SUMMARY DOCUMENT – Managerial Economics (Week 7: Market Structure)

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1. Market Structure – Introduction

Market structure classifies markets based on:

- Number of firms
- Nature/degree of product differentiation
- Behavior of buyers & sellers
- Production characteristics
- Entry/exit conditions
- Government policies

A market is simply a network of buyers and sellers—not necessarily a physical place (e.g., BSE).

Market structure definition:
As per *Pappas & Hirschey (1985)*, it refers to the number and size distribution of buyers and sellers, including potential entrants.

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2. Classification of Market Structure

a) Perfect Competition

- Many buyers and sellers
- Homogeneous product
- Price takers
- Free entry and exit
- No long-run abnormal profit

b) Monopoly

- One seller
- Unique product/no substitutes
- Complete price control
- High entry barriers
- Can earn long-run supernormal profit

c) Monopolistic Competition

- Many sellers
- Differentiated products
- Some price control
- Low entry barriers
- Long run: only normal profit

d) Oligopoly

- Few large firms

- Products may be homogeneous or differentiated
- High interdependence
- High barriers to entry
- Strategic decision-making

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3. Comparison Table of Market Structures

(Original table reproduced exactly)

Criteria	**Perfect Competition**	**Monopoly**	**Oligopoly**	**Monopolistic Competition**
Kind of Competition	Perfect	Imperfect	Imperfect	Imperfect
Number of Producers	Many, Identical	One, Unique	Few, Homogeneous / Differentiated	Many, Differentiated
Part of Economy	Rare	Common	Common	Common
Degree of Control	Price Taker	Price Maker	Interdependence	
Methods of Marketing	Standardized, Homogeneous	Unique, Focused	Cooperative or Competitive	Advertising, Branding, Differentiated Products
Barriers to Entry	Low	High	High	Medium to High
Examples	Agricultural Products, Stock Exchange	Microsoft, De Beers	Automobile Industry, Soft Drinks	Restaurants, Clothing Brands
Nature of Demand	Perfectly Elastic	Downward-Sloping	Interdependent	Downward-Sloping
Price Discrimination	No	Yes	Yes	Yes
Long-Run Economic	No	Yes	Possible	Yes, but Normal Profit

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4. Parameters Determining Market Structure

Key parameters:

1. Number of firms
2. Product differentiation

Other influencing factors:

- Production characteristics (technology, plant size)
- Buyer side characteristics (monopsony, oligopsony)
- Entry barriers
- Government policy

Most real-world markets are **imperfect**.

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5. Factors Determining Nature of Competition

A. Effect on Buyers

- One buyer → **Monopsony**
  - Example: Rail wagon suppliers selling to Indian Railways
- Few buyers → **Oligopsony**
  - Example: Explosives industry dominated by Coal India

B. Production Characteristics

- **Minimum efficient scale** determines number of firms
- Larger plant size → fewer firms (ex: steel)
- Technological change can:
  - Increase optimal size → fewer firms
  - Enable small units → more competition

C. Product Characteristics

- Substitutability levels affect competition
  - CTV: Low substitutes → low competition
  - Detergents: Many substitutes → high competition

D. Conflict of Characteristics Example

- Cement:
  - Plants located near mines (low production cost)
  - But high distribution cost → regional price differences
  - Govt uses levy pricing to standardize prices

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6. Barriers to Entry

Types of Entry Barriers

1. **High Initial Investment**
   - Car plant: ₹100 crore
   - Steel plants: huge capex

2. **Evolving Technology / Patents**
   - Chemicals, drugs, plastics
   - Knowledge-intensive industries

3. **Switching Costs**
   - Heavy machinery, IBM compatibility
   - Customer loyalty, training requirements

4. **Economies of Scale in Non-Production Activities**
    - Marketing & distribution economies in FMCG

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7. Role of Government Policy

Government influences:

- Licensing
- Foreign collaboration norms
- Import policies
- Price controls (sugar, steel, cement)
- Taxation (excise/customs)

Impact:

- Can create or remove entry barriers
- Affects pricing & production

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8. Price Determination Under Different Market Situations

8.1 Perfect Competition

(pp. 11–16 + diagrams pp. 12–14)

Assumptions

- Many buyers & sellers
- Homogeneous product
- Perfect mobility
- Perfect information

Important Diagrams (as in original)

TR, AR, MR under Perfect Competition *(Page 12)*
(Included exactly as in PDF)
[Refer to PDF page 12 image]

Equilibrium Conditions (Page 13–14)

- Profit maximizing condition:

MC = MR

Equilibrium Cases

1. Normal Profit

2. Supernormal Profit
3. Loss Minimization
4. Shutdown Point

(All diagrams on page 13–14.)

Short-Run Equilibrium (Page 15)

Price determined by intersection of **industry supply** & **demand**.
Individual firm faces **horizontal AR = MR**.

Long-Run Equilibrium (Page 16)

Condition:

P = MC = AC = MR

- Above-normal profits → new entry → price falls
- Losses → exit → price rises
- Final state: firms earn **only normal profit**

8.2 Monopolistic Competition

Key Characteristics

- Many firms, differentiated products
- Downward-sloping demand curve
- High cross-elasticity
- Non-price competition (advertising, branding)
- Product variation is costly & uncertain

Revenue Comparison Diagram

(TR, AR, MR under imperfection)

Long-Run Outcome

- Normal profit only
- Excess capacity exists
- Price > MC
- Output < socially optimal level

8.3 Monopoly and Pricing

How Monopoly Sets Price

1. Assess demand

2. Compute marginal revenue (MR < AR)
3. Produce where **MR = MC**
4. Price taken from the **demand curve** at that output

Supernormal Profit & Shutdown Diagrams

(Original diagrams from pages 21–22)

Why Monopolies Charge High Prices

- Market power
- No substitutes
- High entry barriers
- Economies of scale
- Patents
- Inelastic demand
- Natural monopoly structure

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9. Summary of Video Content

Week 7 – Video 1 (Market Structure)

- Market seen from seller & buyer angles
- Product nature: homogeneous vs. differentiated
- Entry/exit: easy vs. restricted
- Interdependence measured by **cross elasticity (eq)**
- Entry barrier formula:

$$E = \frac{P_a - P_c}{P_c}$$

Week 7 – Video 2 (Market Competition)

- Market power depends on structure
- Perfect competition → no market power
- Monopoly → complete power
- Monopolistic → power via differentiation
- Oligopoly → power via differentiation + dominance
- Duopoly examples: Airbus vs Boeing, Visa vs MasterCard

Week 7 – Video 3 (Perfect Competition & Pricing)

- TR/AR/MR table
- Industry vs. firm equilibrium diagrams
- Short-run supply shifts

Week 7 – Video 4 (Monopoly & Pricing)

- Real examples: Indian Railways

- Diagram: supernormal profit under monopoly
- Shutdown conditions
- Long-run monopoly pricing

SUMMARY DOCUMENT – Week 8 (Managerial Economics)

Topics: Price Discrimination • Monopolistic Competition • Oligopoly

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1. Price Discrimination

Definition

Price discrimination refers to **selling the same good or service at different prices to different buyers**, where price differences **are not proportional to marginal cost**.

