CHAPTER 4
CONSUMPTION AND INVESTMENT FUNCTIONS

This chapter deals with

- Consumption Function – its meaning, its technical attributes
- Keynes' Psychological Law of Consumption
- Determinants of Consumption Function
- Investment Function – its meaning, its types, determinants
- MEC & MEI
- Multiplier – its working, classification, leakages, uses
- The Accelerator Principle – its meaning and operation
- Super Multiplier and Leverage Effect

CONSUMPTION FUNCTION

MEANING:

The consumption function or propensity to consume refers to income consumption relationship.

Symbolically, **C = f(Y)**,

C = Consumption Y = Income f = Function

Thus the consumption function indicates a functional relationship between C and Y, where C is the dependent variable and Y is the independent variable,

TECHNICAL ATTRIBUTES OF CONSUMPTION FUNCTION

i) The Average Propensity to Consume

$$\mathbf{APC = C/Y}$$

ii) The Marginal Propensity to Consume

$$\mathbf{MPC = \Delta c\ \Delta y}$$

iii) The Average Propensity to Save

$$\mathbf{APS = S/Y}$$

iv)) The Marginal Propensity to Save

$$\mathbf{MPS = \Delta s\ \Delta y}$$

$$\mathbf{MPC + MPS = 1}$$

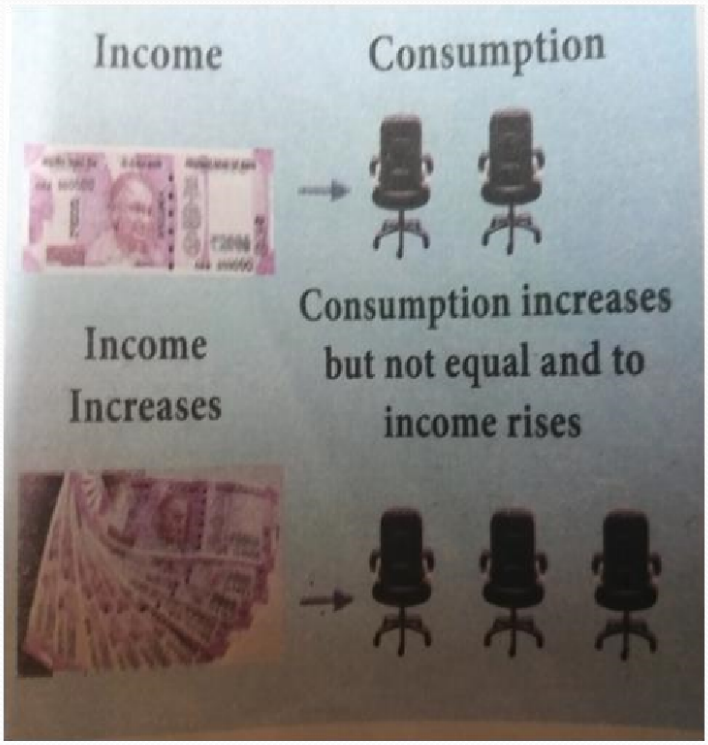
$$\mathbf{MPS = 1 - MPC} \quad \text{and} \quad \mathbf{MPC = 1 - MPS}$$

KEYNES' PSYCHOLOGICAL LAW OF CONSUMPTION

Assumptions:

The law implies that there is a tendency on the part of the people to spend on consumption less than the full increment of income.

1. Ceteris paribus (constant extraneous variables):
2. Existence of Normal Conditions:
3. Existence of a Laissez-faire Capitalist Economy



Propositions of the Law:

(1)When income increases, consumption expenditure also increases but by a smaller amount.

(2) The increased income will be divided in some proportion between consumption expenditure and saving.

(3) Increase in income always leads to an increase in both consumption and saving

Table 3. The three propositions of the law

Income Y	Consumption C	Savings S = Y - C
120	120	0
180	170	10
240	220	20

DIAGRAM EXPLANATION

Proposition (1):

When Y increases from **120** to 180 C also increases from 120 to 170 but the increase in C is less than the increase in Y, **10** is S.

Proposition (2):

When Y increases to 180 and 240, it is divided in some proportion between C by 170 and 220 and S by 10 and 20 respectively.

Proposition (3):

Increases in Y to 180 and 240 lead to increased C 170 and 220 and increased S 20 and 10 than before. It is clear from the widening area below the C curve and the saving gap between 45° line and C curve.

