stocks. Supply will, therefore, be elastic.
If the product cannot be stored easily and cheaply, supply will be inelastic.

3. Length of the Production Process.

- <u>Agricultural Products</u>
  These products take a considerable amount time to change the supply; so, their supply is inelastic in the short run.
- Manufactured Products

Compared to the production of agricultural products, the production process for manufactured products is shorter; so, manufactured products have a relatively elastic supply.

4. **Time required to increase Capacity.**
   - If expansion takes a short time, supply will be elastic; e.g., in the garments industry.
   - If expansion takes a long time, supply will be inelastic; e.g., in the mining Industry.

5. **Ability to Import Inputs.**
   - If a country can import raw-materials, machines, etc., from abroad easily and cheaply, supply will be elastic, even at full-employment.
   - In a closed economy, supply will be inelastic at full-employment.

INCOME ELASTICITY OF DEMAND

The degree of responsiveness of quantity demanded to changes in the income of the consumer alone is known as **income elasticity of demand (YED).**

$$Y.E.D = \frac{\%\Delta Q}{\%\Delta Y} = \frac{\Delta Q}{\Delta Y} \times \frac{Y1}{Q1}$$

In PED, the sign has no important significance, but in YED the sign is of great concern to economists, because it defines the relationship between the variables involved. YED can be characterized into two types, on the basis of signs:

a) Positive YED (normal goods)
b) Negative YED (inferior goods)

Positive YED (Normal Goods):

When an increase in income leads to an increase in quantity demanded or a decrease in income leads to a decrease in quantity demanded, income elasticity of demand will be positive, because income and demand have a positive relationship. This is shown in the example below.

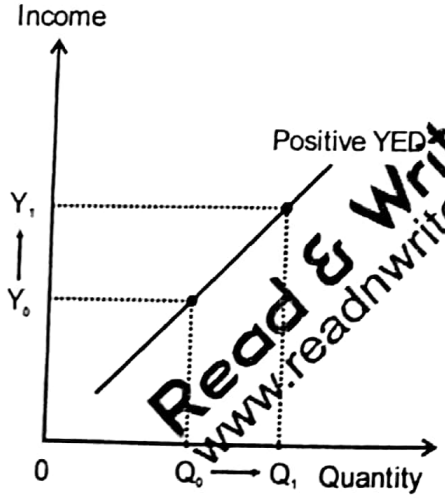
Example:

$Y_1 = \$100 \quad Y_2 = \$110$

$Q^d_1 = 10 \quad Q^d_2 = 11.5$

$$Y.E.D = \frac{\%\Delta Q}{\%\Delta Y} = \frac{11.5 - 10}{110 - 100} \times \frac{100}{10} = +1.5$$

The positive value of YED in the diagram below signifies that, for this good, income and quantity demanded have a positive relationship; hence, it is classified as a **normal good**.

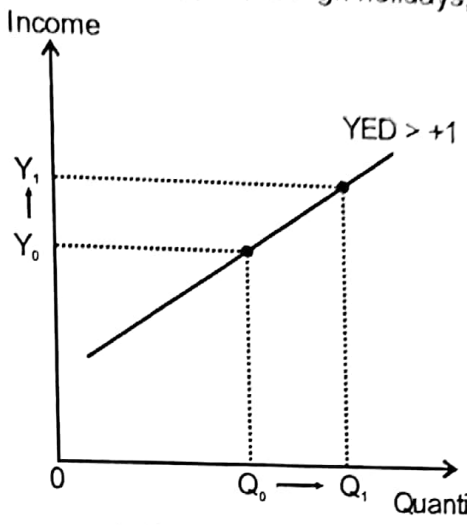


Positive YED is of three types:

i. Positive income elastic demand (YED > 1)
ii. Positive income inelastic demand (YED < 1)
iii. Positive income unitary elastic demand (YED = 1)

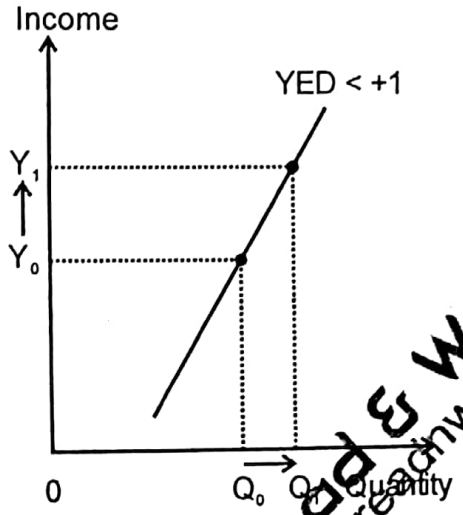
i. **Positive income elastic demand (YED > +1):**

When a small percentage increase in income leads to a large percentage increase in quantity demanded, or when a small percentage decrease in income leads to a large percentage decrease in quantity demanded, demand is said to be **positive income elastic**. This is shown in the diagram below. Normal goods with a positive income elasticity of demand greater than one are sometimes referred to as **superior goods**. Luxuries on which consumers spend a major proportion of their income are taken as positive income elastic goods—e.g., cars, jets, foreign holidays, etc.



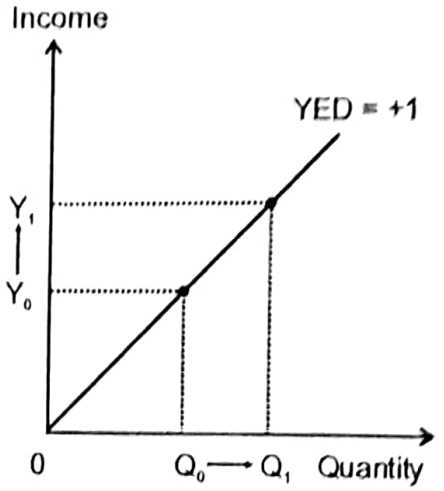
ii. **Positive income inelastic demand (YED < +1):**

When a large percentage increase in income leads to a small percentage increase in quantity demanded, or when a large percentage increase in income leads to a small percentage decrease in quantity demanded, demand is said to be **positive income inelastic**. This is shown in the diagram below. As long as consumers do not spend a major proportion of their incomes on normal goods (either necessities or comforts), their demand is considered to be positively income inelastic—e.g., regular clothing, chocolates, fruits, etc.



iii. **Positive income unitary elastic demand (YED = 1):**

When a change in income leads to an equal proportionate change in quantity demanded, demand is said to be **positive income unitary elastic**. This is shown in the diagram below.

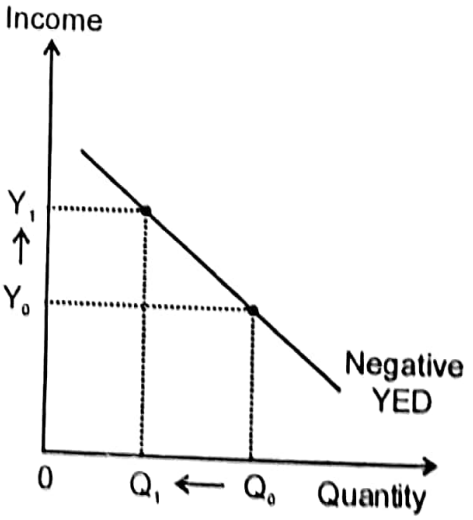


2. Negative YED (Inferior Goods):

When an increase in income leads to a fall in quantity demanded, or when a decrease in income leads to a rise in quantity demanded, **income elasticity of demand will be negative**, because income and demand have an inverse relationship. This is shown in the diagram below. The negative value of YED in the example below shows that income and demand have a negative relationship; hence, it is an inferior good.

$Y_1 = \$100$ $\quad$ $Y_2 = \$115$
$Q^d_1 = 150$ $\quad$ $Q^d_2 = 120$

$$Y.E.D = \frac{\%\Delta Q}{\%\Delta Y} = \frac{120-150}{115-100} \times \frac{100}{150} = -1.3$$

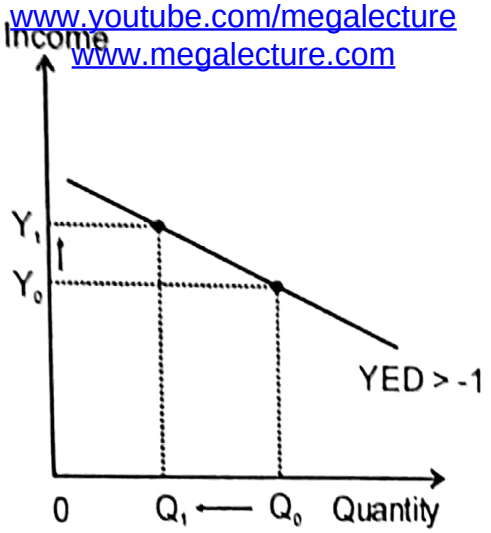


Those goods which have a negative YED are known as **inferior goods**. Negative YED is of three types:

i. Negative income elastic demand (YED > −1)
ii. Negative income inelastic demand (YED < −1)
iii. Negative income unitary elastic demand (YED = −1)

I. Negative income elastic demand (YED > −1):

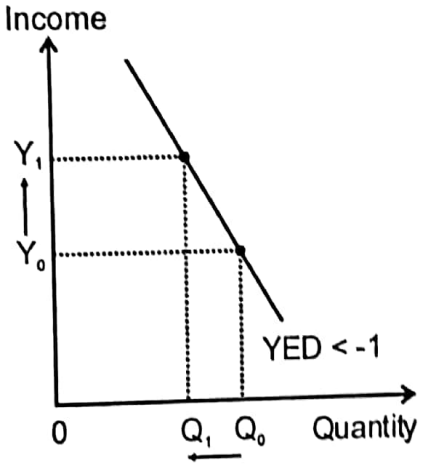
When a small percentage increase in income leads to a large percentage increase in quantity demanded (or vice-versa), demand is said to be characterized by **negative income elasticity**. This is shown in the diagram below.



Inferior goods which have a negative income elastic demand include flour, rice, shoes, etc. With a small increase or decrease in income people can shift to branded products or back to cheap products, respectively.

ii. Negative income inelastic demand (YED < −1):

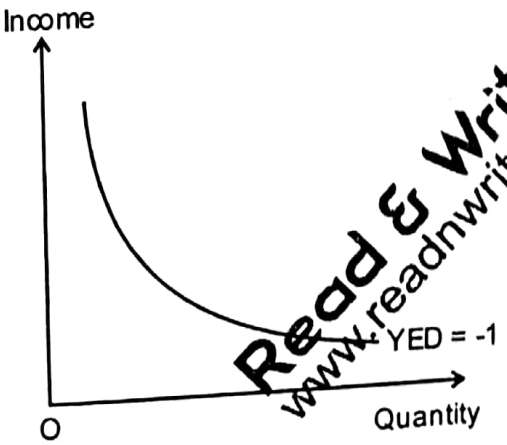
When a large percentage increase in income leads to a small percentage decrease in quantity demanded (or vice-versa), demand is said to be characterized by **negative income inelasticity**. This is shown in the diagram below.



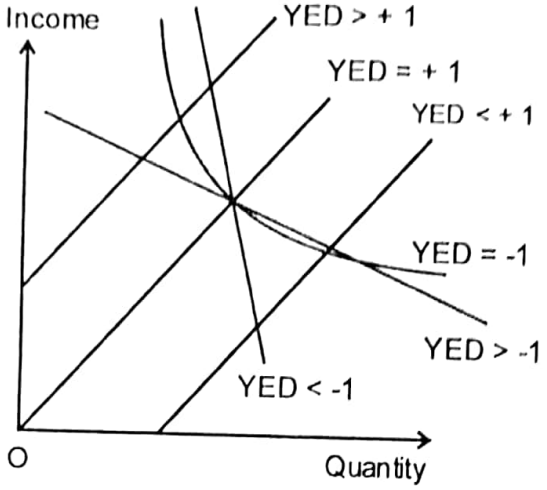
Inferior goods which have negative income inelastic demand include match boxes, grains, etc.

iii. Negative income unitary elastic demand (YED = −1):

When a certain increase in income leads to an equal proportionate decrease in quantity demanded (or vice-versa), demand is said to be characterized by **negative income unitary elasticity**. This is shown in the diagram below.



Summary of types of YED



CROSS ELASTICITY OF DEMAND (XED)

The degree of responsiveness of the quantity demanded of one good to changes in the price of another good is known as **cross elasticity of demand**.

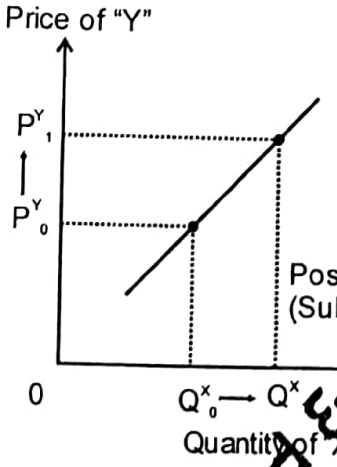
$$XED = \frac{\%\Delta Qd \text{ of good 'x'}}{\%\Delta P \text{ of good 'y'}} = \frac{Q_2^x - Q_1^x}{P_2^y - P_1^y} \times \frac{P_1^y}{Q_1^x}$$

The importance of the sign in XED is also very important for economists because it defines the relationship between the two products (as we will see further in this topic). XED is categorised into two types on the basis of signs:

- Positive XED (substitutes)
- Negative XED (complements)

Positive XED (Substitutes):

If an increase in the price of a product causes an increase in the demand for its substitutes and a decrease in the price of a product causes a decrease in the demand for its substitutes, demand for the good is said to be characterized by **positive cross elasticity**. This is shown in the diagram below.



Substitutes are goods which are alternatively demanded and have a positive relationship between the the price of one and the demand for the other (substitute), e.g. Pepsi and Coke, a Honda Car and a Toyota Car, etc. This is shown in the example below.

Example

Suppose Pepsi and Coke have the following prices and demands, respectively:

P_1^P (price of Pepsi) = \$10 Q_1^C (quantity of Coke) = 100

P_2^P (price of Pepsi) = \$8 Q_2^C (quantity of Coke) = 50

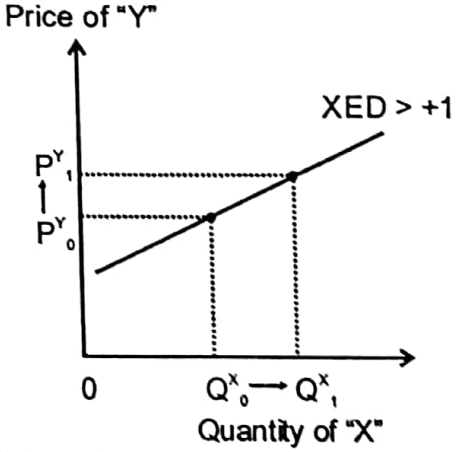
$$XED = \frac{\%\Delta Qd \text{ of Coke}}{\%\Delta P \text{ of Pepsi}} = \frac{50-100}{8-10} \times \frac{10}{100} = +2.5$$

A positive value of XED shows that there is a positive relationship between the price of Pepsi and the demand for Coke. Hence, goods and services with positive XED will be substitutes to each other. Positive cross elasticity of demand is of three types:

- Positive cross elastic demand (XED > 1)
- Positive cross inelastic demand (XED < 1)
- Positive cross unitary elastic demand (XED = 1)

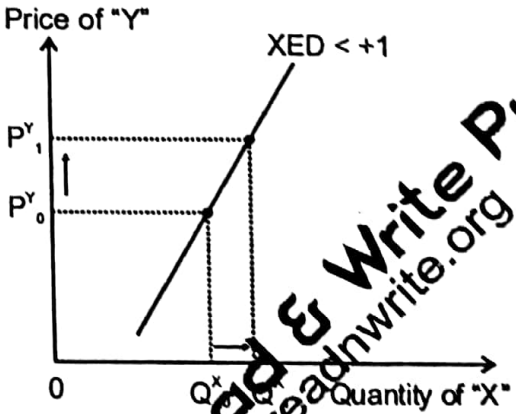
i. Positive cross elastic demand (XED > 1):

When a small percentage increase in the price of product "Y" leads to a large percentage increase in the quantity demanded of product "X" (or vice-versa), demand is said to be characterized by **positive cross elasticity**. This is shown in the diagram below:



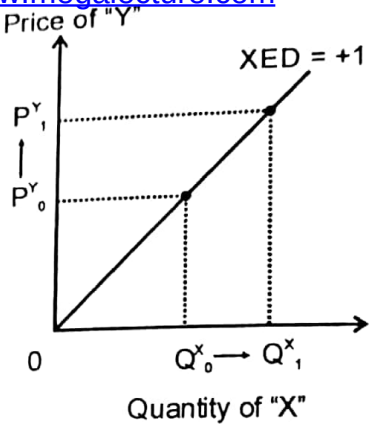
ii. Positive cross inelastic demand (XED < 1):

When a large percentage increase in the price of product "Y" leads to a small percentage increase in the quantity demanded of product "X" (or vice-versa), demand is said to be characterized by **positive cross inelasticity**. This is shown in the diagram below.



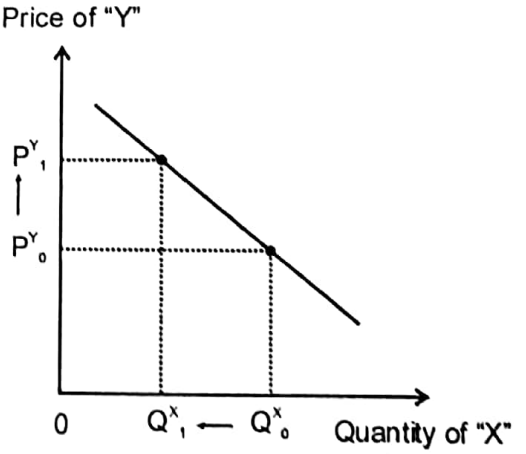
iii. Positive cross unitary elastic demand (XED = 1):

When an increase in the price of product "Y" leads to an equally proportionate increase in the quantity demanded of product "X" (or vice-versa), demand is said to be characterized by **positive cross unitary elasticity**. This is shown in the diagram below.