Conditions for Price Discrimination

A firm must:

- Identify & separate different types of buyers
- Ensure the product cannot be resold
- Have some degree of monopoly power
- Maintain separate markets (geographically, by use-case, time, elasticity etc.)
- Prevent seepage between markets

Examples:

- Indian Railways
- Electricity tariffs (domestic vs. industrial)

Reasons for Price Discrimination

1. Consumer ignorance regarding cost
2. Existence of distinct markets
3. Ability to charge different prices in separate markets

Types of Price Discrimination (Pigou's Classification)

1. First-Degree Price Discrimination

- Each unit sold at a different price
- Firm captures all consumer surplus
- Also known as perfect price discrimination

2. Second-Degree Price Discrimination

- Different prices for different quantities or usage slabs
  Example: Bulk discounts

3. Third-Degree Price Discrimination

- Different prices for different groups of consumers
- Based on elasticity differences
  Example:
- Students vs. Adults pricing
- Peak vs. Off-peak railway fares

Equilibrium under Price Discrimination

(Detailed explanation on Page 4 with diagram)

The discriminating monopolist:

- Maximizes profit where **MRx = MRy = MC**
- Allocates output across markets X and Y depending on their marginal revenues
- Charges **higher price** in **inelastic market (X)** and **lower price** in elastic market (Y)**

Total output:

$$OQ = OQ_x + OQ_y$$

Advantages of Price Discrimination

1. Profit Maximization

Extracts more consumer surplus → increases total revenue
Example: Airlines, hotels, movie halls

2. Economies of Scale

Higher output leads to lower average cost
Example: Software: basic vs. premium versions

3. Effective Use of Infrastructure

Better utilization of fixed facilities
Example: Theme parks – VIP passes, express entry

4. Understanding Market Segments

Different pricing slabs reveal customer willingness to pay
Example: OTT subscription tiers

5. Survival Strategy

Adjust pricing for competitive advantage
Example: Hotels offering discounts during off-peak seasons

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2. Monopolistic Competition

Definition

A market structure where:

- Many sellers
- Each selling a **differentiated product**
- Close substitutes exist
- Entry and exit are easy

Conceptual Issues

- Industry definition becomes difficult
- Group of firms producing "close substitutes" rather than identical goods

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Sources of Monopolistic Competition

- Product differentiation
- Free entry and exit
- Varied consumer preferences
- Advertising & promotion
- Technological change
- Geographical differences
- Imperfect consumer information

Features of Monopolistic Competition

1. **Product Differentiation**
    - Real: durability, performance
    - Non-real: brand name, packaging, shape
2. **Selling Expenses**
    - Advertising
    - Brand image creation
    - Promotions & dealer incentives
3. **Large number of sellers**
    - Each has some control over its price
4. **Quality Variations**
    - Better quality → higher demand → higher cost
5. **Full knowledge of cost/demand**

6. **Free entry & exit**
    - Long run: only normal profit
7. **Profit Maximization Objective**
8. **Uniformity Assumption**
    - Simplifies analysis for group equilibrium

Product Differentiation

Includes:

- Quality differences
- Brand identity, logos
- Technical features
- Imaginary differences via marketing

Demand curve:

- Downward sloping
- More elastic than monopoly
- High cross-elasticity

Selling Expenses

Used for:

- Shifting demand curve rightwards
- Increasing brand loyalty
- Offsetting competitor influence

Nature of selling cost curve:

- U-shaped (law of variable proportions)
- Heavy budget → diminishing returns

Equilibrium Under Monopolistic Competition

Two demand curves:

- **Elastic demand curve** (if rivals don't react)
- **Less elastic demand curve** (if rivals react)

Short-Run Equilibrium

Firm may earn:

- **Supernormal profit**

- **Normal profit**
- **Loss (but less than fixed cost)**

Diagram on Page 12–13 shows:

- Downward sloping AR/MR
- U-shaped AC, MC
- Equilibrium at **MC = MR**

Long-Run Equilibrium

Key outcomes:

- Firms earn **only normal profit**
- AR curve becomes tangent to **LAC curve**
- Output < Optimal capacity
- Excess capacity persists
- Higher prices due to:
    - Selling costs
    - Unused productive capacity

Consumer losses:

- Higher prices
- Lower quantity
- Pay for selling expenses

Minor benefit:

- Variety of products

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3. Oligopoly

Definition

"Oligo" (few) + "Polein" (to sell)

- Few large firms dominate
- Products may be homogeneous (steel, cement) or differentiated (cars, phones)

Indian examples:

- Automobiles
- Steel
- Aluminium

Characteristics of Oligopoly

1. Few large firms

2. High entry barriers
3. Non-price competition
4. High interdependence
5. Either homogeneous or differentiated products
6. Heavy selling costs
7. No predictable pricing pattern
8. Indeterminate demand curve

Sources of Oligopoly

- High entry barriers (capital, patents)
- Economies of scale
- Technology leadership
- Control of raw materials
- Brand loyalty
- Government regulations
- Mergers & alliances

Examples of Oligopoly

- Automobiles (Toyota, Ford, VW)
- Soft drinks (Coca-Cola, Pepsi)
- Mobile phones (Apple, Samsung, Huawei)
- Aircraft manufacturing (Airbus, Boeing)
- Operating systems (Windows, macOS)
- Oil & gas (Shell, Chevron)
- Credit cards (Visa, MasterCard, Amex)

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4. Summary of Video Content

Price Discrimination

- Segment markets
- Different elasticity required
- Prevent resale between markets
- Examples: Online dynamic pricing, peak/off-peak pricing

Advantages

- Profit maximization
- Scale benefits
- Efficient infrastructure use
- Better market understanding
- Survival in competition

Monopolistic Competition

- High product differentiation

- Many firms
- Independent decisions
- Imperfect information
- Examples:
    - Retail
    - Restaurants
    - Hair salons
    - Movie industry (actors differentiate by roles, acting style)

Oligopoly

- Few dominant firms
- Strategic behavior
- High barriers
- Mutual interdependence

SUMMARY DOCUMENT – WEEK 9 (Managerial Economics)

Topics: Oligopolistic Market • Price Leadership • Kinked Demand • Game Theory • Market Failures • Information Asymmetry

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1. Oligopoly – Meaning & Sources

Oligopoly is a market structure where few large firms dominate an industry, with strong interdependence and strategic behaviour.

