સ્ટેટ ટીચર્સ ટ્રેનીંગ ઇન્સ્ટીટ્યુટ
(જી.સી.ઇ.આર.ટી., ગાંધીનગર)

"વિદ્યાભવન", ઉમિયા માતાજી મંદિર પાસે, ઉદ્યોગ ભવન સામે, સેકટર-૧૨,
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Ref.no: STTI/મોડ્યુલ/2022/28   તારીખ :- 12/01/2022

પ્રતિ,

જિલ્લાના શિક્ષણાધિકારીશ્રી,

જિલ્લાના શિક્ષણાધિકારીશ્રીની કચેરી,

જિલ્લો:- યાદી મુજબના

વિષય: અર્થશાસ્ત્રના સંકલિત મોડ્યુલ પર પ્રતિભાવ/પ્રતિસાદ મેળવવા બાબત

NCERT, નવી દિલ્હી, શિક્ષણ વિભાગના સામાજિક વિજ્ઞાન (DESS) વિભાગના તજજ્ઞશ્રીઓ દ્વારા ઉચ્ચતર માધ્યમિક વિભાગના શીખનારાઓ માટે અર્થશાસ્ત્રનું સંકલિત મોડ્યુલ તૈયાર કરેલ છે. ઉચ્ચતર માધ્યમિક વિભાગના સમાન તબક્કે શીખનારાઓ માટે આ મોડ્યુલ હાલના અભ્યાસક્રમ માળખાથી થોડું અલગ છે. ઉચ્ચતર માધ્યમિક વિભાગમાં અર્થશાસ્ત્રની પસંદગી કરતા વિદ્યાર્થીઓ માટે ચાર પુસ્તકો સૂચવવામાં આવ્યા છે. તેમાથી બે થિયરી પુસ્તકો, (પ્રારંભિક સૂક્ષ્મ અર્થશાસ્ત્ર અને પ્રારંભિક મેક્રોઇકોનોમિક્સ) ત્રીજું પુસ્તક અર્થશાસ્ત્ર માટેનું આંકડાશાસ્ત્ર અને છેલ્લું ભારતીય અર્થશાસ્ત્ર પર છે. હાલના સમયમાં માત્ર આ પુસ્તકો જ અધ્યાપન-શિક્ષણ તરીકે ઉપલબ્ધ છે.

NCERT દ્વારા અર્થશાસ્ત્ર વિષયની આંતરરાષ્ટ્રીય અભ્યાસક્રમ સાથે તુલના કરી સિદ્ધાંત અને વ્યવહારુ જોડાણ (પ્રેક્ટિકલ) સાથે સંકલિત કરી મોડ્યુલ બનાવેલ છે. આ મોડ્યુલના આધારે NCERT દ્વારા એક પ્રશ્નાવલિ તૈયાર કરવામાં આવેલ છે. જેના પર શિક્ષકોનો પ્રતિભાવ/પ્રતિસાદ મેળવવાના થાય છે. આપના જિલ્લાની પત્રક -એ મુજબની <u>ઉચ્ચતર માધ્યમિક શાળાના અર્થશાસ્ત્રના વિષય શિક્ષક</u> પાસેથી પ્રતિભાવ/પ્રતિસાદ મેળવી અત્રેની કચેરીના ઇ-મેઇલ પર તારીખ:- ૨૦/૧/૨૦૨૨ સુધીમાં મોકલી આપવાના રહેશે.

સહકારની અપેક્ષા સહ...

કો-ઓર્ડીનેટર
એસ.ટી.ટી.આઇ.
ગાંધીનગર

બિડાણ:- પત્રક- એ

1. Name: _____

2. Gender: ☐
   1. Male
   2. Female

3. Age in Years: ☐☐

4. Marital Status: ☐
   1. Married
   2. Unmarried
   3. Other

5. Annual Income ☐
   1. Up to 2 Lakhs
   2. More than 2 Lakhs to 5 Lakhs
   3. More than 5 Lakhs to 10 Lakhs

6. Caste ☐
   1. General
   2. OBC
   3. SCs
   4. STs

7. Designation when you joined the school (Teaching Profession) ☐
   1. PGT/Lecturer
   2. TGT
   3. Principal
   4. Vice-Principal

8. Year of joining on current post/position ☐☐☐

9. What is your employment status as a teacher at this school? ☐
   1. Permanent Employment
   2. On contract
   3. Guest teacher/Adhoc

10. Highest educational qualification? ☐
    1. Higher Secondary or equivalent
    2. Bachelor's Degree
    3. Master's Degree
    4. M.Phil / Ph.D

11. Qualification:
    a) Educational Qualification (Starting from Higher Secondary or equivalent)

S.No.	Educational Qualification	Percentage	Whether You Studied (1-Yes; 2- No)	
			Maths	Economics

b) Do you possess Doctoral Degree or Equivalent (Ph.D., M.Phil)

Topic of Research _____
_____

12. Qualification acquired after joining PGT (Economics)
    _____
    _____

13. Please specify the classes and subject taught before and after joining PGT

	Classes Taught[*](Use Codes)	Taught Economics (1-Yes; 2-No)	Number of Years
Before joining PGT			
After joining PGT			

1- Primary   2- Upper Primary   3- Secondary   4- Higher Secondary
5- Primary and Upper Primary   6- Secondary & Higher Secondary

14. Medium of Instruction
    1. Hindi
    2. English
    3. Any Other

15. Teaching Experience as PGT Economics
    1. Up to 5 years
    2. 5 to 10 years
    3. 10 to 15 years
    4. 15 to 20 years
    5. Modern 20 years

16. Have you ever enrolled in a MOOC? If yes, name the course and the provider

_____

17. Did you ever make any e-content for teaching-learning?

_____

QUESTIONNAIRE

I. Teacher's perception on Integrated module in Economics

1. Structure of module

a. The content in the textbook is:

(i) Well organized	(ii) There is a balance between theory and examples
(iii) Poorly organized	(iv) Any other _____

b. Which approach is being followed in this Module (Inductive/ Deductive/ Inducto-deductive Approach)?

c. What are your observations on the approach followed?

d. What can you say about the length of Chapters presented in the Module?
   i. They are too long
   ii. They are too short
   iii. They are appropriate
   iv. Any other comments
   _____

e. What can you say about the Chapters
   i. They are very interesting to read and understand
   ii. They are not at all interesting to read and understand
   iii. They are of moderate quality
   iv. Any other comments:
   _____

f. Did you find any interesting, humorous pieces of information/ examples in the Module?
   i. Yes, there were many
   ii. Yes, they were a few

iii.   There were hardly any

iv.   No. there were none

g. What is your opinion about the quantity and quality of Charts, Graphs and other data presented in the Module?

    i.   Yes, I am happy with the quantity and quality of the module

    ii.   They are there but not in adequate quantity and quality

    iii.   No, there are hardly any good examples of Charts, Graphs and other data

    iv.   Any other comment: _____

h. Does the module have examples drawn from across various disciplines such as history, social science, languages, mathematics and etcetera?

Yes there are, but they are few	Yes there are and they are sufficient
No and there needs not to be any	No but they need to be added

2. **Content and support material[1]**

a. Do you use the content support material that exists in the text-book?

Yes	No

If yes, specify which one

_____

b. Do you think that these supporting materials are an obstacle in completing the syllabus?

Yes	No

c. Do you think students need extra hand-holding from teachers for these content support materials?

Yes	No

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[1] These include the charts, illustrations, case studies etc. used in the

d. Does the module have examples drawn from across various disciplines such as social science, languages, mathematics etc. ?

Yes there are, but they are few	Yes there are and they are sufficient
No and there needs not to be any	No but they need to be added

e. How do you look at the given theory and examples in the module?

There is a balance between theory and example	The theory is sufficient but more example needs to be added
The examples are sufficient but more theoretical knowledge needs to be added	Any other _____

f. Do you think that there are sufficient examples for every given concept in the module

Yes	No

If not, do you think that there is a need to provide more examples for the given concepts?

Yes	No

3. **Teacher's engagement with the students**
   a. Which book do you use to teach your students
   _____
   b. To make the classroom set-up more inclusive (for eg: for differently-abled students, slow learners etc.), do you use any new strategies?
   _____
   c. Do you think your current book is sufficient to enhance student's learning?

Yes	No

If not, what are the other resources you use?
_____

   d. Do you encourage field visits for project-based learning?

Yes	No

e. In your opinion, do you think classroom participation is an important criteria for assessing students?

_____

4. **Pedagogy and learning experience (ICT, concept maps, case studies)+ Scope of learning beyond textbook**

   a. Have you ever used any additional pedagogies (teaching methods/aids/strategies) apart from those used in the text-books (such as case study, newspaper clippings, games etc) to explain any topic or concepts.
   If yes, answer the following:

TOPIC/ CONCEPTS	Pedagogies USED	EXPLAIN THE pedagogy USED

   b. Are there other pedagogies that you would use but cannot implement because of time constraints

TOPIC	Pedagogy	SPECIFY CONSTRAINTS

   c. Which pedagogies do you think students find most interesting?

   _____

   d. Do you feel background notes/ some context needs to be provided before introducing a chapter- would it be helpful?

a. History of the topic	b. Anecdote & stories
c. Brief about how theory emerged	d. Others. Please Specify _____

e. Do you think current textbook is helpful in scoring high marks

Yes	No

Do you use/open web links mentioned in the text-books

Yes	No

5. **Individual's knowledge, skills & attitudes**
   a. Does the module adequately cover all the important concepts of economics for learners at the higher secondary stage?

Yes	No

   If no, then suggest
   _____

   b. Is the module suitably created to fulfill the requirements of a diverse set of learners such as slow learners, differently abled students, etc.?

a. Yes	b. No

   c. Does the content develop the following skills among the students:
      i. Application   (Yes___/No___)
      ii. Problem solving   (Yes___/No___)
      iii. Critical Skills   (Yes___/No___)
      iv. Presentation through visuals   (Yes___/No___)
      v. Analytical Skills   (Yes___/No___)
      vi. Data interpretation   (Yes___/No___)
      vii. Inference drawing   (Yes___/No___)
      viii. Decision making   (Yes___/No___)

   d. Does the content develop the following attitudes among the students:
      i. Scientific Temperament   (Yes___/No___)
      ii. Rationality   (Yes___/No___)
      iii. Global-Citizenship   (Yes___/No___)

e. Does the content develop the following values among the students:
   i. Ethical (Yes___/No___)
   ii. Social sensitivity (Yes___/No___)
   iii. Empathy (Yes___/No___)
   iv. Team spirit (Yes___/No___)
   v. Inclusivity (Yes___/No___)
   vi. Social justice (Yes___/No___)
   vii. Global-citizenship (Yes___/No___)
   viii. Constitutional values (Yes___/No___)

f. Which skills and abilities (interpersonal,data interpretation, cognitive skill etc) can be fostered among students through different topics/subtopics?
_____

f. Do you think students can apply text-book concepts in real life?
_____

6. Social Transformation

a. Do you think that sufficient attention was given in the modules for promoting indigenous goods?

Strongly Agree	Agree
Disagree	Strongly disagree

b. Does the content incorporate examples, illustrations etc. highlighting the social transformation in the economy
If yes, specify _____
If no, suggest _____

c. Did the content provide sufficient information about the modernised ways of production and distribution of goods and services?

Strongly Agree	Agree
Disagree	Strongly disagree

d. After reading this module, did you gather any new insights regarding government budget

Yes	No

If no, what kind of information should be added

_____

e. Is there any aspect regarding social transformation that you think has been neglected in the module?

Yes	No

Give reason

_____

f. Did the module provide information about grassroot financing mechanisms and inclusive banking such as Self help groups (SHGs), Jan Dhan Yojana etc. ?

Yes	No

If yes, do you think these are beneficial for society?

_____

g. Do you think that the given module sensitizes the students towards the effective use of community resources/knowledge

Yes	No

7. Learner's Assessments

a. How frequently do you assess your students?

_____

b. Should assessment be restricted to textbook content or expanded to include the overall achievements of students

_____

c. After going through the course content, do you think students can make their own decisions about their learning path?

_____

d. Apart from term-end examination, what are some of the other methods of assessment you use regularly?

_____

e. Do you give homeworks to your students? How often do you give theme homeworks?

_____\

8. **Reflective Teacher**
   a. Your overall suggestions and comments on the curriculum

   _____

   b. What kind of difficulties will be faced by teachers in implementing this curriculum?

   _____

   c. What kind of Teacher training is required for its implementation?

   _____

   d. How often do you update your teaching notes

a. Every year	b. 2 to 5 years
c. 6 to 10 years	d. More than 10 years

   When did you last update your teaching notes?

   _____

   e. What kind of additional assistance do you provide to your learners for their effective learning?

   _____

Integrated Module in Economics

DESS, NCERT

2021

Table of Contents

Chapter-1
Introduction

<u>**XI-XII**</u>

AIMS :-

- Familiarize the student with simple tools of economic theory covering both the theory of markets and the theory of level of activities.
- Equip the student with the skills to analyze/ approach major Indian Economic Problems (Diversity and Inclusiveness).
- Enable the student to measure economic variables and draw inferences with data drawn from Indian Economy.

At the end of the course students should be able to:

1. Understand basic theoretical tools relating to markets and working of aggregate economy.
2. Relate to the problems of Indian economy through these theoretical tools.
3. To use statistical tools and to measure economic variables.

<u>**XI-XII**</u>

<u>**Curriculum Framework**</u>

Micro Economics :-

- Pre Requisite – Exchange Process
- Theory of Markets
- Price and Quantity Determination
- Market for Primary Products and Manufacture Goods
- Market for Labor
- Market for Money and Credit
- Concept of Competition and Services
- Public Goods and Social Consumption (Govt. of Market Regulation)
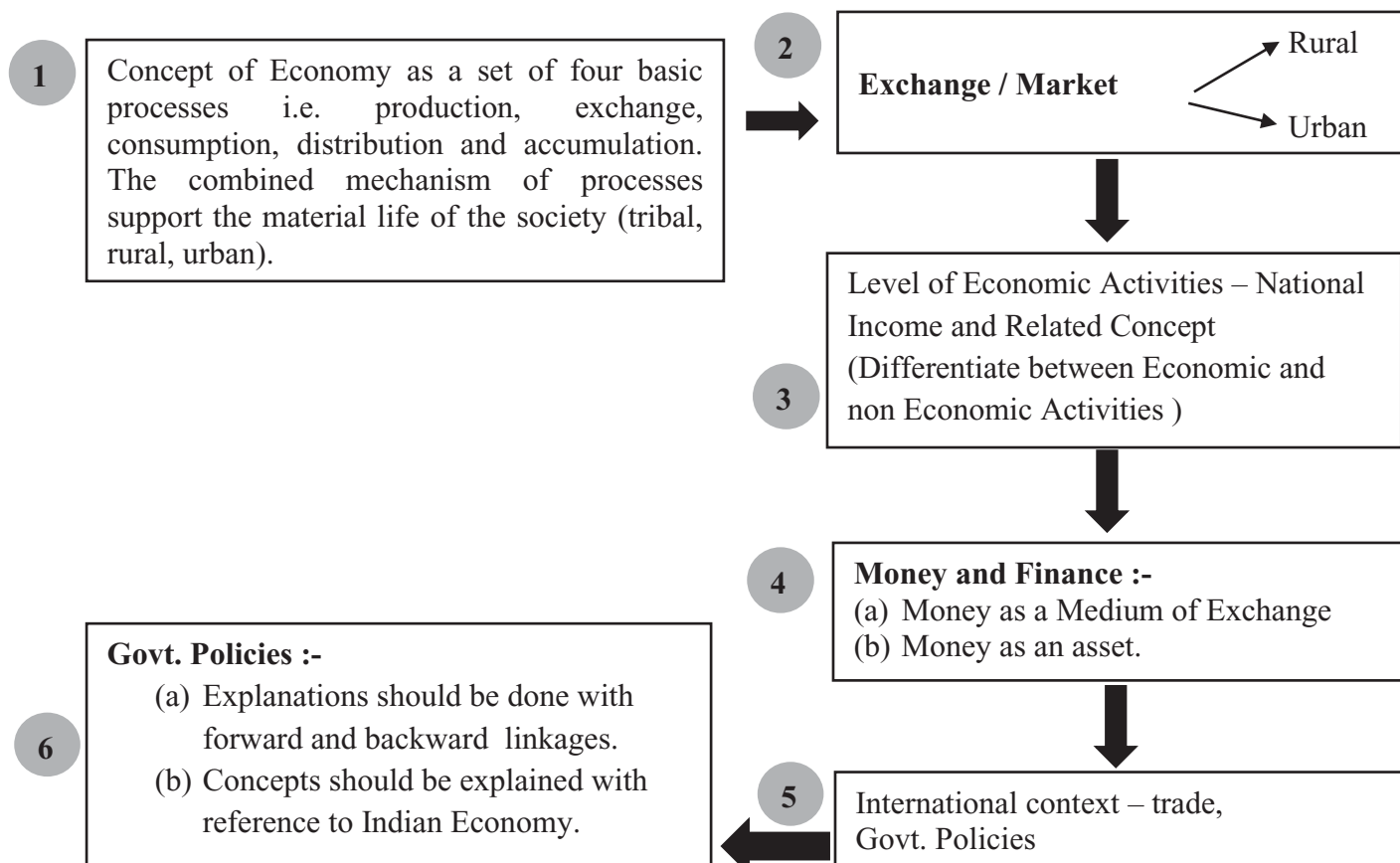
Macro Economics :-

- Pre Requisite – Level of Economic Activities and Basic Concepts of GDP
- Extension of National Accounts
- Principal of Aggregate Demand (C+I+G+X-M)
- Level of Employment

- Theory of Price Level

- Budget

- Money and Finance

- Foreign Trade and Balance of Payment

All this will include examples for Indian Economics as follows :-

  ➢ Long Terms Constraints on Aggregate Demand in India (Colonial India)

  ➢ Functioning of Selected Markets

  ➢ Level of Productivity

  ➢ Unemployment and Poverty

  ➢ Sustainable Development

- Equip the student with the skills to analyze/ approach major Indian Economic Problems (Diversity and Inclusiveness).

- Enable the student to measure economic variables and draw inferences with data drawn from Indian Economy.

CURRICULUM FRAMEWORK OF ECONOMICS

1 — Concept of Economy as a set of four basic processes i.e. production, exchange, consumption, distribution and accumulation. The combined mechanism of processes support the material life of the society (tribal, rural, urban).

2 — **Exchange / Market** → Rural, → Urban

3 — Level of Economic Activities – National Income and Related Concept (Differentiate between Economic and non Economic Activities)

4 — **Money and Finance :-**
(a) Money as a Medium of Exchange
(b) Money as an asset.

5 — International context – trade, Govt. Policies

6 — **Govt. Policies :-**
(a) Explanations should be done with forward and backward linkages.
(b) Concepts should be explained with reference to Indian Economy.

After going through the course in economics student will be able to :-

(a) Develop themselves as responsible citizen of the country

(b) Understand concepts, processes, terms, facts of economy

(c) Apply the knowledge of economy to take informed decision

(d) Describe various level of economic activities

(e) Understand the contemporary challenges faced by the economy

(f) Appreciate diversity including inclusiveness

(g) Develop skills to explore argue logically with reasoning, draw confusion conclusion & communicate on economic ideas & decisions.

Rationale :-

- Economic reality in India and worldwide has undergone significant changes in the last decade.

- New issues and new ways of perceiving these issue and policies responses has emerged recently.

- There is also at the level of discipline of economics – a strong sense of introspection enforced by development in both advanced countries and Indian Economy.

- Together these necessitates relook at the way economics is to be taught and learnt at the secondary level.

- Finally with the explosion of media the discourse on the economy has reached a new level of sophistication.

- It is imperative that school students today are in a position to captured the contemporary discourse.

Economics Syllabus

For Standards (References)

➢ NCF Principles/Guidelines (5)

➢ National Council of Economic Education

➢ Queensland's Senior Syllabus 2010

Knowledge, Evaluation, Synthesize, Attitude and Values

(a) Several kind of economic knowledge

- Concepts
- Logical reasoning
- Data on Indian economics
- Multiple views

(b) how to reason about economic issues

- Identify problems
- Analysing incentive at work in an economic situation
- Examining consequence in Agriculture in economic condition & policies
- Collect & organised evidence
- Compare pros & cons

(c) Attitude & Values (developing human spirit)

Biggs (1999)

- Knowledge
- Declarative – 'What' & 'Why'
- Procedural – how
- Conditional – When
- Functioning – how to apply

US: K-12 common standards

- Align to college & work experience
- Other economies – global world
- Hots

Topics

1. Exchange economy- Concept of market- market demand and supply schedule, equation, curve, elasticity (along with case study)

2. Market equilibrium- Primary product market, and other markets.

3. Market outcomes and regulations (consumer surplus)

4. Forms of competition- importance of competition

5. Consumer optimisation and demand schedule

6. Firms' optimisation and supply schedule

7. Market equilibrium and full employment of labour and capital.

8. National income accounting

9. Theory of income and employment

10. Money and banking

11. Taxes and government expenditure

12. Balance of payment

Note: These topics will be discussed in relation to case study and data set drawn mainly from Indian economy. Statistical tools will be applied as per chosen data set.

Class-XI

1. Introduction – What is economics?
2. Barter and exchange, production and market
3. Market and detail: -
   (i)   Consumer and demand
         (Correlation)
   (ii) Producer and supply   (Correlation)
4. Different market forms
5. Foreign exchange market
   (i)   Indian Economy History + neighbours
   (ii) Making sense of data (questionnaire, collection, organization)

Class-XII

1. National Income (Central Tendency, Index Number, Measures of Dispersion)
2. BOP
3. Equilibrium Income Keynes – Full Employment
4. Money and Banking
5. Taxes and Government Expenditure
6. Challenges for Indian Economy

Guiding principles

IX-X

1. There will be discussion on basic concepts and themes. Theories will not be discussed.
2. General issues related to day-to-day life of students pertaining to economics.
3. Use of statistical diagram and pictures (with the help of different pedagogy) from Indian economy.
4. Learners will be introduced to basic conception of the economy and its process, production, exchange, distribution, investment.

XI-XII

1. Theories will be explained with the help of examples from Indian economy.
2. Inclusion of case studies.

3. Statistics will be integrated in the course.
4. Government policies

Important Points

What is Economics and what are the processes?

How is theory of National Income determined?

NCF Guidelines – Teaching in the classroom should be reflected outside the classroom.

Growth Rate-Geometric series/ Theory.

What is function?

Family budget survey.

GDP- In class IX there should be reference to the domestic income or GDP?

How money used in actual life?

Subsidies- Price determination, Employment determination.

Central Bank-RBI

Indian balance of payment, trade, exchange rate- how is exchange rate determined for example rupee verses dollar?

Central bank- Rural bank (To identify rural population)

There was query whether the Keynes income determination should be included?

Budget, price rise

Humanities don't want mathematics

Practical Realities

Repo Rate-How does it look like?

Application of how policies work?

Repo Rate and inflation trend series, or Repo rate or investment- data can be made use of?

One should be able to relate and apply the concept?

Pedagogy inputs should be strong for books and take help of the books developed abroad?

There is a need to revisit the existing four courses at higher secondary level and relate the common mapping and concept mapping

Cognitive ability has not been developed for content orientation does not favour criticality

Difference between warranted and unwarranted inference?

Teachers will be overloaded by the open-ended question-such as repo rate will increase or not and its impact

If production is falling then there is a need to ask reason?

Demand	Supply
Function: Q=f(x)	Q=f (q)

Individual Demand

Aggregated into market

⇩

Price consumption curve

⇩

Utility function

⇩

Rationality

Basic micro theory: DD-SS equation

Q=f (q)

Individual supply

⇩

Cost function

⇩

Production function

XI-XII

- ❖ There will be two theory textbooks for both class XI and XII
- ❖ These books will be of approximately 150 pages each
- ❖ There will be activities, case studies, images, graph, data on approximately 50 pages

Discussion on the Topics

Exchange Economy: Price and quantity demanded and supplied-Linear correlation. Students will experience that consumer wants to purchase at lower price and producer wants to acquire higher price. Examples from mandi can be sighted – price at which actual purchase have taken place.

- Inverse relation can be shown
- Hypothetical tables will be made
- Elasticity- degree of responsiveness
- Two methods particularly- Percentage and expenditure methods

Market equilibrium- Primary sector to be explained through current economy scenario. For example, the production of onion will not stop even when it has crashed in the current scenario. On the contrary the production houses of automobile industry will fall once the economy is in recession.

Domestic import-variations in stocks-opening and closing stocks

Food security, self-sufficiency, Food Corporation and stocks.

Consumer items-Textile committee, why prices of agricultural goods are low

Manufacturing prices goes low once there is change in technology

1. Index of industrial production- Consumer price index is different for different sections of society (varies among the rich and the poor), price ceiling.
2. Forms of Competition: Different types of market

   Ratio of prices of primary commodity

   This will be followed by multiphrase discussion

   - Inventory stock
   - Capacity utilisation
   - Credit offtake

IT sector

Labour Market- Impact of NREGA on agriculture labour

Government intervention in one labour market is affected by another market Growth-Inflationary, Deflationary

Monetary

Fiscal- Government Expenditure- MGNREGA, Education and health

Sources of inflation

Oil import price- Cost push

Supply shocks

Demand pulls

When interest rate increases – cost of production increases- prices of the commodities also increases.

Growth and development mean changes

Inflation hits the poor more than the rich

Deflation

Policies to mitigate fluctuations in Indian Economy

Reforms are for stabilizations

Monetary transmission does not impact because of the existence of informal sectors

Service sector-Singapore (Case Study)

Economic zone-China

PDS- Brazil

Chapter-2
GOVERNMENT BUDGET AND THE ECONOMY

The economy can be broadly divided into two sectors - public sector and the private sector. The private sector is that part of the economy that is run by individuals and companies for profit. The public sector is that part of the economy that is run by government for improving the overall welfare of the citizens, where profit is not the main objective. In the following chapter, we focus on the role of the government and its provision of goods and services. The government can influence the level of economic activities in a country through its fiscal policy. **Fiscal policy** refers to the shaping of the tax structure and determination of the amount of tax revenue and the volume, as well as direction of public expenditure for attaining a specific objective like a desired level of employment. For instance, during a recession, the government can use Fiscal policy to try to boost economic activity, just as a parent tries to give extra food to an underweight child.

Source: Yoram Bauman, Grady Klein

This requires appropriate planning, which starts with drafting a **Budget**.

Just like a household plans its monthly income and expenditure, the government also plans its yearly allocation. Now we will try to understand the components of a Union Budget using the individual household's perspective:

Ravi is working in a rural factory; his household includes four member – his wife and two kids. Ravi is the sole bread earner of his family. His monthly income is Rs 20,000, which he gets in the beginning of each month – this is a **revenue receipt**, as it is recurring in nature. *Hence, revenue receipts refer to those receipts which neither create any liability nor cause any reduction in assets.*
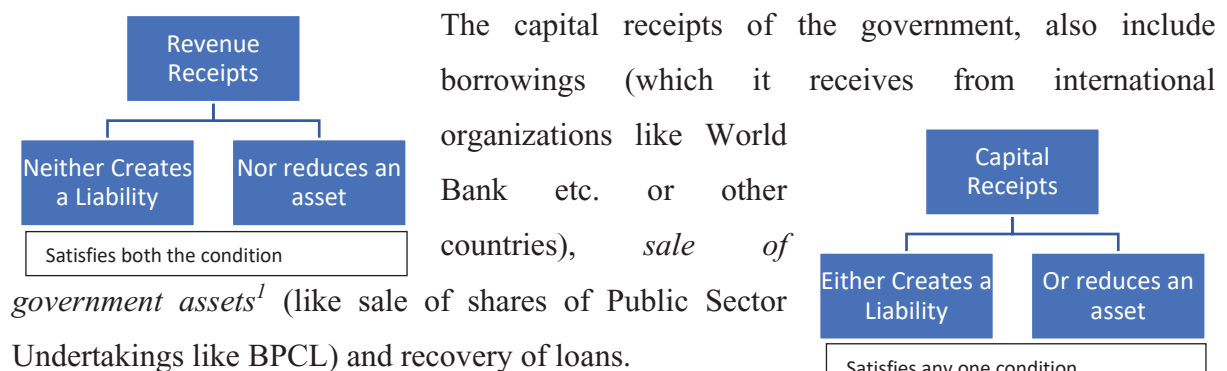
Ravi also needs to buy a tractor for his farm and for which he takes a loan of Rs. 15,000 from a cooperative bank. Although it is a borrowing, it is considered as a **capital receipt**, because he is using it to finance his immediate expenditure. But such expenditures are a liability as he

has to repay the loan along with its interest. *Thus, we can infer from the above that capital receipts create liability or it reduces financial assets.*

Now, we look at Ravi's monthly expenditure. Every month he has to pay for food, clothing, school fee for his children, electricity bill etc. (summing to a total of Rs. 15,000) – since they are recurring in nature, they are a form of **revenue expenditure**. *Revenue expenditure is one, which neither create any liability nor cause any reduction in assets.* Ravi also bought a plot of land (Rs. 50,000), which increased his assets and hence becomes a capital expenditure. In due course, he also managed to repay off his home loan (Rs. 5000) and this led to a reduction in liabilities and is also a capital expenditure.

Likewise, Government budget is an annual statement showing the item-wise estimates of receipts and expenditures during a *fiscal year*. The receipts and expenditures shown in the budget are not actual figures but the estimated values for the coming Fiscal year. Fiscal year in India, is taken from 1st April to 31st March. Budgets is prepared by the government at all levels – center, state and local. However, here we restrict our studies to Budget of Central government, known as the *Union Budget*.

Just like the case of Ravi, the government's budget has receipts and expenditure component. The receipts have a revenue receipt and a capital receipt. Similarly, the expenditure has a revenue expenditure and a capital expenditure. The revenue receipts accrue from Tax and Non-Tax sources, these too, are recurring in nature as the government receives it every year.

The capital receipts of the government, also include borrowings (which it receives from international organizations like World Bank etc. or other countries), *sale of government assets*[1] (like sale of shares of Public Sector Undertakings like BPCL) and recovery of loans.

```
Revenue
Receipts
  ├── Neither Creates a Liability
  └── Nor reduces an asset
  Satisfies both the condition
```

```
Capital
Receipts
  ├── Either Creates a Liability
  └── Or reduces an asset
  Satisfies any one condition
```

Borrowing leads to an increase in liability and recovery of loan and disinvestment lead to decrease in assets (non-debt creating capital receipts).
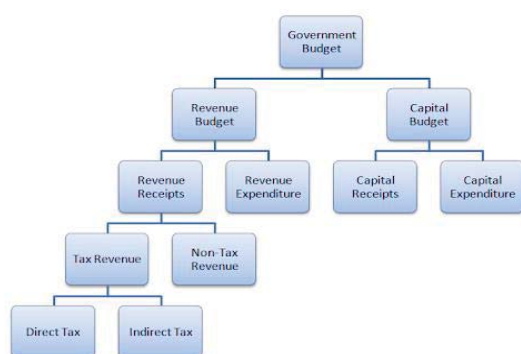
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[1]This is also referred to as disinvestments.

Additionally, the government's revenue expenditure consists of the recurring and day-to-day expenditure of the government like salaries (of government employees like defense personnel

Revenue Expenditure
- Neither decreases Liability
- Nor increases asset

Satisfies both the condition
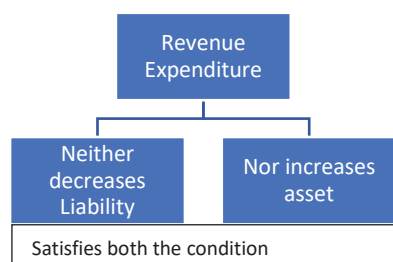
etc.), subsidies (like fertilizers), scholarship to students, pensions, interest payments and grants. The capital expenditure includes

Capital Expenditure
- Either decreases Liability
- Or increases asset

Satisfies any one condition
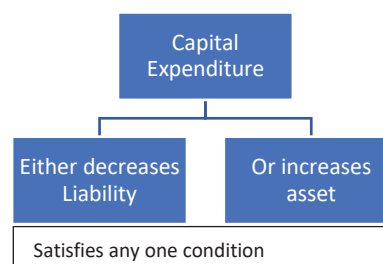
expenditure on land building machinery, equipment, investment in shares and loans and advances by the Central government to state and Union Territories, PSUs and other parties. The capital expenditures results in creation of physical or financial assets or reduction in financial liabilities.

Government Budget
- Revenue Budget
  - Revenue Receipts
    - Tax Revenue
      - Direct Tax
      - Indirect Tax
    - Non-Tax Revenue
  - Revenue Expenditure
- Capital Budget
  - Capital Receipts
  - Capital Expenditure

Tax revenue refers to the sum of total receipts from taxes and other duties imposed by the government. A tax is a compulsory payment made by people and companies to the government without any direct benefit in return. It is classified as direct tax and indirect tax. Direct tax, refers to taxes where liability to pay the tax (impact) and actual burden of the tax (incidence) lie on the same person. They are imposed on individuals and companies. For example – capital gains tax, income tax, corporate tax etc.

Indirect tax refers to those taxes where liability to tax (that is impact) and actual burden of the tax lie on different persons. That is burden can be shifted on others. They are imposed on others – example GST, excise duty etc.

Non-tax revenue refers to receipts of the government from all sources other than those of tax receipts. For example, interest, dividends, fees, gifts, grants, etc.

Capital receipts can be classified into three types –

- Borrowings: which are funds raised by the government to meet excess expenditure, they create a liability for the government.
- Recovery of loans: governments grant loans to various state governments or UTs. It is a Capital receipt as it reduces asset of the government.
- Disinvestment: refers to the act of selling a part or whole of share of a selected PSU held by the government. They are termed as Capital receipts as they reduce the assets.

What happens when Ravi's total expenditure equals his total revenue?

In the above example, we observe that Ravi's receipts (Rs 20,000 +Rs 15,000 = Rs 35,000) far exceeds his total expenditure (Rs 50,000+ Rs 15,000+Rs 5000 = Rs 70,000). This difference of Rs 35,000 (Rs 70,000-35,000) is known as *Deficit Budget*.

However, if his receipts were higher than his total expenditure, then he would have a *Surplus Budget*.

On other hand if his income was exactly equal to his total expenditure, then he would have a *Balanced Budget.*

Which is better – a balanced budget or a surplus budget or a deficit budget?