Negative XED (Complements):

When an increase in the price of a product leads to a proportionate decrease in demand for its complement products, or any decrease in price of a product leads to a proportionate increase in the demand for its complement products, the demand for the good is said to be characterized by **negative cross elasticity**. This is shown in the diagram below.



Complements are those goods and services which are jointly demanded (e.g., car and tyre, bat and ball, compact discs and CD players, etc.) and are characterized by a negative relationship between the price of one product and demand for the other (its complement). This is shown in the example below.

Example

Suppose a car and tyres have the following prices and demands, respectively:

P^c_1 (price of a car) = \$10 Q^c_1 (quantity of tyres) = 100

P^c_2 (price of a car) = \$8 Q^c_2 (quantity of tyres) = 150

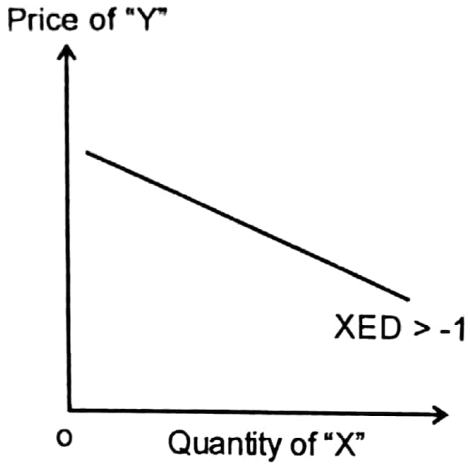
$$XED = \frac{\%\Delta Qd \text{ of tyre}}{\%\Delta P \text{ of car}} = \frac{150-100}{8-10} \times \frac{10}{100} = -2.5$$

A negative value indicates that there is a negative relationship between the price of a car and the quantity demanded of tyres. Hence, goods and services having negative cross elasticity of demand are complements. Negative cross elasticity of demand is of three types:

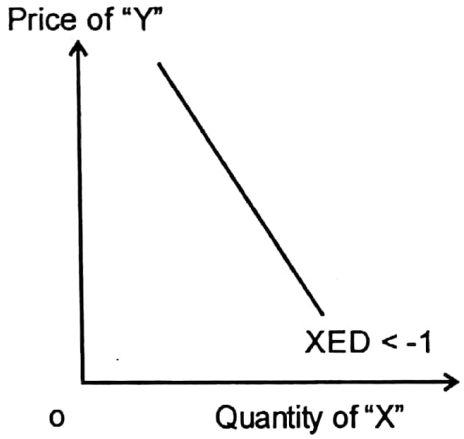
- Negative cross elastic demand (XED > –1)
- Negative cross inelastic demand (XED < –1)
- Negative cross unitary elastic demand (XED = –1)

I. Negative cross elastic demand (XED > –1):

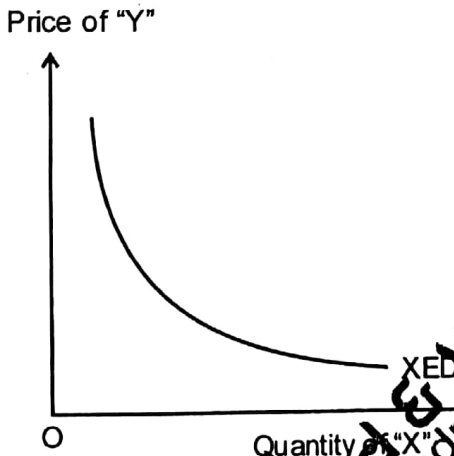
When a small increase in the price of product "Y" leads to a proportionately large decrease in the quantity demanded of product "X" (or vice-versa), demand is said to be characterized by **negative cross elasticity**. This is shown in the diagram below.



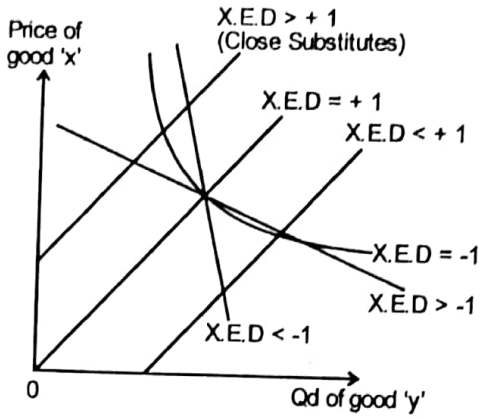
ii. Negative cross inelastic demand (XED < −1):
When a large increase in the price of product "Y" leads to a proportionately small decrease in quantity demanded of product "X" or vice-versa, demand is said to be characterized by **negative cross inelasticity**. This is shown in the diagram below.



iii. Negative cross unitary elastic demand (XED = −1):
When an increase in the price of product "Y" leads to an equally proportionate decrease in the quantity demanded of product "X" (or vice-versa), demand is said to be characterized by **negative cross unitary elasticity**. This is shown in the diagram below.



Summary of types of XED



PRACTICAL APPLICATIONS OF ELASTICITY

- of PED
- of YED
- of XED

Practical Applications of PED and PES

Price elasticity of demand helps in many practical ways, such as:

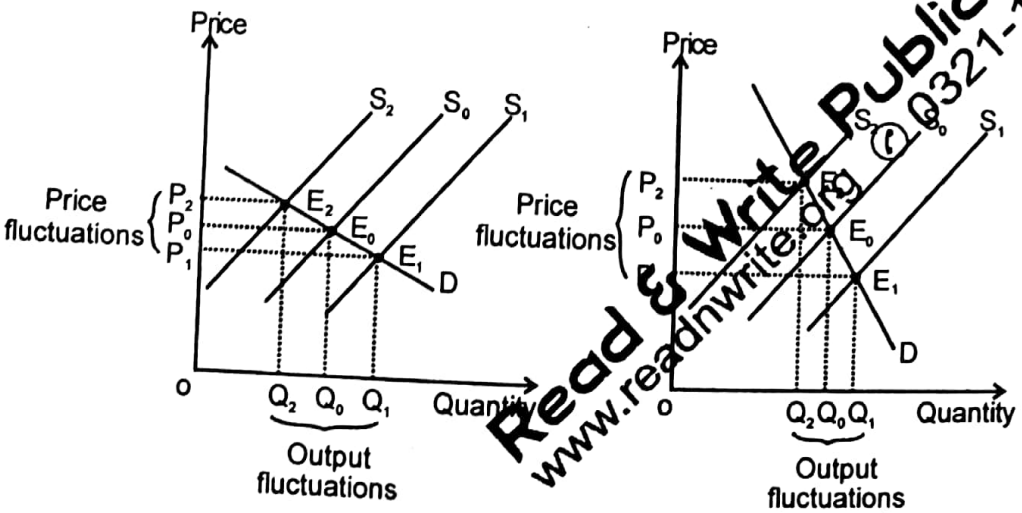
1. The determination of total revenue (TR) of the firm.
2. Determining the price stability of a product
3. Calculating the tax incidence on the consumers and producers
4. Designing fiscal policy

1. Determination of total revenue (TR) of the firm.

Refer to types of PED: elastic, inelastic, unitary elastic, and varying PED along the straight line demand curve.

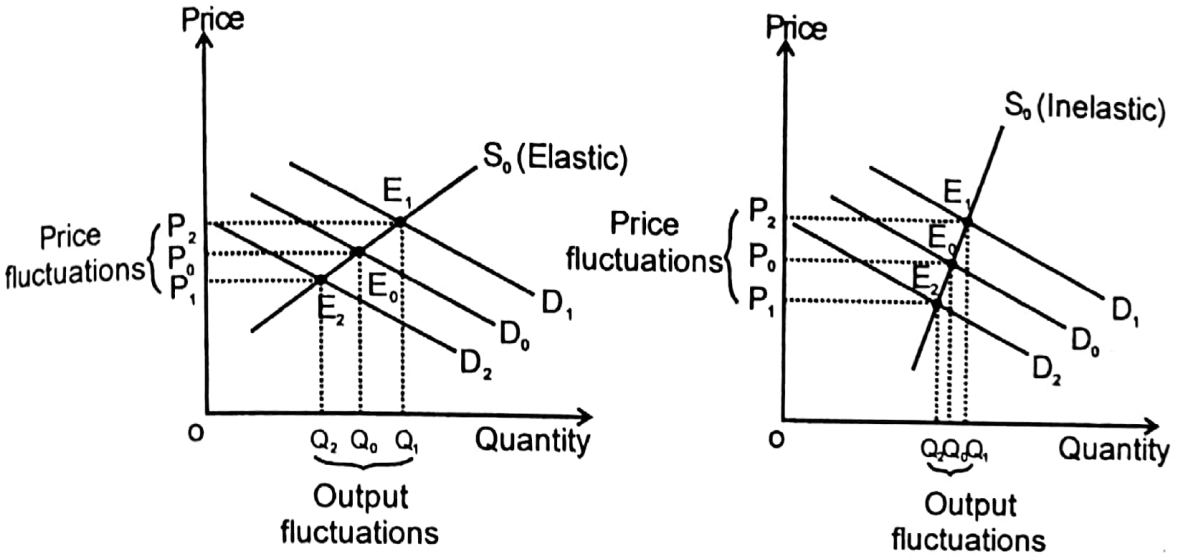
2. Determining the price stability of a product:

PED contributes to price fluctuations in a market. Agricultural products and raw-materials have demand that is more inelastic when compared to the demand of manufactured goods. Let us consider the case of a rise in the supply of primary products and manufactured goods under two different demand conditions; this is shown in the diagrams below.



In the left diagram, demand is elastic for manufactured goods—it causes a relatively small decrease in price from "P_0" to "P_1". In the right diagram, the demand for primary products is inelastic. In order to attract consumers to purchase the increased supply of primary products a large decrease in their price is required—from "P_0" to "P_1". So, for inelastic demand, an equal shift in supply will lead to a large change in price; and, in inelastic demand, it will lead to a small change in price. Therefore, we can conclude: The more elastic the demand, the more stable the price.

Similarly, PES contributes to price fluctuations in a market. Agricultural products and raw-materials have a supply that is more inelastic when compared to the supply of manufactured goods. Let us consider the case of a rise in the demand for primary products and manufactured goods under two different supply conditions. This is shown in the diagrams below.



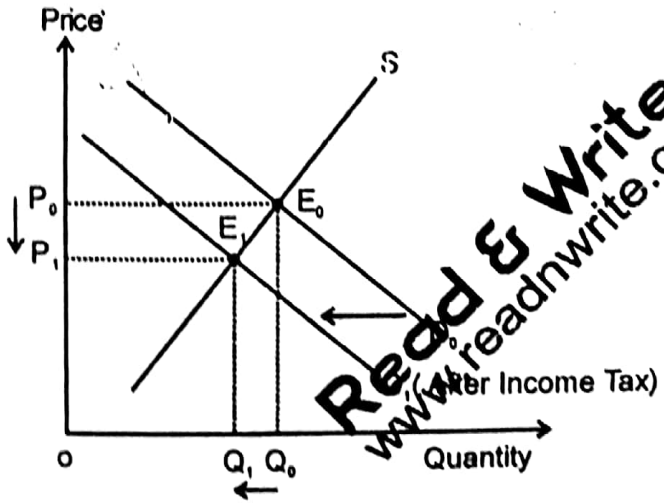
Therefore, the more elastic the supply, the more stable the price.

3. Elasticity and tax incidence

- Tax is a compulsory transfer of money from the private sector to the government.
- Taxes are, broadly speaking, of two types, .i.e., direct taxes and indirect taxes.
- **Direct taxes** are those which are levied directly on individuals and firm—e.g., income tax, wealth tax, etc.
- **Indirect taxes** are those which are levied on goods and services rather than on individuals or firms.
- Income taxes influence the demand for all the products that consumers buy, because they reduce disposable income (the income which consumers can spend).
- Indirect taxes form part of the costs of production; hence, they cause shifts in supply.

Effect of direct tax (income tax)

Income Tax ↑ → Yd↓ → D↓



Effect of Indirect tax

When tax increases, costs of production increase as well, whereas profitability decreases and supply falls

Types of Indirect Taxes

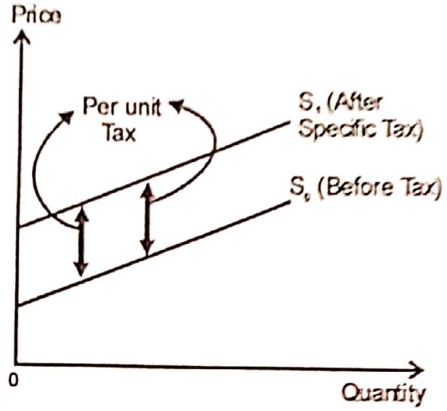
There are two types of indirect taxes:

- Specific tax
- Ad valorem tax

Specific tax

A fixed amount per unit

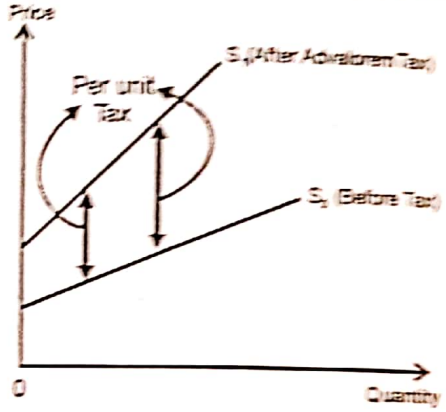
Causes a parallel shift in the supply curve



Ad valorem Tax

Forms a fixed percentage of the price of the product

Causes a pivotal shift in the supply curve



Example

- Suppose an indirect tax of $2 per unit is imposed on a good with an initial equilibrium price of $5 and equilibrium quantity of 600 units. This is shown in the table below.

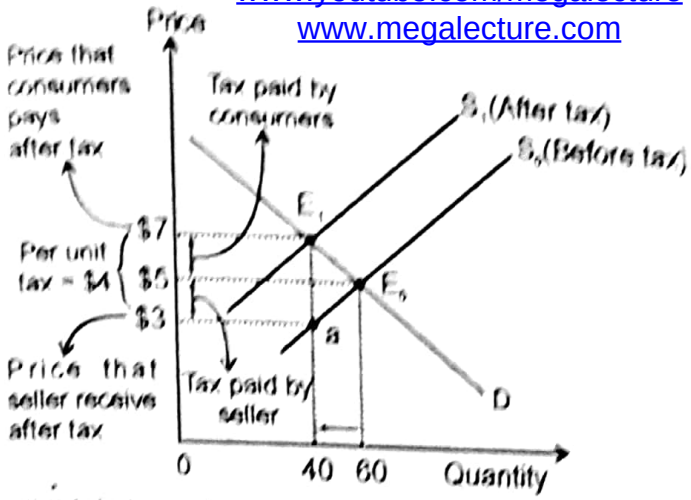
Price that consumers pay	Price that sellers receive after tax	Q_d	Q_S (before tax)	Q_S (after tax)
$10	10–2 = $ 8	100	1100	900
$9	9–2 = $ 7	200	1000	800
$8	8–2 = $ 6	300	900	700
$7	7–2 = $ 5	400	800	600
$6	6–2 = $ 4	500	700	500
$5	5–2 = $ 3	600	600	400
$4	4–2 = $ 2	700	500	300

- After the imposition of a tax there will be a difference between the price consumers pay and the amount sellers receive.

  Price that sellers receive = Price consumers pay − Per unit tax

- The new supply schedule will be according to the price that sellers receive. This is shown in the table "Q_S (after tax)".
- The new equilibrium will be established at a price of $6 with a quantity traded of 500 units, which indicates that the incidence of tax is split between the consumers and producers, with a burden of $1 of tax on each of them.

The effect of tax on equilibrium price and output, and the distribution of the incidence of tax can also be explained by the diagram below:



Per unit tax is the vertical distance taken from the new equilibrium to the old supply curve, denoted by 'a' in the diagram above. It is the amount of tax levied on each unit of the product.

Per unit tax = Price that consumers pay – Price that sellers receive

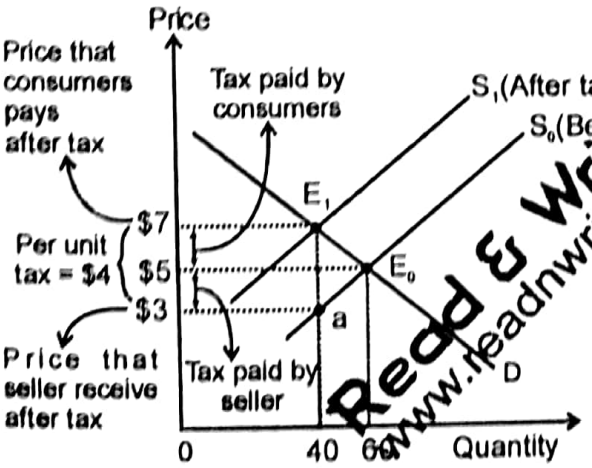
- Total tax revenue is the per unit tax multiplied by the new equilibrium quantity.
- Whether the tax goes directly from the buyer's pocket to the government (income tax), or indirectly from the buyer's pocket, into the seller's hand, and then to the government (sales tax) does not matter. Once the market reaches its new equilibrium, buyers and sellers share the burden, regardless of how the tax is levied.
- The person who physically pays the tax is not necessarily the person who bears the burden of the tax.
- Because a tax creates a difference between the price that consumers pay and the price that seller receives, the burden of a tax typically falls on both buyers and sellers.

Tax incidence on consumers = Price consumers pay after tax – Market price before tax
Tax incidence on seller = Market price before tax – Price seller receives after tax

- The more inelastic one's relative supply and demand, the larger the tax burden one will bear.
- The amount each side pays depends on the relative price elasticity of demand and supply.
- Buyers pay the entire tax only in the case of a perfectly elastic supply or perfectly inelastic demand.
- Sellers pay the entire tax only in the case of a perfectly elastic demand or perfectly inelastic supply.