Sources of Oligopoly

1. Economies of Scale

- Large firms produce diverse varieties at lower average cost.
- Example: Ford, GM manufacturing multiple car models.

2. Huge Investment & Specialized Inputs

- High capital requirement, R&D, advanced technology.
- Example: Semiconductor industry.

3. Brand Loyalty

- Customers stick to known brands.
- Example: Apple, Samsung smartphones.

4. Patents & Specialized Production

- Exclusive rights block entry of others.
- Example: Pharmaceutical patents.

5. Control of Raw Materials

- Few firms control key resources.
- Example: De Beers controlling global diamond mines.

6. Government Franchise / Licensing

- Only one or few firms permitted in essential services.
- Example: Water, electricity utilities.

7. Limit Pricing

- Existing firms keep prices low to prevent new competition.
- Example: Airlines reducing fares to block new entrants.

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2. Price Leadership in Oligopoly

Price leadership = one firm sets the price, others follow.

Key Characteristics

- Leader is dominant, large, cost-efficient.
- Based on Stackelberg's model (leader–follower).
- Creates stability & predictable pricing.
- Risk of anti-competitive concerns.

Types of Price Leadership

1. Low-Cost Firm Price Leadership
2. Dominant Firm Price Leadership
3. (Mentioned in theory) Barometric/collusive leadership

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1. Price Leadership by Low-Cost Firm

(Diagram on Page 8)

Assumptions

- Two firms: A (low-cost) & B (high-cost).
- Identical MR curves; many buyers; independent demand.

Explanation

- If both act independently:
  - Firm A charges lower price (OP1).
  - Firm B charges higher price (OP).
- With tacit agreement:
  - B follows A's price OP1.
  - A enjoys higher profit; B survives but earns less.
- If B charges OP (higher), it sells zero output as consumers switch to A.

Key insight:

Low-cost firm can force others out but avoids legal issues by allowing shared market.

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2. Price Leadership by Dominant Firm

(diagram on Pages 9–11)

Assumptions

- One large dominant firm, many small price-taking firms.
- Dominant firm knows entire market demand.
- Can forecast how much small firms will supply at each price.

Explanation

- Dominant firm fixes market price OP1.
- Small firms supply portion of demand; dominant firm supplies the rest.
- Demand curve for dominant firm = Market demand – small firms' supply.

Equilibrium where:

$$MC_d = MR_d$$

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3. Kinked Demand Curve & Price Rigidity

The kinked demand curve explains price rigidity in oligopoly.

Key Features

1. Price Rigidity

- Rivals match price cuts but not price increases.
- Leads to stable pricing.

2. Elastic Range (Above Current Price)

- If firm raises price → rivals do not follow → large loss in market share.

3. Inelastic Range (Below Current Price)

- If firm cuts price → rivals also cut → little gain in market share.

4. Kink Point

- Point of sudden elasticity change due to competitor reactions.

5. Stable Prices

- Firms avoid changing price because:

- Price increase lowers sales sharply.
- Price cut leads to price war.

6. Non-Collusive Behaviour

- Assumes independent decision-making, not cartel formation.

Diagram on Page 11 illustrates kink at point 'K' with elastic upper demand and inelastic lower demand.

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4. Game Theory in Oligopoly

Game theory studies strategic interactions where outcomes depend on competitors' moves.

Term	Meaning
Game Theory	Game theory is a branch of mathematics and economics that studies strategic interactions among rational decision-makers. It models the decisions of players in situations where the outcome depends on the choices of all participants.
Players	Participants or individuals involved in a game who make decisions that affect the overall outcome.
Payoff	The reward or outcome that a player receives based on the combination of choices made by all players in the game.
Strategy	A complete plan of action that a player adopts to achieve their objectives, taking into account possible moves by other players.
Nash Equilibrium	A state in which no player has an incentive to unilaterally change their strategy, given the strategies chosen by the other players.
Dominant Strategy	A strategy that is optimal for a player regardless of the choices made by other players.
Prisoner's Dilemma	A classic example of a game where two rational individuals might not cooperate, even if it appears that it is in their best interest to do so.
Cooperative Game	A game in which players can form coalitions and make binding agreements to achieve better outcomes.
Zero-Sum Game	A type of game where one player's gain or loss is exactly balanced by the losses or gains of other players. The total amount of wealth or utility in the system remains constant.
Incomplete Information	A situation in which players do not have complete knowledge about the strategies or payoffs of other players.
Perfect Information	A situation in which all players have complete and accurate knowledge about the game, including the strategies and payoffs of other players.
Simultaneous Game	A game in which players make decisions simultaneously, without knowing the choices of other players.

Sequential Game	A game in which players make decisions in a specific order, and each player observes the decisions made by those who preceded them

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Key Terminologies

- Players: Decision-makers
- Payoff: Outcome/reward
- Strategy: Action plan
- Nash Equilibrium: No player can improve by changing strategy alone
- Dominant Strategy: Best irrespective of rivals' choices
- Zero-Sum Game: One gains at another's loss
- Prisoner's Dilemma: Individual rationality → poor collective outcome
- Sequential & Simultaneous Games

Example: Price Setting Game

Two firms: A & B
Strategies:

- High Price (H)
- Low Price (L)

Payoff Matrix

	Firm B sets High (H)	Firm B sets Low (L)
Firm A sets High (H)	(Moderate, Moderate)	(Low, High)
Firm A sets Low (L)	(High , Low)	(High, High)

Insights

- **(**H, H) gives stability → Nash equilibrium
- (L, L) creates price war
- Mixed strategies cause winner–loser outcome

Corporate Dilemmas

- Invest in R&D → will rival follow?
- Cut production → will competitor react?
- Increase price → will rival match?