On the surface it might appear that a balanced or a surplus budget is better than a deficit budget. However, unlike the planning of an individual's finance (just like Ravi's household) managing a country's budget is not that simple. In most of the underdeveloped and developing countries like India, the private sector is not able to provide most of the goods and services to the economy. Hence, the government in these economies has to take a greater responsibility.

Apart from just providing protection and basic socio-economic goods, the government has to also undertake many developmental projects such as building infrastructure, electricity etc. but at the same time, the revenue generation avenues are also less. Therefore, most of these economies have deficit in their budget. And such deficits are important for the growth of the economy. However, these deficits should also be sustainable because the government has to borrow to meet the deficit, which requires future repayment and therefore they cannot go on indefinitely. This brings in the concept of different kinds of deficits:

a. **Revenue deficit** refers to the excess of government expenditure over government receipts.

> ***Revenue deficit = Revenue Expenditure- Revenue Receipts***

It includes only such transactions that include current expenditure and income of the government. It indicates the inability of the government to meet its regular and recurring expenditure in the proposed budget. When the government incurs a revenue deficit, it implies that the government is dissaving and is using up savings of the other sector of the economy to finance a part of its consumption expenditure. This situation means that the government has to make up this deficit from capital receipts, that is through borrowings or disinvestments. Hence, revenue deficits either leads to an increase in liability in the form of borrowing or reduces assets through disinvestment. The use of capital receipts for meeting the extra consumption expenditure leads to an inflationary situation in the economy.
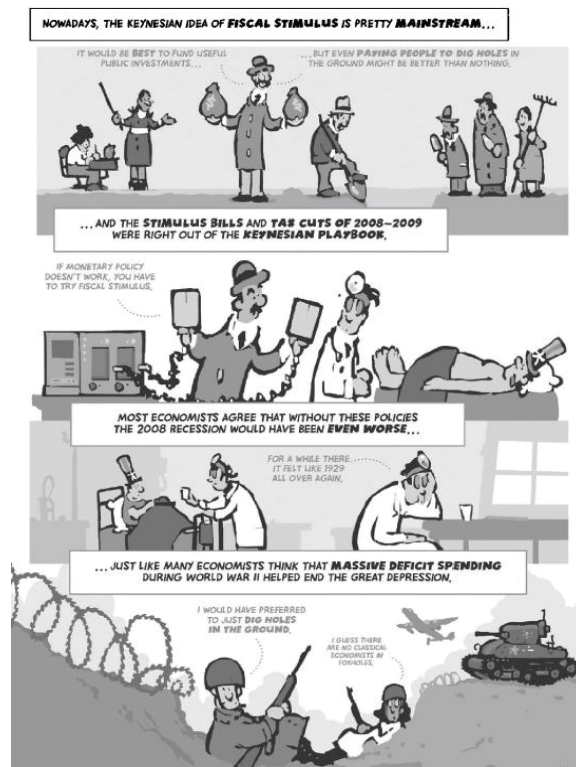
What should the government do to reduce the revenue deficit?

A high revenue deficit gives a warning signal to the government to either curtail its expenditure or to increase its revenue.

b. **Fiscal deficit** presents a more comprehensive view of budgetary imbalances. It is a widely used as a budgetary tool for explaining and understanding the budgetary developments in India.

> _**Gross fiscal deficit = Total expenditure – (Revenue receipts+ non-debt creating capital receipts)**_

Non-debt creating capital receipts are those receipts which are not borrowings and therefore, do not give rise to debt. Examples are recovery of loans and proceeds from sale of PSUs.

The fiscal deficits will have to be financed through borrowings. thus, it indicates the total borrowing requirements of the government from all sources. From the financing side:

**Gross Fiscal Deficit = Net borrowing at home + Borrowing from RBI +Borrowing from abroad**

The extent of fiscal deficit is an indication of how far the government is spending beyond its means. Borrowings not only involve repayment of principal amount but also require payment of interest. Interest payments increase the revenue expenditure, which leads to revenue deficit. It creates a vicious circle of revenue and fiscal deficit wherein the government takes more loans to repay earlier loans and some countries are caught in a debt-trap. When the government borrows from rest of the world, it raises its dependence on other countries. This increases the financial burden for future generations and adversely affects the development prospects of the country. When the government borrows from the RBI, to meet its fiscal deficits and the RBI prints new currencies, it increases money supply in the economy and creates inflationary pressure.

c. **Primary deficit** refers to the difference between the fiscal between fiscal deficit in the current year and interest payments on the previous borrowings.

Primary Deficit = Fiscal Deficit – Interest Payment

The total borrowing requirement of the government includes the interest commitments on accumulated debt. Primary deficit reflects the extent to which such interest commitments have forced the government to borrow in the current period. Given a zero-primary deficit, indicates that interest commitments (on earlier loans) have forced the governments to borrow.

The most reflective of the government's financial health is the Fiscal Deficit and India's long-term plan is to maintain its Fiscal deficit at 3.5% of GDP annually. However, the fiscal deficit of India in recent years has exceeded 3%. So, in order to maintain a Fiscal Deficit of 3.5% of GDP, the government has to either reduce its expenditure or increase its revenue or both. Each one has its positive and negative implications, which one of the above do you think is more appropriate?

Chapter-3

National Income

National Income (Gross Value Added) by economic activity (constant Price)						
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Primary Sector	1762982	1786897	1872305	1894400	1943669	2087812
	21.75					
Secondary Sector	1409986	1486873	1560709	1683938	1898790	2048711
	17.39					
Tertiary Sector	4933978	5272504	5630635	6133795	6660889	7111106
	60.86					
Total National Income (Primary + Secondary + Tertiary)	8106946					

Source: National Accounts Statistics (Different Years)

% share of Primary Sector (2011-12)

$$= \frac{Primary\ Sector\ (2011-12)}{Total\ National\ Income\ (2011-12)} \times 100$$

Q) Calculate the National Income for different years.

Q) Calculate the percentage contribution of different sectors in the national income in a particular year. (The first one has been done for you)

Q) Suggest different types of diagrammatic/graphical representation, appropriate for the following data.

Q) Prepare a Time series graph to represent the trend in national income across different years. (Put content on time series)

Q) Comment on the contribution of Primary, Secondary and Tertiary sectors in the contribution of national income

Table: National Income, Unemployment rate & HDI rank of different countries (2017)

S. No.	Country	HDI Rank[1]	National Income[2]	Unemployment Rate[3]
1	India	129	2245.49	2.557*
2	Norway	1	377.88	4.16
3	Sri Lanka	71	77.82	4.18
4	United Arab Emirates	35	332.09	2.46
5	United States	15	15129.20	4.35
6	Nigeria	158	293.43	8.39

Source: 1 http://hdr.undp.org/en/data#

2 https://data.worldbank.org (Adjusted net national income (in US $))

3 https://data.worldbank.org (Unemployment, total (% of total labour force) (national estimate)

*https://www.ceicdata.com

National Income

In any country countless activity are conducted all the time. For e.g. housewives are buying daily need, firms are paying wages, second hand cars being sold. to make sense of these transactions. Almost all counties calculate 'national income' or national product' using some of the above transactions. All the above transactions are not included in the calculation of National Income.

In India National Accounts Statistics (NAS) , <mospi.gov.in> calculates these numbers to arrive at NI.

In India National Accounts Statistics (NAS), <mospi.gov.in> calculates these numbers to arrive at NI.

There are various versions of NI or various NI Aggregates, the most common being GDP.

GDP is total value of all final goods and services produced in an economy during a given period usually a year.

There are three ways to calculate GDP:

The first way is to survey firms and add up the total value of their production of f*inal goods and services*

The second way is to add up aggregate spending on domestically produced final goods and services in the economy - the sum of consumer spending, investment spending, govt purchase of goods and services, and exports minus imports.

The third way of calculating GDP is to sum the *total factor income* earned by households from firms in the economy.

Let us understand the methods and therefore the calculation of GDP using a hypothetical example

Let there be two firms in India - Rani and Hamid. Rani grows wheat, hiring labor and produces Rs. 50 (lakh) worth of wheat in 2010. He sells the entire wheat to Ravi - owner of a flour mill. Ravi also hires labor and sells 200 Rs of atta to people who come to his shop.

Raja	Vikas		
40 (Profit)			
10 (wages)			

Raja pays Rs 10 to workers and retains the rest as profits with himself. Ravi on the other hand receives Rs 200 from sale of flour and he pays Rs. 50 to Raja (intermediate expenditure). Of the remaining Rs 150, Ravi pays 40 as wages' and retains Rs 110 as profits.

Let us see the GDP for this economy for the 2010 (Data Needed)

1. Output method or Production method or Industry of Origin Method

For each industry *value added* in the particular year is calculated and then total value added for all industries is summed up - this called GDP. Value added, as the name suggests is the additional value created by the firm over and above of what already exists. This is equal to sales of the firm minus raw material / inputs/ intermediate goods. VA is equal to sales minus intermediate expenditure.

From the above example Value added of Raja is 50 - 0 = 50

Similarly, value added of Vikas is 200 - 50 = 150.

GDP by production method is Rs. 200/-

GDP =

2. Income method

Here we calculate GDP by adding the income earned by all factors of production such as *wages* earned by labor, *interest* earned by those who lend their saving to the firm or to the Government, the *rent* earned by those who lease their land or structures and *profit* earned by the shareholders and owners of the firms.

In our example the workers in the economy earn Rs 10 as wages from Raja and Rs 40 from Vikas. Therefore, the total wages earned by the economy is Rs. 50/- The owners of firm earn a profit of Rs 40 (Raja) and Rs 110. The total factor income earned is total wages 50 and total profits 150, therefore total GDP is Rs. 200/-

GDP=

3. Another way to calculate GDP is to add aggregate spending on domestically produced *finally produced goods and services.*

> **Definition:** Final goods and services are those that are purchased for their own sake or for end use. Whereas intermediate goods which are required only for producing other goods. in our example wheat is intermediate good and flour is final good.

If the intermediate goods are added, this usually leads to a problem of **double counting.** in our example the final good is flour and the spending on flour by the consumer is Rs 200/- so GDP by expenditure method is equal to sum of final expenditure is Rs.200/- Let it be noted that flour value already included the value of wheat if we had added wheat separately Rs 50/- worth of wheat would have been added twice.

GDP=

EXAMPLE TO BE PUT IN THE FORMAT GVEN IN KRUGMAN PAGE 107

CIRCULAR FLOW OF INCOME

In the above example, arriving at the same number for GDP, irrespective of the methods used can be understood using the 'circular flow of income'

In any economy there are a large number of transactions, these transactions can be understood by two kinds of flows around the circle

DIAGRAM page 103, of Krugman.

First flow is of physical things such as good and services in one direction and flows of money that pay for these things in the opposite direction. In this case the physical flows are shown in dotted lines and the money flow is solid lines.

The above diagram illustrates an economy that contains only two kinds of inhabitant's households and firms. A household consists of either an individual or a group of people who share their incomes. a firm is an organization that produce goods and services for sale and that employs members of households.

In the above figure there are two kinds of markets on the one side (left side) there are markets for goods and services (product market) in which households buy their goods and services they want from the firms.

This produces a flow of goods and services from the households and a return flow of money to firms.

On the other side there are four markets in which firms buy their resources they need to produce goods and services and the best-known factor is the labor market in which the workers are paid for their time. besides labor we think of households as owing and selling other factors of production to firms.

THREE METHODS IN DETAIL

1. Output Method

As explained earlier, the value-added method calculates the total of value added by each separate industry / firm. This 'value added' is the value added by each industry to the raw materials or other goods and services that it buys from other industries before passing on the products to the next link in the chain of production.

Page 82, Jain and Ohri - before the illustration

Value Added Method - caveat

1.1. Sale and Purchase of second-hand goods is not included

Let's take an example Automobile company A sells five cars in 2019 of this, 1 car was resold by the buyer within one month. the resale activity will not be included in the GDP of 2019 since it would lead to '**double counting**'. Note that this car's value has already been included at the time of the first sale.

In yet another case firm sells its old car which it had bought in 2010, this sale will not be part of GDP of 2019 since the cars value has been already accounted for during the year of its manufacture.

Let's take an example of HOUSE.

1. 2. Commission, Advertisements, sales, renovation refurbishing will be included in GDP.

As already stated, GDP of a year includes goods and services only for the particular year however when goods produced in an earlier year are renovated and or refurbished (improved) upon the value of improvement will be part of the current year's GDP. Consider for example a property dealer sells a house in 2015. The house itself was built in 2000. As should be evident from the first case the value of house will not be included in the GDP of 2015 but the commission received by the property dealer will be included in GDP of 2015.Further any renovation is done in the house will be the part of GDP of 2015.

1. 3. Imputed value of goods and services:

There are instances where the goods and services are produced but not sold. For example, a farmer growing rice or wheat for his own consumption. in such cases since the good has been produced, it should be part of GDP and it is assumed that the producer has sold the good or service to him/herself. A value is assigned to the sale by looking the existing market value. In such a case the value is said to be 'imputed'.

Another example of a house given on rent. The rent received by the owner of the house is the value of the service sold by the owner and hence part of GDP. However, where the owner chooses to stay in house himself, here also the rent would be included but in this case the value of the rent is 'imputed'. It is as though the owner of the house has self-leased the house. However, the value of some services for example, the services of a home-maker are not included in the computation of GDP. (GDP is underestimated in terms of welfare)

2. Income Method

According to this method GDP is estimated in terms of factor payments to the owners of the Factors of Production. Factor payments is referred to as income earned by a person as a reward for rendering his/her factor services. It may be classified in form of factor and factor incomes /payments.

Labour as a factor payment, receives salary, wages, bonus (cash or kind). Provident Fund, Pension. Land as a factor payment receives rent actual / imputed. Capital receives Interest and Entrepreneur receives profits (dividend + retained earning + corporate tax). It must be noted that factor payments are only 'earned income' and it does not include any income with is not earned. For example, a senior citizen receiving old age pension will be not be considered as earned income, because it just a help by government without anything in return. Such receipts are called 'transfer receipts / payments.

III Expenditure Method

3.2. Components of Final Expenditure

In order to calculate the National Income from Expenditure method, we will be using different sets of indicators, all which denote the expenditure incurred in the economy. The four indicators which we will be using are:

- Consumption (C)
- Investment (I)
- Government Expenditure (G)
- Net Export (NX)

Consumption: Consumption consists of all the goods and services purchased by the household in the economy. Goods are the tangible things which can be touched whereas services are those which are intangible i.e., which cannot be touched. For example, the education which you are getting in the school is an example of services whereas the books, pencils, water bottle etc. used by you in the school are the example of goods. Both, goods and

Note: As you proceed further, you will understand that some of the durable goods, in economics, are considered to be a part of investment such as purchase of land. Similarly, some of the services are included in Investment. For example, education is also considered to be a part of Investment.

Have you observed that there are some goods which last for longer duration of time whereas others last for a shorter duration? Those goods which last longer are called **durable goods** such as Lunchbox, Books, cycle etc. whereas those that last for short period of time are **non-durable goods** such as vegetables, milk etc.

considered to be a part of investment such as purchase of land, car etc. Similarly, some of the services are included in Investment. For example, education is considered to be a part of Investment.

Investment: Investment is the expenditure incurred by the producer with the goal of generating income or profit in future. Such kind of expenditure includes spending on new equipment, Machinery, purchase of raw materials, purchase of commercial space etc.

> **Note:** Here, the raw materials are the **intermediate goods** because these are *used up* in order to produce the finished goods whereas machineries, may be depreciated, but are not *used up* completely in a particular year.

Government Expenditure: In any country, the government also incurs expenses towards different goods and services. The government expenditure on goods can be in the form of purchase of office space, cars, office equipment's etc. Similarly, the government expenditure on services can be in the form of wages paid to the teachers in the government schools, wages for government employees etc. Apart from these, the government also makes investment in the economy in the form of roads, railways etc. All these together constitute the government expenditure and are included in the National Income.

Net Export:

National and Welfare

Development and Sustainability - Indian Economy

GREEN NATIONAL INCOME

All the uses of bio-diversity, eco-system services and resources like mineral resources, soil nutrients and fossil fuels are capital assets, but it is not included in NATIONAL ACCOUNTS or GDP (Gross Domestic Products). It is just because they are capital assets and their monetary measures are not calculated on the market value. The concepts of GREEN GDP came to incorporate or register corresponding decline in assets (wealth) as a positive gain in

GDP whereas the ecological debt refers to the consumption of resources from within an eco-system that exceeds the systems regenerative capacity.

Green GDP is a term used generally for expressing GDP after adjusting for environmental damage. It is calculated by subtracting resources depletion, environmental degradation from the traditional GDP figures. It is expected to account for the use of natural resources as well as the costs involved. It also includes medical costs, generated from factors such as air and water pollution, loss of livelihood due to environmental crisis, such as floods or droughts or other economic factors.

Institutions supportive of Green GDP

1. The United Nations Conference on Environment and Development (UNCED), defined 'development that meets the needs of the present generation without compromising the ability of the future generation to meet their own needs'.

2. Edward Barbier defined Sustainable development as one which is directly concerned with increasing the material standard of living of the poor at the grass root level - this can be quantitatively measured in terms of increased income, real income, education services, health care, sanitation, water supply etc.

3. The Brundtland Commission, source (page 172 - onwards NCERT Indian Eco)

Strategies for Sustainable Development.

Q Does provision of goods and services alone, determine wellbeing?

Calculation of GDP: Expenditure Method (2015-16 & 2016-17)

S. No.	Items	2015-16	2016-17
1	**Private Final Consumption Expenditure**	6351137	6812334
2	**Government Final Consumption Expenditure**	1125317	1262124
3	Gross Fixed Capital Formation	3448193	3797875
4	Change in Stock	232449	90256
5	VALUABLES	185417	159735
	Investments (3+4+5)		
6	Exports of goods and services	2371638	2489079
7	Imports of goods and services	2510848	2611628
	Net Exports (6-7)		
8	Discrepancies	182842	196232
9	**GDP (1+2+3+4+5+6-7)**		

Source: National Accounts Statistics (2018)

Q) Calculate the Investment and Net Export of the economy in the year 2015-16 and 2016-17.

Q) Calculate the GDP by Expenditure Method

Chapter - 1

Determination of Income and Employment

Human Society has been very different from what we see around us today. For the longest time human beings lived with very few goods, very low levels of income and even the differences in standard of living between rich and poor was not as large as we see today. It is only around the beginning of the 1800s that the world saw a sudden increase in income and wealth. If human history was treated as being equal to one day or twenty-four hours, this period of growth in income and wealth corresponds to roughly four minutes. But even in this small time, the changes were so significant that many social scholars tried to understand the reasons behind this jump in income and wealth. The fact is that, the society had changed drastically and production was being organized on a radically different basis after the Industrial Revolution of late 1700s. A new system called capitalism became dominant in large part of the world.

The early social scholars, many of whom we know as first economists, developed theories to understand this society. These theories provided explanations for the levels of income, output, unemployment and prices in the society. The early economists believed that an economy produces output or income equal to that level which can be produced if all resources are employed and all those willing to work are employed. This was termed as the full employment level of output. The theory of these early economists was later called classical theory. According to classical economists, the economies would not have involuntary unemployment which means that anyone who wants to work will find work. They also concluded that the government should not interfere in the economy.

However, the further developments in the world did not happen in accordance with what the early economists had predicted. The classical theory could not foresee the Great Depression of 1930s which shook the entire world. This was the time where producers could not sell output, people could not find jobs, and the income and output levels reduced drastically. It was in this context that the British economist John Maynard Keynes, gave a theory to understand what determines the output and employment of any country. This theory is known as Keynesian theory. According to Keynes, output is determined by the amount of the demand in the economy and this in turn determines how much employment can be generated. This was in complete contrast with the classical theory which said that output in any economy is determined by conditions of supply.

Classical theory and Keynesian theory are different explanations of how output, employment and prices are determined in any economy. These different theories suggest different roles for government action or government policy. The theoretical model used in this chapter is based on the theory given by John Maynard Keynes.

Content which will be covered in this chapter:

- Aggregate demand and its components
- Determination of income in two sector model
  - Using Graphs
  - Using algebra
- Changes in income due to changes in aggregate demand
- Multiplier process
- Determination of Income in Three-sector Model

4.1 Actual to Equilibrium: Ex-Post to Ex-Ante

In the chapter on National Income Accounting, we have come across terms like consumption, investment, or the total output of final goods and services in an economy (GDP). These terms have dual connotations. In the chapter on National Income Accounting, they were used in the accounting sense–denoting actual values of these items as measured by the activities within the economy in a certain year. We call these actual or accounting values or ex-post measures of these items. It means that we are looking at the actual values of consumption and investment at the end of the accounting period.

Macroeconomic theories such as Classical and Keynesian theories use these terms with a different connotation. Here, consumption denotes not what people have actually consumed in a given year, but what they had planned to consume during the same period. Similarly, investment means the amount a producer plans to add to his machines or raw material or inventory. The planned values of consumption and investment are called ex-ante values.

Ex-ante values may be different from what ex-post values or the plans of consumers and producers may be different from what they end up doing. Suppose the producer plans to add two machines worth Rs1 lakh each, by the end of the year 2020. His planned investment is, therefore, Rs 2 lakh. However, due to an unforeseen circumstance such as the pandemic, he ends up adding only one machine. In this example, his planned investment is Rs 2 lakh whereas his actual, or ex-post, investment is Rs 1 lakh only.

In simple words, ex-ante depicts what has been planned, and ex-post depicts what has actually happened. The national income statistics of any country measures what has happened or gives the ex-post values. However macroeconomic theories talk about the planned values or ex-ante values.

Keynesian theory states that an economy will reach equilibrium when producers produce that level of output which is demanded in the economy. Equilibrium can be thought of as a state of rest. When income or output equals aggregate demand, there is no tendency for income to change unless demand changes. It should be obvious that equilibrium income (which is based on planned expenditures) may differ from actual income (which is based on actual expenditures and is measured or calculated as GDP). In order to understand how equilibrium income or output is determined, we need to understand different components of aggregate demand. Let us look at these components now.

4.1.1 Consumption

The most important determinant of consumption demand is household income. A consumption function describes the relation between consumption and income. The simplest consumption function assumes that consumption changes positively with income. As our incomes rise, we tend to consume more. This part of consumption is called *induced consumption* since it is induced by income. Of course, even if income is zero, some consumption still takes place such as consumption on food and other basic necessities. Since this level of consumption is independent of income, it is called *autonomous consumption*. We can describe consumption function as:

$$C = \overline{C} + cY \qquad\qquad (4.1)$$

Here C is the consumption expenditure by households. This consists of two components autonomous consumption and induced consumption (*cY*).

Autonomous consumption is denoted by $\overline{C}$ and shows the consumption which is independent of income. If consumption takes place even when income is zero, it is because of autonomous consumption. The induced component of consumption, *cY* shows the dependence of consumption on income. When income rises by Re 1, induced consumption rises by c multiplied by 1. Small c is called MPC or marginal propensity to consume. It is the rate of change of consumption as income changes.

$$MPC = \frac{\Delta C}{\Delta Y} = c$$

Now, let us look at the value that MPC can take. When income changes, change in consumption (ΔC) can never exceed the change in income (ΔY). The maximum value which c can take is 1. On the other hand consumer may choose not to change consumption even when income has changed. In this case MPC=0. Generally, MPC lies between 0 and 1 (inclusive of both values). This means that as income increases either the consumers does not increase consumption at all (MPC = 0) or use entire change in income on consumption (MPC=1) or use part of the change in income for changing consumption (0<MPC<1).

Imagine a country Imagenia which has a consumption function described by *C=100+0.8Y*. Here, even when Imagenia does not have any income, its citizens still consume Rs. 100 worth of goods. Imagenia's autonomous consumption is 100. Its marginal propensity to consume is 0.8. This means that if income goes up by Rs. 100 in Imagenia, consumption will go up by Rs.80.

Let us also look at another dimension of this, savings. Savings is that part of income that is not consumed. In other words,

$$S = Y - C$$

We define the marginal propensity to save (MPS) as the rate of change in savings as income increases.

$$MPS = \frac{\Delta S}{\Delta Y} = s$$

Since, $S = Y - C$,

$$s = \frac{\Delta(Y - C)}{\Delta Y}$$

$$= \frac{\Delta Y}{\Delta Y} - \frac{\Delta C}{\Delta Y}$$

$$= 1 - c$$

Some Definitions

Marginal propensity to consume (MPC): it is the change in consumption per unit change in income. It is denoted by *c* and is equal to $\frac{\Delta C}{\Delta Y}$.

Marginal propensity to save (MPS): it is the change in savings per unit change in income. It is denoted by s and is equal to 1-*c*. It implies that *s + c = 1*.

Average propensity to consume (APC): It is the consumption per unit of income i.e., $\frac{C}{Y}$.

Average propensity to save (APS): It is the savings per unit of income i.e., $\frac{S}{Y}$.

4.1.2 Investment

Investment is defined as addition to the stock of physical capital (such as machines, buildings, roads etc., i.e. anything that adds to the future productive capacity of the economy) and changes in the inventory (or the stock of finished goods) of a producer. Change in inventory is called inventory investment. It can be negative as well as positive: if there is arise in inventory, it is positive inventory investment, while a depletion of inventory is negative inventory investment. The inventory investment can take place due to two reasons: (i) the firm decides to keep some stocks for various reasons (this is called planned inventory investment) (ii) the sales differ from the planned level of sales, in which case the firm has to add to/run down existing inventories (this is called unplanned inventory investment).

Investment decisions by producers, such as whether to buy a new machine, depend, to a large extent, on the market rate of interest. However, for simplicity, we assume here that firms plan to invest the same amount every year. We can write the ex-ante investment demand as

$$I = \bar{I} \hspace{4cm} (4.2)$$

Where $\bar{I}$ is a positive constant which represents the autonomous (given or exogenous) investment in the economy in a given year.

31

Illustration from Indian Economy
Statement 1.1: Key aggregates of National Accounts
At constant (2011-12) Prices
For the year 2019-20

Item	¹ Crore	% of GDP
Domestic Product		
GVA at basic prices	1,32,71,471	
Taxes on Products including import duties	15,49,075	
Less Subsidies on Products	2,51,278	
GDP (1+2-3)	**1,45,69,268**	
CFC	17,46,386	
NDP(4-5)	1,28,22,882	
Final Expenditure		
PFCE	83,21,701	57.1
GFCE	15,41,742	
GCF	53,04,588	36.4

Note: Above information has been taken from the report published by National Accounts Statistics of Ministry of Statistics and program Implementation of the Government of India. PFCE refers to Private Final Consumption Expenditure or Consumption. GCF refers to Gross Capital Formation or Investment. For the year 2019-20 we can see that More than half of GDP came from consumption (57.1%) and around 1/3 of the GDP came from Investment (36.4).

Q. Are these values of consumption and investment ex ante or ex post?

4.2 Determination of Income in Two-Sector Model

In an economy without a government, the ex-ante aggregate demand for final goods is the sum total of the ex-ante consumption expenditure and ex-ante investment expenditure on such goods, viz. $AD = C + I$. Substituting the values of C and I from equations (4.1) and (4.2), aggregate demand for final goods can be written as

$$AD = \overline{C} + \overline{I} + c.Y \qquad (4.3)$$

The equilibrium can be written as

$$Y = \overline{C} + \overline{I} + c.Y \qquad (4.4)$$

Where Y is the equilibrium level of income or output. This equation can be further simplified by adding up the two autonomous terms, $\overline{C}$ and $\overline{I}$, making it

$$Y = \overline{A} + c.Y \qquad (4.5)$$

Where $\overline{A} = \overline{C} + \overline{I}$ is the total autonomous expenditure in the economy. Equation (4.5) should not be confused with the accounting identity of national income accounting which states that the actual output produced or GDP equals the sum total of ex-post consumption and ex-post investment in the economy. In equation 4.5 we are talking of equilibrium income or that level of income where the economy would be in rest. If the economy produces output equal to the what the consumers and investors plan then we get equilibrium. Y in equation 4.5, can be very different from the actual level of the GDP. If ex-ante demand for final goods fall short of the output of final goods that the producers have planned to produce in a given year, equation (4.5) will not hold. Stocks will be pilling up in the warehouses which we may consider as *unintended accumulation of inventories.*

Thus ex-post investment includes both planned and unplanned inventories, whereas ex-ante investment includes only that part of inventory investment which has been planned by the firms. In case, the actual output is different from equilibrium income or output, it leads to either an unplanned increase in inventories or an unplanned decrease in inventories.

4.3 Determination of Equilibrium in the Short Run

(A) Graphical Method

As already explained, the consumers demand can be expressed by the equation

$$C = \overline{C} + cY$$

Where $\overline{C}$ is autonomous expenditure, and c is the marginal propensity to consume.

How can this relation be shown as a graph? To answer this question we will need to recall the "intercept form of the linear equation",

$$Y = a + bX$$

Here, the variables are X and Y and there is a linear relation between them. a and b are constants. This equation is depicted in figure 4.1. The constant 'a' is shown as the "intercept" on the Y axis, i.e, the value of Y when X is zero. The constant 'b' is the slope of the line i.e. tangent $\theta = b$.
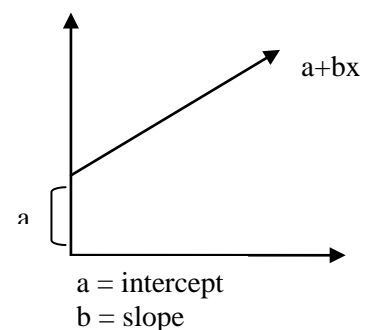
a = intercept
b = slope

Fig 4.1 *Intercept form of the linear equation*

33

Consumption Function – Graphical Representation

Using the same logic, the consumption function can be shown as follows: Consumption function, where, $\overline{C}$ = intercept of the consumption function

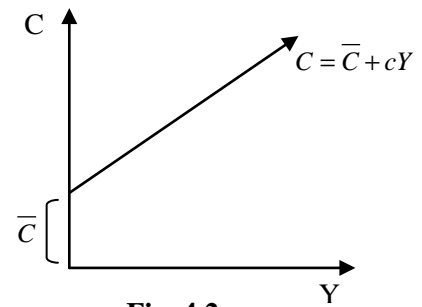c = slope of consumption function = tan α

Fig. 4.2

Investment Function – Graphical Representation

In a two sector model, there are two sources of final demand, the first is consumption and the second is investment.

The investment function was shown as $I = \overline{I}$

Graphically, this is shown as a horizontal line at a height equal to $\overline{I}$ above the horizontal axis.

In this model, I is autonomous which means, it is the same no matter whatever is the level of income.
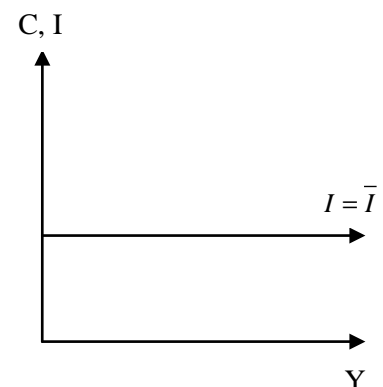
Fig. 4.3 Investment function with I as autonomous

Aggregate Demand: Graphical Representation

The Aggregate Demand function shows the total demand (made up of consumption + investment) at each level of income. Graphically it means the aggregate demand function can be obtained by vertically adding the consumption and investment function.

Here, ON = $\overline{C}$

MN = $\overline{I}$

OM = $\overline{C} + \overline{I}$
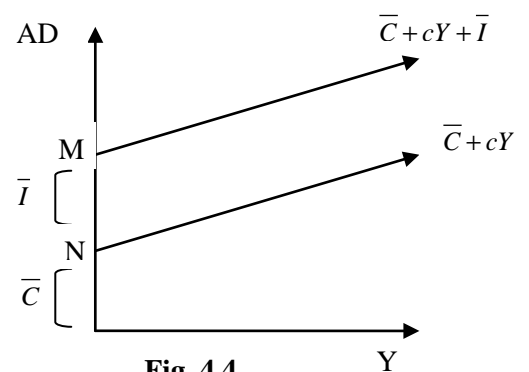
Fig. 4.4

The aggregate demand function is parallel to the consumption function i.e., they have the same slope c. It may be noted that this function shows ex-ante demand.

Equilibrium Income

Equilibrium income can be seen graphically by using a simple geometric trick of a line which passes through the origin at 45°. Now, the 45° line has the feature that every point on it has the same horizontal and vertical coordinates. Any point on this line shows that values on both the x-axis and y-axis are equal.
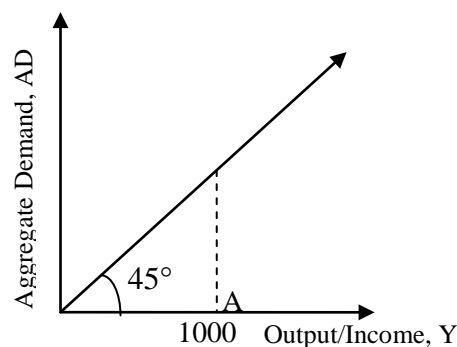
Fig. 4.5

Let us measure AD on y axis (vertical axis) and output produced on x-axis (horizontal axis).

Equilibrium is shown graphically by plotting aggregate demand (ex-ante) on the Y axis and output or income on the X axis. The point where AD curve intersects the 45° line shows the equilibrium income (look at point A in figure 4.6). Point A lies both on AD curve as well as 45° line. Thus, at point A the income produced is equal to the AD in the economy. Hence, A is the point of equilibrium.

4.4 Three Sector Model

At this point, we can introduce a government in this economy. Government also undertakes consumption and investment activities like the private sector and this becomes part of aggregate demand. Government consumption plus government investment is known as government expenditure. Government expenditure consists of activities like expenditure on public works such as setting up a government hospital or expenditure on schemes such as MNREGA.

Now, AD equals planned consumption + planned investment + government spending

$$AD = \overline{C} + \overline{I} + c.Y + \overline{G} \qquad (4.6)$$

Economy is in equilibrium where Y = AD

$$Y = \overline{C} + \overline{I} + \overline{G} + c.Y \qquad (4.7)$$

$$Y = A + c.Y \qquad (4.8)$$

Where A = $\overline{C} + \overline{I} + \overline{G}$ is the total autonomous expenditure in the economy. Graphically in the figure 4.6 Autonomous spending = OL. Of this ON = Autonomous consumption, NM = Investment and ML = Government spending.