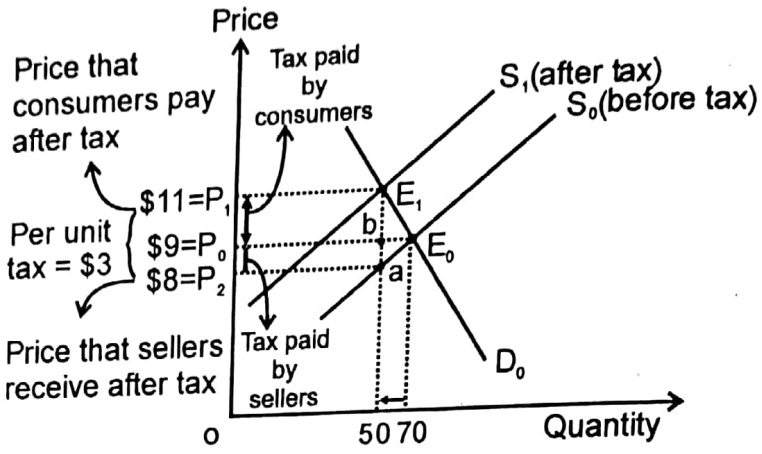
1. When Tax Burden is Equally Shared Between Consumers and Sellers:

- If PED = PES, the tax burden is shared equally. This is shown in the diagram below.

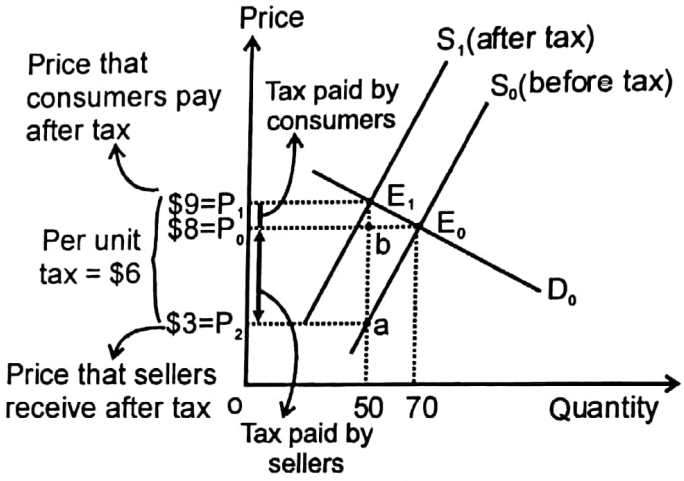


- This rarely ever happens since elasticities are rarely ever equal.

2. When More Tax Burden is on Consumers

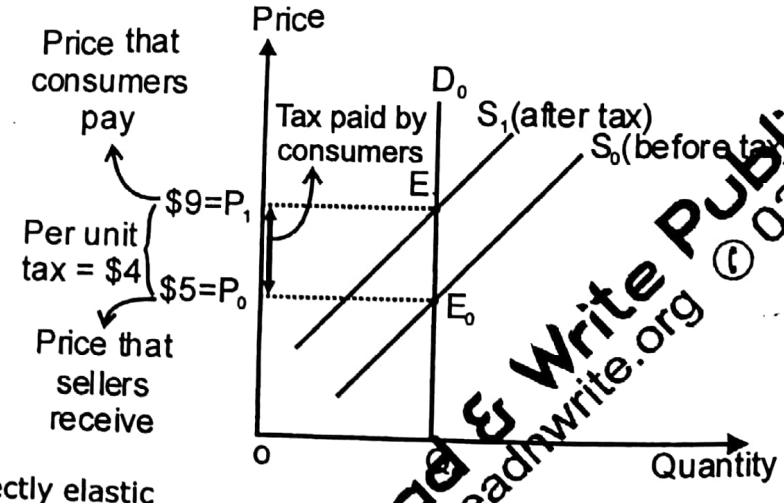


3. When More Tax Burden is on Sellers

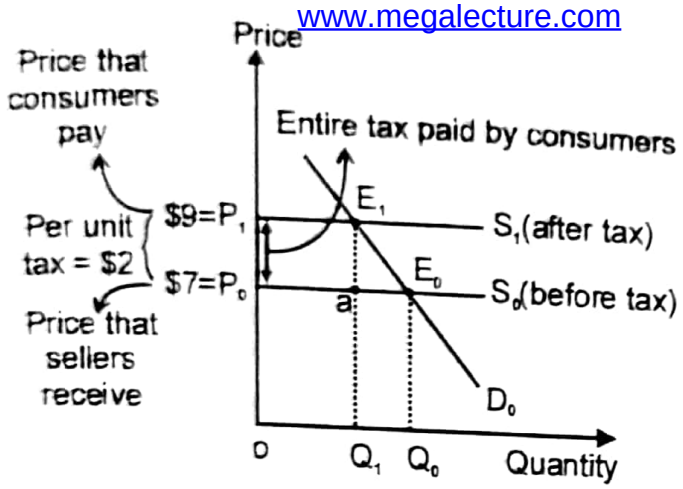


4. When Entire Tax Burden is on Consumers

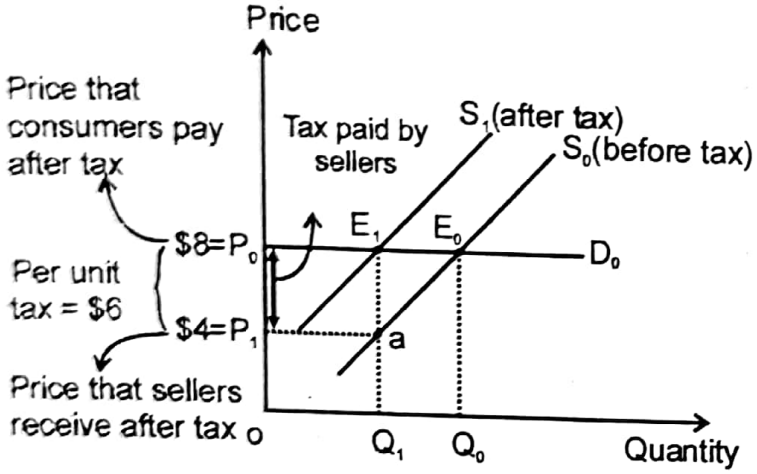
- If demand is perfectly inelastic



- If supply is perfectly elastic



5. When Entire Tax Burden is on Sellers



Demand	Supply	Tax Incidence
Elastic	Inelastic	More tax burden on sellers
Inelastic	Elastic	More tax burden on consumers
Perfectly elastic	–	Whole tax burden on sellers
Perfectly inelastic	–	Whole tax burden on consumers
–	Perfectly elastic	Whole tax burden on consumers
–	Perfectly inelastic	Whole tax burden on sellers

4. Elasticity and subsidy benefits

Subsidies are grants given by the government to firms to increase their production and to reduce the products' market prices. This is done so that consumers are able to buy necessities at cheaper prices.

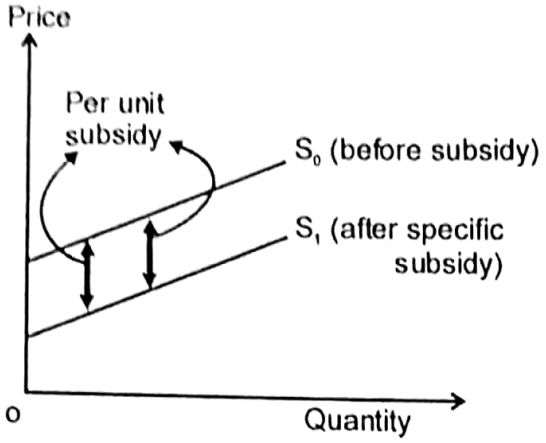
Types of Subsidies

- Specific subsidy
- Ad valorem subsidy

Specific Subsidy

A fixed amount per unit

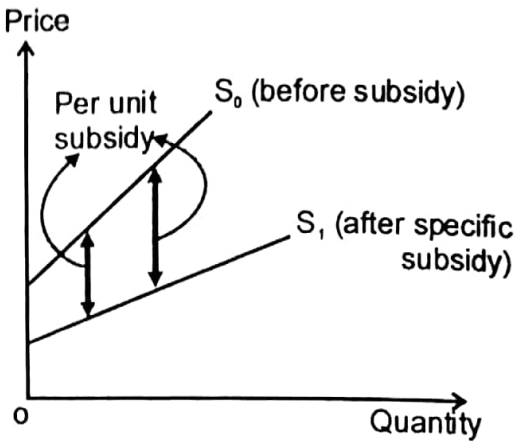
Causes a parallel shift in the supply curve

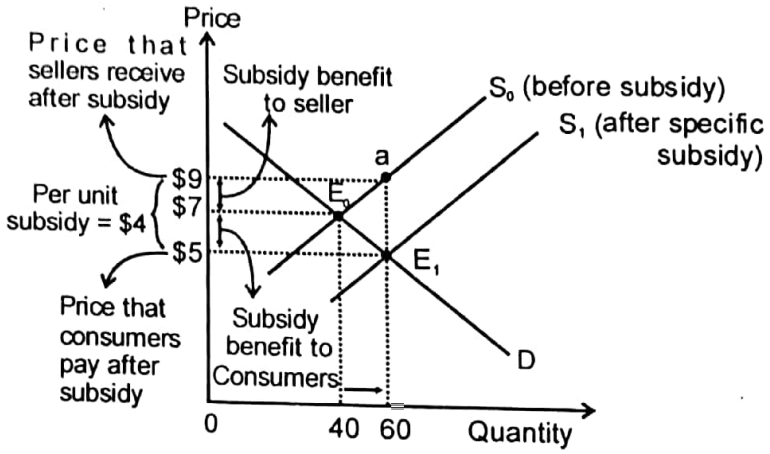


Ad valorem Subsidy

Forms a fixed percentage of the price of the product

Causes a pivotal shift in the supply curve





- When subsidies increase, the costs of production decrease, and supply increases.
- Per unit subsidy is the vertical distance from the new equilibrium to the old supply curve.
- Total subsidy expenditure by the government is calculated by multiplying per unit subsidy with the new equilibrium quantity.

The benefit of a subsidy is also shared between sellers and buyers according to PED & PES—similar to tax incidence.

Demand	Supply	Subsidy benefit
Elastic	Inelastic	More subsidy benefit to sellers
Inelastic	Elastic	More subsidy benefit to consumers
Perfectly elastic	–	Whole subsidy benefit to sellers
Perfectly inelastic	–	Whole subsidy benefit to consumers
–	Perfectly elastic	Whole subsidy benefit to consumers
–	Perfectly inelastic	Whole subsidy benefit to sellers

Similar to how tax incidence depends on the relative elasticity of demand and supply, the distribution of subsidy benefits also depend on the relative elasticity of demand and supply. If the government is willing to grant a subsidy for the welfare of consumers, it must consider the relative elasticity of demand and supply.

If the government is providing a subsidy to the producer whose demand is relatively more elastic than its supply, it will be able to achieve its aim of consumer welfare. However, it would be fairly successful when demand is relatively more inelastic than supply.

Practical Applications of YED:

It is potentially of great importance for **businesses** and for **governments** in **forecasting the future demand** for a whole range of consumer goods and services. In emerging markets like China and India, for example, as incomes increase then people demand more cars. Production changes need to occur to satisfy this demand and governments need to build more roads to accommodate the increased demand.

Information of YED can help sellers decide what price and promotional activities they should undertake in order to increase their sales and profits. When the economy is moving towards a boom, the general level of income is rising, people will prefer purchasing normal instead of cheap inferior goods. If the YED for a normal good is greater than 1, then demand will be expected to grow more rapidly than consumer incomes. During this time, sellers should concentrate on promoting luxuries through attractive displays, advertising, and other promotional activities. Similarly, sellers should promote luxury items at the end of the year as well—when bonuses are paid in a job-oriented society or when crops are sold in an agrarian society. On the other hand, when a society moves towards a slump (i.e., a recession), sellers should promote goods with lower prices as people's income levels are falling.

Practical Application of XED:

Cross elasticity of demand can be helpful for sellers in making decisions regarding which goods should be promoted and what prices should be charged under different market conditions. For example, if the price of coffee rises, tea sellers should realize that consumers will buy more tea; in order to encourage that, they should launch more promotional activities and advertisements to increase their sales. Increases in the price of coffee also, to some extent, enable tea sellers to justify increasing the price of tea. The opposite would be the case of a decrease in the price of coffee. Now the tea seller must lower tea prices in order to stop consumers from switching their demand to coffee.

Cross elasticity of demand also helps sellers decide how and when to react to changes in the prices of complementary goods. If cars are cheaper now, tyre sellers can take advantage of low car prices by increasing their sales of tyres through promotional packages, discounts, etc. On the other hand, an increase in the price of cars will force tyre manufacturers to reduce their price in order to match falling demand. Price cuts and special offers like 'buy one, get one free' can prevent sales from falling.

Companies are increasingly concerned with trying to get consumers to buy not just one of their products but a whole range of complementary ones, e.g., computer printers and cartridges. XED will identify those products that are most complementary and help a company introduce a pricing structure that generates more revenue. For instance, market research may indicate that families spend most money at restaurants when special deals are offered, even though the PED for meals is low. In this case, for example, the high negative cross elasticity between meal prices and the demand for soft drinks (such as Pepsi Cola and Coca-Cola) means that although the revenue from food sales may fall, the demand for soft drinks may increase. This indicates that the restaurant may need to introduce a more sophisticated pricing structure by looking at the relationships between the demand for all products and services offered.

With the knowledge of cross elasticity of demand, a firm can react effectively when the price of its substitutes or complements change. This way it can maximize its profits by raising revenue and keeping costs to a minimum.

LIMITATIONS OF THE CONCEPT OF ELASTICITY

The usefulness of elasticity concepts is restricted by the following limitations:

- It is not always easy—or even possible—to calculate elasticities.
- The data needed for working out elasticities might come from past sales. This data might be old and the market conditions might have changed since then.

- In the case of new products, elasticities may be estimated using statistical samples. In this case they will be subject to the same kind of inaccuracies as other forms of market research.
- Calculations of elasticities are based upon *ceteris paribus* (i.e., only one variable changes at a time) assumptions.
- After the initial price change, the elasticity can easily vary with the course of time.

PAST PAPERS QUESTIONS

Types of Elasticity

(June 2017/P23/Q2/a)
Use the concept of income elasticity of demand to explain how a rise in incomes would affect the demand for an inferior good and for a necessary good. [8]

(June 2017/P22/Q3/a)
Explain how economists use the concept of elasticity to distinguish between substitute goods and complementary goods. [8]

(June 2016/P23/Q2/a)
Explain how economists use the concept of elasticity to distinguish between normal and inferior goods and between substitutes and complements. [8]

(Nov 2015/P21/Q2/a)
Explain, using the concept of income elasticity of demand, how a fall in incomes affects the demand for inferior goods and necessary goods. [8]

(June 2015/P23/Q2/a)
With the help of diagrams, explain how economists use the concept of income elasticity of demand to distinguish between inferior goods and necessity goods. [8]

(June 2015/P22/Q2/a)
Explain how economists measure the way in which demand for a good changes when income changes and, with the help of a diagram, show why some goods are classified as 'inferior goods'. [8]

(Nov 2014/P21/Q3/a)
Explain the factors that determine whether the price elasticity of demand for a product has a high value or a low value. [08]

(Jun 2014/P21/Q2/a)
Explain whether you would expect the price elasticity of supply of an agricultural product, such as rice, in a market to be elastic or inelastic. [08]

(Nov 2014/P22/Q3/a)
Explain why the value of income elasticity of demand for a good can be positive, negative or zero, while the value of its price elasticity of demand is most likely to be negative. [08]

(June 2013/P23/Q3/a)
Explain, using economic analysis, how economists decide whether goods are substitutes or complementary goods. [08]

(June 2012/P23/Q3/a)
Explain how income elasticity of demand and cross elasticity of demand can be used to classify different types of goods. [08]

(Nov 2010/P21/Q3/a)
With reference to the relevant type of elasticity of demand, explain the terms
(i) inferior good, and
(ii) complementary good. [08]

(Nov 2001/a)
Explain price elasticity of demand and income elasticity of demand. [10]

(Nov 2000/a)
Explain price elasticity of demand, income elasticity of demand and cross elasticity of demand. [10]

(Nov 1999/a)
Use the concept of elasticity to distinguish between a normal good and an inferior good. [12]

(June 1999/a)
Distinguish between the concepts of price elasticity of demand and income elasticity of demand. [10]

(June 1996)(a)
Explain the concepts of price elasticity of demand and income elasticity of demand. [10]

(Nov 1996/a)
With the aid of examples, explain and illustrate price elasticity of demand, cross-elasticity of demand and income elasticity of demand. [12]

(Nov 1994/a)
Explain the following terms.
(1) income elasticity of demand. (2) cross-elasticity of demand. [10]

(June 1994/a)
Explain price elasticity of demand, income elasticity of demand and cross-elasticity of demand. [12]

(June 1993/a)
Explain price elasticity of demand and income elasticity of demand. [10]

(Nov 1991/a)
Explain carefully the concepts of price elasticity of demand and cross-elasticity of demand. [10]

Uses of Elasticity

(June 2017/P23/Q2/b)

(June 2017/P22/Q3/b)
Discuss which measure of the different types of elasticity of demand is most useful for a business when setting the price for its product. [12]

(June 2016/P23/Q2/b)
Discuss how knowledge of the differences between these types of goods (normal / inferior goods and substitutes / complements) would help government policy makers and entrepreneurs to make decisions. [12]

(Nov 2015/P2/Q2/a)
A study estimates that dark chocolate has a price elasticity of demand of (-) 0.8 and that white chocolate has a price elasticity of demand of (-) 1.4. Explain how chocolate producers could change price to increases total revenue for each type of chocolate. [08]

(Nov 2015/P2/Q2/b)
Discuss the policies that businesses might adopt to maintain sales when incomes are falling and consider which is most likely to be successful. [12]

(June 2015/P23/Q2/b)
Discuss how, during a world-wide recession when incomes in most countries are falling, economists might use the concept of income elasticity of demand to assess the impact of this recession. [12]

(June 2015/P22/Q2/b)
Discuss how useful governments might find the concepts of price and income elasticity of demand when setting economic policy. [12]

(Jun 2014/P23/Q2/b)
Discuss why businesses might attempt to change the price elasticity of demand for their products and consider whether it is likely that they will be successful in their attempt. [12]

(Nov 2014/P21/Q3/b)
Discuss whether it is both possible and beneficial for a business to change the price elasticity of demand for its product. [12]