Dominant Strategy Model – Market Version Choice

Two firms: Newshop & Starshop
Two markets:

- Basic Version (80%)

- Corporate Version (20%)

Outcome Summary

- Both choosing Basic → each gets 40%
- Both choosing Corporate → each gets 10%
- One on Basic, one on Corporate →
    - Basic firm gets 80%
    - Corporate firm gets 20%

Dominant Strategy

Entering Basic version is dominant because it always yields higher share.

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5. Market Failures & Information Asymmetry

Market failure occurs when free markets allocate resources inefficiently.

Causes of Market Failure

1. Externalities
2. Public Goods (non-rival, non-excludable)
3. Imperfect Competition
4. Information Asymmetry
5. Income Inequality
6. Factor Immobility
7. Market Power & Monopoly

Government intervenes with taxes, subsidies, regulation, public goods supply.

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6. Information Asymmetry

Week9_StudyMaterial_ManagerialE...

Occurs when one party has more information than the other.

Key Concepts

1. Adverse Selection

- Hidden characteristics before transaction
- Example: Used cars

2. Moral Hazard

- Hidden actions after transaction
- Example: Insurance holders taking higher risks

3. Hidden Characteristics

- Worker skills during hiring process

4. Hidden Actions

- Firms' internal behaviour hidden from investors

5. Market Efficiency Impact

- Leads to poor decisions, suboptimal allocation

6. Financial Market Implications

- Insider trading
- Uneven access to information

Mitigation Strategies

1. Regulation & disclosure
2. Third-party certification
3. Incentive-compatible contracts
4. Screening & signalling

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7. Summary of Video Content

Video 1 – Oligopoly Sources

- Economies of scale
- High investment
- Brand loyalty
- Patents
- Control of raw materials
- Government franchises
- Limit pricing

Video 2 – Kinked Demand Curve

- Elastic above price
- Inelastic below price
- Results in price rigidity

Video 3 – Game Theory

- Strategic decisions affect rivals
- Corporate dilemmas

- Dominant strategies
- Nash equilibrium

Video 4 – Market Failure & Information Asymmetry

- Market inefficiency
- Examples of asymmetry: used cars, warranties, insurance
- Moral hazard scenarios

SUMMARY DOCUMENT – WEEK 10 (Managerial Economics)

Topics: Economic Indicators • Aggregate Demand & Supply • Shifts in AD/AS • Investment Function • Multiplier • Consumption & Savings • MPC & MPS

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1. Economic Indicators – Meaning & Classification

Meaning

Economic indicators are statistics that measure economic performance and help predict future trends. Examples:

- GDP, unemployment rate, CPI
- Housing starts, stock market indices
- Industrial production, retail sales

Indicators help policymakers, businesses, and investors assess the economy and make decisions.

Types of Indicators

1. Leading Indicators
Signal future economic activity.

Examples:

- Stock market indices (S&P 500)
- Building permits
- Money supply (M2)
- New orders for plant & machinery

2. Lagging Indicators

Change after the economy changes.
Examples:

- Unemployment rate
- Corporate profits
- Outstanding commercial loans

3. Coincident Indicators

Move at the same time as the economy.
Examples:

- GDP
- Industrial production
- Retail sales

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2. Why Economic Indicators?

Economic indicators help with:

1. Measuring Economic Health
GDP, unemployment, inflation → measure stability.

2. Policy Formulation
Used by government & central banks to set interest rates, taxes, and spending.

3. Business Decision-Making
Production, hiring, investment decisions depend on indicators.

4. Investment Decisions
Interest rates, inflation, and growth rates influence portfolio choices.

5. Predicting Economic Trends
Leading indicators → help forecast recessions or expansions.

6. Risk Management & Confidence
Helps manage economic risk and understand consumer confidence.

7. Global Comparisons
Used to compare economic performance across countries.

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3. Important Economic Indicators

A. GDP Growth Rate – Real GDP

- GDP Growth Rate = % change in GDP → shows expansion or contraction.
- Real GDP = inflation-adjusted GDP (removes price effect).

Relationship:

- Growth rate → speed of expansion
- Real GDP → actual output volume

B. Consumer Prices (CPI)

Measures inflation and cost of living.

Key uses:

- Central bank monetary policy
- Wage & salary adjustments
- Purchasing power
- Investment decisions
- International comparisons

C. Unemployment Rate

Shows percentage of labour force unemployed.

Indicates:

- Labour market conditions
- Consumer confidence
- Wage pressure
- Government response
- Investor sentiment

D. Industrial Production

Measures output of manufacturing, mining & utilities.

Importance:

- Indicates economic growth
- Tracks manufacturing activity
- Helps forecast business cycles
- Shows capacity utilization
- Impacts inflation

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4. Aggregate Demand (AD) & Aggregate Supply (AS)

Aggregate Demand (AD)

Represents total spending on goods & services.

$$\boldsymbol{AD = C + I + G + (X - M)}$$

Downward sloping due to:

1. Real Income Effect
2. Interest Rate Effect
3. Balance of Trade Effect

Aggregate Supply (AS)

- Short-run AS: upward sloping due to sticky wages.
- Long-run AS: vertical (full-employment output).

Equilibrium

Where AD = AS → determines price level & real GDP.

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5. Shifts in the Aggregate Demand Curve

Diagram: Shifts in AD (Page 15)

Shows outward shift (AD1 → AD2) and inward shift (AD1 → AD3).

Reasons for Outward Shift in AD

- Increase in real income & employment
- Govt spending ↑ / taxes ↓ (Fiscal policy)
- Interest rates ↓ / credit ↑ (Monetary policy)
- Currency depreciation
- Growth in trading partners
- Higher consumer & business confidence

Reasons for Inward Shift in AD

- Recession
- Tight monetary policy
- Lower confidence
- Fall in exports

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6. Aggregate Supply (AS) Curve Shifts

Causes of AS shifts

1. Wage/Salary changes
2. Input price changes
3. Govt policies (monetary & fiscal)
4. Imported input cost changes

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7. Investment Function

Investment is made by:

1. Government
2. Corporates
3. Households

Investment Definition

Spending on capital goods (equipment, buildings, machinery).

Determinants of Investment

- Interest rates (inverse relationship)
- Business expectations & confidence
- Technological advancements
- Tax policies
- Economic stability

Investment influences GDP through aggregate demand.

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8. Investment Multiplier

Formula:

$$\boldsymbol{K = \frac{\Delta Y}{\Delta I}}$$

Higher MPC → higher multiplier.