Fig. 4.6

35
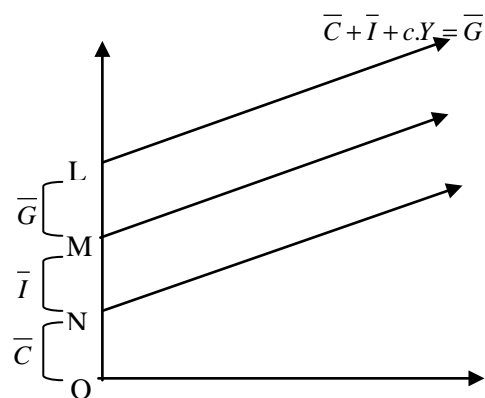
Let us take an example to show that the aggregate demand in the economy can be increased by the government by increasing its own expenditure.

$\overline{C} = 100 + 0.8Y$

$\overline{I} = 50$

Thus AD = 150 + 0.8Y

Equilibrium Y = 750

Now, let us suppose that if this economy had utilized all its resources and labor, it could have produced 1000. In other words, equilibrium income is less than the full employment level of income. In such a case if the government steps in and spends 50, then AD = $\overline{C} + cY + \overline{I} + \overline{G}$ or 100+.8Y+50+50 =200+.8Y

Now equilibrium income becomes equal to 1000
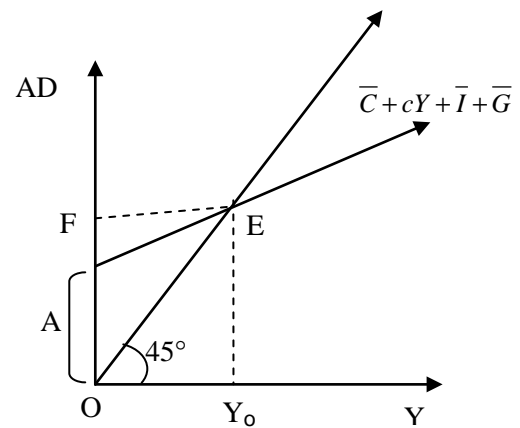
Fig. 4.7

In the figure 4.7 AD lined intersects the 45° line at point E, Y, output (Measured on the x axis), equals AD (measured O the Y axis) point E is thus of point of equilibrium where equilibrium income OY_o equals AD = OF.

According to a study one rupee invested in the MNREGA program increases national income by 1.07 rupees (Ghosh 2015). This kind of government policy whereby the change in government spending changes the national income is called fiscal policy.

4.5 Effect of a Change in Aggregate Demand on Income and Output

We have seen that the equilibrium level of income depends on aggregate demand. Thus, if aggregate demand changes, the equilibrium level of income changes. This can happen in anyone or combination of the following situations:

1.   Change in consumption: this can happen due to (i) change in $\overline{C}$ (ii) change in *c*.

2.   Change in investment: we have assumed that investment is autonomous. However, it just means that it does not depend on income. There are a number of variables other than income which can affect investment. One important factor is availability of credit: easy availability of credit encourages investment. Another factor is interest rate: interest rate is the cost of investible funds, and at higher interest rates, firms tend to lower investment. Let us now concentrate on change in investment with the help of the following example.

Let $C = 40 + 0.8Y$, $I = 10$. In this case, the equilibrium income (obtained by equation Y to AD) comes out to be 250[1]. Now, let investment rise to 20. It can be seen that the new equilibrium will be 300.

This can be seen by looking at the graph (4.8). When autonomous investment increases, the AD_0 line shifts in parallel upwards and assumes the position AD_1. The shift is equal to change in investment or the change in autonomous expenditure (ΔI). With this, the equilibrium changes from point E to point F and the equilibrium level of income rises from OY_o to OY_1. Note that ΔI is equal to the increase in investment and is equal to 10 (20-10). The income increases to 300 (OY_1) and the change in income is equal to 50 (300-250).
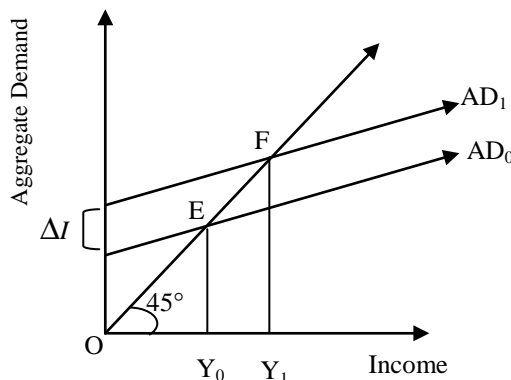
Fig. 4.8

Equilibrium output and Aggregate Demand in the fixed Price Model

Note that in the new equilibrium output and aggregate demand have increased by an amount which is greater than the initial increment in autonomous expenditure. What causes output to increase by an amount larger than the size of the initial increment in autonomous expenditure? We discuss it in section 4.6.

4.6 The Multiplier Mechanism

It was seen in the previous section that with a change in the autonomous expenditure of 10 units, the change in equilibrium income is equal to 50 units (from 250 to 300). We can understand this by looking at the multiplier mechanism, which is explained below:

The production of final goods employs factors such as labour, capital, land and entrepreneurship. In the absence of indirect taxes or subsidies, the total value of the final goods output is distributed among different factors of production – wages to labour, interest to capital, rent to land etc. Whatever is left over is appropriated by the entrepreneur and is called profit. Thus the sum total of aggregate factor payments in the economy, National Income, is equal to the aggregate value of the output of final goods, GDP. In the above example the value of the extra output, 10, is distributed among various factors as factor payments and hence the income of the economy goes up by 10.When income increases by

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[1] $Y = C + I = 40 + 0.8Y + 10$, so that $Y = 50 + 0.8Y$, or $Y = \dfrac{1}{1-0.8}50 = 250$

10, consumption expenditure goes up by (0.8) 10, since people spend 0.8 (= mpc) fraction of their additional income on consumption. Hence, in the next round, aggregate demand in the economy goes up by (0.8) 10 and there again emerges an excess demand equal to (0.8)10. Therefore, in the next production cycle, producers increase their planned output further by (0.8) 10 to restore equilibrium. When this extra output is distributed among factors, the income of the economy goes up by (0.8) 10 and consumption demand increases further by $(0.8)^2$ 10, once again creating excess demand of the same amount. This process goes on, round after round, with producers increasing their output to clear the excess demand in each round and consumers spending apart of their additional income from this extra production on consumption items – thereby creating further excess demand in the next round.

Let us register the changes in the values of aggregate demand and output at each round in Table 4.1. The last column measures the increments in the value of the output of final goods (and hence the income of the economy) in each round. The second and third columns measure the increments in total consumption expenditure in the economy and increments in the value of aggregate demand in a similar way. In order to find out the total increase in output of the final goods, we must add up the infinite geometric series in the last column, i.e.,

$$10 + (0.8) \ 10 + (0.8)^2 \ 10 + ... \infty$$

$$= 10\{1 + (0.8) + (0.8)^2 + ...\infty\} = \frac{10}{1 - 0.8} = 50$$

Table 4.1: The Multiplier Mechanism in the Final Goods Market

	Consumption	**Aggregate Demand**	**Output/Income**
Round 1	0	10 (Autonomous Increment)	10
Round 2	(0.8) 10	(0.8) 10	(0.8) 10
Round 3	$(0.8)^2$ 10	$(0.8)^2$ 10	$(0.8)^2$ 10
Round 4	$(0.8)^3$ 10	$(0.8)^3$ 10	$(0.8)^3$ 10
.	.	.	.
.	.	.	.
.	.	.	.
.	.	.	etc.

The increment in equilibrium value of total output thus exceeds the initial increment in autonomous expenditure. The ratio of the total increment in equilibrium value of final goods output to the initial increment in autonomous expenditure is called the investment multiplier

of the economy. Recalling that 10 and 0.8 represent the values of $\Delta \bar{I} = \Delta \bar{A}$ and mpc, respectively ,the expression for the multiplier can be explained as

$$\text{The investment multiplier} = \frac{\Delta Y}{\Delta \bar{A}} = \frac{1}{1-c} = \frac{1}{S} \qquad (4.5)$$

Where ΔY is the total increment in final goods output and c = mpc. Observe that the size of the multiplier depends on the value of c. As c becomes larger the multiplier increases.

Paradox of Thrift

If all the people of the economy increase the proportion of income they save (i.e. if the mps of the economy increases) the total value of savings in the economy will not increase – it will either decline or remain unchanged. This result is known as the Paradox of Thrift – which states that as people become more thrifty they end up saving less or same as before. This result, though sounds apparently impossible, is actually a simple application of the model we have learnt.

Let us continue with the example. Suppose at the initial equilibrium of Y = 250, there is an exogenous or autonomous shift in peoples' expenditure pattern – they suddenly become more thrifty. This may happen due to a new information regarding an imminent war or some other impending disaster, which makes people more circumspect and conservative about their expenditures. Hence the mps of the economy increases, or, alternatively, the mpc decreases from 0.8 to 0.5. At the initial income level of $AD*_1 = Y*_1 = 250$, this sudden decline in mpc will imply a decrease in aggregate consumption spending and hence in aggregate demand, $AD = \bar{A} + cY$, by an amount equal to (0.8–0.5) 250 = 75.

This can be regarded as an autonomous reduction in consumption expenditure, to the extent that the change in mpc is occurring from some exogenous cause and is not a consequence of changes in the variables of the model. But as aggregate demand decreases by 75, it falls short of the output $Y*_1 = 250$ and there emerges an excess supply equal to 75 in the economy. Stocks are piling up in warehouses and producers decide to cut the value of production by 75 in the next round to restore equilibrium in the market. But that would mean a reduction in fact or payments in the next round and hence a reduction in income by 75. As income decreases people reduce consumption proportionately but, this time, according to the new value of mpc which is 0.5. Consumption expenditure, and hence aggregate demand, decreases by (0.5) 75, which creates again an excess supply in the market. In the next round, therefore, producers reduce output further by (0.5) 75. Income of the people decreases accordingly and consumption expenditure and aggregate demand goes down again by $(0.5)^2$ 75. The process goes on. However, as can be inferred from the dwindling values of the successive round effects, the process is convergent. What is the total decrease in the value of output and aggregate demand? Add up the infinite series 75 + (0.5) 75 + $(0.5)^2$ 75 + ...∞ and the total reduction in output turns out to be

$$\frac{75}{1-0.5} = 150$$

But that means the new equilibrium output of the economy is only $Y^*_2 = 100$. People are now saving $S^*_2 = Y^*_2 - C^*_2 = Y^*_2 - (\overline{C} + c_2.Y^*_2) = 100 - (40 + 0.5 \times 100) = 10$ in aggregate, whereas under the previous equilibrium they were saving $S^*_1 = Y^*_1 - C^*_1 = Y^*_1 - (\overline{C} + c_1.Y^*_1) = 250 - (40 + 0.8 \times 250) = 10$ at the previous mpc, $c_1 = 0.8$. Total value of savings in the economy has, therefore, remained unchanged.

When $\overline{A}$ changes the line shifts upwards or downwards in parallel. When c changes, however, the line swings up or down. An increase in mps, or a decline in mpc, reduces the slope of the AD line and it swings downwards. We depict the situation in Fig. 4.9.

At the initial values of the parameters, $\overline{A}$ = 50 and c = 0.8, the equilibrium value of the output and aggregate demand from equation (4.4) was

$$Y^*_1 = \frac{50}{1 - 0.8} = 250$$

Under the changed value of the parameter c = 0.5, the new equilibrium value of output and value of output and aggregate demand is

$$Y^*_2 = \frac{50}{1 - 0.5} = 100$$

The equilibrium output and aggregate demand have declined by 150. As explained above, this, in turn, implies that there is no change in the total value of savings.
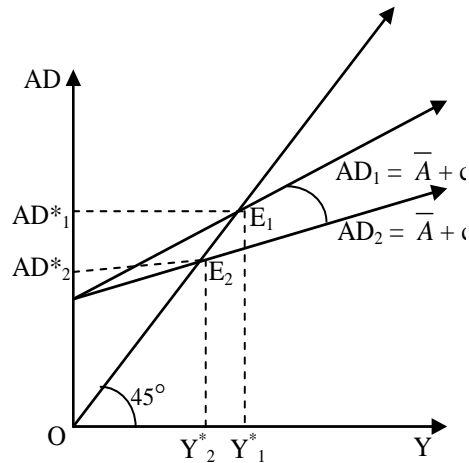
Fig. 4.9

4.7 Some More Concepts

We have already seen that the equilibrium output may not be same as full employment level of output. Once equilibrium output in the economy is determined, it also determines the level of employment. This means that the level of output determined by the equality of Y with AD does not necessarily mean the level of output at which everyone is employed. Full employment level of income is that level of income where all the factors of production are fully employed in the production process. Recall that equilibrium attained at the point of equality of Y and AD by itself does not signify full employment of resources. Equilibrium only means that if left to itself the level of income in the economy will not change even when there is unemployment in the economy.

The equilibrium level of output may be more or less than the full employment level of output. If it is less than the full employment of output, it is due to the fact that demand is not enough to employ all factors of production. This situation is called the situation of deficient demand. It leads to decline in prices in the long run. On the other hand, if the equilibrium level of output is more than the full employment level, it is due to the fact that the demand is more

than the level of output produced at full employment level. This situation is called the situation of excess demand. It leads to rise in prices in the long run.

Conflicting economic perspectives and the role of economists' political beliefs and Ideology

The two perspectives we have studied in this chapter, the classical and Keynesian, are based on very different ways of viewing the economic world. They have important implications for the real world, because each perspective provides very different policy recommendations to deal with macroeconomic problems.

The classical perspective

In this perspective, the economy is seen as a stable system that automatically tends towards long-run equilibrium where there is full employment. in this case there is no need for the government to do anything to change employment. In fact, continues the argument, if governments do intervene with policies intended to correct short-term fluctuations, they may achieve the opposite of the intended results.

The Keynesian Perspective

In the Keynesian perspective, fluctuations in output arise mainly due to changes in aggregate demand caused by spontaneous actions of firms and consumers. Keynes himself considered business cycle fluctuations to be caused mainly by changes in investment spending caused by changes in firms' expectations about the future. Optimism about the future increases investment spending, causing a rightward shift in the AD curve; pessimism decreases investment spending, leading to a leftward shift. Keynes referred to alternating waves of optimism and pessimism as 'animal spirits'.

in the Keynesian view, when there is a deficient demand, there is an important role for government policy to play to restore full employment and raise real GDP to the level of potential GDP.

Why does the debate persist?

Most economists today are unlikely to be purely 'classical' or purely 'Keynesian'. After decades of debate, many would argue that elements of both perspectives have some merit, and that policies attempting to influence both aggregate supply and aggregate demand are important in achieving the goals of reducing short-term fluctuations while promoting economic growth.

Source: Tragakes, E. (2012), Economics for the IB Diploma, Cambridge University Press, Cambridge.

Chapter - 5

India's Evolving Market Structure & Forms of Market

What are the products that we use in our everyday life? Do you use Dabur Meswak or Colgate as toothpaste? Do your parents have Tata tea or Lipton tea? Do you have Parle-G or Marie biscuits? We have a wide range of products now. Talk to your parents and find out what kind of products were available to them when they were your age. They probably did not have a Jio connection for telephones or an ICICI bank for bank deposits. They would probably only be wearing Bata shoes and riding Hero bicycles.

Blast from the past…

If we go further back in time to 1947, you will observe that the choices available to people were minimal back then. When we gained independence from British rule, we had virtually no Indian industries. The British government had decimated the traditional handicraft industry, and modern industry was practically absent. As a result, India only had a handful of industries. Modern industrial development was initiated when the cotton textile mill was first established in 1854, followed closely by other sectors such as Jute, coal, and railways. The most prominent industrial behemoth of 'Tata Iron and Steel Plant' was set up at Jamshedpur in 1907. After that, several other medium and small-size industries like cement, glass, soaps, chemicals, jute, sugar, and paper followed. Industrial production in the pre-independence period was limited and not diversified. At the time of independence, the economy was under-developed, with agriculture contributing to more than 60 percent of the GDP.

From the post-independence period, there has been a marked shift in India's economic development, which has gone through three broad phases. Firstly, the 'Public Infrastructure' phase is characterized by the public sector's attempt to build physical infrastructure. The second phase of Industrial control was characterized by a growing distrust of the private sector where public-owned companies concentrated the market because there were legal barriers that prevented the entry of firms and, subsequently, the competition in the market. One of the most potent tools wielded by the government to prevent the private sector from developing in the economy was the instrument of 'industrial licensing'. Industrial licensing includes regulations and restrictions for establishing industries in specific categories. Under the industrial licensing regime, it becomes mandatory to obtain licenses before setting up such an industry. This led to the public sector dominating most essential sectors, such as

telecom, oil, coal, petroleum, motor cars, banking, insurance, etc. In effect, the government and its regulation decided a firm's right to decide what to produce, how much to charge, what technologies to use for creating a product etc.

While industrial policies stifled the competitive forces – both external and internal, the economic policy reforms of 1991 ushered the third phase of 'reforms and decontrol', increasing private participation. Liberalizing the rules over the private sector, foreign private investments, and de-regulating the previously reserved industries for the public sector succeeded in instilling the dynamic forces of competition. Consequently, the impact of 1991 reforms can be felt in today's economy of India, we can witness multiple types of market structures existing!

But to understand the industrial development pattern, behaviour of the firms and performance needs to be analysed. A firm is an organization that employs factors of production to produce and sell a good or service. A group of one or more firms producing identical or similar products is called an industry. There are many kinds of industries with various characteristics which economists analyse by use of models called market structures. These market structures are broadly identified by economists as perfect competition, monopoly, monopolistic competition and oligopoly. Markets are differentiated based on the general features which includes - number of sellers, number of buyers, nature of product, a firm's ease of entry into the market, availability of information, and, whether the firms in a market are price taker or price maker. Although we can use these forms of market to analyse the changing market structure in the Indian economy, it is also worth noting that these four market structures are theoretical constructs and actual examples are only approximation.

Different types of market structures

1. Perfect Competition

Imagine a kind of market which has a lot of firms and each firm's output is small in relation to the size of the market because the pressure of competing firms forces them to accept the prevailing equilibrium price in the market. This is why perfect competition is called price taker. If a firm in a perfectly competitive market raises the price of its product by even a rupee, it will lose all of its sales to competitors. When a small firm tries to change (say increase or decrease) the price of the product, it cannot influence the pricing or total output of the market.

One other way in which firms can charge different price if products are different. However, in a perfect competition the products produced by each seller is identical and it is not possible to distinguish one product from another. In a perfectly competitive market, there are no barriers to entry and exit the market. Additionally, there is perfect information, meaning that all sellers and buyers have complete information regarding the products, prices, resources and methods of production etc. Since there is perfect information, there is no way to 'cheat' a buyer.

This 'construct' of perfect competition is rarely met in the real world, yet it is important to understand a perfectly competitive market because it provides us with a framework of how an ideal model of a 'competitive market' would look like. Keeping perfectly competitive market as a benchmark, it becomes easier to analyse other types of market.

There are some industries that can be described as somewhat close to perfect competition

Figure 1 Perfect Competition in

44

than others: some agricultural commodities (wheat, corn, livestock), other commodities (silver and gold), and the foreign exchange market (where currencies are bought and sold). Figure 1 shows how an agricultural market with perfect competition could look like.

As indicated earlier, despite its limited applicability to real-world industries, this model is studied because it offers important insights into the workings of the market at large.

2. Monopoly

In total contrast to competitive markets, when a single seller produces a good or service for the entire market, it is called a pure monopoly. The single firm thus becomes the whole market. In a monopoly, there are no close substitutes of a product. If substitute goods existed, then consumers could easily switch to buying a substitute good, in which case there would no longer be a monopoly. Therefore, the monopolist produces a good or service that has no close substitutes

The dominance that a monopolist enjoys can be attributed to the absence of competitor firms!

But you might wonder how come there are no other firms/sellers? This is because there are significant barriers to enter the market.

What can be the barriers to entry for firms?

Barriers to entry can be both visible and invisible. Some form of visible barriers to entry includes legal barriers, branding, predatory pricing and acquisition etc.Meanwhile the more invisible barriers to entry include high R&D cost, economies of scale, ownership of key resource, network effect etc.

LEGAL BARRIERS

Legal barriers include numerous instruments such as:

Patents are rights given by the government to a firm that has developed a new product or invention to be its sole producer for a specified period of time. Examples include patents on new pharmaceutical products, software developed by Microsoft.

Licences are granted by governments for particular professions or particular industries. Licences may be required, for example, to operate radio or television stations, or to enter the telecom

Copyrights guarantee that an author (or an author's appointed person) has the sole rights to print, publish and sell copyrighted works.

Tariffs, quotas and other traderestrictions limit the quantities of a good that can be imported into a country, thus reducing competition

Remember that not all of these legal barriers lead to monopoly, but they all have the effect of limiting competition, thus contributing to the creation of some degree of monopoly power

BRANDING

Through branding, a unique - superior image is associated name of a product. It works through advertising campaigns which influence consumer and get customer loyalty. If branding of a product is successful, many consumers will be convinced of the product's superiority, and will be unwilling to switch to substitute products, even though these may be qualitatively very similar. Branding may work as a barrier to entry by making it difficult for new firms to enter a market that is dominated by a successful brand.

Successful example– Coalgate for Toothpaste market

NETWORK EFFECTS

Do you use WhatsApp? Do you know why people use apps Facebook or WhatsApp? As most of your friends and family members use the application, it is easier to communicate in these apps. If, however, none of your friends or family members or acquaintances were using these applications, you would see no point in using them as there are no people to interact with!

Network effect is a situation when things when a product becomes more valuable as more people use it. Taking the case of WhatsApp, you are unlikely to switch to another messaging app because people you would like to chat with might not be using those applications. In effect, this helps secure the position of WhatsApp as a monopoly product.

CONTROL OF ESSENTIAL RESOURCES

Monopolies can arise from ownership or control of an essential resource. For example, a local grocery store in a residential area located some distance from any other stores may be a local monopoly.

A classic example of an international monopoly is DeBeers, the South African diamond firm, that mines roughly 50% of the world's diamonds and purchases about 80% of diamonds sold on open markets.

Unlike perfect competition, a monopoly is a price maker because it has the power to dictate the price it charges because there are no perfect substitutes for the goods it sells! This discretion of monopoly to charge prices forsaking the welfare of consumers often leads majority of the monopolists to have a bad reputation!

Are there instances when a monopoly may be desirable?

Yes, there are instances when a monopoly is desirable. For instance, in case of product development and technological innovation, monopolies have good reasons to pursue innovation. Their economic profits provide them with the ability to finance large research and development (R&D) projects. Firms may use product development and technological innovation as a means of maintaining their economic profits over the long term, by creating barriers to entry for new potential rivals.

Moreover, there is a possibility of greater efficiency andlower prices due to technological innovations. If monopolies pursue R&D that leads to technological innovations, they may adopt production processes and new technologies that can make them more efficient (i.e. able to produce at a lower cost), and some of these lower costs could be passed to consumers in the form of lower prices

Perfect Competition and Monopoly - A Comparison
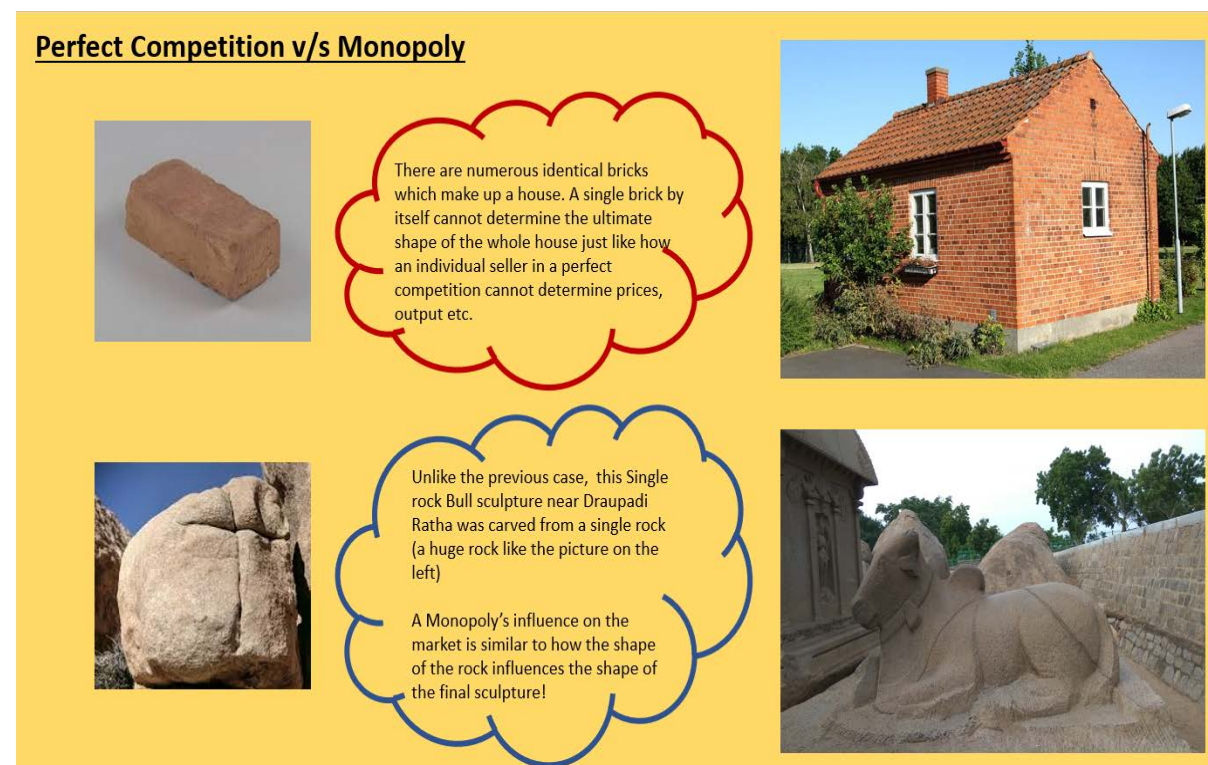
Figure 2 A brief overview of perfect competition versus monopoly

The demand curve facing the monopolist and perfect competition

Since the pure monopolist is the entire industry, the demand curve it faces is the industry or market demand curve, which is downward-sloping. Thisis the most important difference between the monopolist and the perfectly competitive firm, which faces perfectly elastic demand at the price level determined in the market.

The two demand curves shown above indicate that the perfectly competitive firm is a price-taker with zero market power, while the monopolist is a *price- maker* with a significant degree of market power.
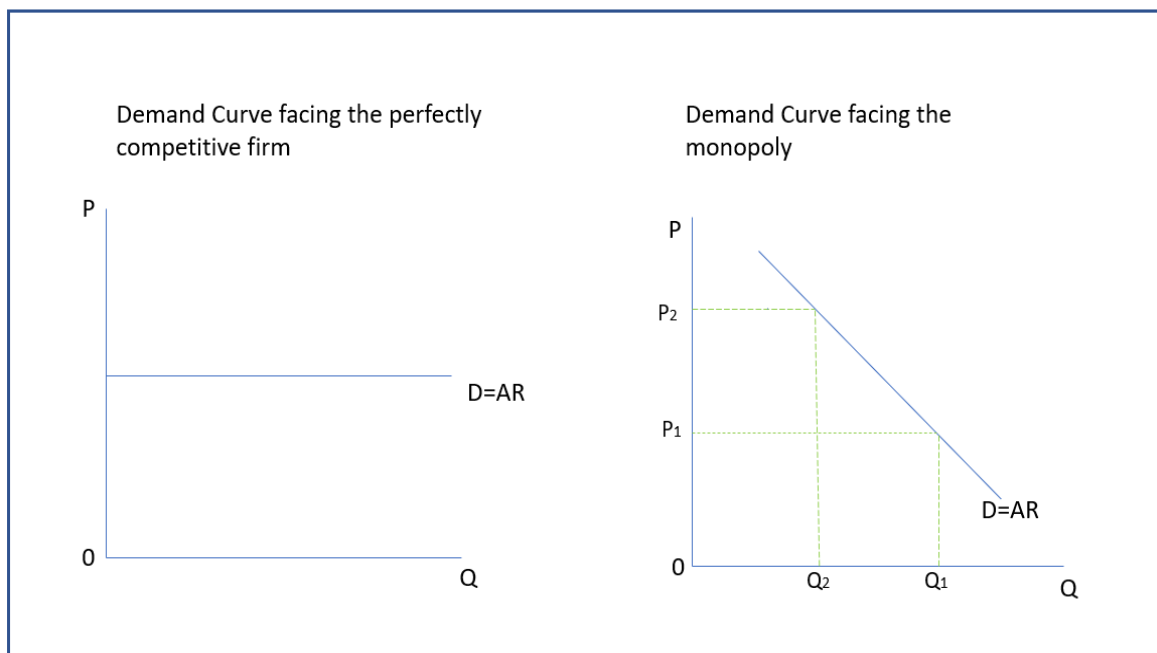
Figure 3 Demand curve facing the monopoly and competitive firm

3. Monopolistic Competition

Let's get to know how your choices are also influenced by the market structures! Usually, which soap brand do you use?

a) Lux   b) Lifebuoy

c) Dettol   d) Dove

Can you tell us why do you choose this brand?

a) Fragrance   b) Size

b) Advertised by favourite actress   d) All of above

c) You would have probably chosen your brand over the other three as you prefer it over the others because of its unique scent or the advertising campaign. Soap is soap otherwise. This kind of market is known as Monopolistic competition.

This market structure recognises that consumers have different preferences.

When you walk into a departmental store to buy goods, just like your choice of soap, you will find a number of brands for each good. For example, for a chocolate, you will have numerous options like Cadbury, Kitkat etc. On one hand, the market for toothpaste seems to be full of competition, with thousands of competing brands and freedom of entry like a perfect competition.

On the other hand, its market seems to be monopolistic, as a seller has the power to charge different pricedue to uniqueness of each product (think variation in toothpaste, chocolates etc.). Since such a market has traits of both monopoly and perfect competition, they are known as monopolistic competitive market.

In Monopolistic competition, there are large number of firms but not as large as under perfect competition. So, each firm can control its price and output policy to some extent. In most cases, such a price and output decision of a firm will not receive any counter-reaction from other firms. Consequently, each firm follows independent price policy to a considerable extent. Meanwhile like a monopolist, the demand curve is more elastic. In order to sell more, the firms must reduce its price.

Unlike either a monopoly of a competitive market, in a monopolistic competition there exists significant degree of product differentiation refers to a situation when the buyers of the product can differentiate one type of product with from other. Although the products of different firms are not inherently different; they are slightly differentiated. To think of it differently, which each firm producing a variant of a 'good' (say chocolate) has the monopoly of its own product, yet they have to face competition. It is also important to understand that this product differentiation may be real or imaginary. Real differences are like design, material used, skill etc. whereas imaginary differences are through advertising, trade mark and so on.

Advertising is an important tool used to bring about 'differentiation' because there are number of products which are all close substitute of each other. However, since the buyers do not know about all the actual quality of these products (lack of knowledge about the market condition), advertising becomes useful!

Monopolistic competition characterizes an industry in which many firms offer products or services that are similar (but not perfect) substitutes. Barriers to entry and exit in a monopolistic competitive industry are low, and the decisions of any one firm do not directly affect those of its competitors. Meanwhile, each firm is the sole producer of a particular brand or "product".It enjoys 'monopoly position' as far as a particular brand is concerned. But this monopoly position is influenced due to stiff 'competition' from other firms. In effect, monopolistic competition can be understood as a market structure where there is competition among a large number of monopolists.

Monopoly + Competition = Monopolistic Competition

4. **Oligopoly**

Many purchases that individuals make at the retail level are produced in markets that are neither perfectly competitive, monopolies, nor monopolistically competitive. Rather, they are oligopolies. Oligopoly arises when a small number of large firms have all or most of the sales in an industry. However, in any one industry the firms are likely to vary in size.

The most important difference between oligopoly and competitive market is that firms in oligopoly collaborate with each. Firms collaborate because they see more economic benefits in cooperating and deciding on a specific price together rather than trying to compete with

their competitors. Thus, in an oligopoly mutual interdependence where various decisions such as output, price, advertising, and so on, depend on the decisions of the other firms.

Such collusion raises the barriers of entry and protect themselves from new potential entrants into the market. This is important because if new firms enter and offer products at lower prices, they can negatively hamper the colluding firm's profit.

Collusion & Cartel

When firms act together in this way to reduce output and keep prices high, it is called collusion. A group of firms that have a formal agreement to collude to produce the monopoly output and sell at the monopoly price is called a cartel. If oligopolists collude with each other, they may effectively act like a monopoly and succeed in pushing up prices and consequently such firms consistently high levels of profit. It is through collusion that oligopolistic firms influence industry output, charge a higher price, and divide up the profit among themselves.

> **The Competition Commission of India (CCI)**
> It is the chief national competition regulator in India. It is a statutory body within the Ministry of Corporate Affairs and is responsible for enforcing the Competition Act, 2002 in order to promote competition and prevent activities that have an appreciable adverse effect on competition in India. It is the duty of the Commission to eliminate practices having adverse effect on competition, promote and sustain competition, protect the interests of consumers and ensure freedom of trade in the markets of India

Why Do Oligopolies Exist?

A combination of the barriers to entry that create monopolies and the product differentiation that characterizes monopolistic competition can create the setting for an oligopoly. For example, when a government grants a patent for an invention to one firm, it may create a monopoly. When the government grants patents to, for example, three different pharmaceutical companies that each has its own drug for reducing high blood pressure, those three firms may become an oligopoly.

How are Oligopolist controlled?

In most markets, antitrust laws exist that aim to prevent price collusion and protect consumers. Antitrust laws preventa single company or small group of companies that is the only supplier of something to control prices unfairly or to create a monopoly. In India the

Competition Commission of India is the statutory body mandated to regulate anti-competitive activity in the country. Firms too device many ways to collude without being detected by regulators. For example, there might be a mutually decided price leader who leads the changes in prices and other firms follow suit in order to "react to competition." In some cases, some firms may pre-decide to change the prices in a specific date and in such a case change will appear to everyone as a reaction to economic conditions like inflation.

Do consumers benefit?

Thus, compared with other market structures, oligopoly offers a better price deal compared to Monopoly but not a good deal when compared with Perfect competition.

Examples of oligopoly the Telecommunication industry (with firms like Jio, Airtel and Vodaphone – Vi), Steel industry (Tata and JSW).