(Nov 2014/P22/Q3/b)
Discuss whether price elasticity of demand is a more useful concept than income elasticity of demand for a business that is trying to increase its sales revenue. [12]

(November 2013/P21/Q3/a)
Explain the pricing policy that the firm should adopt for each of the flavours if it wants to increase total revenue. [08]

(June 2012/P22/Q3/a)
Explain, using elasticity of demand, why a train company might introduce a policy of raising fares at busy travel times and lowering fares at less busy travel times. [08]

(June 2012/P21/Q3/a)
Explain, using elasticity of demand, the possible reasons why in some countries there has been an increased use of private transport instead of public transport. [08]

(June 2011/P23/Q2/b)
Discuss whether the payment of government subsidies to farmers is a beneficial policy. [12]

(June 2011/P23/Q3/a)
Explain how and why the price elasticity of supply of agricultural goods differs from that of manufactured goods. [08]

(Nov 2007/Q/b)
Discuss whether a firm's revenue would increase in response to price and income changes, if the price elasticity and income elasticity of demand for its product became highly elastic. [12]

(June 2006/Q2/a)
Explain, with examples, the significance of the value of a good's cross-elasticity of demand in relation to its substitute and complements. [08]

(June 2004/b)
Discuss the usefulness to businesses of a knowledge of price elasticity of demand and income elasticity of demand. [12]

(June 2003/b)
Discuss whether farmers will benefits from producing goods which have low price elasticities of demand and supply. [12]

(June 2001)
Discuss the extent to which price elasticities of demand and supply can be used to explain why manufactured goods typically exhibit greater price stability than primary products. [25]

(Nov 2001/b)
A government is proposing to increase the tax on petrol. Examine the relevance of price elasticity of demand and income elasticity of demand for this proposal. [15]

(Nov 1999/b)
Discuss how a knowledge of price elasticity and income elasticity might be of practical use to a firm. [12]

(June 1999/b)
Discuss the usefulness of these concepts in predicting the likely future demand for
(1) rice
(2) restaurant meals. [15]

(Nov 1998/b)
Explain how an understanding of price elasticity of demand, cross-elasticity of demand and income elasticity of demand might be useful to a company selling mobile telephones. [15]

(June 1996/b)
Assess the usefulness of these concepts in predicting the sales in August of
(i) new cars
(ii) second-hand cars. [15]

(Nov 1996/b)
A city bus company proposes to reduce passenger fares. What economic concepts might be used to explain the likely effects of this? [13]

(June 1995/b)
Discuss how an understanding of price elasticity of demand, cross-elasticity of demand and income elasticity of demand might be of use to a computer manufacturer. [15]

(Nov 1995/b)
With reference to price elasticity of demand, discuss the likely effects of increasing the general level of indirect taxation on goods and services. [13]

(Nov 1994/b)
Promotion by the recession in Europe to search for promising wealth new markets, the German Luxury Goods Exhibition in Dubai attracted top German designer names supplying performance, silverware, crystal and jeweler. The response to the exhibition was extremely positive. (Gulf News,3 November 1992)
How can these terms be applied to the market for German Luxury goods, and (given that Dubai is a rich Middle Eastern state) how might they be used to explain the success of the exhibition? [12]

(June 1993/b)
In 1991 prices increased for both bread and air travel. Incomes also increased. Using the above elasticity concepts, analyze the likely effects of these increases on the consumption of these products. [15]

(Nov 1992/d)
Explain why, with no government regulation, the prices of agricultural products might be very unstable. [10]

(June 1992/b)
If you had the task of promoting a holiday resort with its various attractions how far could these concepts help you? [13]

(Nov 1991/b)
Using these concepts explain and comment on the strategies you would recommend for increasing the sales revenue of a small business in your country. [15]

(June 1991/b)
Explain and comment on measures which might be taken to increase the revenue earned in your country from foreign tourists. [15]

Determinants of P.E.D & P.E.S

(June 2016/P22/Q3/a)
Explain the meaning of price elasticity of demand and, using examples, outline the factors that would cause the demand for a good to be relatively price elastic. [8]

(June 2016/P22/Q3/b)
Discuss why entrepreneurs might want to change the price elasticity demand for their product and consider the extent to which this is achievable. [12]

(March 2016/P22/Q3/a)
Explain two factors that are likely to make the supply of a product relatively price inelastic. [8]

(March 2016/P22/Q3/b)
Discuss the policies that governments might use to increase the price elasticity of supply of essential goods, and assess the likely effectiveness of such policies. [12]

(Nov 2015/P22/Q2/a)
A study estimates that dark chocolate has a price elasticity of demand of (-) 0.8 and that white chocolate has a price elasticity of demand of (-) 1.4. Explain how chocolate producers could change price to increase total revenue for each type of chocolate. [8]

(June 2015/P2/Q2/a)
Explain two factors that are likely to make the supply of a product relatively price inelastic. [08]

(June 2015/P2/Q2/b)
Discuss how governments might attempt to make the supply of an essential good more responsive to a change in its price and assess the likely effectiveness of such attempts. [12]

(June 2006/Q2/b)
Discuss whether the demand for mobile (cell phones) is likely to be price-elastic or price-inelastic. [12]

(Nov 2004)
(a) Explain the difference between elastic, inelastic and fixed supply. [08]

(b) Discuss whether the elasticity of supply of manufactured goods is likely to be greater than the elasticity of supply of agricultural goods. [12]

(June 2003/a)

Explain what influences the price elasticity of supply of a product. [08]

(Nov 1992/a)

With reference to the market for housing in your country, discuss whether:

-the demand for housing is price elastic or inelastic.

-housing is a normal or inferior good. [15]

(June 1991)

(a) Is the foreign demand for holidays in your country income elastic? [05]

UNIT 4

Government Micro-economic Intervention

AS Level
Microeconomics
Notes Book 1

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Syllabus 2019 – 21

a. Consumer and producer surplus

- meaning and significance
- how these are affected by changes in equilibrium price and quantity

b. Government microeconomic intervention

- taxes (direct and indirect)
- subsidies
- maximum and minimum prices
- transfer payments
- direct provision of goods and services

c. Classification of goods and services

- free goods, private goods (economic goods) and public goods
- merit goods and demerit goods as the outcome of imperfect information by consumers.

d. nationalisation and privatization

UNIT 4 Government Microeconomic Intervention

CONSUMER SURPLUS

The difference between the maximum price consumers are willing to pay and the price that they actually pay.

EXAMPLE:

The following table shows the maximum amounts a consumer is willing to pay for given quantities.

Quantity	Maximum willing to pay
1	100
2	80
3	50
4	30
5	20

Suppose the consumers buys '4' units at the price of $30 each. What will be their consumer surplus:

(i) for '4' units
(ii) of the '4th' unit?

Quantity	Willingness to pay	Price in $'s	Consumer surplus of each unit	Total consumer surplus
1	100	30	100–30 = +70	70
2	80	30	80–30 = +50	70+50=120
3	50	30	50–30 = +20	70+50+20=140
4	30	30	30–30 = 0	70+50+20+0=140
5	20	30	–	–

(i) CONSUMER SURPLUS FOR FOUR UNITS:

Willingness to pay = 100 + 80 + 50 + 30 = 260

Actual expenditure = 4 × 30 = 120

Consumer surplus = 260 – 120 = 140

(ii) CONSUMER SURPLUS FOR THE FOURTH UNIT:

Willingness to pay = 30

Actual expenditure = 30

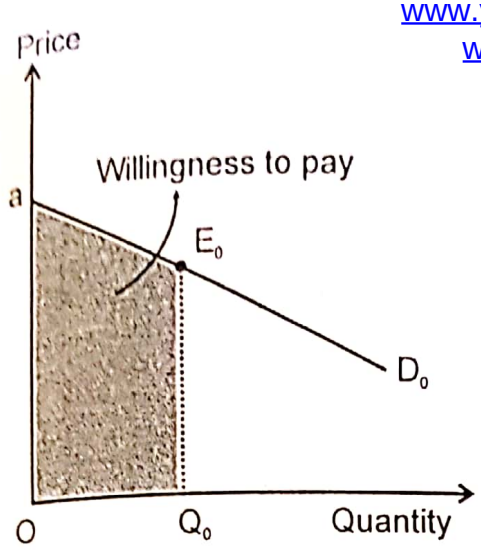
Consumer surplus = 30 – 30 = 0

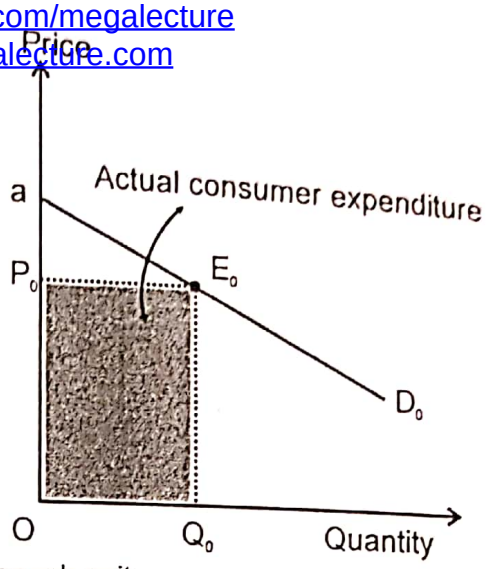
⇒ Consumer surplus can never be negative

Graphically

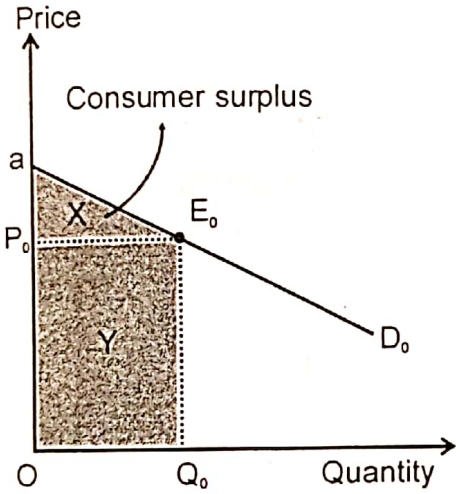
The height of the demand curve measures how much buyers in the market value each unit.

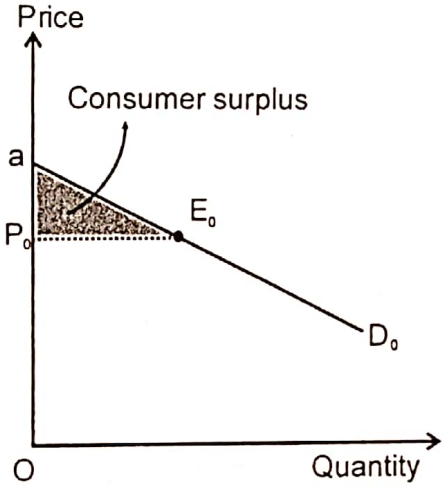
– Total area below the demand curve up to a certain quantity shows the willingness to pay.





- The price indicates the amount they actually pay for each unit.
- The area quantified as price multiplied by quantity represents actual consumer expenditure.
- The difference between these two—the triangular area below the demand curve but above the price paid—is a measure of the total consumer surplus up to a given quantity.

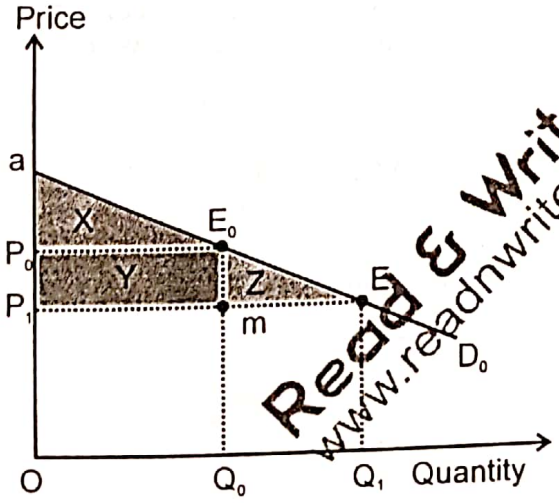




DETERMINANTS OF CONSUMER SURPLUS

a) **PRICE:**
As the price of the product decreases, consumer surplus increases.

$P\downarrow \rightarrow CS\uparrow$
$P\uparrow \rightarrow CS\downarrow$

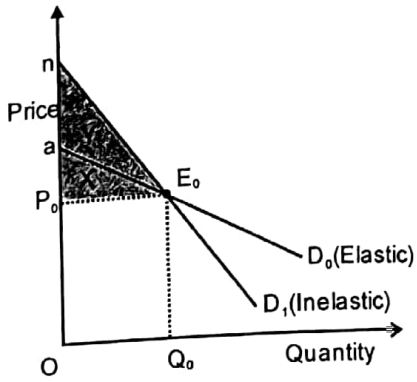


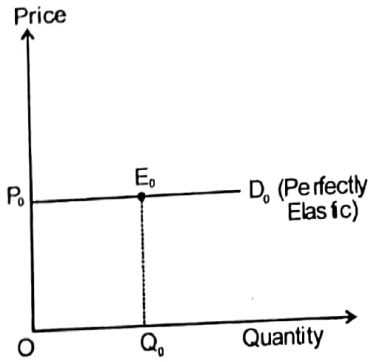
Price	Consumer Surplus
OP_0	aE_0P_0
OP_1	aE_1P_1

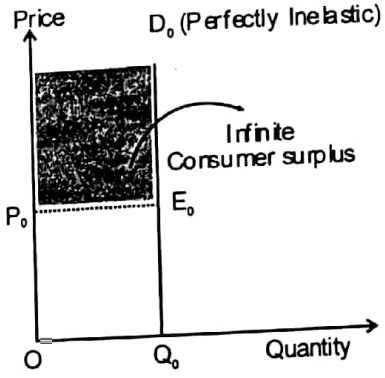
b) PRICE ELASTICITY OF DEMAND:

The more inelastic the demand curve, the greater the consumer surplus. This is illustrated in the following diagrams.

PED	Consumer Surplus
Elastic	aE_0P_0
Inelastic	nE_0P_0
Perfectly Elastic	Zero
Perfectly Inelastic	Infinity







PRODUCER SURPLUS:

It is the difference between the minimum amount that the sellers are willing to accept for the given units of the product and what they actually receive through the market.

Producer surplus is not the same as profit.

Producer surplus represents the gains received by all parties connected to the production of a good (such as raw-material suppliers, workers, landlords, etc.). Profit, however, is only received by the owners of the firm producing the good.

EXAMPLE:

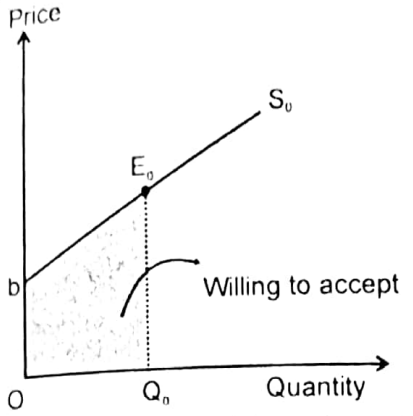
The following table shows the minimum amounts that sellers are willing to accept for the given quantities:

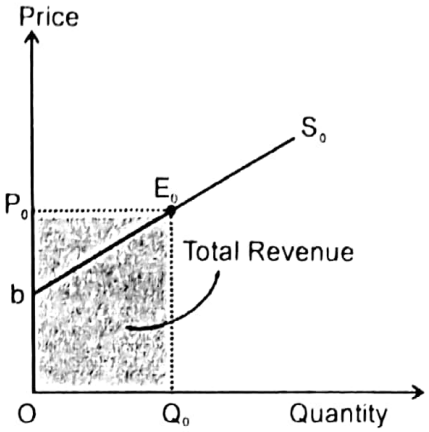
Suppose the market price is $70; producer surplus will be:

Quantity	Willingness to accept	Price in $'s	Producer surplus of each unit	Total producer surplus
1	30	70	70−30=40	40
2	40	70	70−40=30	40+30=70
3	50	70	70−50=20	40+30+20=90
4	60	70	70−60=10	40+30+20+10=100
5	70	70	70−70=0	40+30+20+10+0=100

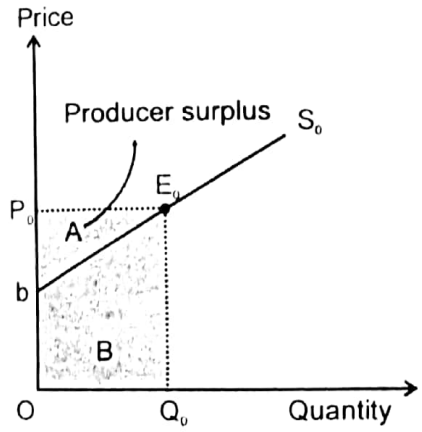
Graphically

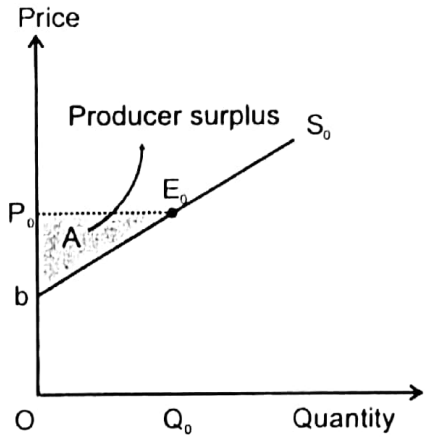
- The height of the supply curve measures the minimum amount the seller is willing to accept in the market for each unit.
- The total area below the supply curve up to a certain quantity shows the minimum amount that the seller is willing to accept for that given quantity.





- The price indicates the amount the seller actually receives for each unit.
- The area quantified by price multiplied by quantity represents the actual revenue received by the seller.
- The difference between these two—the triangular area above the supply curve but below the price received—is a measure of the total producer surplus up to a given quantity.



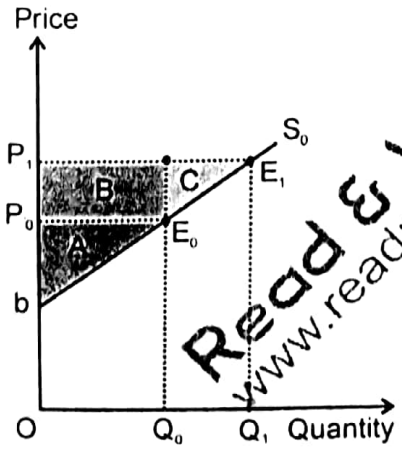


DETERMINANTS OF PRODUCER SURPLUS

c) PRICE :

As the price of the product increases, producer surplus increases.