Process

1. Initial investment → income increases
2. People spend part of new income
3. Spending → new production & income
4. Repeated rounds → multiplied effect

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9. Consumption & Savings Function

Consumption Function

$$\boldsymbol{C = a + bY_d}$$

Where:

- *a* = autonomous consumption
- *b* = MPC (slope)

Savings Function

$$\boldsymbol{S = -a + (1 - b)Y_d}$$

Where:

- *(1 − b) = MPS*
- *Negative intercept = dissaving at zero income*

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10. MPC and MPS

Formulas

$$\boldsymbol{MPC = \frac{\Delta C}{\Delta Y_d}}$$
$$\boldsymbol{MPS = \frac{\Delta S}{\Delta Y_d}}$$
$$\boldsymbol{MPC + MPS = 1}$$

Country Comparison

Developed Countries

- Lower MPC (more saving)
- Higher MPS

Developing Countries

- Higher MPC (more spending due to basic needs)
- Lower MPS

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11. Video Summaries

Video 1 – Economic Indicators

- Helps in decision-making, forecasting, confidence analysis
- Leading, lagging, coincident indicators
- Important indicators: GDP, CPI, unemployment, industrial production

Video 2 – Aggregate Demand & Supply

- AD formula
- Causes of changes: recession, crisis, interest rate, exchange rate

Video 3 – Shifts in AD & AS

- Demand shifts due to fiscal, monetary, global conditions
- Supply shifts due to wages, input price, policies

Video 4 – Investment Function & Multiplier

- Effective demand: Y = C + I
- Household, corporate, govt investment
- Multiplier formula

- Consumption & savings functions

SUMMARY DOCUMENT – WEEK 11 (Managerial Economics)

Topics: Money Supply • Banking • Credit Creation • Inflation • WPI/CPI • Unemployment • Okun's Law • Phillips Curve • NAIRU • Beveridge Curve

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1. Money and Banking

Meaning of Money

Crowther:

"Anything generally acceptable as a means of exchange, and at the same time acts as a measure and store of value."

Functions of Money (Diagram on Page 6)

- Primary: Medium of Exchange, Measure of Value
- Secondary: Store of Value, Standard of Deferred Payment
- Contingent: Basis of Credit, Distribution of National Income, Transfer of Value

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Role of Banks in Economy

1. Financial Intermediaries – connect savers & borrowers
2. Capital Allocation – channel funds to investment
3. Safekeeping of Funds – secure deposits
4. Stimulate Economic Growth – loans to firms
5. Circular Flow Facilitation – move funds between households, firms, govt.

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2. Stock of Money & Money Supply

Stock of Money =

- Currency notes + coins
- Demand deposits
- Reserves with RBI + banks

Money Supply =

Money available for spending at a point in time (currency + deposits + near money).

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3. Sources of Money Supply

1. Commercial Banks – create credit via lending
2. Central Bank (RBI) – prints currency, controls money
3. Government – fiscal spending injects money; taxes withdraw money

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4. Measuring Money Supply (M1, M2, M3, M4)

Aggregate	Components
M1	Currency with public + Demand Deposits
M2	M1 + Post Office savings
M3	M1 + Time Deposits
M4	M3 + All Post Office Deposits

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5. Money Supply Depends On...

1. Interest Rate (r)
    - ↑ r → ↓ money demand → ↓ money supply
2. Disposable Income (Yd)
    - ↑ income → ↑ money demand
3. Employment
4. Tax
5. Exports
6. Imports

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6. Credit Creation by Banks

Process

a. Initial Deposit
b. Reserve Requirement (CRR)
c. Excess Reserves
d. Loans → create new deposits
e. Multiplier Effect
f. Cycle Repeats
g. Central Bank influences with CRR, SLR, OMO

Key Concepts

- Primary Deposits – cash → deposit (no credit created)
- Secondary/Derivative Deposits – created through loans
- CRR – fraction banks must keep with RBI
- Excess Reserves – used for lending
- Credit Multiplier:

$$\text{Multiplier} = \frac{1}{CRR}$$

Credit Creation Example *(Table on Page 14)*

- Initial deposit = ₹1000
- CRR = 20%
- Excess reserves = ₹800
- Total derivative deposits = ₹4000
- Total deposits = ₹5000
- Credit multiplier = 5

---

7. Inflation

Meaning
Sustained rise in general price level → fall in purchasing power.
Measured by:

- WPI – wholesale inflation (page 15)
- CPI – consumer inflation (page 15)

---

8. Types of Inflation

1. Demand-Pull Inflation – AD > AS
2. Cost-Push Inflation – input costs ↑
3. Built-In/Wage-Price – wage–price spiral
4. Hyperinflation – extremely high price rise
5. Open Inflation – visible & anticipated
6. Suppressed Inflation – govt price control
7. Core Inflation – excludes food & energy shocks

(Demand-pull and cost-push diagrams on page 16)

---

9. Price Level Concepts

- Inflation – prices rising
- Deflation – prices falling
- Stagflation – inflation + unemployment
- Disinflation – slowing inflation
- Reflation – policy to counter deflation

---

10. Causes of Inflation

Internal Causes

- Increase in taxes
- Lower interest rates
- Higher wages

- Wealth effect
- Money supply increase
- Deficit financing
- Decrease in production

External Causes

- Crude oil price ↑
- Rupee depreciation
- Higher import prices
- Inflation abroad
- Exports increase

---

11. Stages of Inflation

Type	Rate
Creeping	0–3%
Walking	3–7%
Running	10–20%
Hyperinflation	20%+

---

12. Inflation Measurement in India

Measured by CPI, WPI, published by CSO (MOSPI).

---

13. Adjusting Prices Using CPI

Formula:

$$\text{Adjusted Price} = \frac{CPI_{current}}{CPI_{past}} \times \text{Original Price}$$

---

14. Unemployment

Definition

People willing and seeking work but unable to find it.

NSSO Guidelines

- Uses 365-day, 7-day, daily status reference periods
- Labour force = employed + unemployed
- Unemployment Rate:

$$\frac{\text{Unemployed}}{\text{Labour Force}} \times 100$$

Natural Rate of Unemployment

- Comprises frictional + structural unemployment
- Exists even during normal economy

---

15. Types of Unemployment

- Frictional – job search
- Structural – skill mismatch
- Cyclical – recession
- Seasonal – agriculture, tourism
- Technological – automation
- Hidden/Underemployment
- Disguised – more workers than needed

---

16. Okun's Law

For every 1% increase in unemployment above natural rate, GDP falls by 2–3%.