CASE STUDY: OPEC (Organization of Petroleum Exporting Countries)

The Organization of Petroleum Exporting Countries is an example of an international cartel. The organization was created at a conference in Baghdad, Iraq on September 10th-14th, 1960. The founding members which include Iran, Iraq, Kuwait, Saudi Arabia and Venezuela agreed to create an organization that could bring some degree of stability to the world oil market. OPEC agreed to coordinate energy policies to ensure a fair price for their exported oil and a steady supply to the market. The governments of the OPEC countries agreed to coordinate with petroleum firms (both state owned and private) in order to manipulate the worldwide oil supply and therefore the price of oil.

When firms agree to collude, that is they agree to a certain price and quantity for a good or service, they create a cartel. A cartel is a type of oligopoly. As cartels are formed and operate in secret, it is up to the members of the cartel to keep their agreement intact.

SOURCE: ENERGYEDUCATION.CA

An Overview of the different forms of market

While we analysed the different types of markets, a consolidated framework to differentiate markets can be done by analysing the differentiating features such as number of firms in the market, freedom of entry and exist of each firm, and, the type of products – whether they are unique or different. Figure 4 provides a comprehensive overview comparing the four major forms of market.

TYPE OF MARKET	NUMBER OF FIRMS	FREEDOM OF ENTRY	NATURE OF PRODUCTS	EXAMPLES
Perfect Competition	Numerous	Unrestricted	Differentiated	Tomatoes, potatoes (approx.)
Monopolistic Competition	Several	Unrestricted	Differentiated	Restaurants
Oligopoly	Few	Restricted	Differentiated or Undifferentiated	Telecom, Automobile
Monopoly	One	Blocked	Unique	Railways, Some prescription drug

Figure 4 Comparison of the features of different forms of market

After understanding the features of individual markets, if we compare them all with respect to their level of competitiveness, we observe that only 'perfect competition' follows the perfect typecast of how markets should ideally behave if they were truly competitive. This is in stark contrast to our reality where we can observe only not-so perfect competition. Can you think of some reasons why this is so?

In economics, such markets are called imperfect competition. Imperfect competition includes all those forms of market where the characteristics of an economic market do not fulfil all the necessary conditions (or features) of a perfectly competitive market, resulting in market failure!
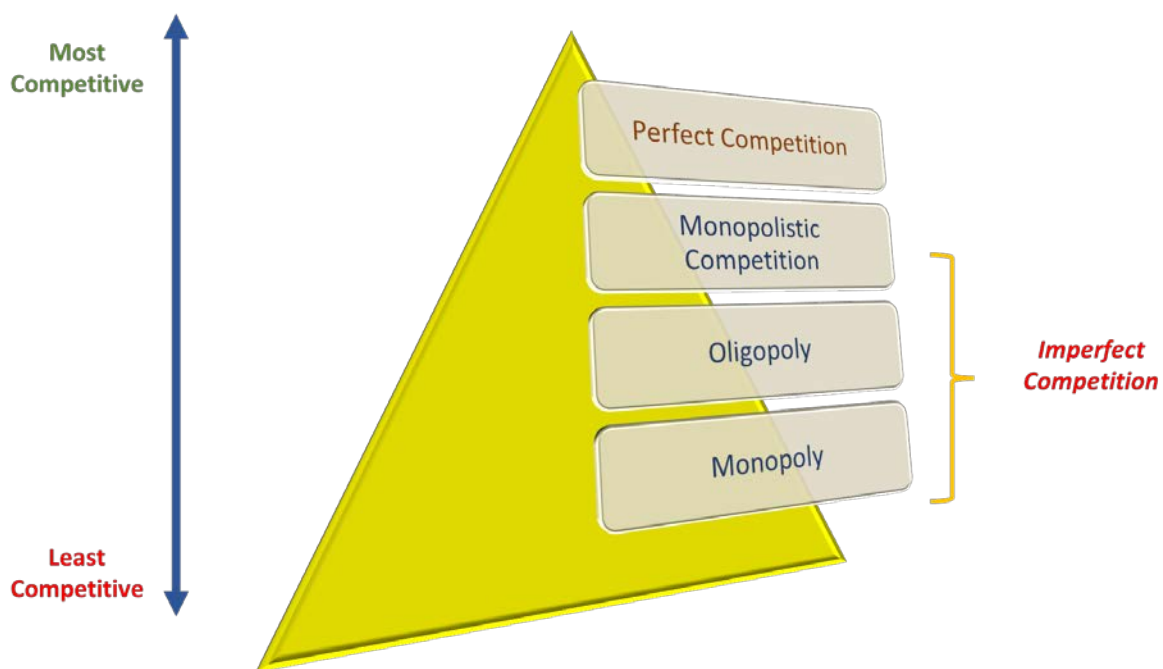
Figure 5 Variation in competitiveness across different market forms

Let's revisit the past!

Now that you understand about the different forms of market, loop back to our earlier discussion under the heading 'blast from the past'.

Remember how telecom or 'Department of Telecommunication' (DoT) was the only telecom service provider in India till 1985. But DoT is owned by a government- would you still classify DoT as a monopoly? Why or why not?

Dig a lit deeper and satiate your curiosity by answering the prompts under the box "Put on your thinking hats"!

Put on your thinking hats!

- What changes have been there in the past few decades with respect to balance between markets and public sector?
- Do you think there are any goods and services that are currently produced in the public sector that should be open to the markets? Why or why not?
- When certain goods were produced by the public sector prior to 1991, what kind of market structure did they resemble?
- What is the impact of increased privatization (as witnessed in the Indian economy) on the evolution of market structure?

Put your statistical skills to use!

"*There has been a price reduction for computers and smartphones yet price for some goods have stayed high because of monopolies and collusion*". Use a bar graph to show the changing trends in the prices of tech goods and automobiles (year by year comparison of prices). Mention the source of your data.

Exercises

Q.1 Indian Railway Catering and Tourism Corp (IRCTC), which entered the primary markets by listing in October 2019. It has 100% market share in rail network. IRCTC is the only entity authorised by Indian Railways to offer online railway tickets. The company charges convenience fees in the range of ₹15-30 per ticket.

What market does IRCTC operate in? Give reasons for your answer.

Q.2 When Coca Cola uses a movie star as Alia Bhatt its brand ambassador to boost its sales overrival soft drink companies,what feature of oligopoly is being

a) Non Price Competition   b)Largenumber   of   sellers

c) Price Competition   d) Barriers to entry

Q.3 Imagine you are an onion seller in Guntur, Andhra Pradesh. What market structure would you most likely operate in? Remember your product is fairly identical (onions are onions, after all…) and there is a very large number of buyers and sellers.

O.4 If we look at the souvenir shops outside various tourist destinations as the Red Fort, Taj Mahal etc, you will find them selling small replicas of the monuments. All these souvenirs are the same in shape, size, quality and are also sold at the same price. The price is predetermined by the kiosk owners together and no single seller charges a higher or lower price because an increase in price by a seller would lead to customers flocking to other shops. Relate this information with features of perfect competition and justify your answer!

Q.5Describe the various types of market and assess their advantages and disadvantages for different stakeholders (such as buyers, sellers)

Chapter - 6

Money and Banking

Money is the commonly accepted medium of exchange. In an economy which consists of only one individual, there cannot be any exchange of commodities and hence there is no role for money. Even if there are more than one individual but they do not take part in market transactions, such as a family living on an isolated island, money has no function for them. However, as soon as there are more than one economic agent who engage themselves in transactions through the market, money becomes an important instrument for facilitating these exchanges. Economic exchanges without the mediation of money are referred to as barter exchanges.

However, they presume the rather improbable double coincidence of wants. Consider, for example, an individual who has a surplus of rice which she wishes to exchange for clothing. If she is not lucky enough, she may not be able to find another person who has the diametrically opposite demand for rice with a surplus of clothing to offer in exchange. The search costs may become prohibitive as the number of individuals increases. Thus, to smoothen the transaction, an intermediate good is necessary which is acceptable to both parties. Such a good is called money. The individuals can then sell their produces for money and use this money to purchase the commodities they need. Though facilitation of exchanges is considered to be the principal role of money, it serves other purposes as well. Following are the main functions of money in a modern economy.

Functions of Money

As explained above, the first and foremost role of money is that it acts as a medium of exchange. This is the most important function of money. Due to acceptability of leather in ancient times, we had leather as a medium of exchange. Thus, leather was money. Then, a time came, when people started accepting silver and gold as a medium of exchange. So, we had silver and gold coins as money. Then, we had token coins and currency notes. Time is changing continuously. Thus, recently we saw that people are exchanging value through digital modes, and plastic cards, i.e., debit cards and credit cards. Thus, the forms of money are evolving continuously. A new form of money is gaining popularity these days — cryptocurrency.

Money also acts as a convenient unit of account. The value of all goods and services can be expressed in monetary units. When we say that the value of a certain wristwatch is ₹ 500 we mean that the wristwatch can be exchanged for 500 units of money, where a unit of money is rupee in this case. If the price of a pencil is Rs 2 and that of a pen is Rs 10 we can calculate the relative price of a pen with respect to a pencil, viz. a pen is worth $10 \div 2 = 5$ pencils. The same notion can be used to calculate the value of money itself with respect to other commodities. In the above this example, a rupee is worth $1 \div 2 = 0.5$ pencil or $1 \div 10 = 0.1$ pen. Thus, if prices of all commodities increase in terms of money which, in other words, can be regarded as a general increase in the price level, the value of money in terms of any commodity must have decreased – in the sense that a unit of money can now purchase less of any commodity. We call it a deterioration in the purchasing power of money. Let's do an exercise to see how inflation impacts the purchasing power of money. In the above example, where we could buy 50 pens with the help of 500 rupees. Now suppose that price of pen rises from ₹ 10 per pen to ₹ 20 per pen. *What will happen to the purchasing capacity of 500 rupees in terms of pens?*

That brings us to the third function of money — Store of Value. Keeping money in cash form for a long period of time, particularly the large amounts of money, is not a good idea. *Why?* Almost always and everywhere, we have a positive rate of inflation. If that is so, the purchasing power of money, or the value stored in your cash, will erode continuously. *At what rate?* That will depend on the rate of inflation. Let's see how do we keep track of inflation rate. For measuring rate of price change, across a number of goods and across various degrees of change, we need to go to the concept of index numbers.

The prices of different goods may behave differently — prices of some goods may move up while prices of some other goods, at the same time, may go down. They change in different degrees and have different importance in the budget of an average consumer. *To have an idea about the change in prices by a single number, we use the concept of index numbers.*

Let's try to get a brief idea of what an index number is.

INDEX NUMBERS

A price index represents these changes by a single numerical measure. There are two methods of constructing an index number.

The Aggregative Method

The formula for a simple aggregative price index is

$$P_{01} = \frac{\Sigma P_1}{\Sigma P_0} \times 100$$

where P_1 and P_0 indicate the price of the commodity in the current period and base period respectively.

Example 1

Calculation of simple aggregative price index

TABLE 8.1

Commodity	Base period price (Rs)	Current period price (Rs)	Percentage change
A	2	4	100
B	5	6	20
C	4	5	25
D	2	3	50

Using the data from example 1, the simple aggregative price index is P_{01}

$$P_{01} = \frac{4+6+5+3}{2+5+4+2} \times 100 = 138.5$$

Here, price is said to have risen by 38.5 per cent.

Do you know that such an index is of limited use? The reason is that the units of measurement of prices of various commodities are not the same. It is unweighted, because the relative importance of the items has not been properly reflected. The items are treated as having equal importance or weight. But what happens in reality? In reality the items purchased differ in order of importance. Food items occupy a large proportion of our expenditure. In that case an equal rise in the price of an item with large weight and that of an item with low weight will have different implications for the overall change in the price index. The formula for a weighted aggregative price index is

$$P_{01} = \frac{\Sigma P_1 q_0}{\Sigma P_0 q_0} \times 100$$

An index number becomes a weighted index when the relative importance of items is taken care of. Here weights are quantity weights. To construct a weighted aggregative index, a well-specified basket of commodities is taken and its worth each year is calculated. It thus measures the changing value of a fixed aggregate of goods. Since the total value changes with a fixed basket, the change is due to price change. Various methods of calculating a weighted aggregative index use different baskets with respect to time.

Example 2

Calculation of *weighted aggregative price index*

TABLE 8.2

Commodity	Base period Price P_0	Base period Quantity q_0	Current period Price p_1	Current period Quality q_1
A	2	10	4	5
B	5	12	6	10
C	4	20	5	15
D	2	15	3	10

Money is same, but basket is getting smaller!!!

$$P_{01} = \frac{\Sigma P_1 q_0}{\Sigma P_0 q_0} \times 100$$

Money Creation by the Banking System (Taken Verbatim from NCERT book)

In this section we shall explore the determinants of money supply. Moneysupply will change if the value of any of its components such as CU (Currency), DD (Demand Deposits) orTime Deposits changes. In what follows we shall, for simplicity, use the mostliquid definition of money, viz. $M_1 = CU + DD$, as the measure of money supplyin the economy. Various actions of the monetary authority, RBI, and commercialbanks are responsible for changes in the values of these items. The preferenceof the public for holding cash balances vis-´a-vis deposits in banks also affectthe money supply. These influences on money supply can be summarised bythe following key ratios.

The Currency Deposit Ratio: The currency deposit ratio (cdr) is the ratioof money held by the public in currency to that they hold in bank deposits.cdr = CU/DD. If a person gets Re 1 she will put Rs $1/(1 + cdr)$ in her bankaccount and keep Rs $cdr/(1 + cdr)$ in cash. It reflects people's preference forliquidity. It is a purely behavioural parameter which depends, among otherthings, on the seasonal pattern of expenditure. For example, cdr increasesduring the festive season as people convert deposits to cash balance formeeting extra expenditure during such periods.

The Reserve Deposit Ratio: Banks hold a part of the money people keep intheir bank deposits as reserve money and loan out the rest to various investmentprojects. Reserve money consists of two things – vault cash in banks and depositsof commercial banks with RBI. Banks use this reserve to meet the demand forcash by account holders. Reserve deposit ratio (rdr) is the proportion of the totaldeposits commercial banks keep as reserves.

Keeping reserves is costly for banks, as, otherwise, they could lend this balance to interest earning investment projects. However, RBI requires commercial banks to keep reserves in order to ensure that banks have a safecushion of assets to draw on when account holders want to be paid. RBIuses various policy instruments to bring forth a healthy rdr in commercial banks. The first instrument is the Cash Reserve Ratio which specifies thefraction of their deposits that banks must keep with RBI. There is anothertool called Statutory Liquidity Ratio which requires the banks to maintain a given fraction of their total demand and time deposits in the form of specifiedliquid assets. Apart from these ratios RBI uses a certain interest rate calledthe Bank Rate to control the value of rdr. Commercial banks can borrowmoney from RBI at the bank rate when they run short of reserves. A highbank rate makes such borrowing from RBI costly and, in effect, encouragesthe commercial banks to maintain a healthy rdr.

Table 3.1: **Sample Balance Sheet of a Commercial Bank**

Assets – Rs		Liability – Rs	
• Reserves		Deposits	100
– Vault Cash	15		
– Deposits with RBI	5		
• Bank Credit			
– Loans	30		
– Investments	50		
rdr = 0.2			

Commercial Banks

Commercial Banks accept deposits from the public and lend out this money to interest earning investment projects. The rate of interest offered by the bank to deposit holders is called the 'borrowing rate' and the rate at which banks lend out their reserves to investors is called the 'lending rate'. The difference between the two rates, called 'spread', is the profit that is appropriated by the banks. Deposits are broadly of two types – demand deposits, payable by the banks on demand from the account holder, e.g. current and savings account deposits, and time deposits, which have a fixed period to maturity, e.g. fixed deposits. Lending by commercial banks consists mainly of cash credit, demand and short-term loans to private investors and banks' investments in government securities and other approved bonds. The creditworthiness of a person is judged by her current assets or the **collateral** (a security pledged for the repayment of a loan) she can offer.

Table 3.2: **Sample Balance Sheet of RBI**

Assets (sources) – Rs		Liability (uses) – Rs	
Gold	10	Currency	
Foreign Exchange	20	*Currency held by Public*	200
Govt. Securities (Loan to GOI)	230	*Vault Cash held by Commercial Banks*	10
Loan to Commercial Banks	5	Deposits of Commercial Banks with RBI	40
		Treasury Deposits of GOI	15
Monetary Base (sources)	265	Monetary Base (uses)	265

High Powered Money: The total liability of the monetary authority of the country, RBI, is called the monetary base or high powered money. It consists of currency (notes and coins in circulation with the public and vault cash of commercial banks) and deposits held by the Government of India and commercial banks with RBI. If a member of the public produces a currency note to RBI the latter must pay her value equal to the figure printed on the note. Similarly, the deposits are also refundable by RBI on demand from deposit-holders.

Theseitems are claims which the general public, government or banks have on RBIand hence are considered to be the liability of RBI.

RBI acquires assets against these liabilities. The process can be understoodeasily if we consider a simple stylised example. Suppose RBI purchases gold ordollars worth Rs 5. It pays for the gold or foreign exchange by issuing currencyto the seller. The currency in circulation in the economy thus goes up by Rs 5,an item that shows up on the liability side of the balance sheet. The value of theacquired assets, also equal to Rs 5, is entered under the appropriate head onthe Assets side. Similarly, RBI acquires debt bonds or securities issued by thegovernment and pays the government by issuing currency in return. It issuesloans to commercial banks in a similar fashion.

We are now ready to explain the mechanism of money creation by themonetary authority, RBI. Suppose RBI wishes to increase the money supply. Itwill then inject additional high powered money into the economy in the followingway. Let us assume that RBI purchases some asset, say, government bonds orgold worth Rs H from the market. It will issue a cheque of Rs H on itself to theseller of the bond. Assume also that the values of cdr and rdr for this economyare 1 and 0.2, respectively. The seller encashes the cheque at her account in

Bank A, keeping Rs $\frac{H}{2}$ in her account and taking Rs $\frac{H}{2}$ away as cash. Currency held by the public thus goes up by $\frac{H}{2}$. Bank A's liability goes up by Rs $\frac{H}{2}$ because of this increment in deposits. But its assets also go up by the same amount through the possession of this cheque, which is nothing but a claim of the same amount on RBI. The liability of RBI goes up by Rs H, which is the sum total of the claims of Bank A and its client, the seller, worth Rs $\frac{H}{2}$ and Rs $\frac{H}{2}$, respectively. Thus, by definition, high powered money increases by Rs H.

The process does not end here. Bank A will keep Rs $\frac{0.2H}{2}$ of the extra deposit as reserve and loan out the rest, i.e. Rs $\frac{(1-0.2)H}{2}$ = Rs $\frac{0.8H}{2}$ to another borrower[3]. The borrower will presumably use this loan on some investment project and spend the money as factor payment. Suppose a worker of that project gets the payment. The worker will then keep Rs $\frac{0.8H}{4}$ as cash and put Rs $\frac{0.8H}{4}$ in her account in Bank B. Bank B, in turn, will lend Rs $\frac{0.64H}{4}$. Someone who receives that money will keep $\frac{0.64H}{8}$ in cash and put $\frac{0.64H}{8}$ in some other Bank C. The process continues *ad infinitum*.

Let us now look at Table 3.3 to get an idea of how the money supply in the economy is changing round after round.

Table 3.3: **The Multiplier Process**

	Currency	Deposits		Money Supply
Round 1	$\dfrac{H}{2}$	$\dfrac{H}{2}$	(Bank A)	H
Round 2	$\dfrac{0.8H}{4}$	$\dfrac{0.8H}{4}$	(Bank B)	$\dfrac{0.8H}{2}$
Round 3	$\dfrac{0.64H}{8}$	$\dfrac{0.64H}{8}$	(Bank C)	$\dfrac{0.64H}{4}$
.	.	.		.
.	.	.		.
.	.	.		.
.	.	.		etc.

The second column shows the increment in the value of currency holdingamong the public in each round. The third column measures the value of theincrement in bank deposits in the economy in a similar way. The last column isthe sum total of these two, which, by definition, is the increase in money supplyin the economy in each round (presumably the simplest and the most liquidmeasure of money, viz. M_1). Note that the amount of increments in money supplyin successive rounds are gradually diminishing. After a large number of rounds,therefore, the size of the increments will be virtually indistinguishable from zeroand subsequent round effects will not practically contribute anything to thetotal volume of money supply. We say that the round effects on money supplyrepresent a convergent process. In order to find out the total increase in moneysupply we must add up the infinite geometric series in the last column, i.e.

$$H + \frac{0.8H}{2} + \frac{0.64H}{4} + \cdots \cdots \infty$$
$$H \left\{ 1 + \left(\frac{0.8}{2}\right) + \left(\frac{0.8}{2}\right)^2 + \cdots \cdots \infty \right\} = \frac{H}{1-0.4} = \frac{5H}{3}$$

The increment in total money supply exceeds the amount of high-poweredmoney initially injected by RBI into the economy. We define money multiplieras the ratio of the stock of money to the stock of high-powered money in aneconomy, viz. M/H. Clearly, its value is greater than 1.

We need not always go through the round effects in order to compute thevalue of the money multiplier. We did it here just to demonstrate the process ofmoney creation in which

the commercial banks have an important role to play.However, there exists a simpler way of deriving the multiplier. By definition,money supply is equal to currency plus deposits

$$M = CU + DD = (1 + cdr)DD$$

where, cdr = CU/DD. Assume, for simplicity, that treasury deposit of theGovernment with RBI is zero. High powered money then consists of currencyheld by the public and reserves of the commercial banks, which include vaultcash and banks' deposits with RBI. Thus

$$H = CU + R = cdr.DD + rdr.DD = (cdr + rdr)DD$$

Thus, the ratio of money supply to high powered money

$$\frac{M}{H} = \frac{1 + cdr}{cdr + rdr} > 1, \quad \text{as } rdr < 1$$

This is precisely the measure of the money multiplier.

Functions of a Central Bank

The most basic function of the Central Bank is issue of currency.The Central bank of the country is mostly the sole issuer of currency. Initially, in India, the currency was issued in accordance with the proportional reserve system. Thus, the RBI had to keep a certain proportion of the money issued in the form of gold and forex reserves. But this system was inflexible. So, in 1957, the RBI shifted to the Minimum Reserve System where a minimum asset stock worth ¹ 200 crore was to be kept and on the basis of that, any money amount may be issued by the RBI.

The Central bank of a country is considered to be the banker to the government. The central bank of the country accepts payments for the Central government and makes payments on its behalf. It also manages public debt. All these functions are performed in India by the RBI. Working closely with the government, the RBI can perform the much-needed task of bringing coordination between the monetary and fiscal policy of the country.

Credit control is considered to be the most important function of the central bank. There are various instruments with the Central Bank for this purpose. In India, the tools for controlling credit has come a long way in past few years. A detailed discussion of the same is given in the next section.

It is clear from the above discussion that the total amount of money stock inthe economy is much greater than the volume of high powered money.Commercial banks create this extra amount of money by giving out a part oftheir deposits as loans or investment credits. It is also evident from Table 3.1(See above) that the total amount of deposits held by all commercial banks in the countryis much larger than the total size of their reserves. If all the account-holders ofall commercial banks in the country want their deposits back at the sametime, the banks will not have enough means to satisfy the need of every account-holder and there will be bank failures.All this is common knowledge to every informed individual in the economy.Why do they still keep their money in bank deposits when they are aware of thepossibility of default by their banks in case of a bank run (a situation whereeverybody wants to take money out of one's bank account before the bank runsout of reserves)?

The Reserve Bank of India plays a crucial role here. In case of a crisis like theabove it stands by the commercial banks as a guarantor and extends loans toensure the solvency of the latter. This system of guarantee assures individualaccount-holders that their banks will be able to pay their money back in case ofa crisis and there is no need to panic thus avoiding bank runs. This role of themonetary authority is known as the **lender of last resort.**

Open Market Operations: RBI purchases (or sells) government securities tothe general public in a bid to increase (or decrease) the stock of high poweredmoney in the economy. Suppose RBI purchases Rs 100 worth governmentsecurities from the bond market. It will issue a cheque of Rs 100 on itself to theseller of the bond i.e. if a person or institution possessing the cheque producesit to RBI. RBI must pay equivalent amount of money to the person or theinstitution. The seller will deposit the cheque in her bank, which, in turn, willcredit the seller's account with a balance of Rs 100. The bank's deposits go upby Rs 100 which is a liability to the bank. However, its assets also go up by Rs100 by the possession of this cheque, which is a claim on RBI. The bank willdeposit this cheque to RBI which, in turn, will credit the bank's account withRBI with Rs 100. The changes in RBI's balance sheet are shown in Table 3.4.

Total liability of RBI, or, by definition, the supply of high-powered money inthe economy has gone up by Rs 100. If RBI wishes to reduce the supply of high-powered money it undertakes an open market sale of government securities ofits own holding in just the reverse fashion, thereby reducing the monetary base.

Table 3.4: Effects of Open Market Purchase on the Balance Sheet of RBI

Assets (sources) – Rs		Liability (uses) – Rs	
All Other Assets	0	Currency	0
Government Securities	+ 100	Deposits of Commercial Banks with RBI	+ 100
Monetary Base (sources)	+ 100	Monetary Base (uses)	+ 100

Bank Rate Policy: As mentioned earlier, RBI can affect the reserve depositratio of commercial banks by adjusting the value of the bank rate – which is therate of interest commercial banks have to pay RBI – if they borrow money fromit in case of shortage of reserves. A low (or high) bank rate encourages banks tokeep smaller (or greater) proportion of their deposits as reserves, since borrowingfrom RBI is now less (or more) costly than before. As a result banks use a greater(or smaller) proportion of their resources for giving out loans to borrowers orinvestors, thereby enhancing (or depressing) the multiplier process via assisting(or resisting) secondary money creation. In short, a low (or high) bank rate reduces(or increases) rdr and hence increases (or decreases) the value of the moneymultiplier, which is $(1 + cdr)/(cdr + rdr)$. Thus, for any given amount of high-powered money, H, total money supply goes up.

These days, more emphasis is put by the RBI on two relatively new instruments, namely repo rate and reverse repo rate. But the mechanism of their functioning is more or less similar to that of Bank rate.

Varying Reserve Requirements: Cash Reserve Ratio (CRR) and StatutoryLiquidity Ratio (SLR) also work through the rdr-route. A high (or low) value ofCRR or SLR helps increase (or decrease) the value of reserve deposit ratio, thusdiminishing (or increasing) the value of the money multiplier and money supplyin the economy in a similar fashion.

Other Functions: Apart from the above functions, the RBI like central banks of other countries performs some other cardinal functions. For example, keeping prices under check. Too much fluctuations in prices are not good for the economy. Similarly, RBI also seeks to maintain a stable exchange rate. In India, RBI has established banks targeting specific sectors of the economy, such as EXIM Bank (1982) for Foreign Trade Sector, National Bank for Agricultural and Rural Development, and National Housing bank. Apart from itself, RBI provides us with voluminous data by publishing various reports. For example, one may refer to Report on Currency and Finance, Handbook on Indian Economy etc.

Activity:

This is time for us to do an activity. Try to find a correlation between price level of a quarter and Repo rate as well as reverse repo rate in the next quarter. See if you can find some correlation between the two.

Chapter - 7

CONSUMERS BEHAVIOUR

Consumer decides how to spend her income on different goods. Objective of every consumer is to buy a combination of goods that gives her maximum satisfaction. When you been to market to buy goods to satisfy your wants? You becomes a consumer, who decides how much quantity of good is to buy in the market at given price, considering your preferences and money you have in the pocket. This ration behind the decision process by a consumer is known as consumer behavior. In this chapter, we will study the behavior of an individual consumer. A rational consumer has the objective to maximize her satisfaction in her given limited income and given market price of the goods. The consumer has to decide how to spend her income on different goods. Economists call this the problem of choice. Most naturally, any consumer will want to get a combination of goods that gives her maximum satisfaction. What will be this 'best ' combination? This depends on the likes of the consumer and what the consumer can afford to buy. The 'likes 'of the consumer are also called 'preferences 'which are effected by weather, fashion, age, culture etc. And what the consumer can afford to buy, depends on prices of the goods and the income of the consumer.

This chapter presents two different approaches that explain consumer behavior (i) Cardinal Utility Analysis and (ii) Ordinal Utility Analysis.

Preliminary Notations and Assumptions

A consumer, in general, consumes many goods; but for simplicity, we shall consider the consumer's choice problem in a situation where there are only two goods. Any combination of the amount of the two goods will be called a consumption bundle or, in short, a bundle. In general, we shall use the variable X to denote the quantity of one good and Y to denote the quantity of other good. X and Y can be positive or zero but can't be negative. (X, Y) would mean the bundle consisting of X quantity of good one and X2 quantity of second good. For particular values of X and *Y*, (X, *Y*), would give us a particular bundle. For example, the bundle (5, 10) consists of 5 units of one good and 10 units of other good. We assume that consumer is rational and he always prefer more than the less.

UTILITY

A consumer usually decides his demand for a commodity on the basis of utility (or satisfaction) that he derives from it.

What is utility? Utility of a commodity is its want-satisfying capacity.

The more the need of a commodity or the stronger the desire to have it, the greater is the utility derived from the commodity. Utility is subjective. Different individuals can get different levels of utility from the same commodity. For example, someone who likes chocolates will get much higher utility from a chocolate than someone who is not so fond of chocolates, Also, utility that one individual gets from the commodity can change with change in place and time. Consumer is willing to pay more for a good when he gets more utility from that good.

For example, utility from the use of a room heater will depend upon whether the individual is in Ladakh or Chennai (place) or whether it is summer or winter (time).

2.1.1 Cardinal Utility Analysis

Cardinal utility analysis assumes that level of utility can be expressed in numbers. For example, we can measure the utility derived from a shirt and say, this shirt gives me 50 units of utility. Before discussing further, it will be useful to have a look at two important measures of utility.

Measures of Utility

Total Utility: Total utility of a fixed quantity of a commodity (TU) is the total satisfaction derived from consuming the given amount of some commodity *X*. More of commodity X provides more satisfaction to the consumer. TU depends on the quantity of the commodity consumed. Therefore, TUn refers to total utility derived from consuming *n* units of a commodity *X*.

Marginal Utility: Marginal utility (MU) is the change in total utility due to consumption of one additional unit of a commodity. For example, suppose 4 chocolates give us 28 units of total utility and 5 chocolates give us 30 units of total utility. Clearly, consumption of the 5th chocolate has caused total utility to increase by 2 units (30 units minus 28 units). Therefore, marginal utility of the 5th chocolate is 2 units.

$MU5 = TU5 – TU4 = 30 – 28 = 2$

In general, $MUn = TUn – TUn\text{-}1$, where subscript n refers to the *nth* unit of the commodity

Total utility and marginal utility can also be related in the following way.

$TUn = MU1 + MU2 + … + MUn\text{-}1 + MUn$

This simply means that TU derived from consuming n units of chocolate is the sum total of marginal utility of first chocolate (MU1), marginal utility of second chocolate (MU2), and so on, till the marginal utility of the *nth* unit.

Table No. 2.1 and Figure 2.1 show an imaginary example of the values of marginal and total utility derived from consumption of various amounts of a commodity. Usually, it is seen that the marginal utility diminishes with increase in consumption of the commodity. This happens because having obtained some amount of the commodity, the desire of the consumer to have still more of it becomes weaker. The same is also shown in the table and graph.

Table 2.1: Values of marginal and total utility derived from consumption of various amounts of a commodity

Notice that MU*3* is less than MU*2*. You may also notice that total utility increases but at a diminishing rate: The rate of change in total utility due to change in quantity of commodity consumed is a measure of marginal utility. This marginal utility diminishes with increase in consumption of the commodity from 12 to 6, 6 to 4 and so on. This follows from the law of diminishing marginal utility. Law of Diminishing Marginal Utility states that marginal utility from consuming each additional unit of a commodity declines as its consumption increases, while keeping consumption of other commodities constant. MU becomes zero at a level when TU remains constant. In the example, TU does not change at 5th unit of consumption and therefore MU5= 0. Thereafter, TU starts falling and MU becomes negative.

How consumer decides the quantity she buys

Ice Cream or Chocolate.

What should I buy?

Marginal Utility =50
Price = Rs. 50
Per Rupee MU = 1 Unit

Marginal Utility =50
Price = Rs. 25
Per Rupee MU = 2 units
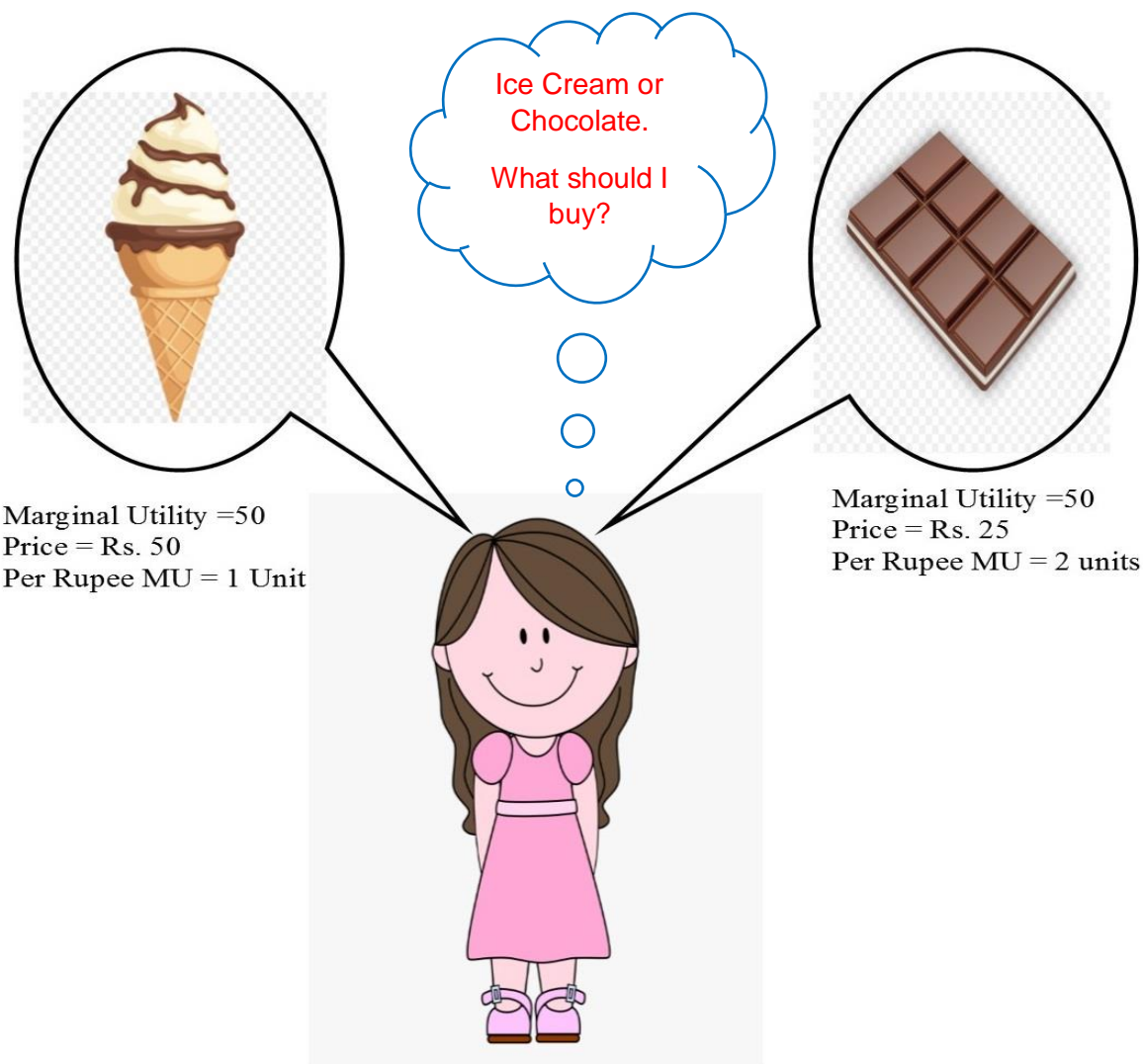
Sunita wants to have something sweet. She has to choose between two options available Chocolate or Ice-cream. Marginal Utility of Ice-cream is higher than chocolate so she is tempted to buy ice-cream. Being rational consumer she can't decide on what she gets but she also need to consider what she pays for that good. To make the goods comparable she calculated per rupee Marginal Utility of goods she consumes. She prefers to buy more of the good which gives higher per rupee marginal utility. Increase in the quantity consumed decreases the Marginal Utility. She keeps increasing the quantity of that good till she reaches the situation where per rupees marginal utility of all goods become equal. That situation is known as situation of rest or consumer equilibrium.