$P\uparrow \rightarrow PS\uparrow$
$P\downarrow \rightarrow PS\downarrow$

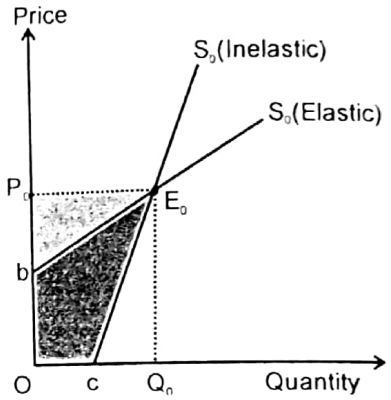


Price	Producer Surplus
OP_0	bE_0P_0
OP_1	bE_1P_1

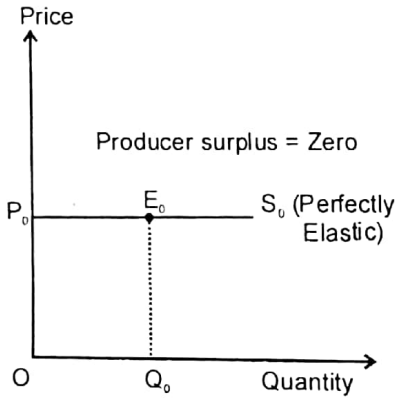
d) PRICE ELASTICITY OF SUPPLY :

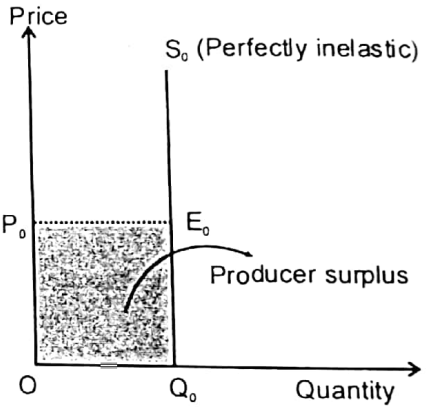
The more inelastic the supply curve, the greater the producer surplus. This is shown in the following diagrams.

PES	Producer Surplus
Elastic	bE_0P_0
Inelastic	$0bP_0E_0r$
Perfectly Elastic	zero

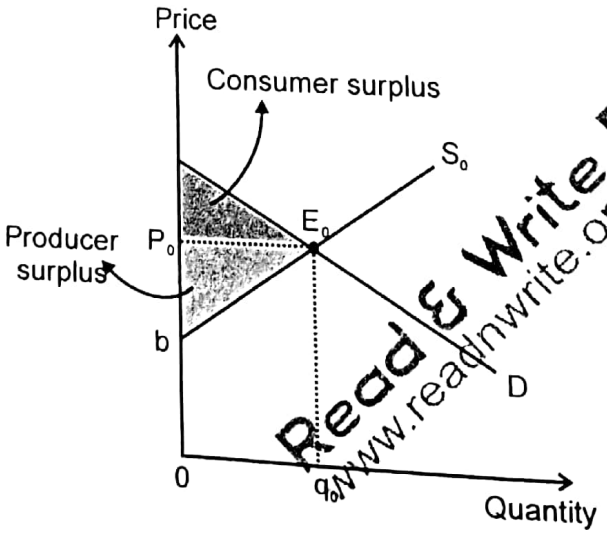


In case perfectly elastic duply producer surplus will be zero and in case of perfectly inelastic it will be equal to total consumer expendture.





TOTAL SURPLUS:



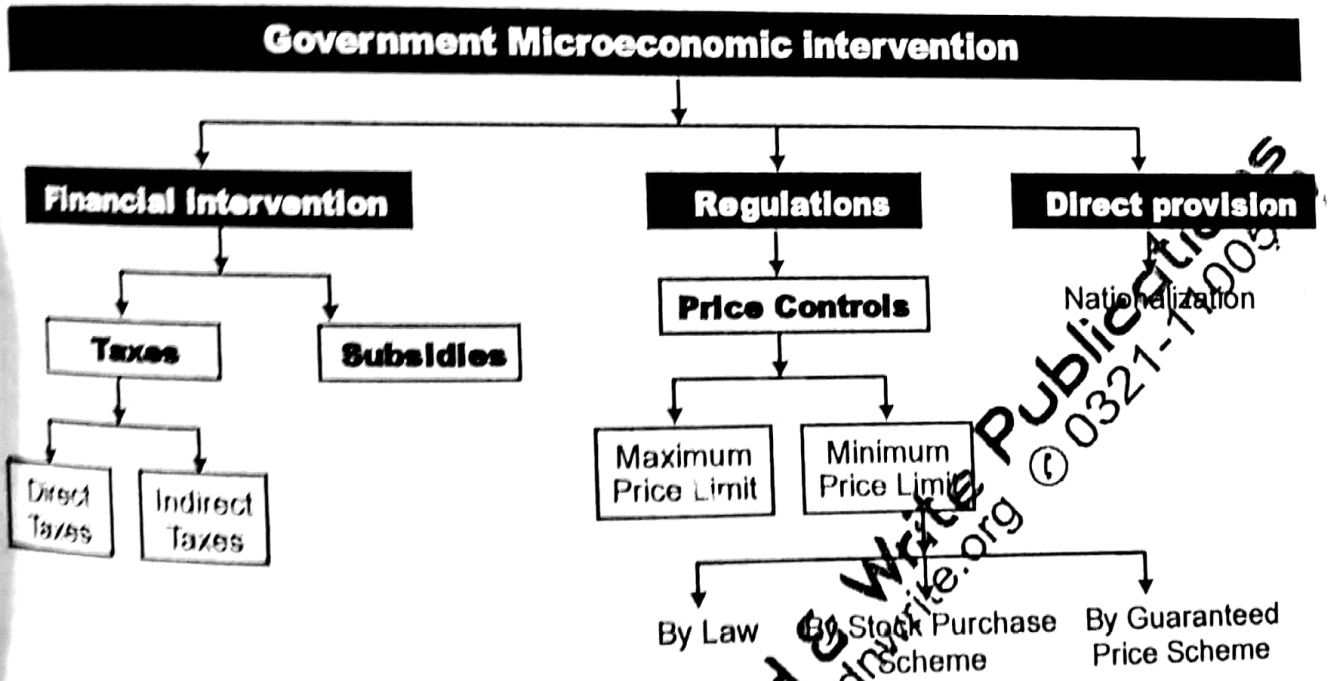
Total Surplus = Consumer Surplus + Producer Surplus

EFFICIENCY AND MARKET EQUILIBRIUM

Economic efficiency means a situation where net social welfare is maximized.

- The supply curve reflects producers' opportunity cost. Each point along the supply curve indicates the minimum price for which the units of a good could be produced without a loss to the seller. Assuming no other third parties are affected by the production of this good, then the height of the supply curve represents the opportunity cost to society of producing and selling the good.
- Each point along the demand curve indicates how consumers value an extra unit of the good—that is, the maximum amount the consumer is willing to pay for the extra unit. Again, assuming that no other third parties are affected, the height of the demand curve represents the benefit to society of producing and selling the good.
- Any time the consumer's valuation of a unit (the benefit) exceeds the producer's opportunity cost, selling the unit is consistent with economic efficiency. The trade will result in mutual gain to both parties.
- Any time the consumer's valuation of a unit (the benefit) is less than the producer's opportunity cost, selling the unit is not consistent with economic efficiency. The trade will not result in a mutual gain for both parties.

Hence
When only the buyers and sellers are affected by production and exchange, competitive market forces will automatically guide a market toward an equilibrium level of output where all units that create more benefit (the buyer's valuation shown by the height of the demand curve) than cost (opportunity cost of production shown by the height of the supply curve) are produced. This maximizes the total gains from trade—the combined area represented by consumer and producer surplus.



FINANCIAL INTERVENTION:

Financial tools, such as taxes and subsidies, are frequently used by governments to influence production and the prices of a wide range of goods and services in the market. For example, demerit goods are usually

subject to high rates of indirect taxation. By contrast, subsidies, involving a direct payment by the government to a producer, make the price paid by consumers less than it should be. Typically, subsidies are paid for goods and services that benefit the community and that might not be provided in a free market. These payments can be in the form of a partial subsidy, as in the case of staple food products and public transport, or total, as in the case of free school meals for children from low-income families.

Taxes — direct and indirect

A tax can be defined as a compulsory levy on private individuals and organizations by the government to raise revenue to finance expenditure on public goods and services.

Canons of Taxation

Adam Smith, the leading classical economist, set out his so-called canons of taxation. These state that a 'good' tax is one that is:

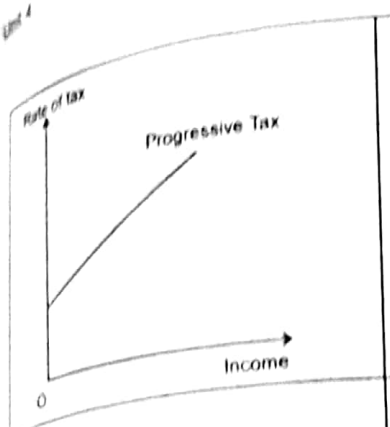
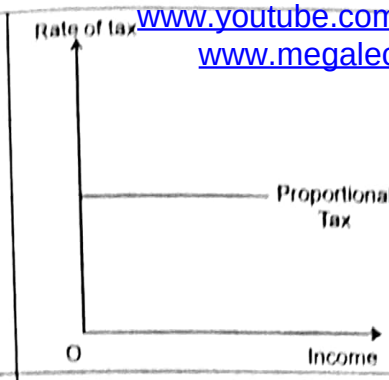
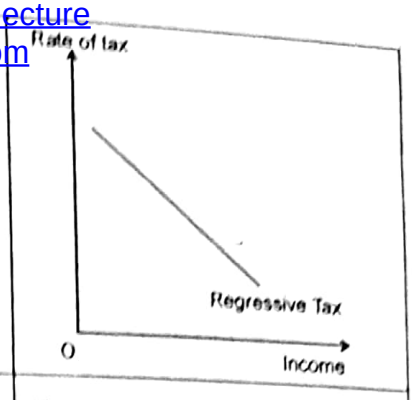
- Equitable—those who can afford to should pay more
- Economic—the revenue should be greater than the costs of collection
- Transparent—tax payers should know exactly what they are paying
- Convenient—it should be easy to pay.

Tax Systems

In collecting taxes and in the development of taxation systems, governments should be aware of the impact a tax has on the various income groups in the economy. This is entirely consistent with the equity aspect of the canons of taxation.

The relationship between taxation and income varies for different types of tax. Three relationships can be identified: progressive, regressive, and proportional. The significance of this classification is important from the standpoint of equity. As incomes increase, people clearly pay more tax in absolute terms; what is more relevant is the percentage of income paid in tax.

Progressive Tax	Proportional Tax	Regressive Tax
Progressive taxes are those that, when income rises, the proportion of total income paid in taxes increases.	A proportional tax is one in which increases in income are matched by proportionally equal increases in the amount paid in tax. The tax rate is, therefore, constant.	Regressive taxes are those that, as income rises, the proportion of total income paid in tax falls.
In a progressive tax system the marginal rate will be greater than the average rate and ART will be rising, resulting in a more equal distribution of income.	In a proportional tax system the marginal rate will be equal to the average rate and both ART and MRT will be constant; therefore, there will be no effect on overall distribution of income.	In a regressive tax system the marginal rate will be lesser than the average rate and ART will be falling, resulting in a more unequal distribution of income.
E.g.: Income tax	E.g.: VAT and GST	E.g.: Professionals tax in Pakistan

		
Example Y_1 = 100 Rate of Tax = 10% Tax Revenue = $100 Y_2 = $ 2000 Rate of Tax = 15% Tax Revenue = $ 300	**Example** Y_1 = 1000 Rate of Tax = 10% Tax Revenue = $100 Y_2 = $ 2000 Rate of Tax = 10% Tax Revenue = $ 200	**Example** Y_1 = 1000 Rate of Tax = 10% Tax Revenue = $100 Y_2 = $ 2000 Rate of Tax = 8% Tax Revenue = $ 160

The **average rate of taxation (ART)** is defined as the average percentage of total income that is paid in taxes. All forms of taxation are included in the calculation. It is dearly more equitable for the poorest income groups to have a low average tax rate; by contrast, higher earners should have a higher average tax rate.

$$ART = \frac{Tax}{Income} \times 100$$

The **marginal rate of taxation (MRT)** is different. It signifies the proportion of an increase in income which is paid in taxes to the government. In a progressive tax system the marginal rate will be greater than the average rate resulting in a more equal distribution of income.

$$MRT = \frac{Change\ in\ Tax}{Change\ in\ Income} \times 100$$

Types of Taxes

	Direct Taxes	Indirect Taxes
	Those taxes which are levied on individuals' and firms' incomes and wealth and for which the burden can't be passed on to others.	Those taxes which are levied on expenditure on goods and services and for which the burden can be passed on to consumers.
	E.g., – income tax – wealth tax – corporation tax – inheritance tax – capital gain tax	E.g., – general sales tax (GST) – value added tax (VAT) – tariff/custom duties – motor vehicle tax
	Advantages	**Disadvantages**
1	**Revenue:** The government collects revenue from direct taxes for its spending on infrastructure such as the building of roads, hospitals, airports, etc.	–
2	**Certain:** Revenue from direct taxes is certain and state authorities can plan their expenditures for the coming year on the revenue they expect from direct taxes.	**Uncertainty of Revenue** Revenue collection from indirect taxes is linked to product sales in the coming year; therefore, it lacks certainty. Actual revenue might be far below or far above expectations.

3	**Redistribute Income from Rich to Poor** Direct taxes are usually progressive in nature—the rate of taxation rises with increases in income. Therefore, more tax is collected from the rich, and the poor are exempted from income tax payments. Even if the poor earn below a certain level, they might be subsidized by the government. Direct taxes, therefore, reduce inequality (the gap between the rich and poor).	**Redistribute Income from Poor to Rich** Indirect taxes are usually regressive in nature, i.e., as income rises, the rate of taxation falls. Therefore, the poor bears a greater burden of the tax than the rich. The poor become poorer and the rich become richer in a regressive tax system, so, inequalities /disparities between the rich and poor increase in a system of indirect taxation.
4	**Deflationary in Nature** Increased direct taxes (e.g., income tax) reduce disposable income and, therefore, reduce spending in the economy. Lower aggregate demand will bring the price level down, thus reducing inflationary pressure.	**Inflationary in Nature** Indirect taxes (e.g., GST) usually form part of the price of a product. Therefore, any increase in indirect taxes will increase the prices of goods, causing inflation in the economy.
5	**No Tax Burden** The burden of direct taxes cannot be passed over to others.	**Tax Burden** The burden of indirect taxes can be passed to consumers in the form of higher prices.
6	**According to ability to pay**	**Not according to ability to pay**
7	**Not Avoidable** Anyone who earns an income beyond the tax-exempted level (e.g., Rs.150,000 per annum in Pakistan in 2006) has to pay income tax. It cannot be avoided.	**Avoidable** Anyone who does not buy a product will not pay the tax on that product. Therefore, indirect taxes are avoidable.
	Disadvantages	**Advantages**
1	**Expensive to collect:** High cost of collection, keeping records, pursuit of defaulters, etc.	**Cheaper to collect** from a company that might charge it to consumers by raising their product's price.
2	**Discourage Savings** e.g., income ↑⇒ Yd↓⇒C↓. S↓	**Do not discourage savings**
3	**Narrow Tax base** Direct taxes have a very narrow tax base. Very few people fall in the tax net of direct taxes; for example, income taxes are only levied on those who are either employed or running a business, and earning an income beyond the tax-exempted level. Those of old age, children, housewives, and the unemployed, along with people who are earning below the minimum taxable limit will not pay income tax.	**Wider Tax base.** Since these taxes are levied on goods and services, all people will pay them, irrespective of their age, sex, and income. Indirect taxes have a far wider base than direct taxes.
4	**Disincentive to work** Direct taxes (e.g., income tax) discourage work. This is because they reduce the willingness and incentives of workers to work overtime because a major part of their extra income would be deducted as tax.	**No Disincentive to Work** As indirect taxes are on goods and services, they do not discourage workers.
5	**Disincentive to Enterprise** Similar to "disincentive to work", direct taxes discourage businessmen from putting in their best efforts into their work.	**No Disincentive to Enterprise**
6	**Can't be Used to Discourage Demerit Goods**	**Are Used to Discourage Demerit goods** e.g., A high tax on cigarettes will discourage their consumption.

7	**Cannot Discourage Imports Directly**	**Can Discourage Imports Directly** E.g., tariff/duties will make imports expensive, forcing people to switch their demand to local substitutes ⇒ balance of payments deficit would be corrected.

Governments have decisions to take regarding their tax regimes, the most important being achieving the right balance between direct and indirect taxes. A trend in many economies has been to collect increasing revenues from indirect taxes on expenditure since these can usually be collected quickly, are less liable to evasion and corruption, and do not interfere with the work incentive problem. Those economies that are compliant with this strategy are therefore supporting a regressive tax system—one that will not be well-liked by low and middle-income earners. This is particularly the case in developing and emerging economies, where it is easier to levy indirect rather than direct taxes as a means of establishing a secure tax regime.

Purposes of taxation

1. To collect revenue

To collect revenue for the government developed countries depend mainly on direct taxes while developing countries depend mainly on indirect taxes.

2. To redistribute income

The government can reduce income inequality in four ways:

- Progressive tax system whereby the higher the income earned, the higher the taxes paid.
- Higher indirect taxes on luxuries (e.g., cars and liquor).
- Higher indirect taxes on luxuries (e.g., cars and liquor).
- Negative income tax (only in the United States and the United Kingdom). If the household earns less than the minimum level of income, the government gives a subsidy so that they have a subsistence-level income. It is an income maintenance scheme. The amount paid is related to the level of income.