Formula:

$$\%\Delta GDP \approx -2(\Delta U)$$

---

17. Phillips Curve

Shows inverse relationship between inflation & unemployment in short run.

Key points:

- Short run trade-off
- Long run curve vertical (no trade-off)
- Expectations matter
- Explains policy dilemma

---

18. NAIRU

Non-Accelerating Inflation Rate of Unemployment

- Unemployment rate at which inflation is stable
- If unemployment < NAIRU → inflation accelerates

---

19. Beveridge Curve

Shows inverse relation between:

- Job vacancies
- Unemployment rate

Downward sloping; indicates labour market efficiency.

SUMMARY DOCUMENT – WEEK 12 (Managerial Economics)

Topics: Interest Rates • Exchange Rates • CPI vs WPI • Stock Market • Index of Industrial Production (IIP)

---

1. Interest Rates

Definition

Interest rate = *Cost of borrowing* or *Return on investment*. Expressed as % of principal.

Components of Interest Rates

- Nominal Interest Rate
- Real Interest Rate
- Effective Interest Rate
- Simple Interest
- Compound Interest
- Risk-Free Rate
- Market Interest Rate
- Lending & Borrowing Rate

Banks earn profits because:

They charge higher rates on loans and pay lower rates on deposits.

---

2. Effects of Rising Interest Rates

General Effects

1. Borrowing becomes expensive
2. Loan repayments increase → disposable income falls
3. Savings become more attractive
4. Currency appreciates due to hot money inflows
5. Exports become costlier; import demand rises
6. Asset prices (housing, equity) fall

Effects on Individuals

- Higher loan & mortgage costs
- Better returns on savings
- Lower confidence & borrowing
- Bank lending increases (due to better returns)

Effects on Economy

- Currency appreciates
- Exports fall
- Inflation declines
- GDP growth slows
- Unemployment may rise
- Govt borrowing cost increases

---

3. Exchange Rates

Factors Affecting Exchange Rates

1. Inflation
2. Interest Rates
3. Speculation
4. Competitiveness
5. Strength of other currencies
6. Balance of Payments
7. Government debt & intervention
8. Economic growth/recession

Interest Rate–Exchange Rate Relationship

Higher interest rate → attracts foreign capital → currency appreciates.

Example (page 4):

- Country A: 8% inflation, 8% interest → real interest = 0%
- Country B: 4% inflation, 5% interest → real interest = 1%
  Investment flows to Country B because of:
- Positive real interest
- Lower inflation → stability

---

4. Inflation, Interest Rates & Currency Value

Higher inflation → currency depreciates because:

- Goods become less competitive
- Demand for domestic goods falls
- Imports become expensive

Hot Money Flow Mechanism (Page 4–5)

a. Interest rate rises
b. Higher return on deposits
c. Foreign investors buy domestic currency
d. Currency appreciates

---

5. CPI and WPI

WPI (Wholesale Price Index)

- Measures inflation at wholesale level
- Published by Office of Economic Advisor, Ministry of Commerce
- Covers 697 items
- Earlier used by RBI for policy decisions (before 2014)
- *Does not include services*

CPI (Consumer Price Index)

- Measures retail inflation
- Published by NSO (MOSPI)
- Includes services like housing, education, medical care
- Items: 448 (rural), 460 (urban)
- Used for:
    - Purchasing power studies
    - DA revision
    - Real income estimation
    - Cost of living comparison

Difference Between CPI and WPI (Table on Page 7)

Parameter	**CPI**	**WPI**
Measures	Retail prices	Wholesale prices
Publisher	NSO/MOSPI	Office of Economic Advisor
Frequency	Monthly	Weekly (components), Monthly
Includes Services	Yes	No
Items	448 rural, 460 urban	697
Food Weight	39%	24%
Stage	Final consumer	First transaction stage

Why RBI uses CPI?

- Includes services
- More relevant for common people
- Better reflects actual cost of living

---

6. Stock Market

Meaning

A marketplace where investors buy/sell shares, bonds, and other securities.

Importance

- Companies raise capital
- Investors earn dividends & capital gains
- Stock market is a leading economic indicator

Why Stock Prices Are Leading Indicators?

1. Reflect expectations of:
    - Earnings
    - Dividends
    - Interest rates
2. React to leading indicators like:
    - Corporate margins
    - Money supply growth

Major Stock Indices in India

- BSE Sensex
- Nifty 50
- Finnifty
- Nifty IT
- Nifty FMCG
- Nifty Pharma
- Nifty Energy
- Nifty Auto

Economic Effects of Stock Market

1. Wealth Effect
Fall in stock prices → lower wealth → reduced spending.

2. Pension Funds
Lower share prices → pension fund values decline.

3. Consumer Confidence

Falling stock market reduces confidence; rising market boosts it.

4. Business Investment
Firms find it harder to raise finance during market declines.

5. Bond Market Impact
Investors shift money from stocks → bonds/gold when markets fall.

---

7. Stock Prices, Money Supply & IIP

Money Supply vs Stock Prices

- High money supply → higher liquidity → stock market rises
- Low money supply → stocks become unattractive

Stock Prices & IIP (Page 12, Page 18)

- Low IIP → low production → low sales & profits → stock prices fall
- Continuous fall in IIP → fundamentally strong stocks become undervalued → good buying opportunity

---

8. Index of Industrial Production (IIP)

Meaning

IIP measures industrial activity across sectors like manufacturing, mining, electricity.

Published by Central Statistical Organisation (CSO) monthly.
(*Now part of NSO.*)

Importance of IIP

- Used for policymaking (Finance Ministry, RBI)
- Estimates Gross Value Added (GVA)
- Helps project GDP growth
- Only measure of physical industrial volume

IIP Latest Changes

- Base year revised to 2011–12
- 697 items included
- 9th revision since 1950

Core Industries in IIP

Industry	Weight (%)
Coal	10.33
Electricity	19.85
Crude Oil	8.98
Natural Gas	6.88
Refinery Products	28.04
Steel	17.92
Cement	5.37
Fertilizers	2.63
Total	**100**

These account for 40.27% of total IIP weight.