Conditions of consumer's equilibrium are (1) $$\frac{MUx}{Px} = \frac{MUy}{Py}$$ and (2) MU is diminishing

Derivation of Demand Curve in the Case of a Single Commodity (Law of Diminishing Marginal Utility)

71

Cardinal utility analysis can be used to derive demand curve for a commodity. Demand for a commodity *x*, apart from the price of *x* itself, depends on factors such as prices of other commodities (substitutes and complements), income of the consumer and tastes and preferences of the consumers. Demand curve is a graphic presentation of various quantities of a commodity that a consumer is willing to buy at different prices of the same commodity, while holding constant prices of other related commodities and income of the consumer.

Figure 2.2 presents hypothetical demand curve of an individual for commodity *x* at its different prices. Quantity is measured along the horizontal axis and price is measured along the vertical axis.

The downward sloping demand curve shows that at lower prices, the individual is willing to buy more of commodity *X*; at higher prices, she is willing to buy less of commodity *X*.

Therefore, there is a negative relationship between price of a commodity and quantity demanded which is referred to as the Law of Demand. An explanation for a downward sloping demand curve rests on the notion of diminishing marginal utility. The law of diminishing marginal utility states that each successive unit of a commodity provides lower marginal utility.

Therefore the individual will not be willing to pay as much for each additional unit and this results in a downward sloping demand curve. At a price of Rs. 40 per unit *X,* individual's demand for X was 5 units. The 6th unit of commodity X will be worth less than the 5th unit. The individual will be willing to buy the 6th unit only when the price drops below Rs. 40 per unit. Hence, the law of diminishing marginal utility explains why demand curves have a negative slope.

2.1.2 Ordinal Utility Analysis

Cardinal utility analysis is simple to understand, but suffers from a major drawback in the form of quantification of utility in numbers. In real life, we never express utility in the form of numbers. At the most, we can rank various alternative combinations in terms of having more or less utility. In other words, the consumer does not measure utility in numbers, though she often ranks various consumption bundles. This forms the starting point of this topic – Ordinal Utility Analysis.

Let's do that by yourself

Bundles	Good-X	Good-Y	Preference	Lies on I. C.
Base Bundle	3	4	Given	Same I.C.
1	4	4	+ More	Higher I.C.
2	4	3	= Indifferent	Same I. C.
3	4	5	+ More	Higher I.C.
4	3	3	- Less	Lower I. C.
5	5	2	= Indifferent	Same I. C.
6	5	4	+ More	Higher I.C.
7	2	3	- Less	Lower I. C.

Base bundle along with bundles 2 and 5 forms an Indifference curve because consumer is indifferent among them. She prefer bundles 1, 3 and 6 more than base bundle that lies on higher Indifference Curve due to monotonic preferences and prefer bundles 4 and 7 less than base bundle that lies on lower Indifference Curve. A consumer preferences are infinite and all preferences can be represented on various Indifference Curves, family of I.C.s collectively called Indifference Map.

A consumer's preferences over the set of available bundles can often be represented diagrammatically. We have already seen that the bundles available to the consumer can be plotted as points in a two dimensional diagram. The points representing bundles which give the consumer equal utility can generally be joined to obtain a curve like the one in

Fig. 2.3
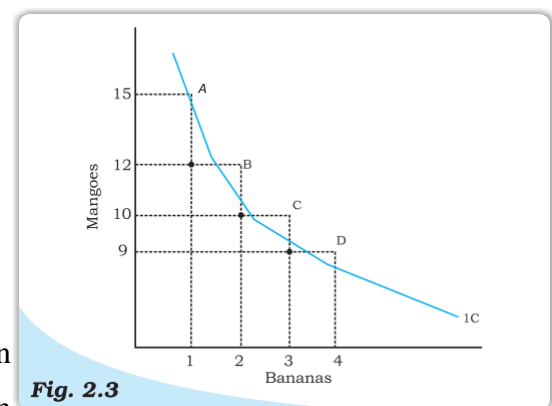
Figure 2.3. The consumer is said to be indifferent on the different bundles because each point of the bundles give the consumer equal utility. Such a curve joining all points representing bundles

among which the consumer is indifferent is called an indifference curve. All the points such as A, B, C and D lying on an indifference curve provide the consumer with the same level of satisfaction.

It is clear that when a consumer gets one more goods X, she has to forego some good Y, so that her total utility level remains the same and she remains on the same indifference curve. Therefore, indifference curve slopes downward. The amount of goods Y that the consumer has to forego, in order to get an additional Goods X, her total utility level being the same, is called marginal rate of substitution (MRS). In other words, MRS is simply the rate at which the consumer will substitute chocolates for ice-creams, so that her total utility remains constant. So, *MRS Y / X* 3.

One can notice that, as we increase the quantity of chocolates, the quantity of ice-creams sacrificed for each additional chocolate declines. In other words, MRS diminishes with increase in the number of chocolates. As the number of chocolates with the consumer increases, the MU derived from each additional chocolate falls. Similarly, with the fall in quantity of ice-creams, the marginal utility derived from ice-creams increases. So, with increase in the number of chocolates, the consumer will feel the inclination to sacrifice small and smaller amounts of ice-creams. This tendency for the MRS to fall with increase in quantity of chocolates is known as Law of Diminishing Marginal Rate of Substitution. This can be seen from figure 2.3 also. Going from point A to point B, the consumer sacrifices 3 ice-creams for 1 chocolate, going from point B to point C, the consumer sacrifices.

2 ice-creams for 1 chocolate, and going from point C to point D, the consumer sacrifices just 1 ice-cream for 1 chocolate. Thus, it is clear that the consumer sacrifices smaller and smaller quantities of ice-creams for each additional chocolate.

Shape of an Indifference Curve

It may be mentioned that the law of Diminishing Marginal Rate of Substitution causes an indifference curve to be convex to the origin. This is the most common shape of an indifference curve. But in case of goods being perfect substitutes, the marginal rate of substitution does not diminish. It remains the same. Let's take an example.

Here, the consumer is indifferent for all these combinations as long as the total of five rupee coins and five rupee notes remains the same. For the consumer, it hardly matters whether she

gets a five rupee coin or a five rupee note. So, irrespective of how many five rupee notes she has, the consumer will sacrifice only one five rupee coin for a five rupee note. So these two commodities are perfect substitutes for the consumer and indifference curve depicting these will be a straight line.

Indifference Map

The consumer's preferences over all the bundles can be represented by a family of indifference curves. This is called an indifference map of the consumer. All points on an indifference curve represent bundles which are considered indifferent by the consumer. Monotonicity of preferences imply that between any two indifference curves, the bundles on the one which lies above are preferred to the bundles on the one which lies below.

Features of Indifference Curve

1. Indifference curve slopes downwards from left to right:

An indifference curve slopes downwards from left to right, which means that in order to have more of chocolates, the consumer has to forego some ice-creams. If the consumer does not forego some ice-creams with an increase in number of chocolates, it will mean consumer having more of chocolates with same number of ice-creams, taking her to a higher indifference curve.

Fig. 2.6

Thus, as long as the consumer is on the same indifference curve, an increase in chocolates must be compensated by a fall in quantity of ice-creams.

2. Higher indifference curve gives greater level of utility:

As long as marginal utility of a commodity is positive, an individual will always prefer more of that commodity, as more of the commodity will increase the level of satisfaction.

Consider the different combination of chocolates and ice-creams, A, B and C depicted in table 2.4 and figure

Fig. 2.7
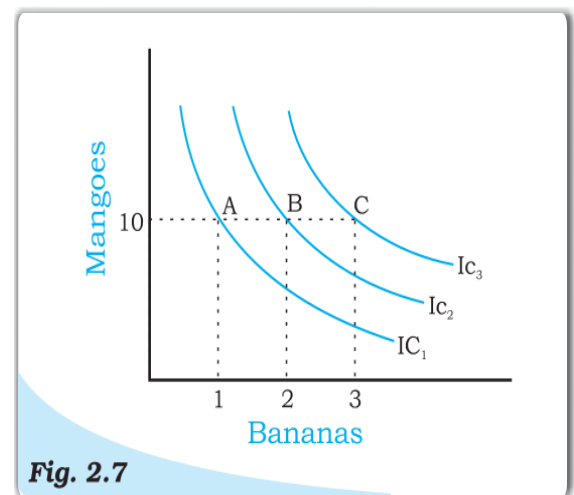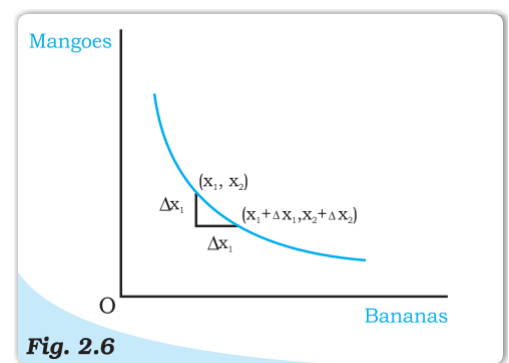
2.7. Combinations A, B and C consist of same quantity of ice-creams but different quantities of chocolates. Since combination B has more chocolates than A, B will provide the individual a higher level of satisfaction than A. Therefore, B will lie on a higher indifference curve than A, depicting higher satisfaction. Likewise, C has more chocolates than B (quantity of ice-creams is the same in both B and C). Therefore, C will provide higher level of satisfaction than B, and also lie on a higher indifference curve than B. A higher indifference curve consisting of combinations with more of ice-creams, or more of chocolates, or more of both, will represent combinations that give higher level of satisfaction.

3. Two indifference curves never intersect each other: Two indifference curves intersecting each other will lead to conflicting results. To explain this, let us allow two indifference curves to intersect each other as shown in the figure 2.8. As points A and B lie on the same indifference curve IC1, utilities derived

Fig. 2.8
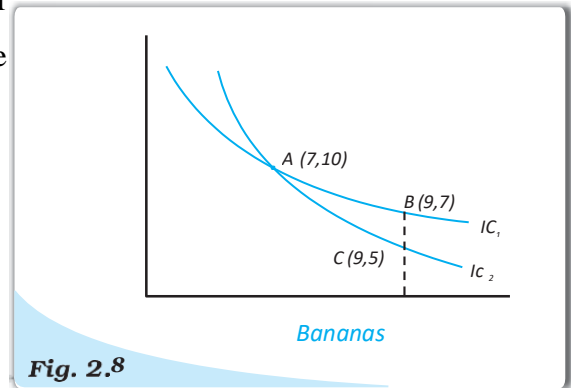
from combination A and combination B will give the same level of satisfaction. Similarly, as points A and C lie on the same indifference curve IC2, utility derived from combination A and from combination C will give the same level of satisfaction.

From this, it follows that utility from point B and from point C will also be the same. But this is clearly an absurd result, as on point B, the consumer gets a greater number of ice-creams with the same quantity of chocolates. So consumer is better off at point B than at point C. Thus, it is clear that intersecting indifference curves will lead to conflicting results. Thus, two indifference curves cannot intersect each other.

2.2 THE CONSUMER'S BUDGET

Let us consider a consumer who has only a fixed amount of money (income) to spend on two goods. The prices of the goods are given in the market. The consumer cannot buy any and every combination of the two goods that she may want to consume. The consumption bundles that are available to the consumer depend on the prices of the two goods and the income of the consumer. Given her fixed income and the prices of the two goods, the consumer can afford to buy only those bundles which cost her less than or equal to her income.

2.2.1 Budget Set and Budget Line

Suppose the income of the consumer is *M* and the prices of chocolates and ice-creams are $p1$ and $p2$ respectively. If the consumer wants to buy $x1$ quantities of chocolates, she will have to spend $p1x1$ amount of money. Similarly, if the consumer wants to buy $x2$ quantities of ice-creams, she will have to spend $p2x2$ amount of money.

Therefore, if the consumer wants to buy the bundle consisting of $x1$ quantities of chocolates and $x2$ quantities of ice-creams, she will have to spend $p1x1 + p2x2$ amount of money. She can buy this bundle only if she has at least $p1x1 + p2x2$ amount of money. Given the prices of the goods and the income of a consumer, she can choose any bundle as long as it costs less than or equal to the income she has. In other words, the consumer can buy any bundle $(x1, x2)$ such that
$$p1x1 + p2x2 = M \quad (2.1)$$
The inequality (2.1) is called the consumer's budget constraint. The set of bundles available to the consumer is called the budget set. The budget set is thus the collection of all bundles that the consumer can buy with her income at the prevailing market prices.

Derivation of the Slope of the Budget Line

The slope of the budget line measures the amount of change in mangoes required per unit of change in bananas along the budget line. Consider any two

points (x_1, x_2) and $(x_1 + \Delta x_1, x_2 + \Delta x_2)$ on the budget line.[a]
It must be the case that
$$p_1 x_1 + p_2 x_2 = M \qquad (2.4)$$
and, $p_1(x_1 + \Delta x_1) + p_2(x_2 + \Delta x_2) = M$ $\qquad$ (2.5)
Subtracting (2.4) from (2.5), we obtain
$$p_1 \Delta x_1 + p_2 \Delta x_2 = 0 \qquad (2.6)$$

By rearranging terms in (2.6), we obtain
$$\frac{\Delta x_2}{\Delta x_1} = -\frac{p_1}{p_2} \qquad (2.7)$$

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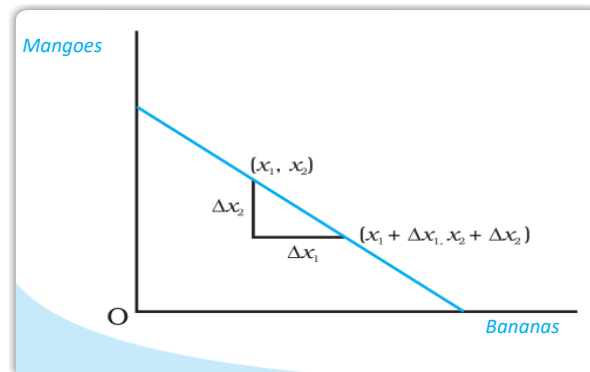
[a] *Δ (delta) is a Greek letter. In mathematics, Δ is sometimes used to denote 'a change'. Thus, Δx_1 stands for a change in x_1 and Δx_2 stands for a change in x_2.*

2. Changes in the Budget Set

The set of available bundles depends on the prices of the two goods and the income of the consumer. When the price of either of the goods or the consumer's income changes, the set of available bundles is also likely to change. Suppose the consumer's income changes from M to $M\,¢$ but the prices of the two goods remain unchanged. With the new income, the consumer can afford to buy all bundles

(x_1, x_2) *such that* $p_1x_1 + p_2x_2 \leq M$

Now the equation of the budget line is

$P_1\ x_1 + p_2\ x_2 = M$

Fig. 2.10
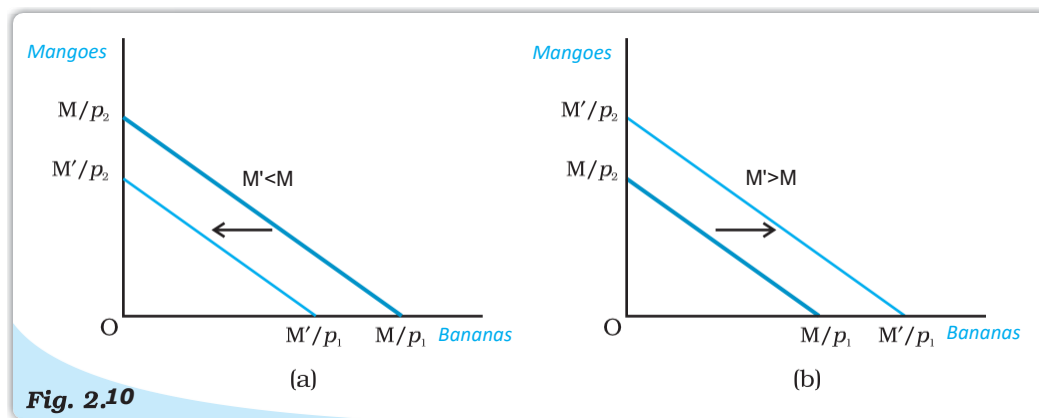
$X_2 = (M/P_2) - (P_1/P_2)*X$

Note that the slope of the new budget line is the same as the slope of the budget line prior to the change in the consumer's income. However, the vertical intercept has changed after the change in income. If there is an increase in the income, i.e. if $M' > M$, the vertical as well as horizontal intercepts increase, there is a parallel outward shift of the budget line. If the income increases, the consumer can buy more of the goods at the prevailing market prices. Similarly, if the income goes down, i.e. if $M' < M$, both intercepts decrease, and hence, there is a parallel inward shift of the budget line. If income goes down, the availability of goods goes down. Changes in the set of available bundles resulting from changes in consumer's income when the prices of the two goods remain unchanged are shown in Figure 2.10.

78

Changes in the Set of Available Bundles of Goods Resulting from Changes in the Consumer's Income. A decrease in income causes a parallel inward shift of the budget line as in panel (a). An increase in income causes a parallel outward shift of the budget line as in panel (b).

Note that the vertical intercept of the new budget line is the same as the vertical intercept of the budget line prior to the change in the price of bananas. However, the slope of the budget line and horizontal intercept have changed after the price change. If the price of bananas increases, ie if $p'_1 > p_1$, the absolute value of the slope of the budget line increases, and the budget line becomes steeper (it pivots inwards around the vertical intercept and horizontal intercept decreases). If the price of bananas decreases, i.e., $p'_1 < p_1$, the absolute value of the slope of the budget line decreases and hence, the budget line becomes flatter (it pivots outwards around the vertical intercept and horizontal intercept increases). Figure 2.11 shows change in the budget set when the price of only one commodity changes while the price of the other commodity as well as income of the consumer are constant. A change in price of mangoes, when price of bananas and the consumer's income remain unchanged, will bring about similar changes in the budget set of the consumer.

2.3 OPTIMAL CHOICE OF THE CONSUMER

The budget set consists of all bundles that are available to the consumer. The consumer can choose her consumption bundle from the budget set. But on what basis does she choose her consumption bundle from the ones that are available to her? In economics, it is assumed that the consumer chooses her consumption bundle on the basis of her taste and preferences over the bundles in the budget set. It is generally assumed that the consumer has well defined preferences over the set of all possible bundles. She can compare any two bundles. In other words, between any two bundles, she either prefers one to the other or she is indifferent between the two.
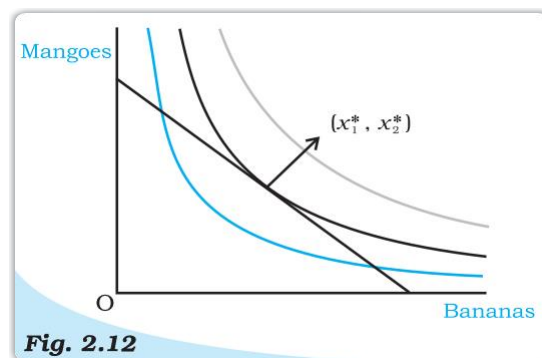
Fig. 2.12

In economics, it is generally assumed that the consumer is a rational individual. A rational individual clearly knows what is good or what is bad for her, and in any given situation, she always tries to achieve the best for herself. Thus, not only does a consumer have well-defined preferences over the set of available bundles, she also acts according to her preferences. From the bundles which are available to her, a rational consumer always chooses the one which gives her maximum satisfaction.

In the earlier sections, it was observed that the budget set describes the bundles that are available to the consumer and her preferences over the available bundles can usually be represented by an indifference map. Therefore, the consumer's problem can also be stated as follows: The rational consumer's problem is to move to a point on the highest possible indifference curve given her budget set.

If such a point exists, where would it be located? *The optimum point would be located on the budget line.* A point below the budget line cannot be the optimum. Compared to a point below the budget line, there is always some point on the budget line which contains more of at least one of the goods and no less of the other, and is, therefore, preferred by a consumer whose preferences are monotonic. Therefore, if the consumer's preferences are monotonic, for any point below the budget line, there is some point on the budget line which is preferred by the consumer. Points above the budget line are not available to the consumer. Therefore, the optimum (most preferred) bundle of the consumer would be on the budget line.

Where on the budget line will the optimum bundle be located? The point at which the budget line just touches (is tangent to), one of the indifference curves would be the optimum.[9] To see why this is so, note that any point on the budget line other than the point at which it touches the indifference curve lies on a lower indifference curve and hence is inferior. Therefore, such a point cannot be the consumer's optimum. The optimum bundle is located on the budget line at the point where the budget line is tangent to an indifference curve.

Demand

Introduction

Whenever a consumer goes to a free market, one observes a multitude of goods and services reflecting different quantities that can be purchased and sold at specific market prices. These market prices and quantities are determined by the market forces of demand and supply, which remain a main focus of any economic activity. Moreover, market is a place where consumers and producers come together, interact with each other and decide how much quantity they will are willing to buy and sell at market prices. The whole process of this decision making by the consumer is studied under the theme of consumer theory since the inception of economics. After this chapter, you should be able to learn about: -

- the concept of consumer demand and factors that causes change in demand.
- What are the ways in which consumer demand curve can be derived and the law of demand?
- Are there any exemptions to law of demand, or no?
- how the market demand curve is derived?

Demand

Individual's demand for goods and services plays an important role in deciding how scarce resources are utilized. Demand for the commodity is the want or willingness of consumers to buy goods and services, given prices of goods and tastes and preferences. For revealing the demand for the commodity, consumers must have enough income/ money to buy commodities given the possible prices. Wherever one or more of these variables change, the quantity of the good chosen by the consumer is likely to change as well.

MOBILE PHONES: Factors affecting the consumers' purchase:

With ever changing technological world, life without mobile phones is totally unimaginable. Mobile phones have become very popular among consumers especially students and professionals because of their distinctive features and acting as a minicomputer which one can carry in their pocket and can use anywhere, anytime. The nature of regular mobile phones has also changed dynamically over the last decade. What started out of necessity to make the call remotely have become smarter and smarter with more advanced computer capabilities, advanced features and connectivity. The coronavirus pandemic has greatly increased the demand for

smartphones due to altered way of life of every individual requiring them to work from home by using technological devices.

Total Number of Smart Phone Users in India
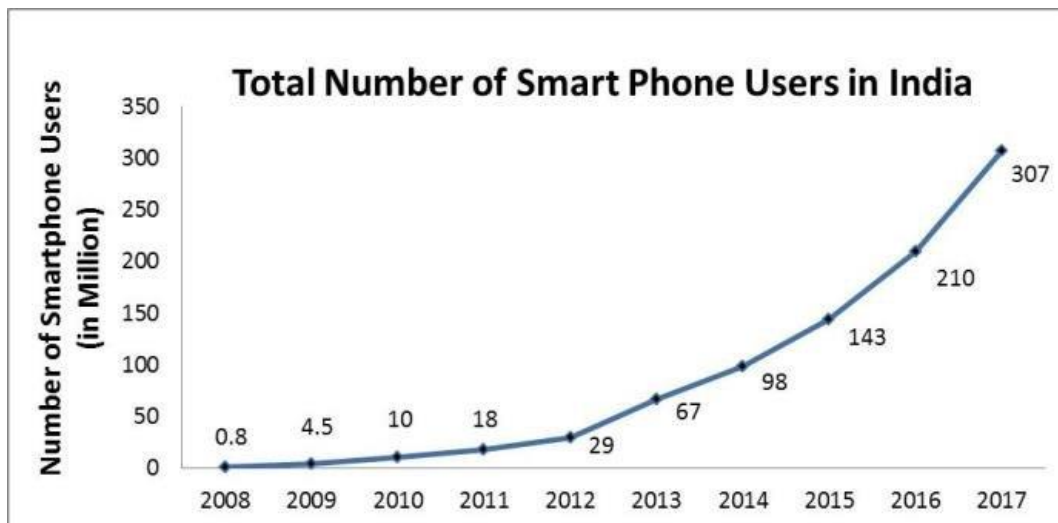
1. Who makes up the market for smartphones?
2. How are consumers' wants changing in the smart phones industry?
3. What is likely impact on the allocation of resources in the smart phones industry of changing consumer demand?
4. Why do you think more consumers now want and are able to buy better smart phone mobiles?

This article above illustrates the changing pattern of the changing pattern of consumer demand in the mobile industry. People are now spending more on smart phones having additional features such as easy access to internet along with the audio-video-facility and instant messaging, etc. Producers of mobile phones have reacted by moving the scarce resources of land, labour and capital to the production of smart phones with added features. In this way consumers get what they want in the market economy. Now let us look into some graphs.

Visualising the numerical variables

Visualising two numerical variables together can reveal possible relationships between two variables and serve as a basis for the application of various methods. To visualise two numerical

variables, we start with a use of scatter plot. For the special case, in which one of the two variables represents the passage of time, one can use a time-series plot.

THE SCATTER PLOT

A **scatter plot** explores the possible relationship between two numerical variables by plot- ting the values of one numerical variable on the horizontal, or *X*, axis and the values of a second numerical variable on the vertical, or *Y*, axis. For example, marketing manager of ABC mobile company by comparing advertising expenses and sales revenue of 50 stores by using the X axis to represent advertising expenses and the Y axis to represent sales revenues.

To quickly visualize a possible relationship between team revenues and valuations, you construct a scatter plot as shown in the Figure below, in which you plot the revenues on the *X* axis and the value of the team on the *Y* axis.

Store Code	Revenue (Rs. mil)	Current Value (Rs. mil)	Store Code	Revenue (Rs. mil)	Current Value (Rs. mil)	Store Code	Revenue (Rs. mil)	Current Value (Rs. mil)
ATL	133	825	DEN	136	855	MIN	128	625
BOS	173	1700	DET	144	810	NOH	131	650
BKN	212	1500	GSW	168	1300	NYK	278	2500
CHA	130	725	HOU	175	1250	OKC	152	930
CHI	201	2000	IND	149	830	ORL	143	875
CLE	149	915	LAC	146	1600	PHI	125	700
DAL	168	1150	LAL	293	2600	PHX	145	910
TOR	151	920	MEM	135	750	POR	153	940
UTA	142	830	MIA	188	1175	SAC	125	800
WAS	143	900	MIL	110	600	SAS	174	1000

SCATTER PLOT OF ABC MOBILE COMPANY REVENUE AND VALUE
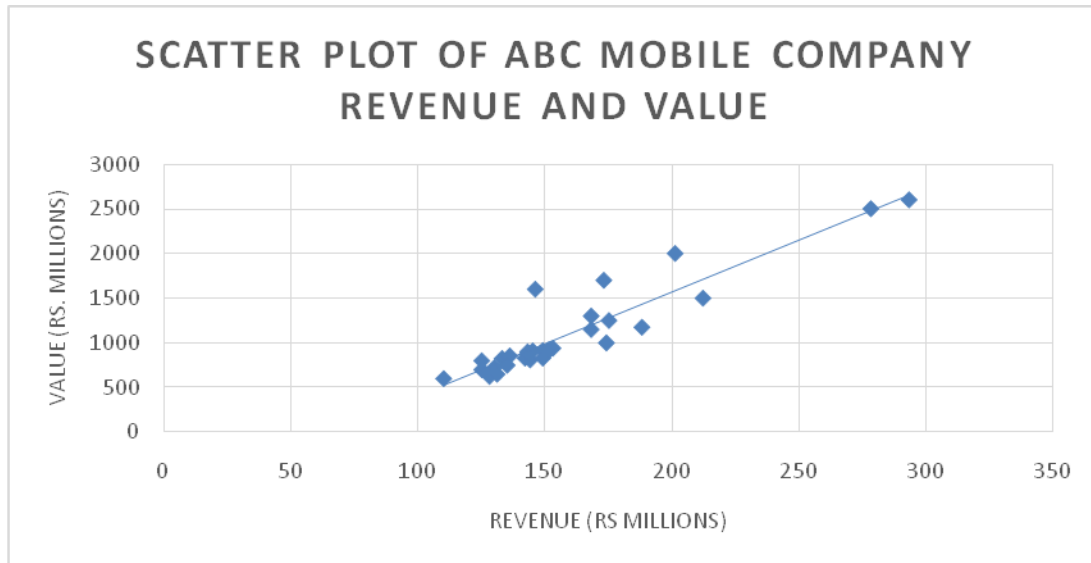
Time-Series Plot

A **time-series plot** plots the values of a numerical variable on the *Y* axis and plots the time period associated with each numerical value on the *X* axis. A time-series plot can help you visualize trends in data that occur over time.

As an investment analyst who specializes in the smartphones industry, you are interested in discovering any long-term trends in smartphones revenues. You collect the annual revenues (in Rs millions) for smartphones sold from 1995 to 2014:

Year	Revenues (Rs. mill)	Year	Revenues (Rs. mill)
1995	5.29	2005	8.93
1996	5.59	2006	9.25
1997	6.51	2007	9.63
1998	6.79	2008	9.95
1999	7.30	2009	10.65
2000	7.48	2010	10.54
2001	8.13	2011	10.19
2002	9.19	2012	10.83
2003	9.35	2013	10.90
2004	9.11	2014	10.36

Smartphones revenues per year, 1995-2014
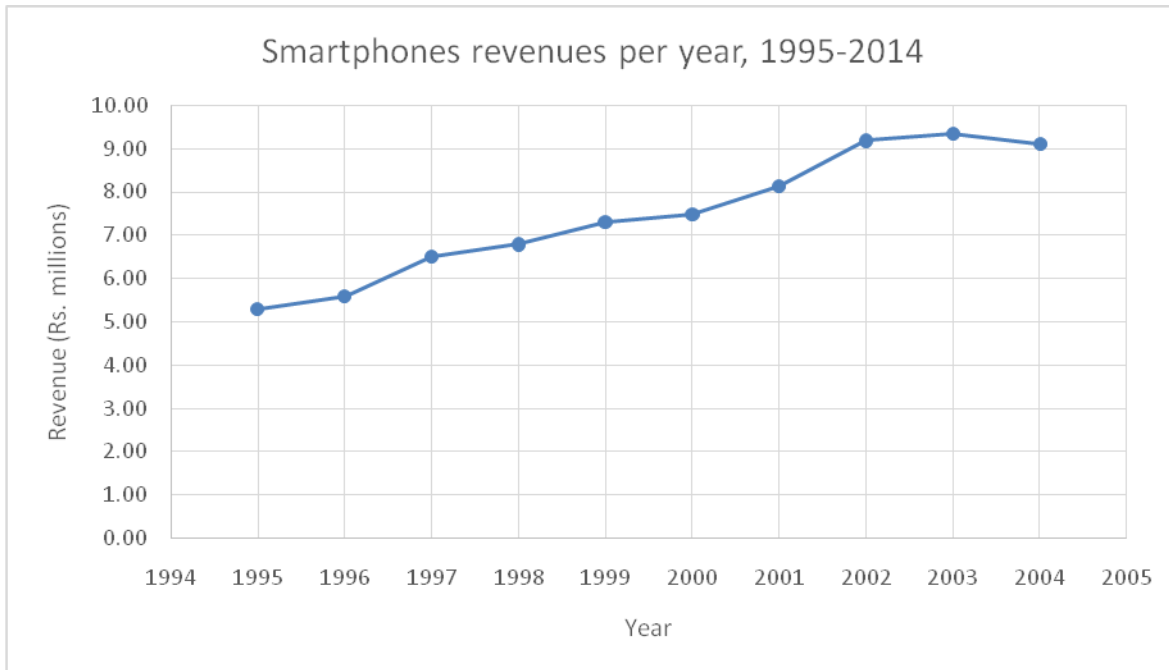
From the above, you see that there was a steady increase in the smart phone sales revenues between 1995 and 2003, a levelling off from 2003 to 2006, followed by a further increase from 2007 to 2009, followed by another levelling off from 2010 to 2013, and then a decline in 2014 back to near the level of the revenue in 2011. During that time, the revenues increased from under Rs 6 million in 1995 to more than Rs 10 million in 2009 to 2014.

2.4.1 Demand Curve and the Law of Demand

The amount of a good or service consumers are willing and able to buy is known as quantity demanded of the product. Economists measure the quantity demanded of that particular good or service at a certain price over certain price over certain periods of time, say the number of apples bought per week, number of calls per day, or the number of TVs per year.

Individual Demand is the demand of just one consumer, while the market demand for a product is the total demand for that product for that product from all its consumers.

After the liberalization of Indian telecommunication, many foreign investors got entry into the Indian telecom markets. The Government became more liberal in making policies and issuing licenses to private providers. As a result of these factors, the service fees finally reduced and the call costs per minute has drastically fallen enabling individuals to increase the number of calls made by them.