3. To combat inflation

This is done by imposing higher direct taxes, especially income tax, which will cause disposable income to fall. When this happens, demand pull inflation will fall, thereby controlling inflation.

Note: Indirect taxes will only worsen inflation because prices will be increased by such a tax.

4. To correct an adverse balance of payments

By imposing tariffs, the price of the imported good will rise and (assuming demand is elastic) this will cause a fall in demand for the imported good.

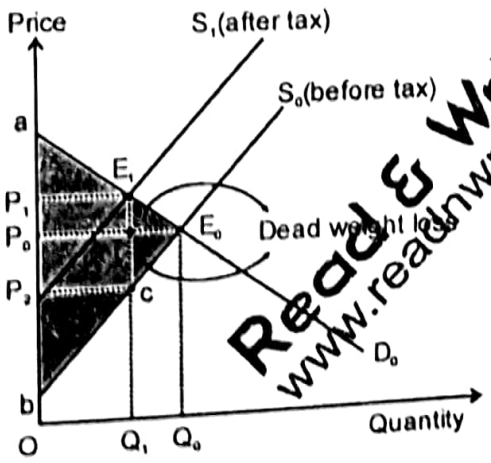
5. To check consumption of goods which are considered undesirable

An example is high indirect taxes on cigarettes and liquor.

6. To protect local/infant industries

By imposing higher custom duties on imported goods. This causes the prices of imported goods to rise and (assuming that demand is elastic), therefore, demand for imported goods will fall.

EFFECTS OF AN INDIRECT TAX ON CONSUMERS, SELLERS, THE GOVERNMENT, AND EFFICIENCY:



	Before Tax	After Tax
Supply curve	S_0	S_1
Price that consumer pays	OP_0	OP_1
Price that sellers receive	OP_0	OP_2
Quantity traded	OQ_0	OQ_1
Consumer surplus	$a P_0 E_0$	$a P_1 E_1$
Producer surplus	$b P_0 E_0$	$b P_2 c$
Per unit tax	–	$E_1 c$
Total tax revenue	–	$P_1 E_1 c P_2$
Reduction in consumer surplus	–	$P_1 E_1 E_0 P_0$
Reduction in production surplus	–	$P_0 E_0 c P_2$
Tax from consumer surplus	–	$P_0 P_1 E_1 f$
Tax from production surplus	–	$P_0 f c P_2$
Dead weight loss	–	$E_1 c E_0 = (E_1 f E_0 + f c E_0)$

The above diagram illustrates the effects of the imposition of an indirect tax. The initial demand curve is D_0, supply curve is S_0, and old equilibrium point is E_0 (with old equilibrium price P_0 and old equilibrium quantity Q_0). The triangular area that is below the demand curve but above old equilibrium price P_0 represents the old consumer surplus (aP_0E_0). The area above the old supply curve S_0 but below old equilibrium price quantifies the producer surplus (bP_0E_0). The amount per unit that the consumers pay and the sellers receive for the good is P_0. As the indirect tax is imposed, the costs of production for suppliers increase, causing the supply curve to shift leftwards to S_1, decreasing the quantities that suppliers are willing to sell for every given price. The new equilibrium point is E_1 (with new equilibrium price P_1 and new equilibrium quantity Q_1). As can be observed, the equilibrium price increased, but the equilibrium quantity decreased. The consumers now pay a higher price of P_1 per unit. However, at a quantity of Q_1, the producers receive an amount of P_2 per unit (as determined by the price per unit charged for quantity Q_0 according to the old supply curve S_0). The new consumer surplus is aP_1E_1; so, the reduction in consumer surplus is represented by the area $P_1E_1E_0P_0$. The new producer surplus is bP_2c; so, the reduction in producer surplus is represented by the area $P_0E_0cP_2$. The tax per unit is the vertical difference between the supply curves. In this case, that would be the difference between OP_1 and OP_2, which is E_1c. The total tax revenue for the government is calculated as (tax per unit × new equilibrium quantity). Thus, total tax revenue is quantified by the rectangular area $P_1E_1cP_2$. Part of this rectangular area which lies above new equilibrium price P_1 represents the burden of the tax on the consumer ($P_0P_1E_1f$), whereas the part of it which lies below the new equilibrium price P_1 represents the burden of the tax on the producer (P_0fcP_2). The triangular area E_1cE_0 represents the dead weight loss due to the imposition of the indirect tax. It is important to note that the deadweight loss comprises of a loss in consumer surplus of E_1fE_0 and a loss in producer surplus of fcE_0. The burden of the tax incidence is being shared between consumers and producers. However, the distribution of that burden depends on the price elasticities of demand and supply.

Subsidies

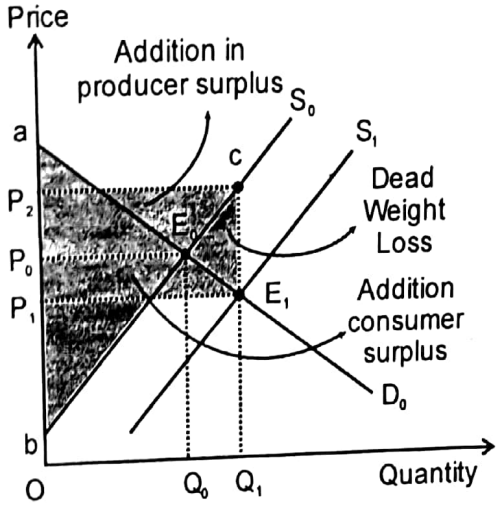
Another form of government intervention in the market is through the provision of subsidies. These are direct payments made by governments to the producers of goods and services. When paid to a producer, a subsidy has the opposite effect of an indirect tax: it is the equivalent of a fall in costs for the producer and results in a rightward shift in the market supply curve. A reduction in a subsidy payment will lead to a shift to the left in the supply curve.

Purposes of subsidy

- to keep down the market **prices of essential goods**
- to encourage greater consumption of **merit goods** s to contribute to a more equitable distribution of income
- to provide services that **would not be provided by the free market**
- **to raise producers' income**, especially in the case of farmers
- to provide an **opportunity for exporters** to sell more goods
- to **reduce dependence on imports** by paying subsidies to domestic producers of close substitutes.

EFFECTS OF THE PROVISION OF A SUBSIDY ON CONSUMERS, SELLERS, THE GOVERNMENT, AND EFFICIENCY:

A government normally intervenes in a market if it senses that the equilibrium price and quantity determined by the price mechanism has resulted in a misallocation of resources. A subsidy is a payment made by the government to a firm or household. In most cases, these payments are made to a firm to reduce the cost of the labour or capital it employs.



	Before Subsidy	After Subsidy
Supply curve	S_0	S_1
Price that consumer pays	OP_0	OP_1
Price that sellers receive	OP_0	OP_2
Quantity traded	OQ_0	Oq_1
Consumer surplus	aP_0E_0	aP_1E_1
Producer surplus	bP_0E_0	bP_2c
Per unit Subsidy	–	E_1C
Subsidy expenditure	–	$P_1E_1CP_2$
Addition in consumer surplus	–	$P_1E_1E_0P_0$
Addition in production surplus	–	$P_0E_0cP_2$
Dead weight loss	–	E_1cE_0

The above diagram illustrates the effects of the provision of a subsidy. The initial demand curve is D_0, supply curve is S_0, and old equilibrium point is E_0 (with old equilibrium price P_0 and old equilibrium quantity Q_0). The triangular area that is below the demand curve, but above old equilibrium price P_0 represents the old consumer surplus (aP_0E_0). The area above the old supply curve S_0 but below old equilibrium price quantifies the producer surplus (bP_0E_0). The amount per unit that the consumers pay and the sellers receive

for the good is P_0. As the subsidy is provided, the costs of production for suppliers decrease, causing the supply curve to shift rightwards to S_1, increasing the quantities that suppliers are willing to sell for every given price. The new equilibrium point is E_1 (with new equilibrium price P_1 and new equilibrium quantity Q_1). As can be observed, the equilibrium price decreased, but the equilibrium quantity increased. The consumers now pay a lower price of P_1 per unit. However, at a quantity of Q_1, the producers receive an amount of P_2 per unit (as determined by the price per unit charged for quantity Q_0 according to the old supply curve S_0). The new consumer surplus is aP_1E_1; so, the addition to consumer surplus is represented by the area $P_1E_1E_0P_0$. The new producer surplus is bP_2c; so, the addition in producer surplus is represented by the area $P_0E_0cP_2$. The subsidy per unit is the vertical difference between the supply curves. In this case, that would be the difference between OP_1 and OP_2, which is E_1c. The total subsidy expenditure for the government is calculated as (subsidy per unit × new equilibrium quantity). Thus, subsidy expenditure is quantified by the rectangular area $P_1E_1cP_2$. The triangular area E_1cE_0 represents the dead weight loss due to the provision of the subsidy.

It is clear that both consumer and producer surpluses will be impacted by subsidizing the good. However, the extent to which each will be affected depends on the respective elasticity of the demand and supply curve. The more inelastic the demand curve, the greater the consumer's gain from a subsidy. When demand is perfectly inelastic the consumer gains most of the benefit from the subsidy, since the entire subsidy is passed onto the consumer through a lower price. When demand is relatively elastic, the main effect of the subsidy is to increase the equilibrium quantity traded rather than to lower the market price. The above diagrams show the impacts on prices and the respective surpluses of both agents when price elasticity of demand differs.

Advantages:

The benefits of subsidizing goods are vast.

- The obvious benefit is that subsidizing the good **reduces the price** of the good, allowing more consumers to be able to afford the good or service. Moreover, if the good is a necessity, as in the case of most agricultural goods, then it is mandatory for the government to ensure that the good is available to most citizens. Subsidizing those particular agricultural goods will raise the standard of living for lower-tier consumers.
- Producers of agricultural commodities are likely to benefit from subsidies as well. They are likely to **earn higher revenue**, as government payments to firms are likely to increase. Farmers or other people employed in the agricultural sector are likely to earn little income without the government incentivizing them through subsidies.
- Subsidies also **support lower-income groups**, allowing them to afford basic necessities which they would otherwise not be able to.
- Also, if a country imports agricultural goods, subsidizing local producers would help them compete with foreign competitors and, thus, would also **benefit the balance of payments** of the country.

Disadvantages:

While farm subsidies may have benefits, such as stabilizing the agricultural development of a nation, the potential negatives of farm subsidies should be taken into consideration as well.

- Critics of farm subsidies argue that they **drive down international prices for agricultural products**, causing or exacerbating poverty in countries struggling to establish a strong export economy.
- They (export subsidies) may also **encourage inefficiency** by causing the firms to rely more on subsidies than on efficient cost-reducing techniques that will help them make a bigger profit .The farmers would still receive the subsidy offered by the government even though their agricultural produce reaps no profits.
- Farm subsidies also control the normal market cycle. **Raising incomes while prices are rising will eventually raise commercial and industrial costs**, causing the final products to lose their competitiveness in the international market.
- It is not only interfering with the workings of the market mechanism but has **opportunity cost implications.**
- Another problem is that subsidies are so-called 'blanket' or **lump sum** payments and, unlike taxes on consumers, **cannot easily be linked to incomes and the ability to pay**.

Transfer payments

Transfer payments are payments from tax revenue that are received by certain members of the community without any production activity. They are not made through the market, as no production takes place. Like a progressive taxation system, their function is to provide a more equitable distribution of income. The main recipients are vulnerable groups such as the elderly, the disabled, the unemployed and the very poor. Payments tend to transfer income from those able to work and pay taxes to those unable to work or in need of assistance.

Examples include:

- old age pensions
- unemployment benefits m housing allowances a food coupons
- child benefits.

The extent to which transfer payments can be paid is heavily dependent on how much tax is collected and how many people have paid tax. In developing economies this is affected by all sorts of problems. Pakistan has a growing elderly population, yet it has a low tax base. Pension and social security coverage is limited to the formal sector and therefore only covers a small percentage of the population

Advantages

- necessary to protect the most vulnerable groups in the community.
- less poverty
- more equitable distribution of income.

Disadvantages

- act as a disincentive to accepting work, so increasing the unemployment rate
- output in the economy is less than it might be
- inefficiency

PRICE CONTROLS:

The government can control market prices by:

- Setting maximum price limit (price ceiling)
- Setting minimum price limit (price floor)

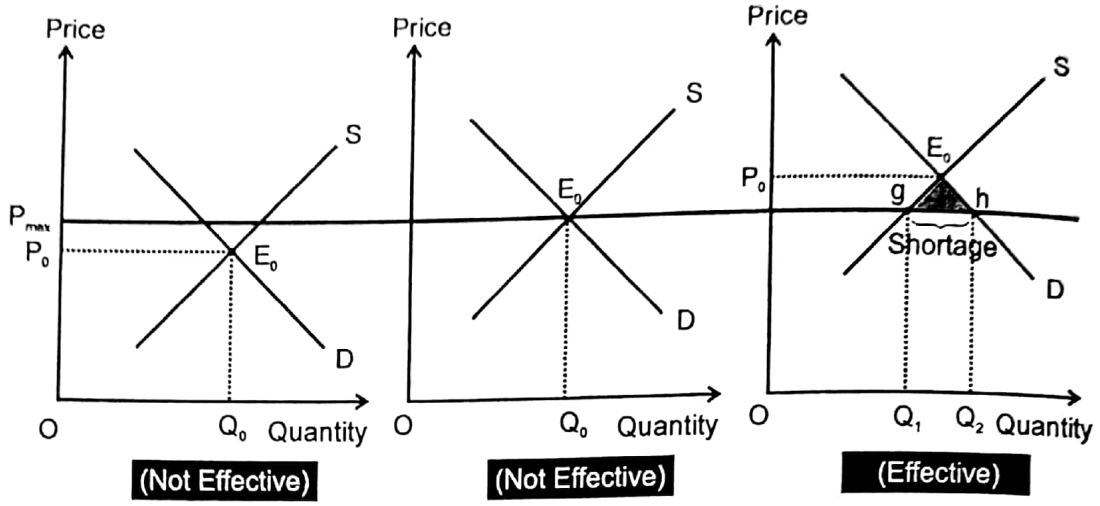
1. Maximum price limit (price ceiling).

Objective:

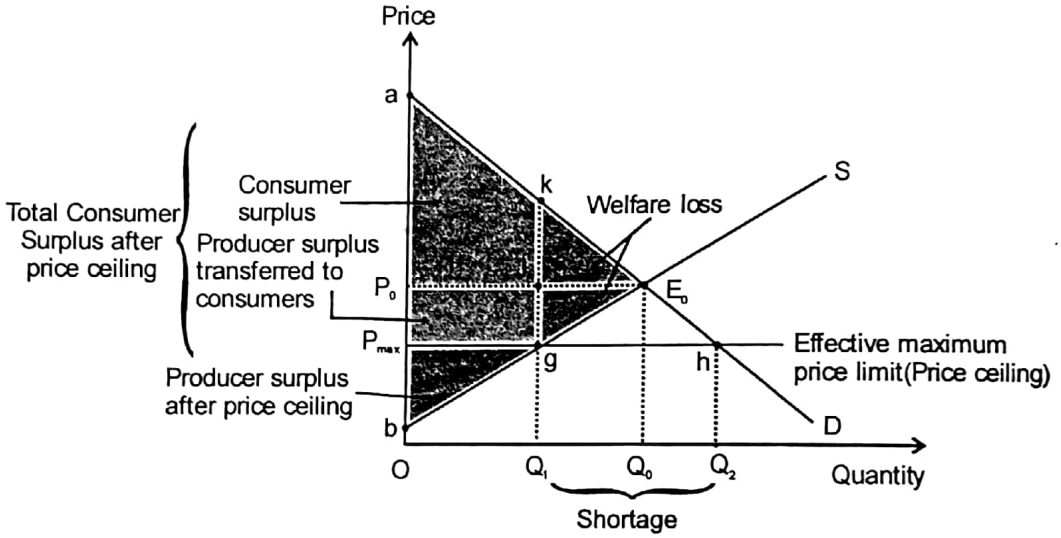
To protect consumers from exploitation by sellers. Usually, in the case of commodities that are necessities, the government sets a maximum price limit in the market.

The effects of a maximum price limit:

- As long as the market price is below or equal to the maximum price limit, it will be ineffective and the government will not interfere in the market.
- If the market price tends to cross the maximum price limit, the government takes administrative actions to make it effective.



The effects of an effective maximum price limit:



	Before effective maximum price limit	After effective maximum price limit
Price that consumer pays and sellers receive	OP_0	OP_{max}
Quantity demanded (Q_d)	OQ_0	OQ_2
Quantity supplied (Q_s)	OQ_0	OQ_1
Shortage	–	$Q_1Q_2=gh$
Quantity traded	OQ_0	OQ_1
Consumer expenditure=Sellers revenue (TR)	$O\ P_0E_0Q_0$	$O\ P_{max}\ gQ_1$
Consumer Surplus	$a\ P_0\ E_0$	$a\ P_{max}\ gk$
Producer Surplus	$b\ P_0\ E_0$	$b\ P_{max}\ g$
Producer surplus converted to consumer surplus	–	$P_0\ jg P_{max}$
Dead weight loss		kgE_0

The above diagram illustrates the effects of the imposition of an effective maximum price. The demand curve is D, supply curve is S, and equilibrium point is E_0 (with equilibrium price P_0 and equilibrium quantity Q_0). The triangular area that is below the demand curve but above old equilibrium price P_0 represents the

old consumer surplus (aP_0E_0). The area above the old supply curve S_0 but below old equilibrium price quantifies the producer surplus (bP_0E_0). Originally, the amount per unit that the consumers pay and the sellers receive for the good is P_0. As the maximum price limit is imposed, the new price that consumers pay and sellers receive decreases to P_{max}. (Note that the equilibrium price remains unchanged. It's just that the market price is forced to be P_{max} or lower.) At the maximum price P_{max}, the quantity demanded increases to Q_2 and the quantity that sellers are willing to supply decreases to Q_1. The difference between Q_1 and Q_2 of gh represents the shortage of stock to satisfy effective demand. The quantity traded, therefore, is only equal to Q_1. The new consumer surplus is a P_{max} gk. The new producer surplus is b P_{max} g. The amount of producer surplus converted to consumer surplus as a result of the price ceiling is represented by the area P_0jgP_{max}. The triangular area kg E_0 represents the dead weight loss due to the imposition of the price ceiling.