Basket of Products in IIP

Six categories:

1. Primary goods (mining, electricity, fuels)
2. Capital goods (machinery)
3. Intermediate goods (steel, yarn, chemicals)
4. Infrastructure goods (cement, paint, cables)
5. Consumer durables (vehicles, appliances)
6. Consumer non-durables (food, medicines, toiletries)

IIP & Economic Growth

- Measures short-term changes in industrial output
- Indicates economic health & growth prospects
- Used for physical output measurement

SUMMARY DOCUMENT – WEEK 13 (Managerial Economics)

Topics: Fiscal Policy • Fiscal Instruments • Monetary Policy • Monetary Tools • Economic / Business Cycle

---

1. Fiscal Policy

Definition

Fiscal Policy = Government's use of taxation and public expenditure to influence macroeconomic conditions (growth, employment, stability).

Key Points about Indian Fiscal Policy

- Dual Objectives: Economic growth + Social justice
- Budgetary Process: Annual Union Budget outlines revenues & expenditures
- Taxation Policies: Direct taxes (Income Tax, Corporate Tax), Indirect taxes (GST)
- Public Expenditure: Infrastructure, education, health, social welfare
- Fiscal Deficit Management: Keeping deficits within target for stability
- Counter-Cyclical Measures:
    - Recession → increase spending, cut taxes
    - Inflation → reduce spending, increase taxes
- Debt Management: Sustainable borrowing
- Subsidy Rationalization: Reduce burden, target deserving beneficiaries
- Structural Reforms: GST, labour code reforms, ease of doing business
- Global Context: External shocks, trade policy & global trends influence fiscal stance

---

Objectives of Fiscal Policy

1. Price Stability – Control inflation/deflation using taxes & spending
2. Exchange Rate Stability – Strong fiscal stance improves currency stability
3. Financial Stability – Prevent crises & ensure confidence
4. Output Stability – Smooth business cycles
5. Employment & Growth – Enable full employment & long-term growth

---

Types of Fiscal Policy

- Expansionary → Increase spending / reduce taxes (during recession)
- Contractionary → Reduce spending / increase taxes (during inflation)
- Neutral → Balanced fiscal stance
- Progressive / Regressive / Proportional → Based on tax structure
- Discretionary → Deliberate policy changes
- Non-Discretionary (Automatic stabilizers) → Unemployment benefits, welfare
- Fiscal Austerity → Lower spending during high deficits
- Fiscal Stimulus → Higher spending to boost AD

Three Key Formats of Fiscal Policy

1. Compensatory Fiscal Policy

- Surplus or deficit budgets
- Expansionary vs Contractionary stance

2. Discretionary Fiscal Policy

- Policy changes based on economic conditions

3. Countercyclical Fiscal Policy

- Downturn → Expansionary
- Booms → Contractionary

4. Rule-Based Fiscal Policy

- Fiscal Responsibility Act, debt ceilings, etc.

---

2. Fiscal Instruments

A. Budgetary Policy

Budgetary decisions on taxation + government spending.

Types of Budgets

- Surplus Budget: Revenue > expenditure
- Deficit Budget: Expenditure > revenue

Budget used to influence:

- Private disposable income
- Consumption
- Savings
- Trade (exports & imports)
- Price levels

B. Crowding-Out vs Crowding-In

Crowding Out

- Govt borrowing ↑ → interest rates ↑ → private investment ↓
- Happens when economy is near full capacity

Crowding In

- Govt spending ↑ → boosts demand → stimulates private investment
- Happens mainly during recession

Factors: Interest rates, economic slack, policy coordination.

C. Fiscal Discipline

Indicators:

- Fiscal deficit
- Debt-to-GDP
- Budget transparency
- Fiscal rules adherence
- Revenue & expenditure management
- Structural reforms
- Macro stability
- Independent fiscal councils

D. Definitions

Budgetary Deficit

$$\text{Budget Deficit} = \text{Revenue Expenditure} - \text{Revenue Receipts}$$

Fiscal Deficit

$$\text{Fiscal Deficit} = \text{Total Expenditure} - (\text{Tax Revenue} + \text{Loan Recovery} + \text{Other Receipts})$$

---

3. Monetary Policy

Definition

Monetary Policy = Central Bank's regulation of:

- Interest rates
- Money supply
- Credit availability

To achieve stability & growth.

In India:

Monetary policy is conducted by the RBI.

Objectives of Monetary Policy

1. Price Stability (primary objective)
2. Economic Growth
3. High Employment
4. Equity
5. Balance of Payments Stability

Types of Monetary Policy

1. Expansionary MP

- Lower interest rates
- Increase money supply
- Purchase government securities
- Reduce CRR & SLR

2. Contractionary MP

- Increase interest rates
- Reduce money supply
- Sell securities
- Raise CRR & SLR

Monetary Policy Instruments *(Pages 18–19)*

1. Repo Rate – Rate at which RBI lends to banks
2. Reverse Repo Rate – Rate at which RBI absorbs liquidity
3. LAF (Liquidity Adjustment Facility) – Repo + Reverse repo auctions
4. MSF (Marginal Standing Facility) – Emergency lending at penal rate
5. Bank Rate – Rate for rediscounting bills
6. CRR – Cash reserves banks must maintain with RBI
7. SLR – Proportion of deposits to be held in govt securities/cash/gold
8. Open Market Operations (OMO) – Buying/selling govt securities
9. MSS – Sterilization using govt treasury bills
10. MCLR – Benchmark lending rate for banks

---

4. Business / Economic Cycle

Definition

Periodic fluctuations in economic activity over time.

Key Drivers

- Consumer & business confidence
- Interest rates
- Fiscal & monetary policies
- Global conditions

Stages of Business Cycle

1. Expansion

- GDP ↑
- Employment ↑
- Income ↑
- High confidence
- Investment ↑

- AD expands

2. Peak

- Maximum output
- Full capacity
- Inflation pressures build
- Central bank may raise rates

3. Recession

- Output ↓
- Employment ↓
- Investments ↓
- Income ↓
- Rising unemployment

4. Depression

- Severe recession
- Prolonged low output
- Business failures
- Low confidence

5. Recovery

- GDP starts rising
- Employment improves
- Investment picks up
- Confidence returns

---

5. Video Summary Section

Video 1 – Fiscal Policy

- Objectives: stability, growth, employment
- Types: compensatory, discretionary, countercyclical, rule-based

Video 2 – Fiscal Instruments

- Budgetary policy: surplus vs deficit
- Taxation, govt borrowing, deficit financing
- Crowding-out & crowding-in
- Fiscal deficit formula

Video 3 – Monetary Policy

- Objectives: price stability first, then growth
- Tools: CRR, SLR, OMO, repo, reverse repo, MSF, bank rate
- Expansionary vs contractionary MP

Video 4 – Business Cycle

- 5 phases: expansion → peak → recession → depression → recovery
- Drivers: GDP, employment, consumption changes

SUMMARY DOCUMENT – WEEK 14 (Managerial Economics)

Topics: Circular Flow • National Income • GDP Measurement • Forex Market • Exchange Rates • International Trade • Balance of Payments • Globalisation • Impossible Trinity

---

1. Circular Flow of Income

Meaning

Circular flow = continuous movement of income, goods/services & factors of production between households and firms.