Let's imagine the possible reduction in the call price per minute post the entry of many service providers in the telecom sector. How many calls per month would you be prepared to make at each possible price?

Possible Call Price per Minute	Call Quantity (your demand per month)
32	110
24	175
16	630
8.4	2600
1	6000

2. Copy and complete the table. You have now completed your demand schedule for your number of mobile calls (quantity of calls per month), that is, a table of figures relating quantity demanded to price. Use this information to plot a line graph below to show your individual demand curve for number of mobile calls
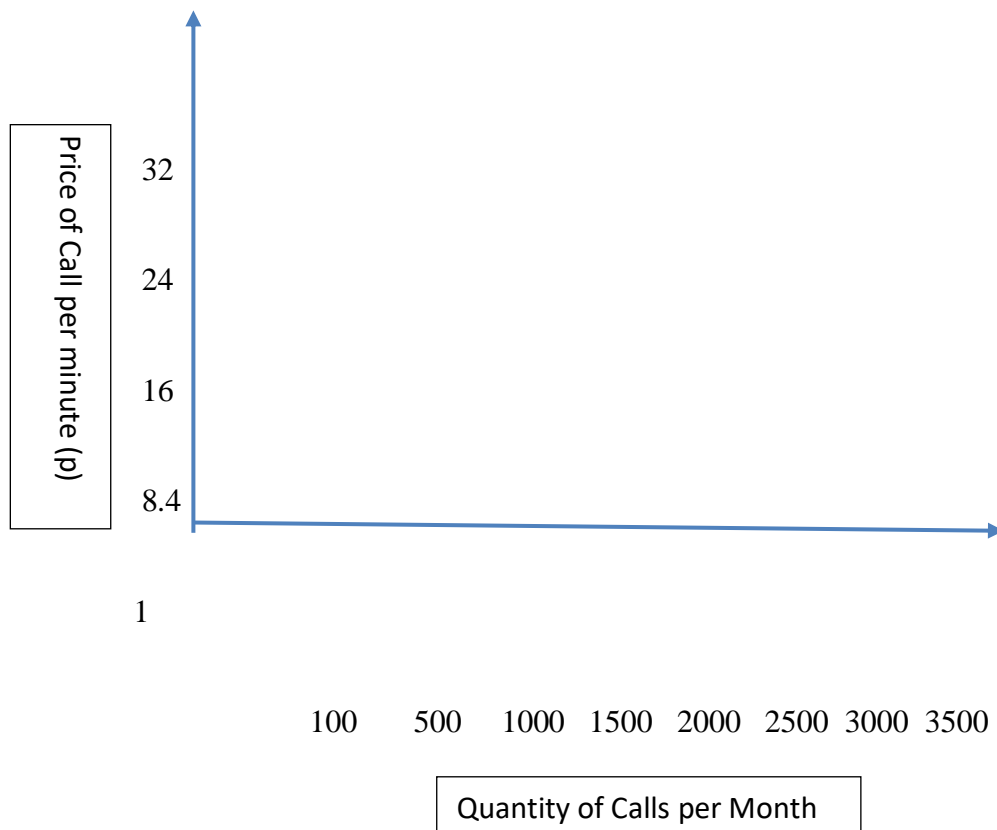
3. Which of the following statements applies to your demand curve?

   a. It shows that as price rises, quantity demanded falls, as price falls, quantity demanded rises.

   b. It is roughly downward sloping

   c. Price and quantity demanded more in opposite direction

Don't be surprised if all three statements apply to your demand curve. For the great majority of goods and services experience shows that quantities demanded will rise as their price changes fall. In general, demand curves will be downward sloping when plotted against price.
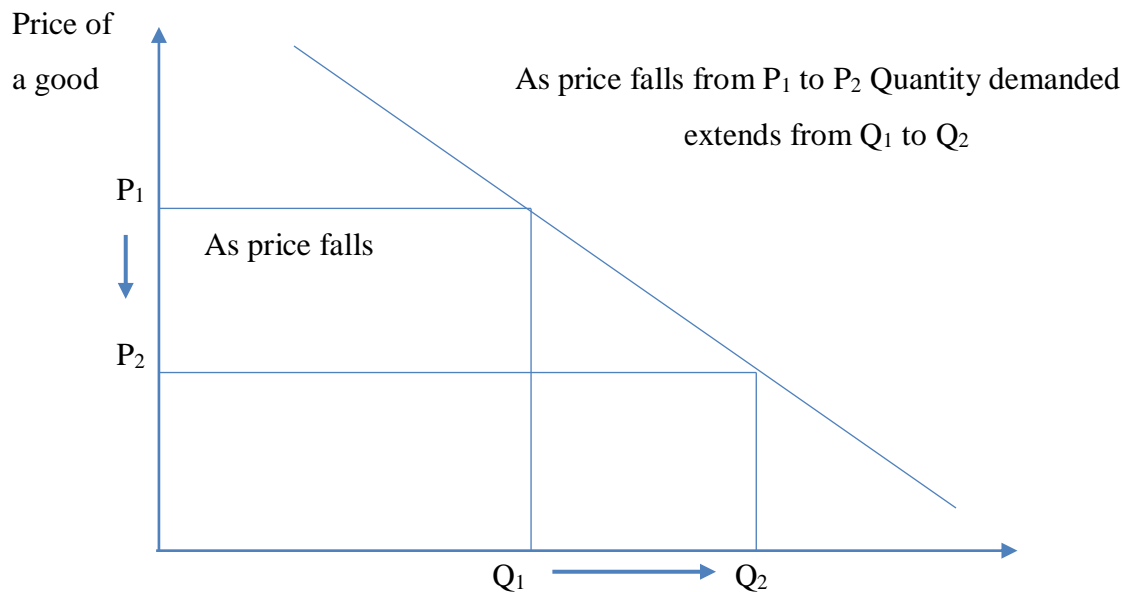
Quantity Demanded extends

Thus, as the price of a product changes consumers move along their demand curve. That is, their demand extends as price falls, or contracts as price rises.

An extension of demand or increase in quantity demanded refers to the way in which demand changes with a fall in price, with no change in any other factor that could affect demand.

Here, y and x are related by the function y = f(x) which is defined as follows: f(0) = 100; f(10) = 90; f(15) = 70 and f(20) = 40. Very often functional relation between the two variables can be expressed in algebraic form like y = 5 + x and y = 50 – x. A function y = f(x) is an increasing function if the value of y does not decrease with increase in the value of x. It is a decreasing function if the value of y does not increase with increase in the value of x. The function in Example 1 is an increasing function. So the function y = x + 5. The function in example 2 is decreasing function. The function y = 50 – x is also decreasing.

Graphical representation of a Function:

A graph of a function y = f(x) is a diagrammatic representation of the function. Following are the graphs in the examples given below.

Usually in a graph, the independent variable is measured along the horizontal axis and the dependent variable is measured along the vertical axis. However, in economics, often the opposite is done. The demand curve, for example, is drawn by taking the independent variable (price) along the vertical axis and the dependent variable (quantity) along the horizontal axis. The graph of an increasing function is upward sloping and the graph of the decreasing function is downward sloping.

Deriving a Demand Curve from Indifference Curves and Budget Constraints

Consider an individual consuming bananas (X1)and mangoes (X2), whose income is M and market prices of X1 and X2 are 1 P' and 2 P ' respectively. Figure (a) depicts her consumption equilibrium at point C, where she buys 1 X ' and 2 X ' quantities of bananas and mangoes respectively. In panel (b) of figure 2.14, we plot 1 P ' against 1 X ' which is the first point on the demand curve for X1.

Fig. 2.14
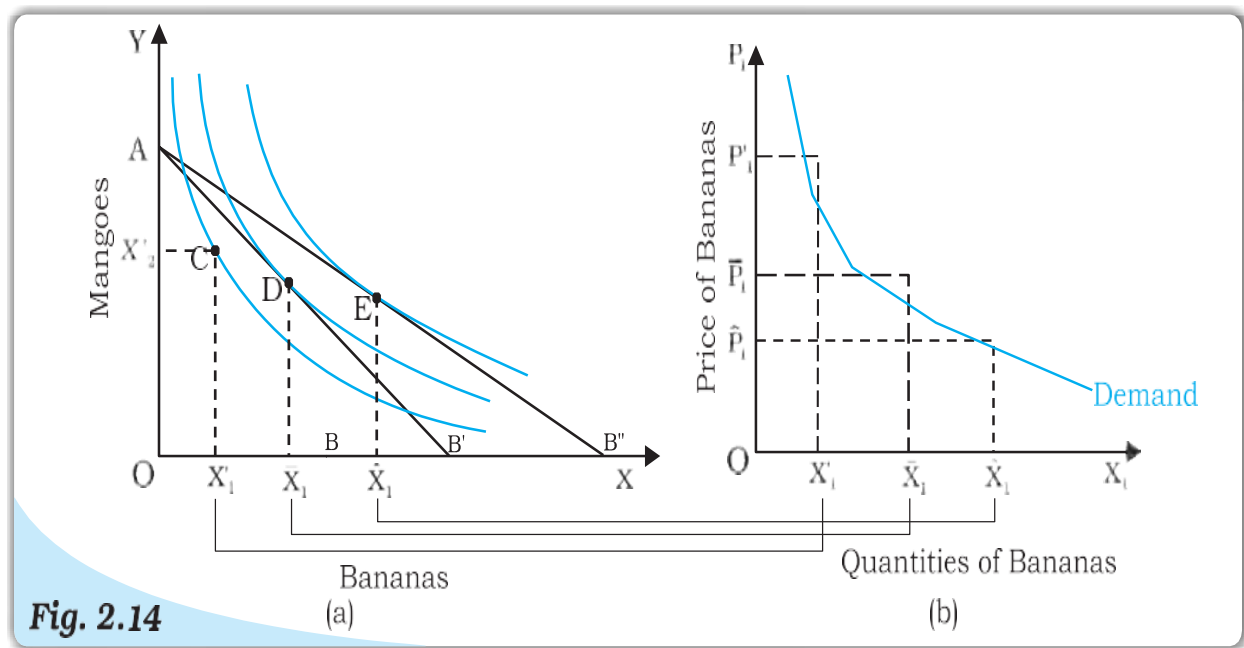
Suppose the price of X1 drops to 1 P with 2 P ' and M remaining constant. The budget set in panel (a), expands and new consumption equilibrium is on a higher indifference curve at point D, where she buys more of bananas ($X^1_1, X_1, \hat{x}_1$). Thus, demand for bananas increases as its price drops. We plot 1 P against 1 X in panel (b) of figure 2.14 to get the second point on the demand curve for X1. Likewise the price of bananas can be dropped further to P1 , resulting in further increase in consumption of bananas to X1 . P1 plotted againstX1 gives us the third point on the demand curve. Therefore, we observe that a drop in price of bananas results in an increase in quality of bananas purchased by an individual who maximises his utility. The demand curve for bananas is thus negatively sloped.

The negative slope of the demand curve can also be explained in terms of the two effects namely, substitution effect and income effect that come into play when price of a commodity changes. When bananas become cheaper, the consumer maximises his utility by substituting bananas for

mangoes in order to derive the same level of satisfaction of a price change, resulting in an increase in demand for bananas. Moreover, as price of bananas drops, consumer's purchasing power increases, which further increases demand for bananas (and mangoes). This is the income effect of a price change, resulting in further increase in demand for bananas.

Law of Demand: *Law of Demand states that other things being equal, there is a negative relation between demand for a commodity and its price. In other words, when price of the commodity increases, demand for it falls and when price of the commodity decreases, demand for it rises, other factors remaining the same.*

Linear Demand

A linear demand curve can be written as $d(p) = a - bp$; $0 \leq p \leq a/b$ where a is the vertical intercept, $-b$ is the slope of the demand curve. At price 0, the demand is a, and at price equal to a/b, the demand is 0. The slope of the demand curve measures the rate at which demand changes with respect to its price. For a unit increase in the price of the good, the demand falls by b units. Figure 2.15 depicts a linear demand curve

Fig. 2.15
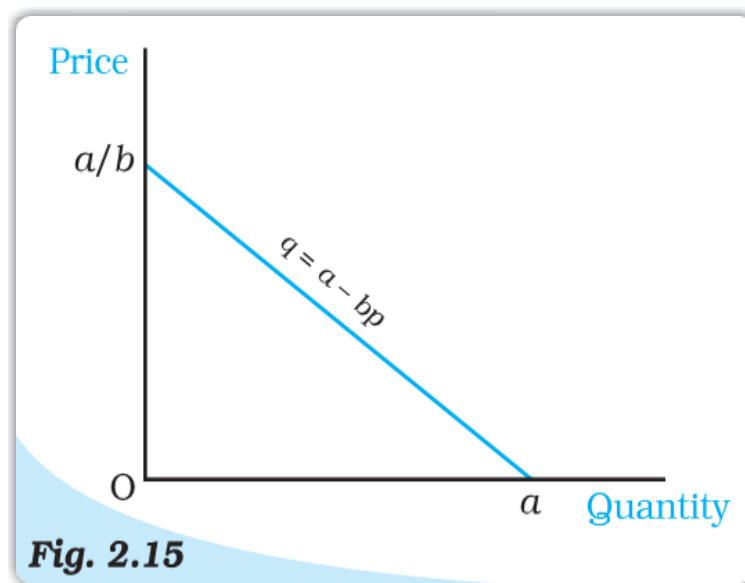
Correlation

Correlation is a tool to studies and measures the direction and intensity of relationship among variables. Correlation measures co-variation, not causation. Correlation should never be interpreted as implying cause and effect relation. The presence of correlation between two variables X and Y simply means that when the value of one variable is found to change in one direction, the value of the other variable is found to change either in the same direction (i.e. positive change) or in the opposite direction (i.e. negative change), but in a definite way.

Types of Correlation-
Correlation is commonly classified into negative and positive correlation. The correlation is said to be positive when the variables move together in the same direction. When the income rises, consumption also rises. When income falls, consumption also falls. Demand of fans and temperature move in the same direction. The correlation is negative when they move in opposite directions. When the price of apples falls its demand increases. When the prices rise its demand decreases. Demand of room heaters and temperature move in the opposite directions. These are instances of negative correlation. The variables move in opposite direction.
Study of correlation helps us in understanding demand in relation with factors effecting it.

TECHNIQUES FOR MEASURING CORRELATION
1. Scatter Diagram

A scatter diagram is a useful technique for visually examining the form of relationship, without calculating any numerical value. In this technique, the values of the two variables are plotted as points on a graph paper. From a scatter diagram, one can get a fairly good idea of the nature of relationship. In a scatter diagram the degree of closeness of the scatter points and their overall direction enable us to examine the relationship. If all the points lie on a line, the correlation is perfect and is said to be in unity. If the scatter points are widely dispersed around the line, the correlation is low. The correlation is said to be linear if the scatter points lie near a line or on a line.

2. Karl Pearson's Coefficient of Correlation
This is also known as product moment correlation coefficient or simple correlation coefficient. It gives a precise numerical value of the degree of linear relationship between two variables X and Y.

3. Spearman's rank correlation

Rank correlation coefficient and simple correlation coefficient have the same interpretation. Its formula has been derived from simple correlation coefficient where individual values have been replaced by ranks. These ranks are used for the calculation of correlation. This

2.4.3: Normal and Inferior Goods

The demand function is a relation between the consumer's demand for a good and its price when other things are given. Instead of studying the relation between the demand for a good and its price, we can also study the relation between the consumer's demand for the good and the income of the consumer. The quantity of a good that the consumer demands can increase or decrease with the rise in income depending on the nature of the good.

Normal Goods

For most goods, the quantity that a consumer chooses, increases as the consumer's income increases and decreases as the consumer's income decreases. Such goods are called normal goods. Thus, a consumer's demand for a normal good moves in the same direction as the income of the consumer.

Inferior Goods

However, there are some goods the demands for which move in the opposite direction of the income of the consumer. Such goods are called inferior goods. As the income of the consumer increases, the demand for an inferior good falls, and as the income decreases, the demand for an inferior good rises.

Let's look into the examples from the world of mobile industry – by comparing two categories of mobiles- one, regular mobile phones utilised for making basic calls and second, smartphones with latest features and technological compatibility.

If income of an individual rises, then one would like to switch from regular phone to smartphone as result, demand for regular phone falls and demand for smart phones increases. So, if demand for regular phones increases with increase in income then it is referred as an inferior good and demand for smart phones increases with increase in income then it is referred as normal good.

Examples of inferior goods include low quality food items like coarse cereals.A good can be a normal good for the consumer at some levels of income and an inferior good for her at other levels of income. At very low levels of income, a consumer's demand for low quality cereals can increase with income. But, beyond a level, any increase in income of the consumer is likely to reduce her consumption of such food items as she switches to better quality cereals.

Let's do an increase to figure out which goods can be classified into inferior and normal goods?

Item	Income Increase or Decrease	Quantity Demanded Increased or Decreased	Type of Good (Inferior/ Normal)
Metro Ride	Income Increases	Quantity Demanded	Inferior
Car purchase	Income Decrease		
Maggi noodles	Income increase		
Clothes	Income Decrease		

2.4.4 Substitutes and Complements

We can also study the relation between the quantity of a good that a consumer chooses and the price of a related good. The quantity of a good that the consumer chooses can increase or decrease with the rise in the price of a related good depending on whether the two goods are substitutes or complementary to each other. Goods which are consumed together are called complementary goods. Examples of goods which are complement to each other include tea and sugar, shoes and socks, pen and ink, etc. Since tea and sugar are used together, an increase in the price of sugar is likely to decrease the demand for tea and a decrease in the price of sugar is likely to increase the demand for tea. Similar is the case with other complements. In general, the demand for a good moves in the opposite direction of the price of its complementary goods.

Mobile Phone

Mobile SIM card

Complimentary Goods

Mobile phone and mobile SIM are complimentary goods as consumer can't use any of these without each other to make call. Presence of few large mobile services providers has decreased the price of SIM to nominal amount. It has increased demand of mobiles and the quantity demanded of SIM cards. Decrease in price of Complimentary good increases the demand of given good.

In contrast to complements, goods like tea and coffee are not consumed together. In fact, they are substitutes for each other. Since tea is a substitute for coffee, if the price of coffee increases, the consumers can shift to tea, and hence, the consumption of tea is likely to go up. On the other hand, if the price of coffee decreases, the consumption of tea is likely to go down. The demand for a good usually moves in the direction of the price of its substitutes.

Substitute goods

Mobile call services and Internet call services are substitute goods as consumer may use any of these to make call. When free calls through internet call services was started by various service providers, it decreased the demand of mobile call services. It forced all mobile call services providers to reduce their call rate to increase the quantity demanded for their services. Now, mobile call rates are lowest since the inception of mobile services. Non availability of substitute effects the demand of a good in other way around.

Shifts in Demand

An increase in the price of a product will normally cause demand to contract. However, this assumes that no other factor that affects consumers' demand changes. Demand curves based are drawn based on the assumption that nothing else changes other than price only changes in the

price of the product can be seen to affect demand. This is called the ceteris paribus assumption, meaning 'all other things remaining unchanged'.

However, what happens to the demand of the particular goods and services when these things do change? For example, an increase in people's income cause them to demand more of a product whatever its price?

An increase in Demand

For example, the market demand for smart phones

Possible Price (Rs.)	Original Demand (per thousand)	Increased Demand (per thousand)
25,000	5,000	10,000
20,000	10,000	20,000
15,000	15,000	25,000
10,000	20,000	30,000
5,000	25,000	35,000
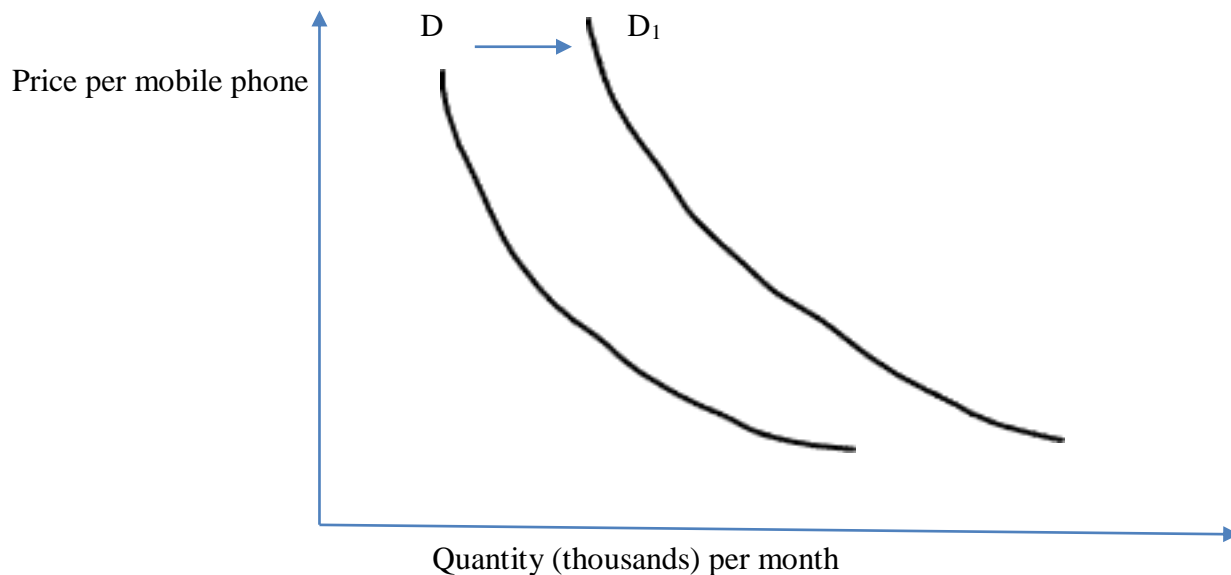
The diagram above shows an increase in demand for smart phones, but it could be any other good or service because the same rules apply. At each price consumers are now willing to by more smart phones than they did before. The whole demand curve has shifted outwards from D to D_1

A fall in Demand

For example, the market demand for television sets.

Possible Price (Rs.)	Original Demand (per thousand)	Decreased Demand (per thousand)
50,000	20,000	10,000
40,000	15,000	10,000
30,000	10,000	5,000
20,000	5,000	2,500
10,000	2,500	1,500

price for
television sets

D_1 D

Quantity of Television Sets
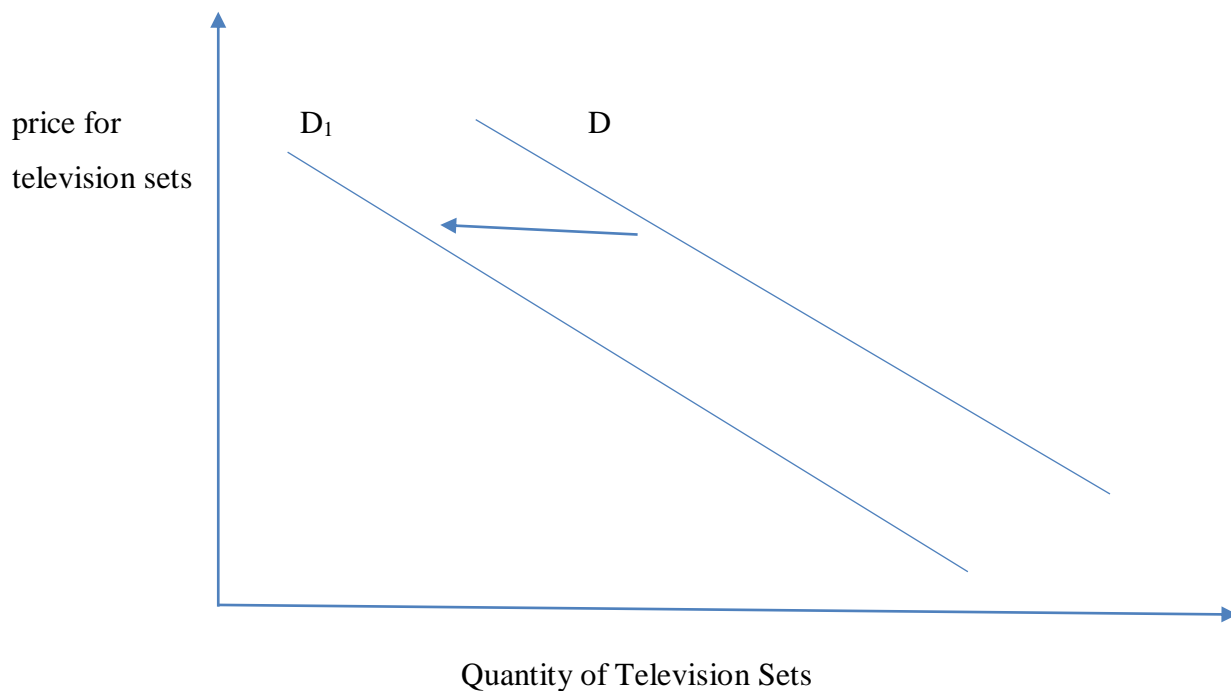
A fall in demand at all prices will cause the demand curve to shift to left, or inwards from D to D_1

A fall in demand means that consumers now demand less of a product at each and every price than they did before.

What causes shift in the demand curve?

The demand curve was drawn under the assumption that the consumer's income, the prices of other goods and the preferences of the consumer are given.

What happens to the demand curve when any of these things changes?

Given the prices of other goods and the preferences of a consumer, if the income increases, the demand for the good at each price changes, and hence, there is a shift in the demand curve. For normal goods, the demand curve shifts rightward and for inferior goods, the demand curve shifts leftward. Given the consumer's income and her preferences, if the price of a related good changes, the demand for a good at each level of its price changes, and hence, there is a shift in the demand curve. If there is an increase in the price of a substitute good, the demand curve shifts rightward. On the other hand, if there is an increase in the price of a complementary good, the demand curve shifts leftward.

The demand curve can also shift due to a change in the tastes and preferences of the consumer. If the consumer's preferences change in favour of a good, the demand curve for such a good shifts rightward. On the other hand, the demand curve shifts leftward due to an unfavourable change in the preferences of the consumer. The demand curve for ice-creams, for example, is likely to shift rightward in the summer because of preference for ice-creams goes up in summer. Revelation of the fact that cold-drinks might be injurious to health can adversely affect preferences for cold-drinks. This is likely to result in a leftward shift in the demand curve for cold-drinks.

Shifts in the demand curve are depicted in diagrams above. It may be mentioned that shift in demand curve takes place when there is a change in some factor, other than the price of the commodity.

Market Demand Curve

The market demand curve for a particular good or service will display the demand of all the consumers of that commodity given a set of possible prices.

In the last section, we studied the choice problem of the individual consumer and derived the demand curve of the consumer. However, in the market for a good, there are many consumers. It is important to find out the market demand for the good. The market demand for a good at a particular price is the total demand of all consumers taken together. The market demand for a good can be derived from the individual demand curves. Suppose there are only two consumers in the market for a good. Suppose at price p', the demand of consumer 1 is q_1' that of consumer 2 is q_2^1. Then, the market demand of the good at p' is $q_1' + q_2^1$. Similarly, at price $\hat{p}$, if the demand of consumer 1 is $\widehat{q_1}$ and that of consumer 2 is $\widehat{q_2}$, the market demand of the good at $\hat{p}$ is $\widehat{q_1} + \widehat{q_2}$. Thus, the market demand for the good at each price can be derived by adding up the demands of the two consumers at that price. If there are more than two consumers in the market for a good, the market demand can be derived similarly.

The market demand curve of a good can also be derived from the individual demand curves graphically by adding up the individual demand curves horizontally as shown in Figure below. This method of adding two curves is called horizontal summation.

**Fig. 2.18**

98
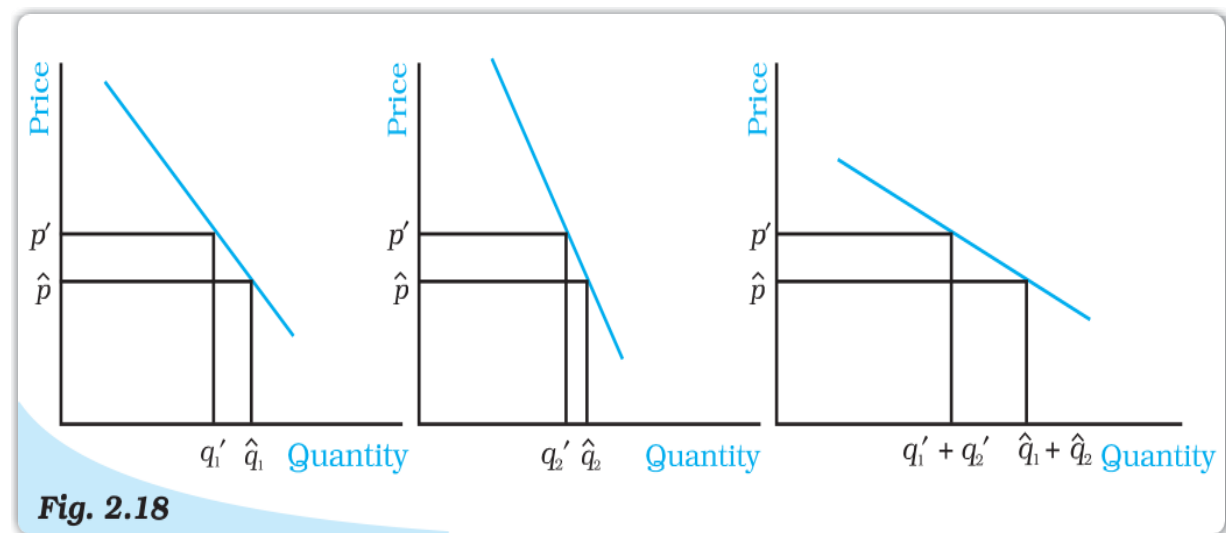
Chapter-8
Open Economy Macroeconomics

Open and Closed Economies

•A closed economy is one that does not interact with other economies in the world. There are no exports, no imports, and no capital flows.

•An open economy is one that interacts freely with other economies around the world. An open economy interacts with other countries in two ways. It buys and sells goods and services and financial assets (fixed deposits, mutual funds etc.)in world markets.

India is a large and open economy. It imports and exports many goods and services. After the economic reforms, international trade and finance have become increasingly important.

*How does an open economy create linkages?

Goods & Services and Financial Assets

Country **A**   OPEN ECONOMY   Country **B**

Goods & Services and Financial Assets
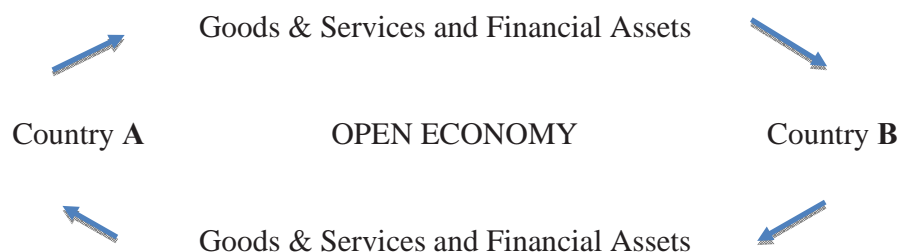
Foreign trade, influences aggregate demand in two ways. First, when Indians buy foreign goods, this spending escapes as a leakage **from** the circular flow of income decreasing aggregate demand. Second, our exports to foreigners enter as an **injection** into the circular flow, increasing aggregate demand for goods produced within the domestic economy.

*How does foreign trade affect aggregate demand?

Indian Buyers import from foreign countries	Foreigners buy domestic goods and services
leakages from circular flow	injections into circular flow
decrease in aggregate demand	increase in aggregate demand

6.1 THE BALANCE OF PAYMENTS

The balance of payments (BoP) records the transactions in goods, services and assets between residents of a country with the rest of the world for a specified time period typically a year. There are two main accounts in the BoP — the current account and the capital account.

6.1.1 Current Account

Current Account is the record of trade in goods and services and transfer payments. Figure 6.1 illustrates the components of Current Account. Trade in goods includes exports and imports of goods. Trade in services includes factor income and non-factor income transactions. Transfer payments from abroad are the receipts which the residents of a country get for 'free', without having to provide any goods or services in return. They consist of gifts, remittances and grants. They could be given by the government or by private citizens living abroad.
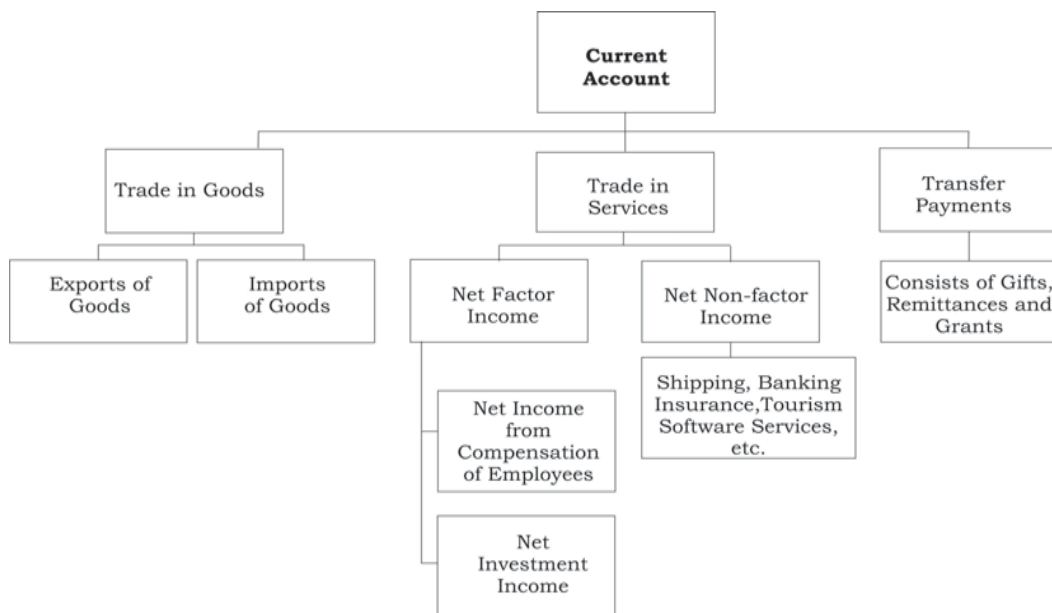
Fig. 6.1: Components of Current Account

Balance on Current Account

Current Account is in balance when receipts in the current account are equal to the payments on the current account. A surplus current account means that the nation is a lender to other countries and a deficit current account means that the nation is a borrower from other countries.