Advantages:

Some of the people will get the product at a lower price.

Disadvantages:

1. Shortages and black markets will develop.
Because the quantity demanded will exceed quantity supplied, some people will not be able to buy the product. Frustrated by the shortage, consumers will make under-the-table (black market) payments to secure their purchases.

2. The future supply will decline.
The below-equilibrium price will discourage entrepreneurs from producing the product, and private investment will flow elsewhere.

3. The quality will deteriorate.
When producers are not allowed to raise their prices, they will use quality reductions to incur lower costs. Eventually, the quality of the product will reflect the controlled price. A cheaper product will be of inferior quality to an expensive one.

4. Non-price methods of rationing will become more important.
Because price no longer rations (distributes) the goods, other forms of competition will develop. Sellers will favor friends, people of influence, and relatives, etc.
Discrimination will become more prevalent in the rationing process.

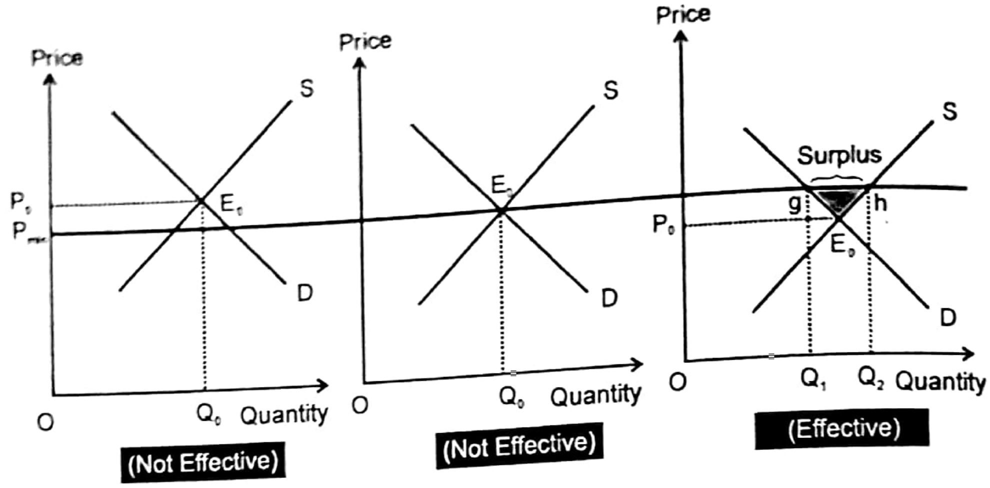
2. Minimum price limit (price floor).

Objective:

Sometimes the prices are adjusted too low to benefit the suppliers of the product, so the government feels the need to interfere in the market by setting minimum prices—for example, through minimum wage laws for agricultural products. The government imposes price floors in an effort to artificially increase the prices that farmers receive.

The effects of a minimum price limit:

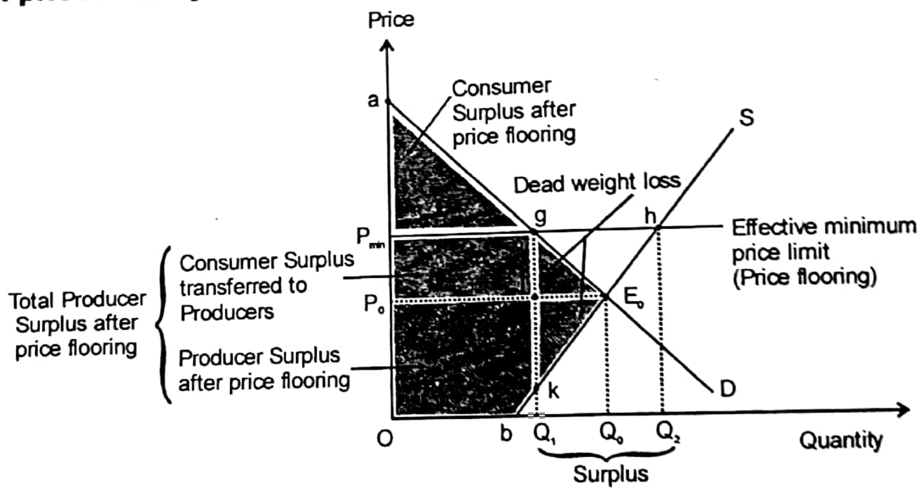
- As long as the market price is above or equal to the minimum price limit, it will be ineffective and the government will not interfere in the market.
- If the market price tends to cross the minimum price limit, the government will take administrative actions to make it effective.



Types of minimum price limits

- By law
- By stock purchase or buffer stocks
- By guaranteed price scheme

a. Minimum price limit by law



	Before effective minimum price limit	After effective minimum price limit
Price that consumer pays and sellers receive	OP_0	OP_{min}
Quantity demanded (Q_d)	OQ_0	OQ_1
Quantity supplied (Q_s)	OQ_0	OQ_2
Surplus	–	$Q_1Q_2=gh$
Quantity traded	OQ_0	OQ_1
Consumer expenditure=Sellers revenue (TR)	$OP_0E_0Q_0$	$OP_{min}gQ_1$
Consumer Surplus	aP_0E_0	$aP_{min}g$
Producer Surplus	bP_0E_0	$OP_{min}gkb$
Consumer surplus converted to producer surplus	–	P_0jgP_{min}
Dead weight loss	–	kgE_0

The above diagram illustrates the effects of the imposition of an effective minimum price by law. The demand curve is D, supply curve is S, and equilibrium point is E_0 (with equilibrium price P_0 and equilibrium quantity Q_0). The triangular area that is below the demand curve but above old equilibrium price P_0 represents the old consumer surplus (aP_0E_0). The area above the old supply curve S_0 but below old equilibrium price quantifies the producer surplus (bP_0E_0). Originally, the amount per unit that the consumers pay and the sellers receive for the good is P_0. As the minimum price limit is imposed, the new price that consumers pay and sellers receive increases to P_{min}. (Note that the equilibrium price remains unchanged. It's just that the market price is forced to be P_{min} or higher.) At the minimum price P_{min}, the quantity demanded decreases to Q_1 and the quantity that sellers are willing to supply increases to Q_2. The difference between Q_1 and Q_2 of gh represents the surplus of stock left unsold after satisfying effective demand. The quantity traded, therefore, is only equal to Q_1. The new consumer surplus is $aP_{min}g$. The new producer surplus is $OP_{min}gkb$. The amount of consumer surplus converted to producer surplus as a result of the price ceiling is represented by the area P_0jgP_{min}. The triangular area kgE_0 represents the dead weight loss due to the imposition of the price floor.

Advantages:

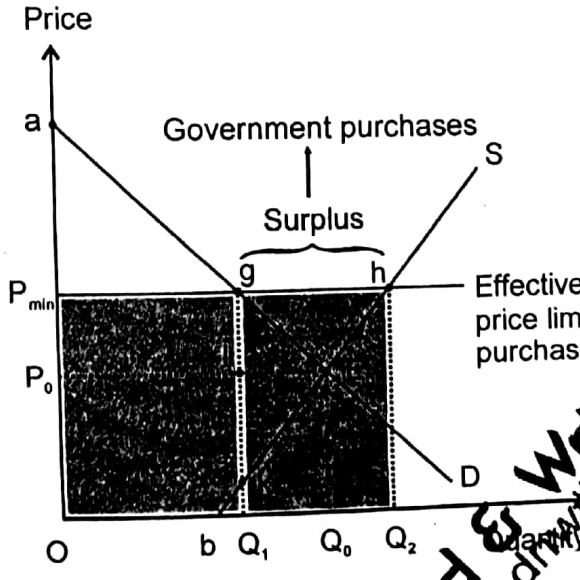
- Benefits some of the sellers who will sell the product at a higher price.

Disadvantages:

- A price floor reduces the quantity of the good exchanged and reduces the gains from trade.
- Non-price factors will play a larger role in the rationing process, but this time buyers will be in a position to be more selective. Buyers will purchase from sellers willing to offer them non-price favors—better service, discounts on other products, or easier credit terms, for example.
- Sellers will only benefit from the price increase if demand is inelastic.

b. Minimum price limit by stock purchase schemes:

- The government sets a lower limit on the price of the product and allows free market forces to operate unless and until the price of the product remains above or equal to the minimum price limit.
- However, if the market price falls below the limit, the government will buy surplus stocks and store them to resell them in the market during periods of shortage when the market price starts rising.



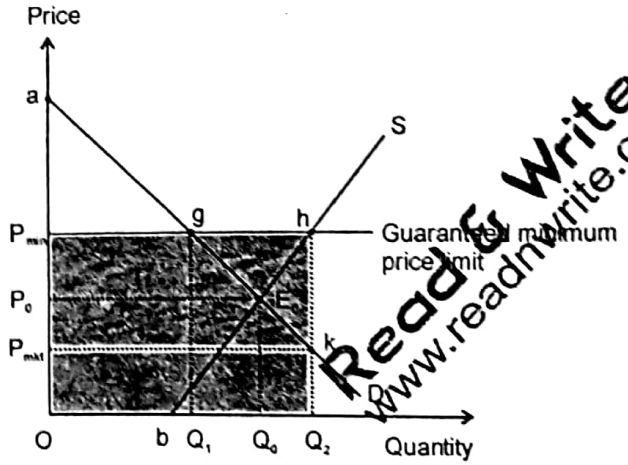
	Before minimum price limit by stock purchase	After minimum price limit by stock purchase
Price that consumer pays	OP_0	OP_{min}
Price that seller receives	OP_0	OP_{min}
Quantity demanded (Q_d)	OQ_0	OQ_1
Quantity supplied (Q_s)	OQ_0	OQ_2
Surplus	–	Q_1Q_2=gh
Quantity traded	OQ_0	OQ_1
Consumer expenditure	$OP_0E_0Q_0$	$O\ P_{min}\ gQ_1$
Government expenditure of stock purchase	–	ghQ_2Q_1
Sellers revenue	$OP_0E_0Q_0$	$OP_{min}hQ_2$

The above diagram illustrates the effects of the imposition of an effective minimum price through stock purchase schemes. The demand curve is D, supply curve is S, and equilibrium point is E_0 (with equilibrium price P_0 and equilibrium quantity Q_0). Originally, the amount per unit that the consumers pay and the sellers receive for the good is P_0, and the revenue that sellers receive (calculated as price per unit × quantity sold) is quantified by the region $OP_0E_0Q_0$. As the minimum price limit is imposed, the new price that consumers pay and sellers receive increases to P_{min}. (Note that the equilibrium price remains unchanged. It's just that the market price is forced to be P_{min} or higher.) At the minimum price P_{min}, the quantity demanded decreases to Q_1 and the quantity that sellers are willing to supply increases to Q_2. The difference between Q_1 and Q_2 of gh represents the surplus of stock left unsold after satisfying effective demand. The quantity traded, therefore, is only equal to Q_1. The revenue that sellers receive now is equal to $OP_{min}hQ_2$. Part of this revenue (ghQ_2Q_1) is paid for by the government as it purchases the surplus stock so that it can maintain the minimum price.

The stock purchase system is usually unsuccessful when the minimum price limit is too high. The government ends up buying more often and in larger quantities than they are able to sell, increasing storage and purchase costs. However, stock purchase is a more common practice for agricultural products than for any other types of goods.

c. Minimum Price Limit by guaranteed price scheme

- Another way to support producers and consumers is through a guaranteed price scheme.
- In a guaranteed price scheme the government ensures a certain price or revenue to sellers for a given output, and allows them to sell their product in the market at whatever price they can sell.
- The difference between market price (price that consumers pay in this case) and guaranteed price will be paid by the government as a subsidy. This is shown in the diagram below.

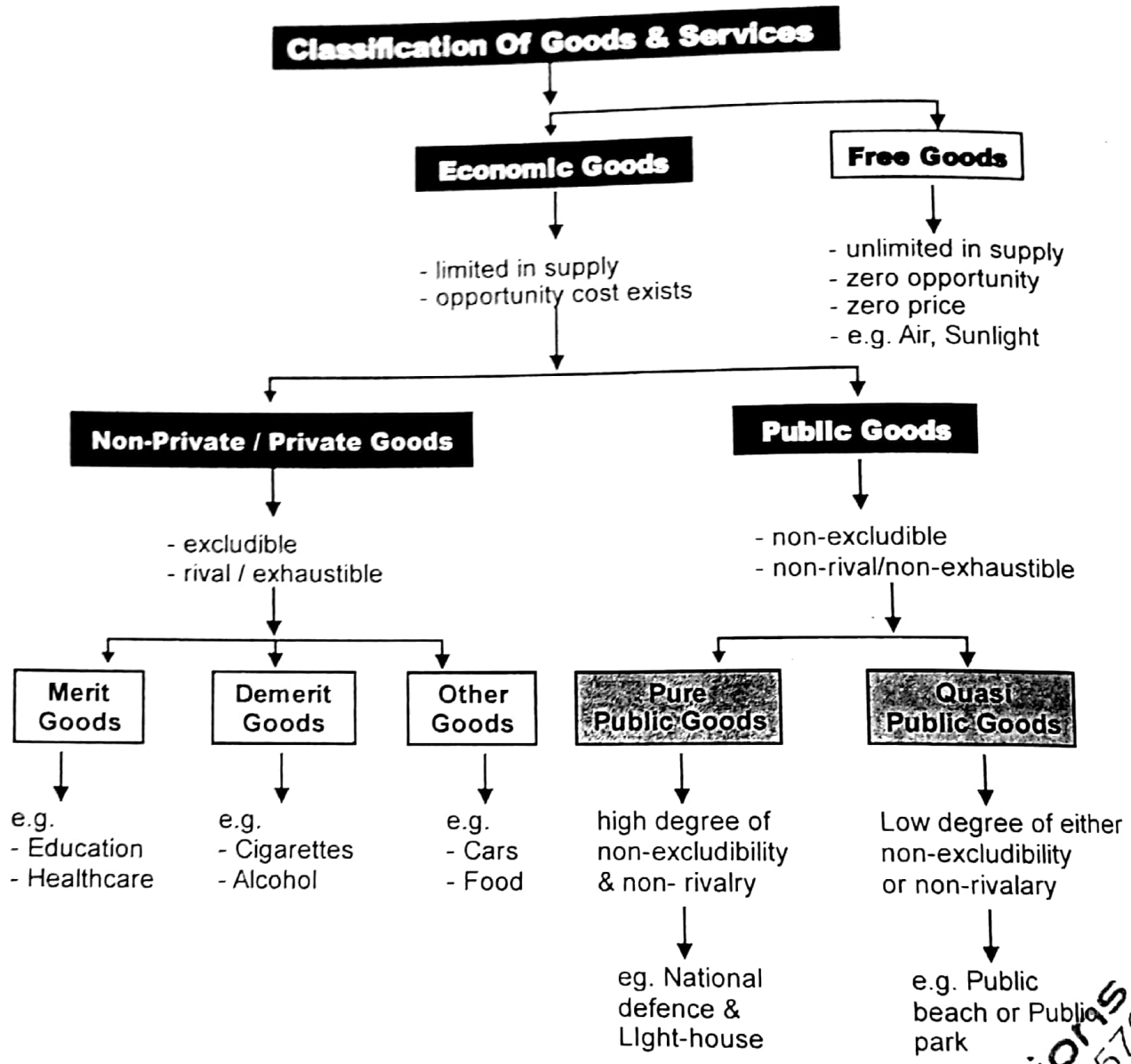


	Before guaranteed minimum price limit	After guaranteed minimum price limit
Price that consumer pays	OP_0	OP_{min}
Price that seller receives	OP_0	OP_{mkt}
Quantity demanded (Q_d)	OQ_0	OQ_2
Quantity supplied (Q_s)	OQ_0	OQ_2
Surplus	–	–
Quantity traded	OQ_0	OQ_2
Consumer expenditure	$OP_0E_0Q_0$	$OP_{mkt}kQ_2$
Government subsidy expenditure	–	$P_{mkt}P_{min}hk$
Sellers revenue	$OP_0E_0Q_0$	$OP_{min}hQ_2$

The above diagram illustrates the effects of the imposition of an effective guaranteed minimum price. The demand curve is D, supply curve is S, and equilibrium point is E_0 (with equilibrium price P_0 and equilibrium quantity Q_0). Originally the amount per unit that the consumers pay and the sellers receive for the good is P_0, and the revenue that sellers receive (calculated as price per unit × quantity sold) is quantified by the region $OP_0E_0Q_0$. As the minimum price limit is imposed, the new price that consumers pay increases to P_{min}, and the new price that sellers receive is the market price P_{mkt}. (Note that the equilibrium price remains unchanged. It's just that the minimum price guaranteed to sellers is P_{min}, and the price actually prevailing in the market is P_{mkt}.) At the market price P_{mkt}, the quantity demanded by consumers increases to Q_2 and the quantity that sellers are willing to supply decreases to Q_1. However, the price that suppliers are willing to accept for quantity Q_2 is price P_{min}. The government pays that price to the suppliers (since they are guaranteed it), so the quantity supplied and traded at the guaranteed minimum price limit is Q_2. The consumer expenditure on the good is equal to (market price per unit×quantity traded), which is quantified by the area $OP_{mkt}kQ_2$. The government pays the producers the guaranteed amount of $P_{mkt}P_{min}hk$ in the form of a subsidy. The revenue that sellers receive now is the addition of consumer expenditure and the government subsidy, equaling $OP_{min}hQ_2$.

CLASSIFICATION OF GOODS AND SERVICES:

Product or commodity is anything that is used to satisfy needs and wants of a society. Products are either **Goods** (tangible and visible) or **Services** (intangible and invisible). Goods and services can be classified into two basic categories, i.e., free goods and Economic goods.



FREE GOODS:

Free goods are those which are unlimited in supply. These have zero opportunity cost since consumption is not limited by scarcity. They have no prices - as their name indicates - and in theory, no factors of production are required to produce them. The air we breathe could also be seen as a free good along with water in a local river.

ECONOMIC GOODS:

Economic or scarce goods are those which are limited in supply. Virtually all goods we consume are economic goods including food, clothing, cars mobiles etc. except those few which fall under the category of free goods. Economic goods are either private goods or public goods.