Households

- Own factors (land, labour, capital, entrepreneurship)
- Earn income (wages, rent, interest, profit)
- Consume goods & services

Firms

- Produce goods/services
- Pay factor incomes to households
- Sell output to earn revenue

Financial Institutions

- Mobilize savings → investment
- Provide credit to households & firms

Government

- Collects taxes
- Provides public goods/services
- Regulates economy

Foreign Sector

- Exports, imports
- Capital inflow/outflow
- Affects Balance of Payments

---

2. Models of Circular Flow

Week14_StudyMaterial_Managerial...

1. Two-Sector Model

- Sectors: Households + Firms
- Equilibrium:

$$Y = E = O$$

(Income = Expenditure = Output)

2. Three-Sector Model

Adds Government

- Taxes → leakages
- Govt spending/subsidies → injections

3. Four-Sector Model

Adds Financial Sector

- Savings → leakages
- Investment → injections

4. Five-Sector Model

Adds Foreign Sector (Rest of the World)

- Exports, imports, capital flows

Diagram on pages 6–8 clearly illustrates all four models.

---

3. Leakage & Injection

Leakages

Withdrawals from circular flow:

- Savings
- Taxes
- Imports

Injections

Add to circular flow:

- Investment
- Government spending
- Exports

Equilibrium Condition

$$S + T + M = I + G + X$$

If not equal → disequilibrium.

---

4. Significance of Circular Flow

- Helps measure national income
- Shows interdependence among sectors
- Demonstrates continuous nature of economic activity
- Analyses leakages & injections

---

5. National Income & GDP Concepts

National Income (NI)

Value of total goods & services produced net of duplication in one year.

GDP (Gross Domestic Product)

$$GDP = C + I + G + (X - M)$$

Includes final goods produced within domestic boundaries.

GNP (Gross National Product)

$$GNP = GDP + (X–M)$$ (Net factor income from abroad)

GNP includes income earned by nationals abroad.

NNP (Net National Product)

$$NNP = GNP - Depreciation$$

National Income (NNP at factor cost)

$$NNP_{FC} = NNP_{MP} - (Indirect\ taxes - Subsidies)$$

---

6. Personal Income & Disposable Income

Personal Income (PI)

$PI = NI$ − Corporate taxes − Undistributed profits − Social security payments + Transfer payments

Disposable Personal Outlay

$$\text{Disposable Outlay} = DI - Savings$$

---

7. Three Methods of Measuring National Income

---

1. Product Method (Output Method)

- Value of final goods/services
- Uses value added approach
- Steps include identifying sectors, deducting intermediate consumption, adding NFA from abroad

Limitations

- Double counting
- Difficult in service sector
- Excludes non-market output

---

2. Income Method

- **Sums factor incomes:**
  - Wages
  - Rent
  - Interest
  - Profits
  - Mixed income

$$\boldsymbol{NI = COE + Operating\ Surplus}$$

Limitations

- Non-monetary income ignored
- Informal sector difficult to capture

---

3. Expenditure Method

$$\boldsymbol{GDP = C + I + G + (X - M)}$$

Limitations

- Barter not counted
- Own consumption ignored
- Inflation affects estimation

---

8. Problems in National Income Measurement

- Non-market services excluded
- Environmental degradation not counted
- Sampling difficulties
- Illegal activities not included
- Depreciation estimation issues
- Double counting risk

---

9. Forex Market

Key Features

- Currencies traded in pairs
- OTC market → no central exchange
- Major centres: London, New York, Tokyo
- Participants: Central banks, commercial banks, MNCs, investors, individuals

Important Terms

- Bid–Ask
- Spread
- Leverage & Margin

---

10. Determinants of Forex Activity

1. Exchange Rate

- BOP surplus → rupee demand ↑ → rupee appreciates
- Imports cheaper, exports fall

2. National Income (Y)

- ↑Y → ↑imports → rupee supply ↑
- But higher growth attracts foreign investment → rupee appreciates

3. Interest Rate

- High rates → capital inflow → rupee appreciates

4. Price Level (Inflation)

- High inflation → exports costly → rupee depreciates

Terms of Trade

$$ToT = \frac{\text{Price of exports}}{\text{Price of imports}} \times 100$$

---

11. International Trade

Key Ideas

- Based on comparative advantage
- Leads to efficiency & specialization
- Exchange of goods, services, capital
- Involves trade surplus, deficit
- Affected by exchange rates

Role of WTO

- Trade negotiations
- Dispute resolution
- Reducing trade barriers

---

12. Globalisation

Includes:

- Movement of goods, services, capital, people, technology, ideas
- Driven by communication & transport technology
- Led by MNCs, global supply chains
- Cultural exchange, social integration

---

13. Balance of Payments (BOP)

(Pages 20–22)

Week14_StudyMaterial_Managerial...

Components

1. Current Account

- Trade balance (goods)
- Services balance
- Income (dividends, interest)
- Transfers (remittances, gifts)

2. Capital Account

- FDI
- FPI
- External borrowings

- NRI deposits

3. Official Reserves

- Forex reserves
- Gold
- SDRs

BOP Surplus

Demand for rupee > supply → rupee appreciates

BOP Deficit

Supply of rupee > demand → rupee depreciates

---

14. Key Relations

- Closed Economy:

$$S = I$$

- Open Economy:

$$S = I + NX$$

---

15. Impossible Trinity (Mundell–Fleming Trilemma)

Week14_StudyMaterial_Managerial...

A country cannot simultaneously have all 3:

1. Fixed exchange rate
2. Free capital movement
3. Independent monetary policy

Can choose any two, but must sacrifice the third.
Examples:

- China: Fixed FX + independent MP → restricted capital flows
- US: Free capital flow + independent MP → floating exchange rate

---