Current Account Surplus	Balanced Current Account	Current Account Deficit
Receipts > Payments	Receipts = Payments	Receipts < Payments

Balance on Current Account has two components:

Balance of Trade or Trade Balance

Balance on Invisibles

Balance of Trade (BOT) is the difference between the value of exports and the value of imports of goods of a country in a given period of time. Export of goods is entered as a credit item in BOT, whereas import of goods is entered as a debit item in BOT. It is also known as Trade Balance.

Credit items indicate inflow of foreign exchange in the economy whereas debit items indicate outflow of foreign exchange.

BOT is said to be in balance when exports of goods are equal to the imports of goods. Surplus BOT or Trade surplus will arise if a country exports more goods than what it imports. Whereas, Deficit BOT or Trade deficit will arise if a country imports more goods than what it exports.
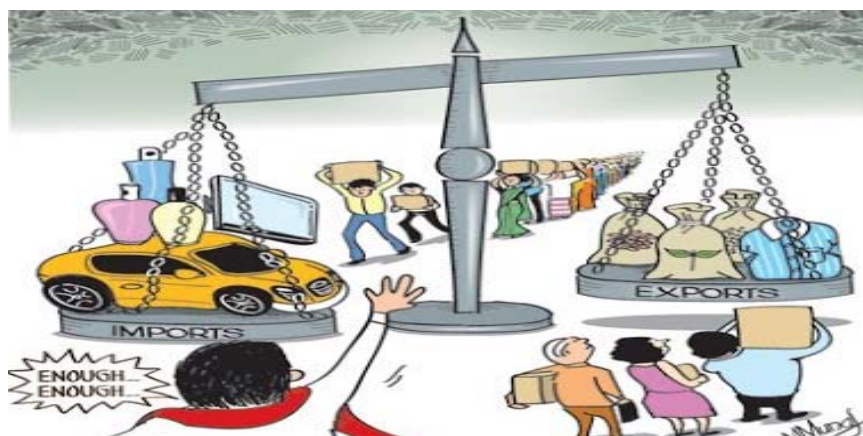
The imports are outweighing the exports leading to TRADE DEFICIT.

Net Invisibles is the difference between the value of exports and value of imports of invisibles of a country in a given period of time. Invisibles include services, transfers and flows of income that take place between different countries. Services trade includes both factor and non-factor income. Factor income includes net international earnings on factors of production (like labour, land and capital). Non-factor income is net sale of service products like shipping, banking, tourism, software services, etc.

CREDIT ITEMS (+) - Inflow of foreign exchange	DEBIT ITEMS (-) - Outflow of foreign exchange
exports of goods exports of services receipts of investment income - rent, interest, profit transfer receipts	import of goods imports of services payments of investment income - rent, interest, profit transfer payments

6.1.2 Capital Account

Capital Account records all international transactions of assets. An asset is any one of the forms in which wealth can be held, for example: money, stocks, bonds, Government debt, etc. Purchase of assets is a debit item on the capital account. If an Indian buys a UK Car Company, it enters capital account transactions as a debit item (as foreign exchange is flowing out of India). On the other hand, sale of assets like sale of share of an Indian company to a Chinese customer is a credit item on the capital account. Fig. 6.2 classifies the items which are a part of capital account transactions. These items are Foreign Direct Investments (FDIs), Foreign Institutional Investments (FIIs), external borrowings and assistance.(Both FDI & FII are the forms of investment made in a foreign country. FDI is made to acquire controlling ownership in an enterprise but FII tends to invest in the foreign financial market. In most cases, the former is given preference over the latter because it benefits the whole economy.

FDI brings in funds, resources, technology, strategies and know-how etc. however FII brings only funds in the economy

Source: www.fdi.finance

Balance on Capital Account

Capital account is in balance when capital inflows (like receipt of loans from abroad, sale of assets or shares in foreign companies) are equal to capital outflows (like repayment of loans, purchase of assets or shares in foreign countries). Surplus in capital account arises when capital inflows are greater than capital outflows, whereas deficit in capital account arises when capital inflows are lesser than capital outflows.
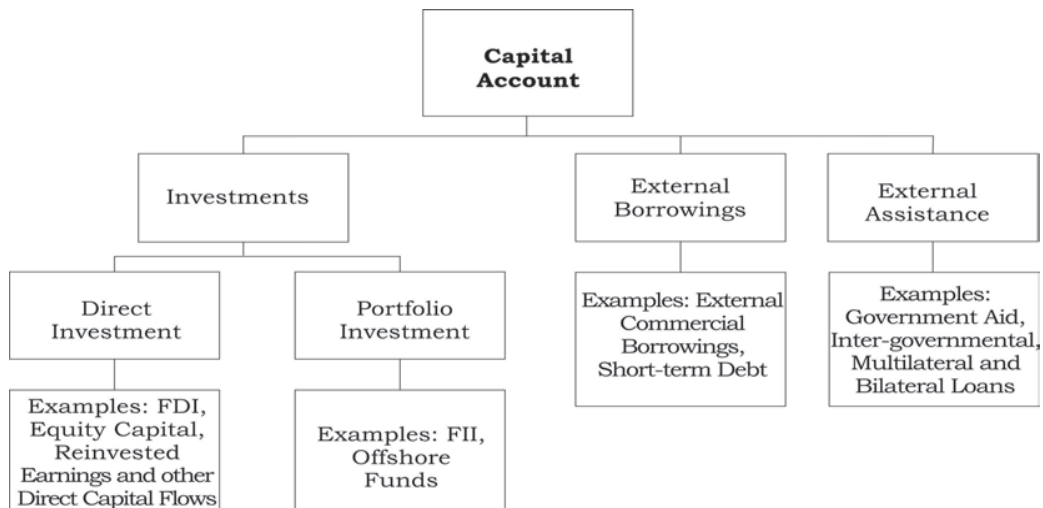
Fig. 6.2: Components of Capital Account

6.1.3 Balance of Payments Surplus and Deficit

The essence of international payments is that just like an individual who spends more than her income must finance the difference by selling assets or by borrowing, a country that has a deficit in its current account (spending more than it receives from sales to the rest of the world) must finance it by selling assets or by borrowing abroad. Thus, any current account deficit must be financed by a capital account surplus, that is, a net capital inflow.

$$\text{Current account} + \text{Capital account} \equiv 0$$

In this case, in which a country is said to be in balance of payments equilibrium, the current account deficit is financed entirely by international lending without any reserve movements. Alternatively, the country could use its reserves of foreign exchange in order to balance any deficit in its balance of payments. The reserve bank sells foreign exchange when there is a deficit. This is called **official reserve sale**. The decrease (increase) in official reserves is called the **overall balance of payments deficit (surplus).** The basic premise is that the monetary authorities are the ultimate financiers of any deficit in the balance of payments (or the recipients of any surplus).

Autonomous and Accommodating Transactions

International economic transactions are called **autonomous** when transactions are made due to some reason other than to bridge the gap in the balance of payments, that is, when they are independent of the state of BoP. One reason could be to earn profit. These items are called 'above the line' items in the BoP. The balance of payments is said to be in surplus (deficit) if autonomous receipts are greater (less) than autonomous payments.

Accommodating transactions (termed 'below the line' items), on the other hand, are determined by the gap in the balance of payments, that is, whether there is a deficit or surplus in the balance of payments. In other words, they are determined by the net consequences of the autonomous transactions. Since the official reserve transactions are made to bridge the gap in the BoP, they are seen as the accommodating item in the BoP (all others being autonomous).

Errors and Omissions

It is difficult to record all international transactions accurately. Thus, we have a third element of BoP (apart from the current and capital accounts) called **errors and omissions** which reflects this.

Note in this table, there is a trade deficit and current account deficit but a capital account surplus. As a result, BOP is in balance.

BoP Deficit	Balanced BoP	BoP Surplus
Overall Balance < 0	Overall Balance = 0	Overall Balance > 0
Reserve Change > 0	Reserve Change = 0	Reserve Change < 0

Table 6.1 provides a sample of Balance of Payments for India.

Box 6.1: The balance of payments accounts presented above divide the transactions into two accounts, current account and capital account. However, following the new accounting standards introduced by the International Monetary Fund in the sixth edition of the Balance of Payments and International Investment Position Manual (BPM6) the Reserve Bank of India also made changes in the structure of balance of payments accounts. According to the new classification, the transactions are divided into three accounts: current account, financial account and capital account. The most important change is that almost all the transactions arising on account of trade in financial assets such as bonds and equity shares are now placed in the financial account. However, RBI continues to publish the balance of payments accounts as per the old system also, therefore the details of the new system are not being given here. The details are given in the Balance of Payments Manual for India published by the Reserve Bank of India in September 2010.

Table 6.1: **Balance of Payments for India (in million USD)**

No.	Item	Million USD
1	Exports (of goods only)	150
2	Imports (of goods only)	240

3	Trade Balance [2 – 1]	–90
4	(Net) Invisibles [4a + 4b + 4c]	52
	a. Non-factor Services	30
	b. Income	–10
	c. Transfers	32
5	Current Account Balance [3+ 4]	–38
6	Capital Account Balance [6a + 6b + 6c + 6d + 6e + 6f]	41.15
	a. External Assistance (net)	0.15
	b. External Commercial Borrowings (net)	2
	c. Short-term Debt	10
	d. Banking Capital (net) of which	15
	Non-resident Deposits (net)	9
	e. Foreign Investments (net) of which [6eA + 6eB]	19
	A. FDI (net)	13
	B. Portfolio (net)	6
	f. Other Flows (net)	–5
7	Errors and Omissions	3.15
8	Overall Balance [5 + 6 + 7]	0
9	Reserves Change	0

6.2 THE FOREIGN EXCHANGE

So far, we have considered the accounting of international transactions on the whole, we will now take up a single transaction. Let us assume that a single Indian resident wants to visit London on a vacation (an import of tourist services). She will have to pay in pounds for her stay there. She will need to know where to obtain the pounds and at what price. As mentioned at the beginning of this chapter, this price is known as the exchange rate. The

market in which national currencies are traded for one another is known as the **foreign exchange market**. The major participants in the foreign exchange market are commercial banks, foreign exchange brokers and other authorised dealers and monetary authorities. It is important to note that although participants themselves may have their own trading centers, the market itself is world-wide. There is a close and continuous contact between the trading centers and the participants deal in more than one market.

Foreign Exchange Rate

Foreign Exchange Rate (also called Forex Rate) is the price of one currency in terms of another. It links the currencies of different countries and enables comparison of international costs and prices. For example, if we have to pay Rs 50 for $1 then the exchange rate is Rs 50 per dollar.

To make it simple, let us consider that India and USA are the only countries in the world and so there is only one exchange rate that needs to be determined.

The demand for and supply of foreign exchange affect the exchange rate. Discuss.

Demand for Foreign Exchange

People demand foreign exchange because: they want to purchase goods and services from other countries; they want to send gifts abroad; and, they want to purchase financial assets of a certain country.

A rise in price of foreign exchange will increase the cost (in terms of rupees) of purchasing a foreign good. This reduces demand for imports and hence demand for foreign exchange also decreases, other things remaining constant.
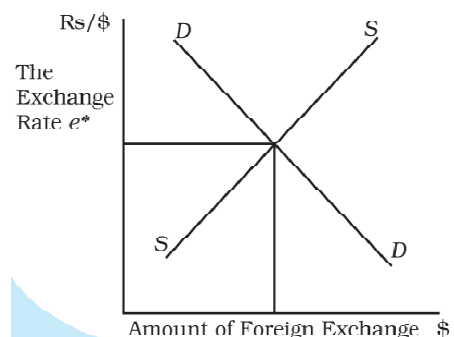
Supply of Foreign Exchange

Foreign currency flows into the home country due to the following reasons: exports by a country lead to the purchase of its domestic goods and services by the foreigners; foreigners send gifts or make transfers; and, the assets of a home country are bought by the foreigners. A rise in price of foreign exchange will reduce the foreigner's cost (in terms of USD) while purchasing products from India, other things remaining constant. This increases India's exports and hence supply for foreign exchange may increase (whether it actually increases depends on a number of factors, particularly elasticity of demand for exports and imports.

Determination of the Exchange Rate

Different countries have different methods of determining their currency's exchange rate. It can be determined through Flexible Exchange Rate, Fixed Exchange Rate or Managed Floating Exchange Rate.

Flexible Exchange Rate

This exchange rate is determined by the market forces of demand and supply. *It is also known as **Floating Exchange Rate**. As depicted in Fig. 6.1, the exchange rate is determined where the demand curve intersects with the supply curve, i.e., at point e on the Y – axis.


Fig. 6.1

109

Point q on the x – axis determines the quantity of US Dollars that have been demanded and supplied on e exchange rate. In a completely flexible system, the Central banks do not intervene in the foreign exchange market. Suppose the demand for foreign goods and services increases (for example, due to increased international travelling by Indians), then as depicted in Fig. 6.2, the demand curve shifts upward and right to the original demand curve. The increase in demand for foreign goods and services result in a change in the exchange rate. The initial exchange rate e0 = 50, which means that we need to exchange Rs 50 for one dollar.

Equilibrium under Flexible Exchange Rates

At the new equilibrium, the exchange rate becomes $e_1 = 70$, which means that we need to pay more rupees for a dollar now (i.e., Rs 70). It indicates that the value of rupees in terms of dollars has fallen and value of dollar in terms of rupees has risen. Increase in exchange rate implies that the price of foreign currency (dollar) in terms of domestic currency (rupees) has increased. This is called **Depreciation** of domestic currency (rupees) in terms of foreign currency (dollars).

Fig.
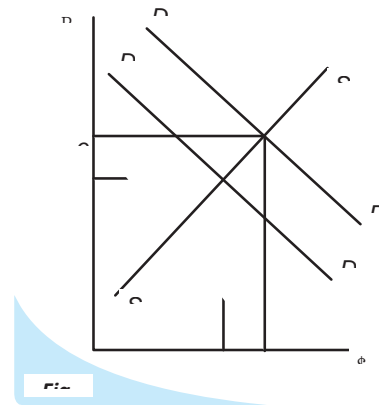
Similarly, in a flexible exchange rate regime, when the price of domestic currency (rupees) in terms of foreign currency (dollars) increases, it is called **Appreciation** of the domestic currency (rupees) in terms of foreign currency (dollars). This means that the value of rupees relative to dollar has risen and we need to pay fewer rupees in exchange for one dollar.

EXAMPLE   6.1

If a shirt costs $8 in the US and Rs 400 in India, the rupee-dollar exchange rate should be Rs 50. To see why, at any rate higher than Rs 50, say Rs 60, it costs Rs 480 per shirt in the US but only Rs 400 in India. In that case, all foreign customers would buy shirts from India. Similarly, any exchange rate below Rs 50 per dollar will send all the shirt business to the US.

Next, we suppose that prices in India rise by 20 per cent while prices in the US rise by 50 per cent. Indian shirts would now cost Rs 480 per shirt while American shirts cost $12 per shirt. For these two prices to be equivalent, $12 must be worth Rs 480, or one dollar must be worth Rs 40. The dollar, therefore, has depreciated.

Fixed Exchange Rates

In this exchange rate system, the Government fixes the exchange rate at a particular level. In Fig. 6.3, the market determined exchange rate is e. However, let us suppose that for some reason the Indian Government wants to encourage exports for which it needs to make rupee cheaper for foreigners it would do so by fixing a higher exchange rate, say Rs 70 per dollar from the current exchange rate of Rs 50 per dollar.

Fig 6 3
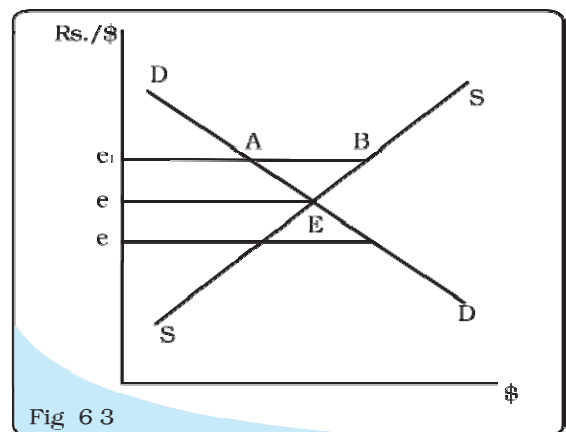
Thus, the new exchange rate set by the Government is e_1, where $e_1 > e$. At this exchange rate, the supply of dollars exceeds the demand for dollars. The RBI intervenes to purchase the dollars for rupees in the foreign exchange market in order to absorb this excess supply which has been marked as AB in the figure. Thus, through intervention, the Government can maintain any exchange rate in the economy. But it will be accumulating more and more foreign exchange so long as this intervention goes on. On the other hand if the government was to set an exchange rate at a level such as e2, there would be an excess demand for dollars in the foreign exchange market. To meet this excess demand for dollars, the government would have to withdraw dollars from its past holdings of dollars.

Foreign Exchange Market with Fixed Exchange Rates

If it fails to do so, a black market for dollars may come up.

In a fixed exchange rate system, when some government action increases the exchange rate (thereby, making domestic currency cheaper) is called **Devaluation**. On the other hand, a

Revaluation is said to occur, when the Government decreases the exchange rate (thereby, making domestic currency costlier) in a fixed exchange rate system.

Merits and Demerits of Flexible and Fixed Exchange Rate Systems

The main feature of the fixed exchange rate system is that there must be credibility that the government will be able to maintain the exchange rate at the level specified. Often, if there is a deficit in the BoP, in a fixed exchange rate system, governments will have to intervene to take care of the gap by use of its official reserves. If people know that the amount of reserves is inadequate, they would begin to doubt the ability of the government to maintain the fixed rate. This may give rise to speculation of devaluation. When this belief translates into aggressive buying of one currency thereby forcing the government to devalue, it is said to constitute a speculative attack on a currency. Fixed exchange rates are prone to these kinds of attacks, as has been witnessed in the period before the collapse of the Bretton Woods System. The flexible exchange rate system gives the government more flexibility and they do not need to maintain large stocks of foreign exchange reserves. The major advantage of flexible exchange rates is that movements in the exchange rate automatically take care of the surpluses and deficits in the BoP. Also, countries gain independence in conducting their monetary policies, since they do not have to intervene to maintain exchange rate which are automatically taken care of by the market.

Managed Floating

Without any formal international agreement, the world has moved on to what can be best described as a **managed floating** exchange rate system. It is a mixture of a flexible exchange rate system (the float part) and a fixed rate system (the managed part). Under this system, also called **dirty floating**, central banks intervene to buy and sell foreign currencies in an attempt to moderate exchange rate movements whenever they feel that such actions are appropriate. Official reserve transactions are, therefore, not equal to zero.

Foreign Trade in Indian context (Before Colonial Rule)

India had an independent economy before the advent of the British rule.Though agriculture was the main source of livelihood for most people,yet,the country's economy was

characterised by various kinds of manufacturing activities.India was particularly well known for its handicraft industries in the fields of cotton and silk textiles,metal and precious works etc. These products enjoyed a worldwide market based on the reputation of the fine quality of material used and the high standards of craftsmanship seen in all imports from India.

During Colonial Rule

A large part of India"s foreign trade was either directly with GREAT BRITAIN or its colonies or allies. India became an exporter of primary products and importer of finished goods. As a result more than half of India"s foreign trade was restricted to Britain while the rest was allowed with few other countries like China, Ceylon (Sri Lanka) and Persia (Iran) India's foreign trade throughout the colonial led to the generation of large export surplus.

Trade through the Suez Canal

Suez Canal is an artificial waterway running from north to south across the Isthmus of Suez in north-eastern Egypt.

It connects Port Said on the Mediterranean Sea with the Gulf of Suez,an arm of the Red Sea. The canal provides a direct route for ships operating between European or American ports and ports located in South Asia,East Africa and Oceania by doing away with the need to sail around Africa.Strategically and economiically,it is one of the most important waterways in the world.Its opening in 1869 reduced the cost of transportation and made access to the Indian market easier.

Phase 1 Foreign Trade Policy 1950-90

After independence, especially with the second five year plan, India's development strategy focused on Inward looking strategy known as Import Substitution.Its main aim was to produce goods domestically which could be imported to India. The Government protected domestic producers from the foreign competition.This policy protected domestic industries in two forms: Tariffs and Quotas. Our planners also feared the possibility of foreign exchange being spent on import of luxury goods if no restrictions were placed on imports.

Phase 2 The Crisis 1990-91

In 1991,India found itself in its worst balance of payments crisis since 1947.

The oil price increase resulting from Iraq's invasion of Kuwait in August 1990 reinforced the crisis and accompanying double digit inflation in 1990-91. India's credit rating got downgraded as ,for the first time in its history,India was on the verge of defaulting in its international commitments and was denied access to external commercial credit markets.

The only way left for India was to borrow against the security of its gold reserves transported abroad.
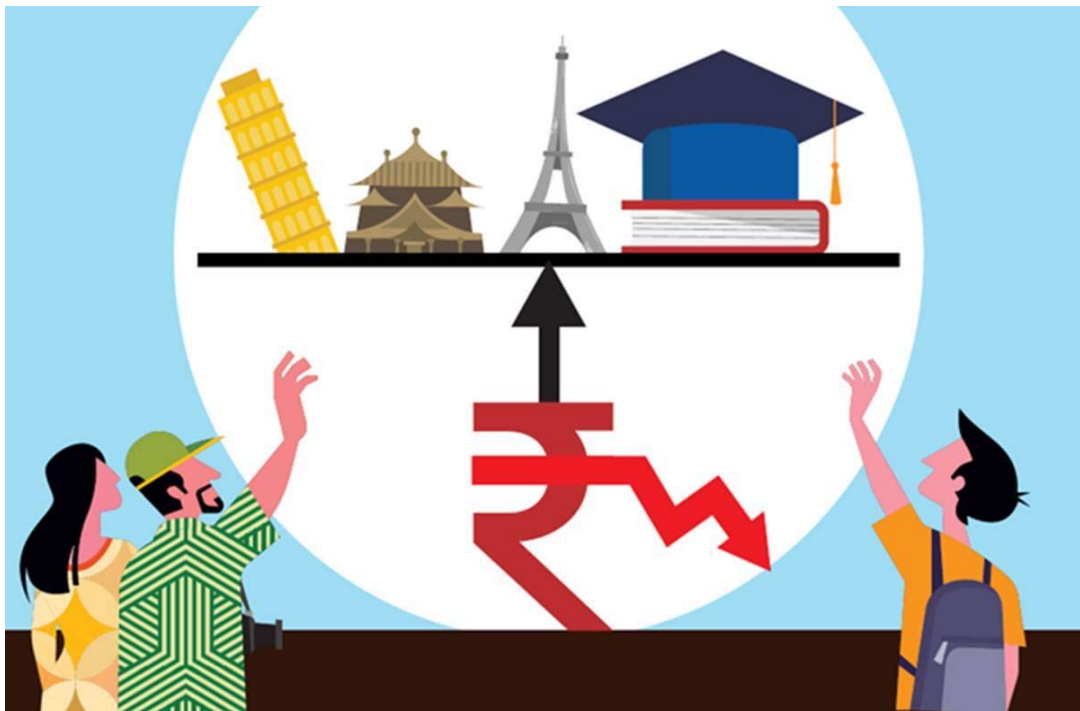
What was rationale behind devaluation in early 90s, New Economic Policy?

The overvalued exchange rate was corrected by Devaluation in 1991,followed by partial convertibility of rupee in 1992-93 and then making the rupee fully convertible on trade account in 1993-94.Now, market determine exchange rates based on the demand and supply of foreign exchange.Tariffs were also cut steeply to open Indian industry to foreigh competition.India adopted Open door policy of Liberalisation,Privatisation and Globalisation.

Impact of NEP on Foreign Exchange

Liberalisation of trade and investment regime was initiated to increase international

competitiveness of industrial production and also foreign investments and technology into the economy. The aim was also to promote the efficiency of local industries and adoption of modern technologies.In order to protect domestic industries India was following a regime of Quantitative restrictions on imports.This encouraged through a tight control over imports by keeping the tariffs very high.These policies reduced efficiency and competitiveness which led to slow growth of the manufacturing sector.The trade policy reforms aimed at (a) dismantling of quantitative restrictions on imports and exports (b) reduction of tariff rates and © removal of licencing procedures for imports.

Import licencing was abolished except in case of hazardous and environmentally sensitive industries.Quantitative restrictions on imports of manufactured consumer goods and agricultural products were also fully removed from April2001. Export duties have been removed to increase the competitive position of Indian goods in the international market.

SUMMARY

Openness in product and financial markets allows a choice between domestic and foreign goods and between domestic and foreign assets.

The BoP records a country's transactions with the rest of the world.

The current account balance is the sum of the balance of merchandise trade, services and net transfers received from the rest of the world. The capital account balance is equal to capital flows from the rest of the world, minus capital flows to the rest of the world.

A current account deficit is financed by net capital flows from the rest of the world, thus by a capital account surplus.

The nominal exchange rate is the price of one unit of foreign currency in terms of domestic currency.

The real exchange rate is the relative price of foreign goods in terms of domestic goods. It is equal to the nominal exchange rate times the foreign price level divided by the domestic price level. It measures the international competitiveness of a country in international trade. When the real exchange rate is equal to one, the two countries are said to be in purchasing power parity.

The epitome of the fixed exchange rate system was the gold standard in which each participant country committed itself to convert freely its currency into gold at a fixed price. The pegged exchange rate is a policy variable and may be changed by official action (devaluation).

Under clean floating, the exchange rate is market-determined without any central bank intervention. In case of managed floating, central banks intervene to reduce fluctuations in the exchange rate.

In an open economy, the demand for domestic goods is equal to the domestic demand for goods (consumption, investment and government spending) plus exports minus imports.

The open economy multiplier is smaller than that in a closed economy because a part of domestic demand falls on foreign goods. An increase in autonomous demand thus leads to a smaller increase in output compared to a closed economy. It also results in a deterioration of the trade balance.

An increase in foreign income leads to increased exports and increases domestic output. It also improves the trade balance.Trade deficits need not be alarming if the country invests the borrowed funds yielding a rate of growth higher than the interest

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ACTIVITIES:

Case Study 1

Answer the Q1-4 based on the study of the following passage:

Each nation has its own currency. When monetary transactions are conducted within the national borders, payments are made in the currency of that country for example Indian currency is called rupee. To be more exact it is called Indian rupee payments within the national borders Of India are made in Indian rupees. Similarly, each other nation has its own currency for example Pakistan currency is called Pakistani rupee USA currency US dollar, Kuwait currency Kuwaiti Dinar, UAE currency dirham and so on. Payments within the nation borders of Pakistan are made in Pakistani rupees. Payment within the national border

of USA is USA dollars etc .When transactions are conducted across National borders one currency must be converted in to another. Conversion rate between Two currencies is decided by two ways first fixed exchange rate second floating or Flexible exchange rate.

1. .Exchange rate refer to the rate at which the following is exchanged:

(a) Goods   (c) Services

(b) Currencies   (d) All the above

2. Who decides the flexible exchange rate?

(a) Central bank   (b) Government

(c) market forces   (d) none of these

3. ------ refers to a system in which exchange rate for a currency is fixed by the Government

(a) Flexible exchange rate

(b) Fixed exchange rate

(c) Managed Floating exchange rate

(d) None of the above

4. When the value of domestic currency is deliberately reduced by the government, it is called

(a) Depreciation   (b) appreciation

(c) Revaluation   (d) devaluation

ANSWERS:

1(a) 2(c) 3(b) 4(d)

CASE STUDY 2

India's balance of payments this year is going to be 'very very strong' on the back of significant improvement in exports and a fall in imports. Commerce and Industry Minister Piyush Goyal said, "good green shots are visible in the economy and exports have shown a "good" turnaround. In the first half of the current fiscal, CAD narrowed to 1.5% of the GDP from 2.6% in the same period in financial year 2018-19 on the back of a reduction in the

trade deficit. Unilateral transfer has also shown a positive surplus this year.

Q1. Which of the following is a unilateral transfer?

purchase of shares of Reliance by Microsoft

(b) Gifts received from a relative in America

(c) Purchase of toys from China

(d) Export of computer software

Q.2 'Sale of asset by an Indian company to a foreign company' will be recorded in which account and on what side of BOP?

 (a) debit side of current account   (b) credit side of capital account

 (c) credit side of current account   (d) debit side of capital account

Q.3 Suppose Ravi receives a gift from a friend residing in US. Which account and on which side of BOP will this be recorded ?

 (a) Debit side of current account   (b) credit side of capital account

 (c) Credit side of current account   (d) debit side of capital account

ANSWERS:

1(b) 2(b) 3(c)

Chapter-9

Production Behavior

1. Production Function: An Overview

Fundamentally, production function is a basic idea that you can have various inputs – input 1 (I_1), input 2 (I_2), input 3(I_3) etc. and you put them in a kind of process 'f' (function) which determines how much output the inputs will yield. This can be formulaically expressed as the follows:

$$Q = f(I_1, I_2, I_3 \ldots)$$

Where, Output is denoted by Q

Although input in production process differs from each other, in economics we broadly categorize all inputs into either one of the factors of production namely, land, labor, capital, and entrepreneurship. It is not important that all the factors of production are used. But generally, some combination of these factors is used, depending on what is being produced.

The first factor of production is **land**, but this includes any natural resource used to produce goods and servicesthat comes from the land e.g., water, oil, copper, natural gas, coal, forests etc. The second factor of production is **labour**. Labour is the effort that people contribute to the production of goods and services. If you have ever been paid for a job, you have contributed labour resources to the production of goods or services. The third factor of production is capital. It includes machinery; tools and buildings humans use to produce goods and services. Common example would include hammers, computers, truck etc. The third factor of production is **capital**. Capital differs based on the worker and the type of work being done. For example, a doctor may use a stethoscope while a teacher may use textbooks, desks to provide education services. The fourth factor of production is **entrepreneurship**. An entrepreneur is a person who combines the other factors of production - land, labour, and capital - to earn a profit.

Usually, production is undertaken by producers or firms. However, there are exceptions. If we take the example of home-based business, then the production is undertaken inside a house only.

1.1.Let's do a Role Play!

Supposing you want to be an entrepreneur and start a paratha businessSo, for our paratha business what will be our output then?

Figure 1 Delicious Parathas

Naturally, the final product – paratha!

While the final output is paratha, what are the inputs that would be required to make it?

What are the input materials used? To make dough, we would need flour, oil, salt and water. We will also need cooking equipment like spatula, frying pan and rolling pin. To do the cooking, a chef is also needed.
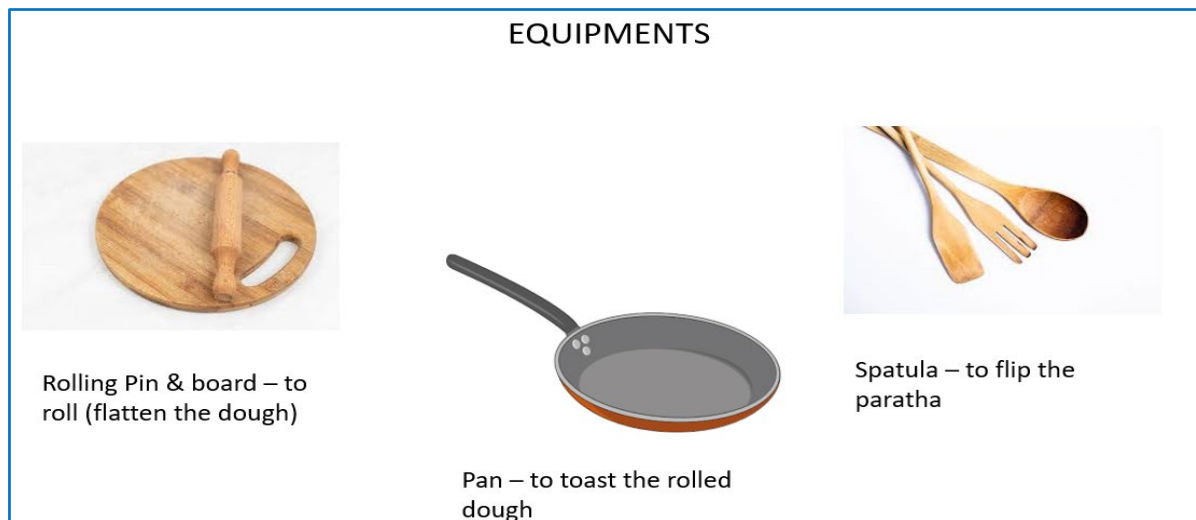
Figure 2 Equipment used for making Paratha
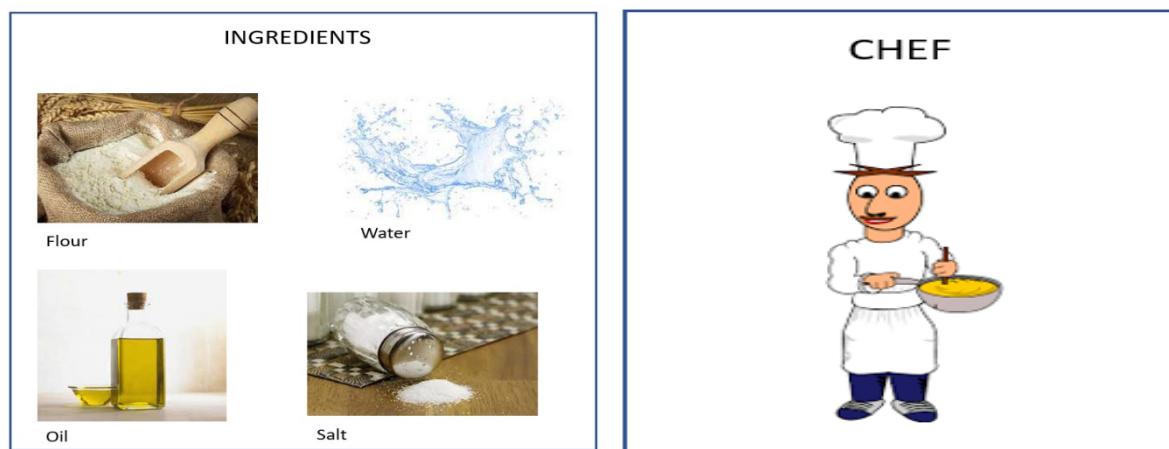
Figure 3 Chef who prepares the parathas

Figure 4 Ingredients used for making paratha (raw materials)

Let's start classifying the different inputs – input 1could be flour, input 2 could be oil, input 3 can be rolling pin, and so on….

Broadly, as can be seen from the above pictures, the inputs have been broadly categorized in three categories.

Question: Which of the above three categories of inputs will come under 'labor', 'land', and 'capital'?