Public goods:

Public goods are non-excludable and non-exhaustible (non-rivalry in consumption) and, most times, non-rejectable as well.

- **Non-excludable** means no one can be stopped from the consuming the good if they are available to anyone in the society.

Non-exhaustible or **non-rival** means that they don't exhaust when they are consumed.
Non-rejectable means that the consumer does not have a choice of whether to consume the commodity or not. An availability of public goods to one person does not infringe upon the right of others to consume the same product.

There are a number of goods that can be seen as public goods. Take the example of a lighthouse. Once a lighthouse is built to warn one ship at sea away from a dangerous area of rocks, then by its very nature, this service will automatically be provided to all ships that sail within a certain distance of the lighthouse. It is non-excludable. Equally, the fact that other ships see the light given by the lighthouse and are warned away from the dangerous rocks does not reduce the benefit that any one particular ship receives from that warning. It is non-rival.

Quasi-public goods

Some goods are purely public (e.g. lighthouse or national defence) and others are to certain extent also known as **quasi-public goods** (e.g. public beach or public park). These are the goods that have some but not all of the characteristics of public goods.

A good example might be a sandy seaside beach. Such a beach is available to all those who wish to use it. It appears non-excludable. However, it is possible to think of ways of excluding consumers. Privately owned beaches do this. Equally, the beach is non-rival up to a point. If you are the first person on a pleasant beach on a warm sunny day, it does very little to diminish your enjoyment of that beach as a few more people arrive to enjoy the benefits themselves. However, there may well come a point at which that is no longer the case. As the beach becomes crowded, space limited and other people's conversations and music become ever more audible, enjoyment may perceptibly reduce. Thus the each has something of the characteristic of non-rivalry, but not the full characteristic. It is a quasi-public good.

Whether a good is purely public depends upon the extent to which it is non-excludable and non-exhaustible.

PUBLIC GOODS	PRIVATE GOODS
Non-excludable	Excludible
Non-exhaustible	Exhaustible
Free rider problem	No free rider problem
Non-marketable	Marketable
Benefits of public goods can be extended to others at zero additional cost.	Benefits of private goods can't be extended to others at zero additional cost.
Non-rejectable	Rejectable
Examples: National defence, light houses, national T.V., and radio broadcasts.	Examples: merit goods, demerit goods, and all other goods.

Private goods:

Private goods are those bought and consumed by individual consumers or firms for their own benefit. Most of the goods we consume on a daily basis are private goods. Food, cars, TV, education, cigarettes etc all are examples of private goods regardless of whoever is producing i.e. private or public sector. They have two important characteristics:

a. Excludability:
It is possible to exclude some people from using a private good. This is normally done through charging a price. If the price is not acceptable, then that good will not be consumed. Once a private good has been purchased by one person it cannot be consumed by others.

b. Rivalry:
The consumption by one person reduces the availability for others, in some ways it seems obvious that when we purchase food, clothes or a textbook then this means that fewer of these goods are available for purchase by others.

1. Merit goods:

The state is concerned to increase in consumption of certain goods which it considers to be highly desirable for the welfare of the citizens however consumers do not realize the true private benefit of them. Such goods are described as merit goods. They are special form of private goods. The best known examples are state health and education systems. Other examples include training, insurance, inoculation and seat belts.

In a pure market system, consumer spending on merit goods would be determined by the **private benefits** (benefit to consumers and producers) derived from them. Merit goods have **positive externalities** or **external benefit** (benefit to the third party who are not directly involved in production and consumption decision) so that the **social benefits** (Private benefit + external benefit) derived from their consumption exceed the private benefits.

To understand these types of good, it is necessary to appreciate that there is **information failure** to the consumer. This arises because consumers do not perceive quite how good or bad a particular product is for them; either they do not have the right information or they simply lack some relevant information. This is why merit goods are provided by the government for those who are deemed to need them. With this idea of a failure of information, a merit good is defined as a good that is better for a person than the person who may consume the good realizes.

It is interesting to note that the example of a merit good given here, namely education, is the same as the same as the example of the product that can be seen as having positive externalities associated with it. People undertaking education receives consumption and investment benefits. Most will enjoy the education and it may stimulate lifetime interests (consumption benefit) and will increase their future earning power (investment benefit). In addition to these private benefits, third parties will gain from having a more educated, inventive labour force and a more informed population (positive externalities). However, the reason for identifying the product is different here in case of merit goods. Here, it is not due to the external benefits that it creates, but rather due to the unperceived private benefits to the person through consuming the product.

2. Demerit goods:

Demerit goods, on the other hand, are those products that are worse for the individual consumer than the individual realizes. Cigarettes are taken to be a typical example here. It is suggested that when a person makes a decision to smoke a cigarette, he or she is not fully in possession of such information, then there would be a greater reluctance to smoke.

In a pure market system, consumer spending on demerit goods would be determined by the **private costs** (cost to consumers and producers) derived from them. Demerit goods have **negative externalities** or **external cost** (cost to the third party who are not directly involved in production and consumption decision) so that the **social costs** (Private cost + external cost) derived from their consumption exceed the private costs.

It is interesting to note that the example of a demerit good given here, namely smoking, is the same as the same as the example of the product that can be seen as having negative externalities associated with it. However, the reason for identifying the product is different. Here, it is not due to the damage done to others that the issue arises, but rather due to the unperceived damage done to the person through consuming the product. Like smoking if a good is demerit as well as causes negative externality, there will be two causes of market failure associated with one product:

Merit goods, demerit goods and value judgements

It may have been noticed in the above definitions that a significant question poses itself with regard to merit and demerit goods. Who is to say what is 'good' or 'bad' for a person? If an individual consumer makes a presumably rational decision to consume a product, what right has the rest of society to say that he or she is making a 'wrong' decision? It seems clear that if this is what is going on, we have entered the area of value judgements. If society is able to say to consumers that they do not fully realise what is good or bad for them, then we are accepting that 'society knows best' and has some right to make such a judgement.

In effect, we are allowing **paternalism** (a situation where society knows best and has some right to make a value judgement) and we are saying that it is acceptable for society to judge what is, or is not, good for a person regardless of what that person may believe.

PRIVATIZATION

Privatization means transferring the ownership of assets from the public to the private sector.

Forms of privatization

1. **Denationalization**:
Privatization of ownership—sales of assets or shares. In this case, the government may retain some shares in the enterprise and act as a regulator to ensure that public interest is protected.

2. **Franchising**:
Gives the private sector a right to operate a particular service/activity for a given length of time. May be exclusive or competitive.

3. **Privatization of production**:
The government buys goods and services instead of producing them.

4. **Privatization of financing**:
The government relies on consumer charges rather than tax revenue to subsidize operations; e.g., independent school fees.

5. **Deregulation**:
The liberalization of regulation to promote competition through the removal of barriers to entry (e.g., telecommunications, the financial industry, airlines, etc.).

Arguments for privatization

These include:

1. **Raising revenue for the government**
The revenue gained **from the sale** makes it possible for the government to reduce its need to borrow and to cut tax rates without reducing its own spending. Extra government revenue may also be received in the form of **higher corporation tax** receipts if the privatized concerns become more profitable.

2. **The removal of political interference**
In the private sector, decisions are made on the grounds of efficiency and profit. Politicians may make decisions to further their own political ends and not those of the industry in question.

3. **Increased competition**
It is argued that the private sector has the spur of competition since inefficiency is punished with bankruptcy. A failed firm will go out of business and the resources will be reallocated in line with consumer demand, whereas state enterprises cannot go bankrupt because the government guarantees their borrowings.

A private sector firm may have to compete in financial markets for funds, and has to persuade banks and other financial institutions or its shareholders that its plans are viable.

Greater competition may also be created in the product market if an industry, which was run as a monopoly under state ownership is split into competing parts; for example, separate telecommunication firms operating in competition with each other.

4. **Increased efficiency**
Managers of a privatized firm will be freed from political control and interference. They will be able to charge prices they regard as commercially appropriate and make investments they think will produce the right

return. The stock market may also put pressure on private sector firms to be more efficient. If they are not performing well, their share price will fall and they will run the risk of being taken over by another firm.

5. Wider share ownership.
The broadening of share ownership may be another aim of privatization. The idea is to shift ownership away from the state and institutions towards individuals.

6. Cost-push inflation may be reduced
Private sector managers may be more reluctant to concede to wages raises not matched by higher productivity, and may be less willing to accept inefficient labour.

Arguments against privatization

1. Long term loss of revenue
Whilst selling off profitable assets raises revenue for the government in the short term, it leads to a loss of future profits for these industries. If the loss of profit is greater than any rise in corporation tax resulting from the privatization, the government borrowing requirements may be larger in the future.

2. Competition in product markets may not be increased
If a public-sector monopoly is replaced by a private sector monopoly then, other things being equal, competition will not increase.

3. Market forces may not ensure greater efficiency
Privatized firms, if they have a high degree of monopoly power, are likely to be able to earn supernormal profits, even if they are inefficient. The stock market may also fail to put pressure on the firms to become efficient. The stock market may also fall heavily on retained profits for their investment finance, and their large size is likely to prevent other firms from being able to take them over.

4. The loss of potential revenue from the sale of a privatized concern that has been sold too cheaply
It is thought that, in the past, some state concerns were sold off too cheaply. Evidence for this was provided by the sharp rise in the price of shares, which occurred the day after the shares were sold in many former state concerns. Whilst this provided a speculative gain for the purchasers, there was a corresponding sacrifice in revenue for the state and taxpayers. In practice, it is difficult to set the price of shares in privatized industries at the appropriate level.

5. Private sector firms may not act in the interests of the public
Private sector firms do not take into account externalities. They are also unlikely to base their output and pricing decisions on considerations of equity.

6. Loss of government control over the economy
The government's ability to influence pay prices and output decisions will directly be reduced.

7. Natural monopolies
In the case of industries where there is only room for one firm to operate efficiently (a natural monopoly), there is a risk that a private sector monopoly will abuse its market power, whereas a state monopoly can be run in the interests of the nation, and not with a view to making private profit.

8. Adjustment to changing market conditions
One of the main arguments for public ownership when basic capital-intensive industries (such as steel, coal, and the railways) were nationalized was that only the state could and would provide the very large injections of capital which were needed to restructure and modernize them.

9. Helping to manage the economy.
A further argument for having a large sector of the economy directly under government control is that it can be used as a powerful lever to control the economy. For example, during a recession, the investment programmes of the nationalized industries can be increased to help stimulate an **increase in income and employment**.

Governments can also use their powers to restrict price increases by nationalized industries as a means of reducing the rate of inflation.

10. Social costs and benefits

Private sector firms usually only undertake production if private benefits (revenue) are greater than private costs: they will not take into account externalities. Nationalized industries charged with operating in the public interest, will be under strong political and social pressures to give much more attention to externalities, they may be obliged to operate some loss-making activities were social benefits are clearly greater than social costs-for example rural, postal and transport services. The government recognizing these social obligations may provide subsidies for such non-commercial operations.

NATIONALIZATION AND DIRECT PROVISION OF GOODS AND SERVICES

Nationalization refers to the public (government) ownership of certain firms (public corporations), to provide goods or services sold in the market (commercial activities).

Arguments for Nationalization

1. Some industries can benefit from being organized on a national rather than a local level like **natural monopolies**. It is much more efficient to provide services such as postal services, electricity, gas, and railways on a national scale. If, for instance, railways were provided by local companies, passengers might have to change trains frequently as they passed between areas controlled by different companies, and there might be different gauges between track and different timetable.
2. Some industries, such as steel, railways and electricity, are best provided on a large scale so that they can take advantage of the **economies of large-scale** production. If the industry were nationalized it would be provided on a large scale rather than by several smaller private enterprise firms.
3. Some industries require **vast amounts of finance to operate** efficiently. For instance, the steel industry needs to invest millions of pounds every year on new plant and equipment. If the industry is nationalized then finance can be found by allocating some of the revenues of the government, which it receives mainly from taxation. It is unlikely that private enterprise firms would be able to afford such large expenditures.
4. Some industries are **monopolies**, which would then have the power to charge high prices and limit the quality and quantity of output. The government might nationalize such industries to prevent such a state of affairs.
5. Some industries are so **important to the well-being of the economy** that they should always be owned and controlled by the state which can then organize them to the advantage of the economy as a whole. Such industries include railways, coal, electricity, and steel. These industries are known as 'the commanding heights of the economy.'
6. Some industries are best provided by the government for reasons of **national safety** and security. It would clearly be better for the government to provide industries such as nuclear power and the armed forces, rather than allow private entrepreneurs to do so.
7. Some industries are very **important for employment** in a particular region, so they might be nationalized in times of financial difficulty. For instance, if a major industry was facing potential dissolution, this would cause a great deal of unemployment in the region. The government might, therefore, seek to nationalize a company rather than allow this to happen.
8. Nationalization in the economy may help the **redistribution of wealth and income** from rich to poor, and to ensure that industry is run for the benefit of all the people in the country.
9. There are also **social arguments** for nationalization on the grounds that some services, such as health services, should be available to all members of society, either free or at subsidized prices.

Arguments against nationalization

1. Nationalized industries suffer from being too big. They suffer from **diseconomies of large-scale** production, such as too much 'red tape', little personal service to staff and consumers, slow decision-making and little profit motive among managers and the labour force.
2. Nationalized industries are **public monopolies** and are, therefore, equally as bad as private monopolies. They charge high prices for a poor service.
3. Nationalized industries are constantly in the 'public eye'. Their affairs have to be made public, and there is an annual debate in the parliament, and their managers may be interviewed by parliamentary

committees. Therefore, **managers are afraid of making risky and imaginative decisions**, in case they might fail.

4. Nationalized industries are frequently **inefficient and unprofitable**. They demand large amounts of finance to keep them in business. Thus, they are a drain on the taxpayer.

PAST PAPERS QUESTIONS

Consumer Surplus

(Nov 2012/P23/Q2/a)
Explain, with the aid of a diagram, what changes will alter the amount of consumer surplus available from the consumption of a good. [08]

(June 2010/P22/Q4/a
Using a normal demand curve, explain how consumer surplus occurs. [08]

(June 2009/a)
Explain, with the aid of a diagram, how consumer surplus will be affected by the introduction of an indirect tax. [08]

(June 2000)
The Automobile Association (AA) is a to close its 142 town centre shopes because customs now make greater use of the telephone for buying goods and services which have been advertised by the AA. The AA said 'We have to adapt to the changing demands of our customers... and the closures will enable us to reduce the price of some of our goods and services.'(Adapted from AA Magazine, Autumn 1998)

(a) Explain what is meant by consumer surplus and analyze what might happen to the consumer surplus of AA telephone customers. [12]

(June 1997/a)
Explain what is meant by a consumer's surplus and discuss what might cause in that surplus. [12]

Government Intervention in Price Mechanism

(June 2017/P21/Q3/b)
Discuss the difficulties of introducing a widespread system of maximum prices for essential food to protect low-income families in a period of high inflation. Consider whether this system is likely to be successful. [12]

(June 2016/P21/Q2/b)
Discuss whether attempts to help poorer consumers through the introduction of a maximum price for necessities can ever be successful. [12]

(March 2016/P22/Q2/b)
Discuss the effectiveness of subsidies and indirect taxes in ensuring that the correct price for merit and demerit goods is charged in the market. [12]

(Nov 2015/P2/Q3/b)
Discuss why merit goods are undersupplied in a free market economy and consider the effectiveness of one policy to deal with this problem. [12]

(Nov 2015/P2/Q3/b)
Most governments provide both defence and education services.
(b) Discuss how taxation and subsidies could improve the provision of defence and education services in an economy and consider the likely success of such policies. [12]

(Nov 2014/P21/Q2/a)
Using a supply and demand diagram, explain how the imposition of a subsidy on a good would affect the surplus enjoyed by the producers of that good. [08]

(Jun 2014/P21/Q2/b)
Discuss the extent to which a government can increase the supply of an agricultural product to an economy in the short-run and in the long-run. [12]

(Jun 2014/P22/Q2/b)
Discuss the view that attempts to help poorer consumers through the imposition of a maximum price for food items will always fail. [12]

(Jun 2014/P22/Q3/a)
Distinguish between income elasticity of demand and cross elasticity of demand and explain how each is used to identify different types of product. [08]

(Jun 2014/P22/Q3/b)
Discuss which of these two types of elasticity would be more useful when predicting how a firm's revenue would change as demand factors change in a market economy. [12]

(June 2013/P23/Q3/b)
Explain on which goods and services the government should impose indirect taxes to ensure that the incidence of the tax falls mainly on consumers, and discuss the extent to which consumer surplus would be affected. [12]

(June 2013/P22/Q2/b)
Discuss whether preventing the price mechanism from working freely by using government price controls can ever be effective. [12]

(Nov 2012/P21/Q2/a)
Explain, with the use of diagrams, the different effects on the price and quantity of a product of the removal of a subsidy and the removal of an indirect tax on that product. [08]

(Nov 2012/P21/Q2/b)
Discuss the possible benefits and drawbacks of government subsidies to agriculture. [12]

(June 2012/P23/Q3/b)
Discuss the effectiveness of government use of maximum and minimum prices to help consumers and producers. [12]

(June 2011/P22/Q3/b)
Suggest two possible reasons why a government might increase the indirect tax on such goods (MP3 Players) and discuss, in the light of these reasons, the likely effectiveness of such a policy. [12]

(June 2010/P22/Q4/b)
With the help of diagrams, discuss whether consumers will benefit from the introduction on a product of
(i) an indirect tax, and
(ii) an effective maximum price. [12]

(Nov 2009/P22/Q2)
(a) With the aid of a diagram, explain how a government subsidy to producers of fuel will affect the producers and government expenditure. [08]
(b) Discuss how reduced air fares on low-cost budget airlines might affect the air travel market and the markets for related goods and services. [12]

(Nov 2009/21/Q2/a)
Explain, with the help of a diagram, how the price of a product moves to a new equilibrium following a decrease in its supply. [08]

(Nov 2007/Q3/b)
Discuss, with the aid of a demand and supply diagram, the effects on consumers and producers when the government introduces an indirect tax on a good. [12]

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