Ans: ingredients: land, equipment: capital, and, chef: labor

1.2.Production function of the Paratha business

The production function of the paratha business can be simplistically expressed as follows:

No. of paratha = function(chef, pan, rolling pin and board, spatula, flour, oil, salt, water,)

Or,

No. of Parathas = function (chef, equipment, ingredients)

Or,

Output = function (labour, capital, land)

Or,

Q= f(L,K, L') where L is labour , K is capital, and, L' is land

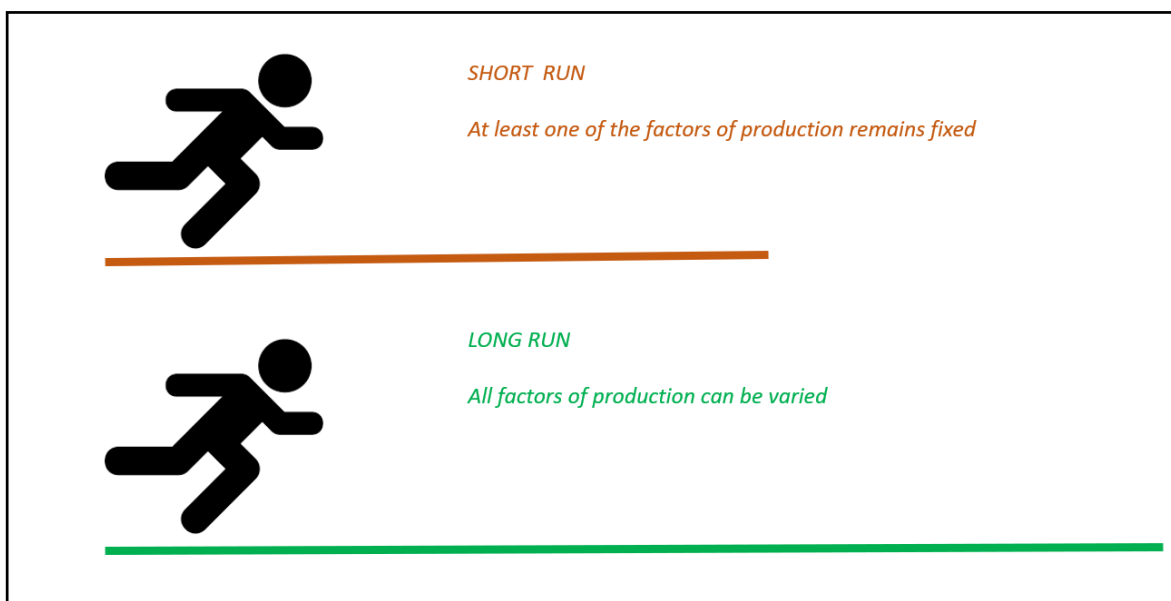### 2. The Short Run and the Long Run

To simplify, let us assume there are two factors of production – labour and capital. **Short-run** is a time period when at least one of the factors cannot be varied (meaning, its quantity cannot be increased or decreased) and remains fixed. In such a situation, the only way to increase (or decrease) the output level, the firm needs to vary the other factor of production. The factor of production which remains fixed is called the '**fixed factor**'. While the factor of production which can be changed in the short-run is called the '**variable factor**'.

In our paratha example, let us assume that it takes a month for new equipment's, i.e., capital (K)to arrive, so the fixed factor is K here. Consequently, make more parathas (increase output) we need to increase the number of chefs (labour – L)which can help improve efficiency and increase production. So, the variable factor in this case is L.

Question: In the above example, what is the duration of short run?

Answer: one month. Since after one month, more equipment can be bought!

Figure 5 the Short Run versus the Long Run

Lon-run is a time period when all factors of production can be altered. In the context of the paratha example, any time period over one month will be long run.

3. Total Product, Marginal Product, and Average Product

Let us take only one input and consider all the others to be fixed. The idea is to understand how does output vary as a function of one input.

Taking the case of our Paratha business, we would like to see how much does the production of paratha vary as a function of one input. The input which we are considering is labour, i.e., the chef.

More concretely, we want to see how much our paratha production per day varies because of the no. of chefs working. This relationship between the output and one variable input (labour or chef), keeping all the other inputs constant (equipment, ingredients etc.) is called the Total Product (TP) of the variable input. Since we are considering labour as the variable input, we will be concerned with the Total Product of labour (TP$_L$). Thus, we candefine Total Product as the total volume or amount of final output produced by a firm using given inputs in a given period of time.

Meanwhile, the additional output produced which results from employing an additional unit of the variable factor input (in our case, labour) is called the Marginal Product. Thus, marginal product is the addition to Total Product when an extra unit of input is used.

Marginal Product = Change in Output/ Change in Input

Looking at MP from another perspective, it can also be said that Total Product is the summation of Marginal products at different input levels.

$$\text{Total Product} = \Sigma \text{ Marginal Product}$$

Average Product is the output per unit of factor input used. Since output is expressed as Total Product, the AP can be calculated by dividing the Total Product by the units of variable inputs employed.

$$\text{Average Product} = \text{Total Product/ Units of Variable Factor Input}$$

Table 1 highlights the per day TP, MP, and AP in the paratha production process.

Per day Paratha Production:

Table 1 Total Product, Marginal Product and Average Product

| Labour (Chef)	TP_L	MP_L	AP_L (TP_L /L)
0	0	-	-
1	10	10	10
2	24	14	12
3	40	16	13.33
4	50	10	12.5
5	56	6	11.2
6	57	1	9.5

3.1 Shape of TP, MP, and AP

Exercise: Before proceeding further, try drawing the graph of the data presented in Table 1.

Can you think of any explanations for the shapes of the graphs you have drawn?

TP Curve

This is a total product curve forlabour derived from Table 1. When all other inputs are held constant, itshows the different output levels which are obtained at different units of labour.
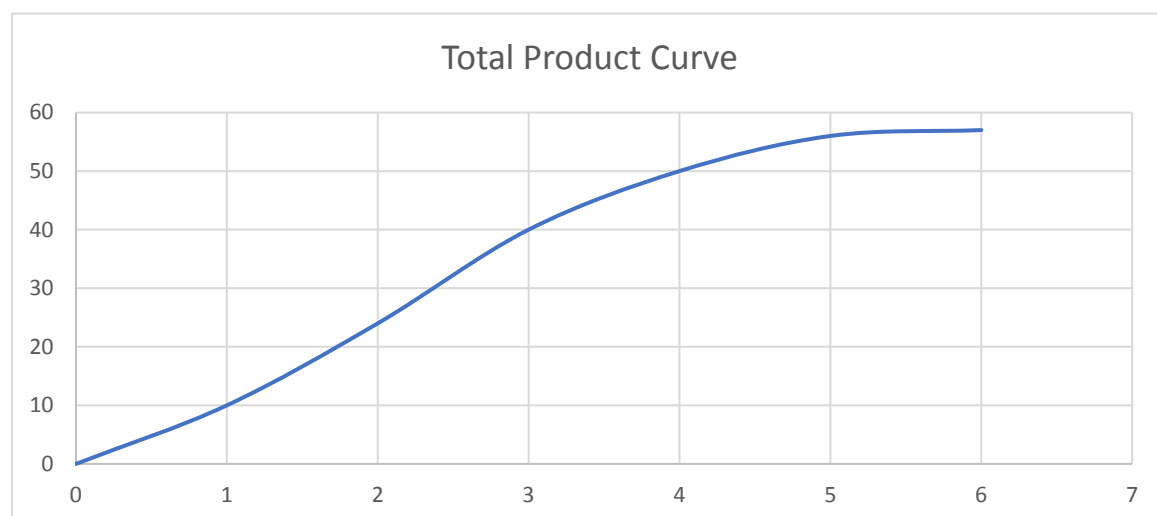

Figure 6 Total Product Curve of Labour

As can be seen from Figure 6, the TP curve of a firm is usually positively sloped. While the units of labourare measured in the horizontal axis, the output is measured along the vertical axis. The curve shows the increase in amount of output caused by increasing the amount of labour, keeping all the other inputs constant.

MP Curve and AP Curve

Figure 7 shows the Marginal Product of labour derived from Table 1. When all other inputs are held constant, it shows the incremental change in output at each level of variable input.
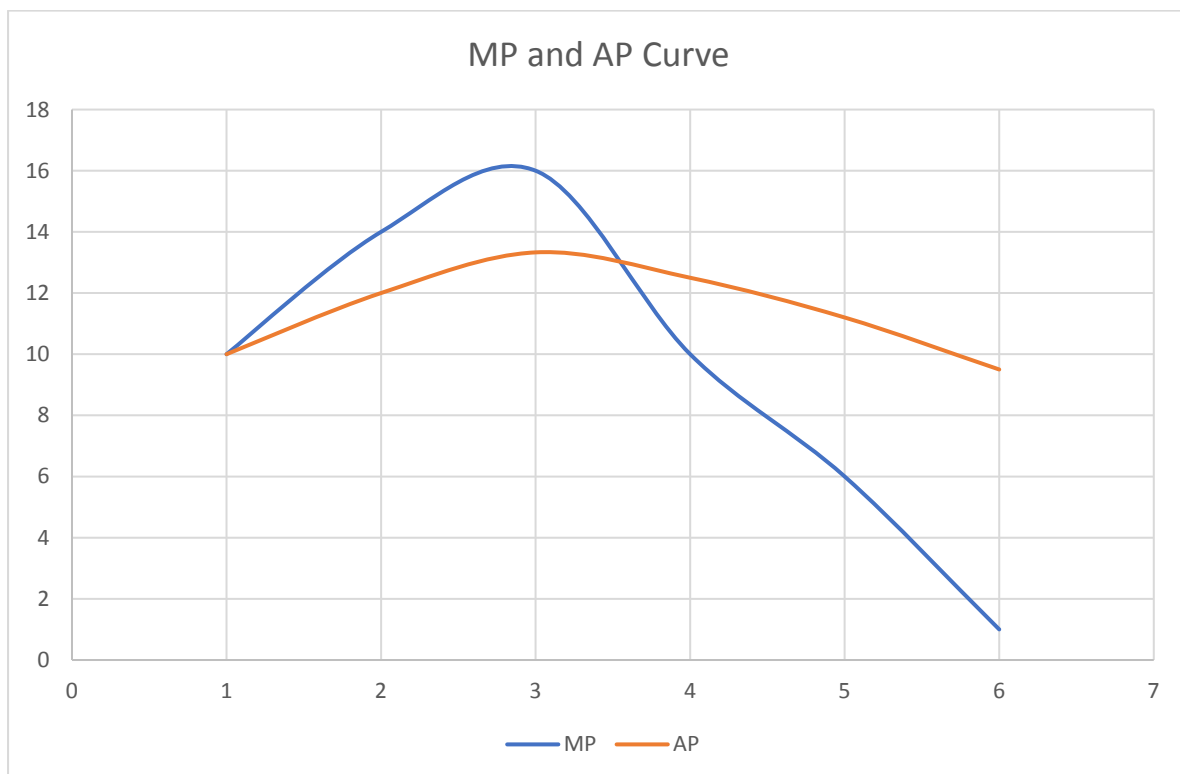
Figure 7 Marginal Product and Average Product

Both AP and MP curve are inverted 'U' shaped. They start at the same level when there is one unit of variable factor employed, as can be seen from Figure 7. With the increase in amount of variable input, MP rises. AP also rises but at a lesser rate. MP and AP curve intersect when AP is at the highest (compare Figure 7 with Table 1). Why do you think this is so? Do you see how the fall in MP curve is sharper than the decline in AP curve? Can you think of a reason why this is so?
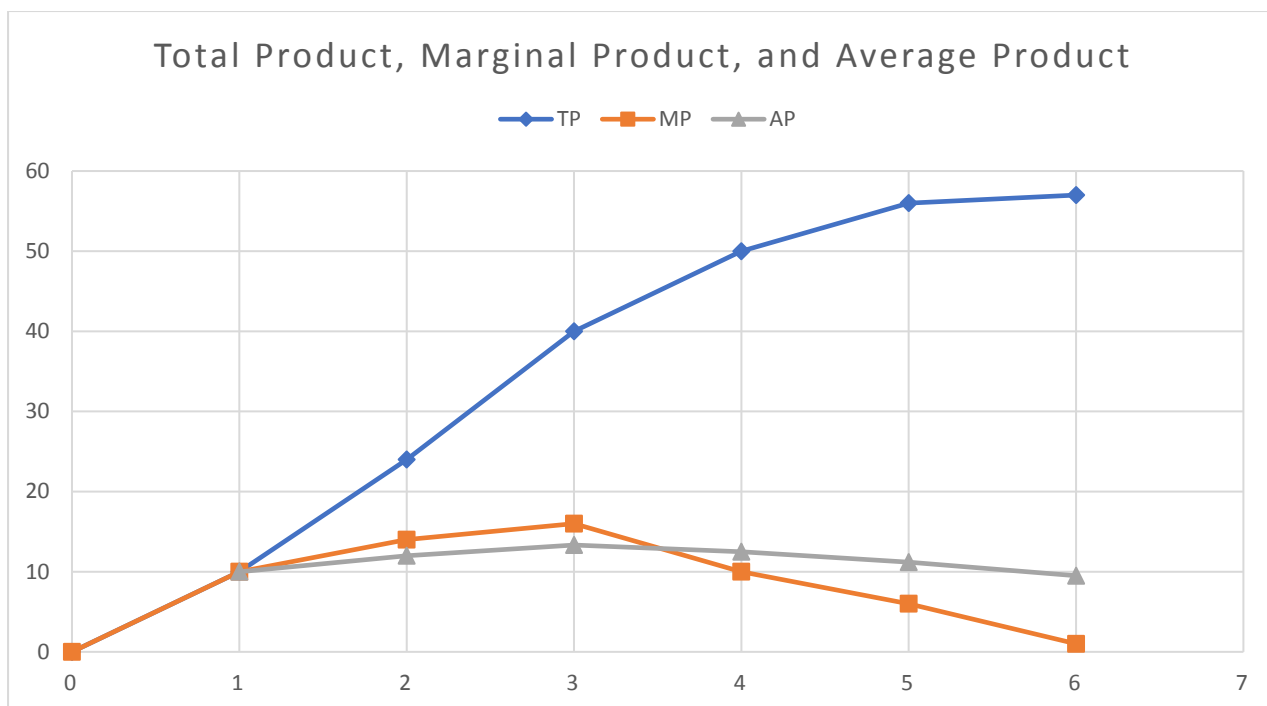
Figure 8 TP, MP, AP curve

Observe Figure 8 carefully. Notice how each curve's peak corresponds to the other curve's behavior. Can you draw any conclusions by comparing them all?

Hint: MP curve is the slope of TP curve (but why?). Think and write your inferences!

4. Law of Variable Proportions or the Law of Diminishing Marginal Product

In case of the paratha business, with no chefs, the restaurant's production will be zero. When one chef is hired, the restaurant/takeaway's production may increase to 10 plates of parathas yielding a positive MP_L of 10. When a second chef is hired the production increases to 24 plates of parathas, yielding an MP_L of 14. Since the MP_L is rising, it makes sense to continue increasing the number of chefs. So, a third chef is hired which in turn leads to an increase in 40 plates of parathas, yielding an MP_L of 16. Since the MP_L is rising, it makes business sense to continue hiring additional chefs. With the fourth chef added to the business, the overall production stands at 50, which shows that the overall level of production continues to rise. However, the additional yield of the fourth chef is 10. Notice how the MP_L of the fourth chef at 10 plates is less than the addition yield of the third and second chef too. This indicates that the additional yield by the variable input (chefs) start declining after the fourth chef is inducted in the production process. Nevertheless, the MP_L continues to remain positive (in

other words output increases) as the production site (kitchen space in our example) continues to accommodate new chef.

Notice how each chef does not provide the 10 plate MP_L like the first chef. This is because, to measure the MP_L, only the variable input (in this case the number of chef) can change, but the other factors remain the same – meaning all the kitchen facility and ingredients are fixed/ stay the same. With each additional chef hired, the whole team share resources like pans, ingredients, and kitchen space. Consequently, the marginal productivity of the labour cannot increase by the same margin once the 'optimal' number of chefs employed (this optimal number is based on the other resources) – in case of our example, the optimal number of chefs was three as marginal productivity started to decline thereafter. As can be seen from Table 1, the marginal productivity continued to decline as fourth, fifth and sixth chef were inducted.

This trend of MP_L is in line with **Law of Variable Proportion** which states that as more of variable input is combined with fixed factor, marginal product of the variable factor may initially rise, but it reached a point eventually wherein the marginal product of the variable factor starts declining. There even might be a stage where MP becomes zero implying that output stops increasing altogether. In extreme cases MP_L can also be negative, showing that total output stops declining.

5. Returns to Scale

The law of variable proportions arises because factor proportions change as long as one factor is held constant and the other is increased. Now let us consider a long run scenario where both factors can be changed. One special case in the long run occurs when both factors are increased by the same proportion. This relationship between the change in proportion of all factors with respect to the change in the level of output is referred as the "the law of returns to scale".

In the continuing example, now restaurant that sells parathas vary both inputs, that is, labour and capital by the same proportion. Then for different levels of input we have corresponding level of output, increase in the level of output and nature of the returns to scale. Let us look into the table 3.2. Suppose we vary both inputs (workers and equipment's) . Then for different levels of inputs, we get different levels of output. Now, let's explore the relationship between the change in the level of output and corresponding change in the level of output.

127

Units of Labour (Chefs and Staff)	Units of Capital (Equipment)	Total Output	Percentage increase in labour and capital	Total Product (Units)	Percentage change in Total Product	Returns to scale
1	1	2	-	10	-	
2	2	4	100%	30	200%	Increasing returns to scale
4	4	8	100%	70	133%	
8	8	16	100%	140	100%	Constant returns to scale
16	16	32	100%	280	100%	
32	32	64	100%	400	42.8%	Decreasing returns to scale
64	64	128	100%	500	25%	

The law of returns to scale analyzes the effects of scale on the level of output as—
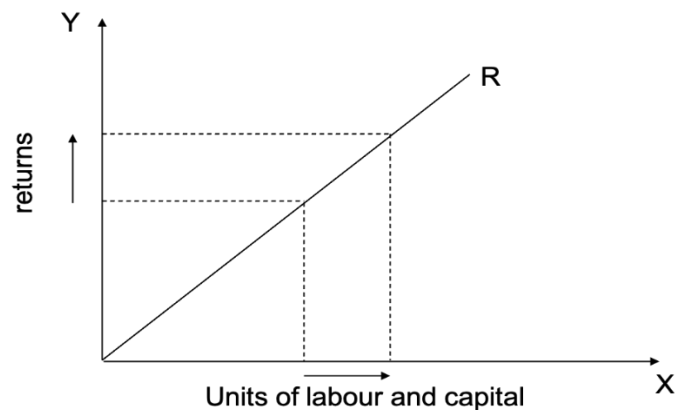
I.   **Increasing Returns to Scale-**

When a proportional increase in all inputs results in an increase in output by a larger proportion, the production function is said to display Increasing Returns to Scale (IRS). Example: when both inputs are increased by 100% and output rises by 200%.
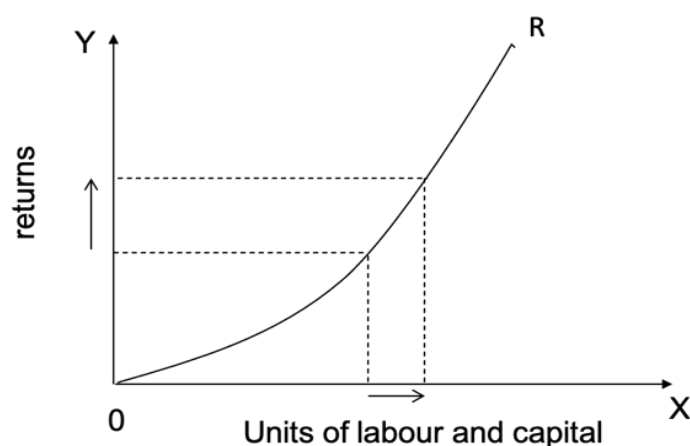
II.   Constant Returns to Scale –

When a proportional increase in all inputs results in an increase in output by the same proportion, the production function is said to display Constant returns to scale (CRS). Example when both inputs are increased by 100% and output also rises by 100%.

III.   Decreasing Returns to Scale-

When a proportional increase in all inputs results in an increase in output by a smaller proportion, the production function is said to display Decreasing returns to scale. Example when both inputs are increased by 100% but output increases by 42.8%.
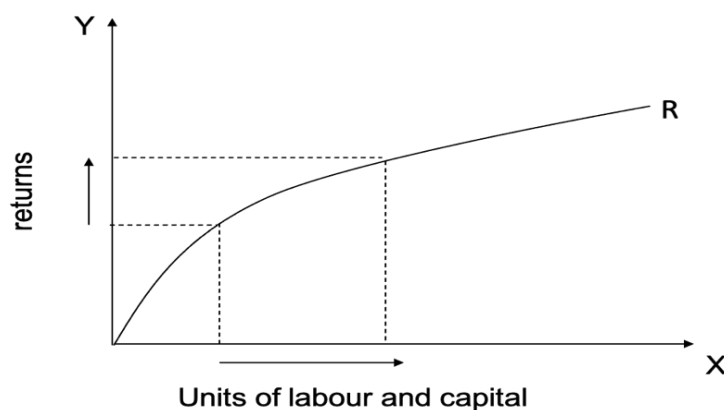
6. COSTs

The firms production function tells how much output the firm will produce with given amounts of inputs.

In order to produce output, the firm needs to employ units. For every factor of production (or input), there is an associated factor payment. Factor payments are what firms pay for the use of inputs. From firm's perspective, these input payments are costs. From the owner of each

factor's perspective factor payments are income. In case of parathas, factor payments or costs include:-

- Raw materials prices like inventories of vegetables, spices, sauces, etc.

- Rent for restaurant

- Wages and salaries for staff and chefs

- Interest paid on equipment's bought on loans

➔*Activity 1:*

What all costs can you think of in running a restaurant? Please list them.

<u>Cost Function:</u> A cost function is a mathematical equation that tells the cost of producing different levels of output for the given level of prices of factors of production used in the production.

Following Table gives us an example of producing different quantities of parathas:

Table: Cost function for producing Parathas				
Q	1	2	3	4
Cost	Rs.25.50	Rs.35.50	Rs.59.40	Rs.65.75

We can observe that as quantity of parathas increases, the cost of producing them also increases. This is implicit, since producing more outputs require higher quantities of inputs, which costs more rupees to purchase them.

Let go back to the origin of cost which comes from the production function and factor payments. We also need to remember that production function can be varied depending upon whether firm is operating in short run or long run. However, whether firms can vary factors of production that they deploy but they still need to pay the cost to all inputs being utilised by them. Thus, it brings us to talk about Short Run and Long Run Costs.

In short run, there are two components – fixed and variable costs.

The cost that firms incurs on fixed inputs which cannot be varied in the short run are called as total fixed costs. Fixed costs do not change regardless of the level of production, at least not

in the short run. Whether you produce a lot or less, the fixed cost remains same. Example in case of paratha making is the rent on the retail space. Once the restaurant owner sign the lease, the rent is the same regardless of how much output it produces.

Fixed costs can take many other forms: the cost of equipment to produce dough and clay oven to bake the parathas, research and development costs to develop new varieties of parathas, also in some cases advertising to popularise the restaurants.

Variable costs, on the other hand, are the costs of the inputs that can varied in the short run. They are incurred in the act of producing – the more one produces, the greater the variable cost. Labour is treated as a variable cost, since producing a greater quantity of a good or service typically requires more workers or more work hours.

➔*Activity 2:*

Think of all possible variable and fixed costs involved in running a restaurant?

As a relevant example of fixed and variable costs, considering the restaurant "ABC Paratha Restaurant". The information for output and costs are shown in Table below. The fixed costs of operating the restaurant, including space and equipment, are Rs.20 per day. The variable costs are the costs of hiring chefs, which in our example Rs.50 per chef per day.

The first two columns of the table show the quantity of parathas produced in the restaurant as it hires additional help. The third column shows the fixed costs, which do not change regardless of the level of production. The fourth column shows variable costs at each level of output. This is calculated by taking the amount of labour hired and multiplying by the wage. For example, two chefs cost: 2*50 = Rs100.

Adding together the fixed costs in the third column and the variable costs in the fourth column produces total costs in the fifth column.

TC = TFC + TVC

Total Cost = Total Fixed Cost + Total Variable Cost

At zero level of output, TC is just the fixed cost, and hence, equal to Rs 20. For 1 unit of output, total cost is Rs 70; for 2 units of output, the TC is Rs 120 and so on

Table: Output and Total Costs of Producing Parathas				
Labour	Quantity	Fixed Cost	Variable Cost	Total Cost
0	0	20	0	20
1	16	20	50	70
2	40	20	100	120
3	60	20	150	170
4	72	20	200	220
5	80	20	250	270
6	84	20	300	320

The relationship between the quantity of output being produced and the cost of producing that output is shown graphically in the Figure. You could plot the data from in table 3.3 by placing output on the x-axis and costs on the y-axis.This results in an increase in total variable cost, and hence, an increase in total cost. Therefore, as output increases, total variable cost and total cost increase. Total fixed cost, however, is independent of the amount of output produced and remains constant for all levels of production
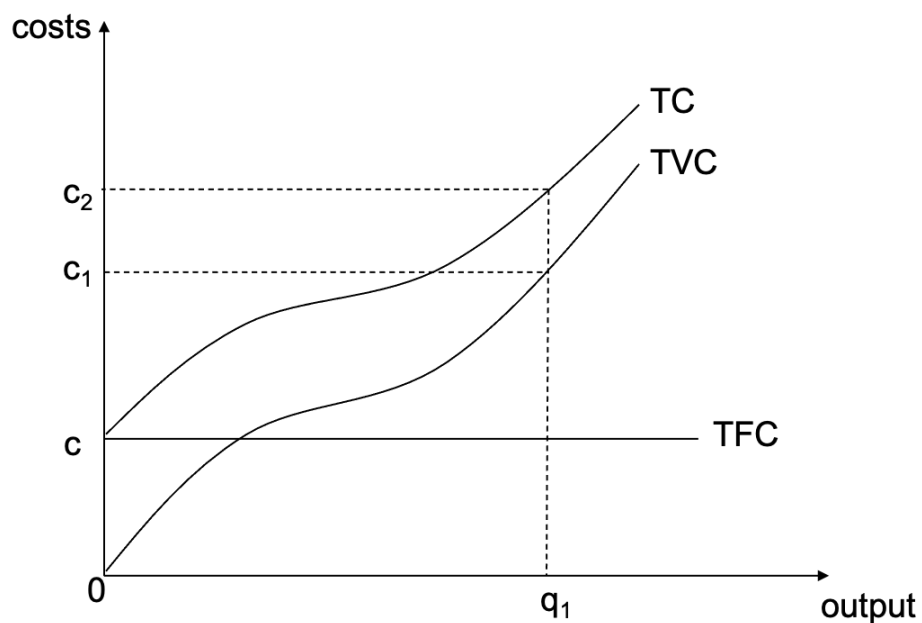
Average Costs and Marginal Costs

The breakdown of total costs into fixed and variable costs provide basis for understanding other cost functions. Next table, provides details about the average total costs, average variable costs, average fixed costs and marginal costs. These new measures analyse cost on a per unit basis (rather than a total basis) and are reflected numerically and through graphs below:

Table: Total Costs, Average Costs and Marginal Costs of producing Parathas								
Labour	Quantity	Fixed Cost	Variable Cost	Total Cost	Marginal Cost	Average Total Cost	Average Variable Cost	Average Fixed Cost
0	0	20	0	20	-	-	-	-
1	16	20	50	70	3.125	4.375	3.125	1.24
2	40	20	100	120	2.08	3	2.5	0.5
3	60	20	150	170	2.5	2.833	2.5	0.333
4	72	20	200	220	4.167	3.055	2.778	0.278
5	80	20	250	270	6.25	3.375	3.125	0.25
6	84	20	300	320	12.5	3.810	3.572	0.238

Average Total Cost (ATC) = $\frac{Total\ Cost}{Output}$

Average Total Cost = Average variable cost + Average fixed cost

AFC = AVC + AFC

Since the total cost of producing 40 parathas is Rs. 120, the average total cost of producing each of 40 parathas is Rs.120/40, or Rs.3 per paratha. Average total costs are typically U-shaped as depicted in the Figure below. Average total cost starts off relatively high, because at low levels of output total costs are dominated by the fixed cost; mathematically, the denominator is so small that average total cost is large. Average total cost then declines, as the fixed costs are spread over an increasing quantity of output. In the average cost calculation, the rise in the numerator of total costs is relatively small compared to the rise in

the denominator of quantity produced. But as output expands still further, the average cost begins to rise. At the right side of the average cost curve, total costs begin rising more rapidly as diminishing returns kick in.

$$Average\ Variable\ Cost = \frac{Variable\ Cost}{Output}$$

Average Variable cost is calculated when variable cost is divided by quantity of output. For example, the variable cost of producing 80 parathas is Rs.250, so the average variable cost is Rs.270/80, or Rs.3.375 per paratha. Note that at any level of output, the average variable cost will always lie below the curve for average total cost as depicted in the figure. The reason is that average total cost includes average variable cost and average fixed cost. For example, for Q = 80 parathas, the ATC is Rs.3.375 per paratha, while the AVC is Rs.3.125. However, as output grows, fixed costs become less important as they do not rise with output, so average variable cost reaches closer to average total cost.

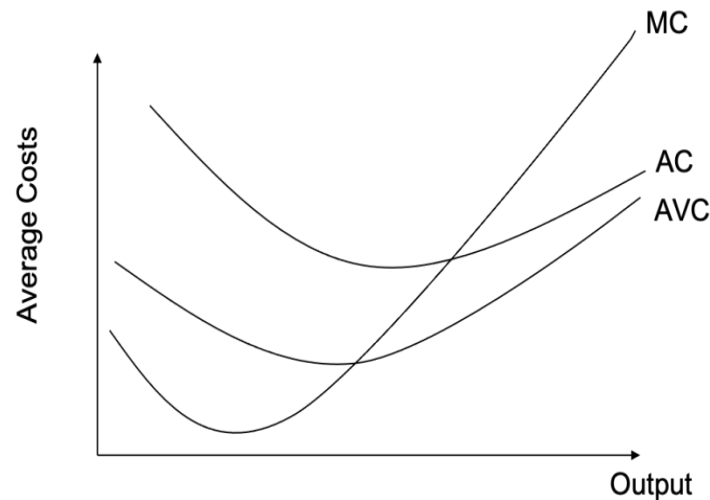$$Average\ Fixed\ Cost = \frac{Fixed\ Cost}{Output}$$

Average fixed cost is calculated by divided fixed cost by quantity of output. Therefore, as output increases, AFC decreases. When output is very close to zero, AFC is arbitrarily large, and as output moves towards infinity, AFC moves towards zero. AFC curve is, in fact, a rectangular hyperbola.
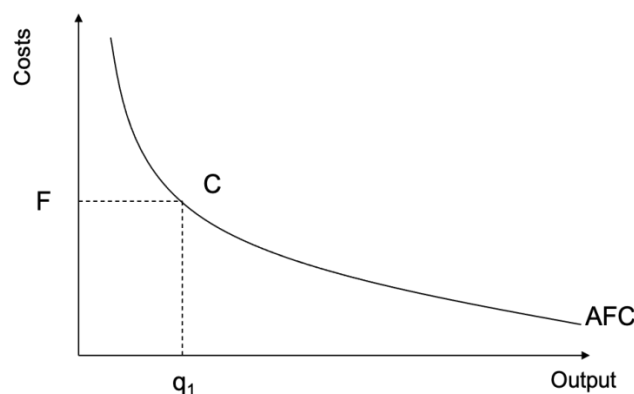
Marginal Costs is somewhat different from average costs. Marginal cost is the additional cost of producing one more unit of output. So it is not the cost per unit of all units being produced, but only the next one. Marginal cost is calculated by taking the change in total cost and dividing it by the change in quantity. For example, as quantity produces increases from 40 to 60 parathas, total cost rise by $170 - 120$, or Rs.50. Thus, the marginal cost for each of these 20 units will be 50/20, or Rs.2.5 per paratha. The marginal cost curve is generally upward-

sloping, because diminishing marginal returns implies that additional units are more costly to produce. A small range of increasing marginal returns can be seen in the figure as a dip in the marginal cost curve before it starts rising.

$Marginal\ Cost = \frac{\Delta\ Total\ Cost}{\Delta\ Output}$

Long Run Costs: In the long run, all inputs are variable. There are no fixed costs. The total cost and total variable costs therefore, coincide in the long run.

Long run average cost (LRAC) is defined as cost per unit of output, i.e.,

$LRAC = \frac{Total\ Cost}{Quantity}$

Long run marginal cost (LRMC) is the change in total cost per unit of change in output.

$LRAC = \frac{\Delta Total\ Cost}{\Delta Quantity}$

When output changes in discrete units, then, if we increase production from $q_1 - 1$ to q_1 units of output, the marginal cost of producing $q_1{}^{th}$ unit will be measured as

LRMC = (TC at q_1 units) – (TC at q_1- 1 units)

Activity 3: The Rohan Cloth Manufacturing Company for kids. Fixed costs are Rs. 30. Fill in the following table for total cost, average variable cost, average fixed cost, average total cost and marginal cost. Also plot the graph for AC, AVC and MC with respective quantity and cost associated. Highlight the minimum of AC and AVC where MC crosses them.

Quantity	Total Variable Cost	Total Fixed Cost	Total Cost	Average Total Cost	Average Fixed Cost	Average Variable Cost	Marginal Cost
0	0	Rs.30					
1	Rs.10	Rs.30					
2	Rs.25	Rs.30					
3	Rs.45	Rs.30					
4	Rs.70	Rs.30					
5	Rs.100	Rs.30					
6	Rs.135	Rs.30					

Table: Average Costs for Rohan Cloth Manufacturing Company

જા.નં./મા-૨/૫૨ચ/૨૦૨૨/વશી.૪૪/૮૭૬

ઉપરોક્ત તા.૧૨/૦૧/૨૦૨૨ના પત્ર અન્વયે આપની કક્ષાએથી જરૂરી નિયમાનુસારની કાર્યવાહી કરવા સારું...

(એસ.એચ.રાજ્યગુરુ)
જિલ્લા શિક્ષણાધિકારી
સુરત, જિલ્લો-સુરત

પ્રતિ,
આચાર્યશ્રી,
ઉચ્ચત્તર માધ્યમિક શાળાઓ
સુરત. જિ.સુરત