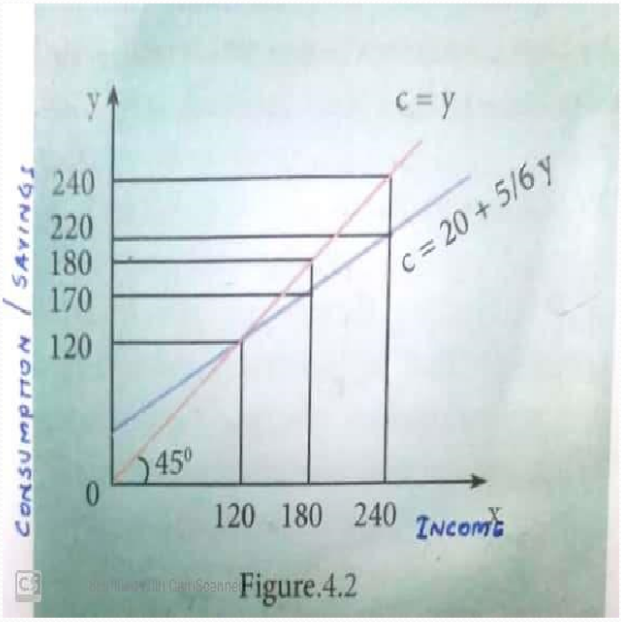


Figure.4.2

DETERMINANTS OF CONSUMPTION FUNCTION

SUBJECTIVE FACTORS

1.The motive of precaution
2.The motive of foresight
3.The motive of calculation
4.The motive of Improvement
5. The motive of financial independence.
6. The motive of enterprise
7. The motive of pride
8. The motive of avarice

OBJECTIVE FACTORS

1. Income distribution
2. Price level
3. Wage Level
4. Interest Rate
5. Fiscal Policy
6. Consumer Credit
7. Demographic Factors
8. Duesenberry Hypothesis (2 factors)
9. Windfall Gains

INVESTMENT FUNCTION

- The investment function refers to investment -interest rate relationship.

$$\mathbf{I = f\ (r)}$$

- I= Investment (Dependent variable) r = Rate of interest (Independent variable)
- **Meaning of investment**
- The term investment means purchase of stocks and shares,
- In the views of **Keynes**, Investment includes expenditure on capital investment debentures, government bonds and equities.

TYPES OF INVESTMENT

- i) **Autonomous investment**: Autonomous investment is the expenditure on capital formation, which is independent of the change in income, rate of interest or rate of profit.
- ii) **Induced investment**: Induced investment is the expenditure on fixed assets and stocks which are required when level of income and demand in an economy goes up.

	AUTONOMOUS INVESTMENT	INDUCED INVESTMENT
1.	Independent	Planned
2.	Income inelastic	Income elastic
3.	Welfare motive	Profit motive

Determinants of Investment Function

1. Rate of interest
2. Level of uncertainty
3. Political environment
4. Rate of growth of population
5. Stock of capital goods
6. Necessity of new products
7. Level of income of investors
8. Inventions and innovations
9. Consumer demand
10. Policy of the state
11. Availability of capital
12. Liquid assets of the investors

MARGINAL EFFICIENCY OF CAPITAL

- MEC was first introduced by **J.M Keynes** in 1936.
- It may be defined as the highest rate of return over cost expected from the additional unit of capital asset.
- **MEC depends on two factors**:
- 1. The prospective yield from a capital asset.
- 2. The supply price of a capital asset.
- **Factors Affecting MEC:**
- The cost of the capital asset
- The expected rate of return from during its lifetime
- The market rate of interest

FACTORS THAT INFLUENCE MEC

SHORT RUN FACTORS

- Demand for the product
- Liquid assets
- Sudden changes in income
- Current rate of investment
- Waves of optimism and pessimism

LONG RUN FACTORS

* Rate of growth of population
* Technological progress
* Monetary and Fiscal policies
* Political environment
* Resource availability

MARGINAL EFFICIENCY OF NVESTMENT

- MEI is the expected rate of return on investment as additional units of investment are made under specified conditions and over a period of time.

- When cost of borrowing is high, businesses are less motivated to borrow money and make investment on different projects because high cost of borrowing reduces profit margin of the business firms;

MEC vs MEI

Marginal Efficiency of Capital(MEC)	Marginal Efficiency of Investment(MEI)
1) It is based on a given supply price for capital.	1) It is based on the induced change in the price due to change in the demand for capital.
2) It represents the rate of return on all successive units of capital without regard to existing capital.	2) It shows the rate of return on just those units of capital over and above the existing capital stock.
3) The capital stock is taken on the X axis of diagram.	3) The amount of investment is taken on the X - axis of diagram.
4) It is a "stock" concept.	4) It is a "flow" concept.
5) It determines the optimum capital stock in an economy at each level of interest rate.	5) It determines the net investment of the economy at each interest rate given the capital stock.

MULTIPLIER

- The multiplier is defined as the ratio of the change in national income to change in investment.

$$K = \Delta Y / \Delta I$$

- ΔI stands for increase in investment
- ΔY stands for resultant increase in income,

$$MPC = \Delta C / \Delta Y$$

- The value of multiplier depends on MPC

$$\text{Multiplier}(K) = 1/1\text{-MPC}$$

- Numerically if MPC is 0.75, MPS is 0.25 and k is 4.

POSITIVE MULTIPLIER AND NEGATIVE MULTIPLIER EFFECTS

POSITIVE MULTIPLIER

When an initial increases in an injection (or a decrease in a leakage) leads to a greater final increase in real GDP.

NEGATIVE MULTIPLIER

When an initial increases in an injection (or an increase in a leakage) leads to a greater final decrease in real GDP

WORKING OF MULTIPLIER

WORKING OF MULTIPLIER

GIVEN

$\Delta Y = 100 + (100 \times .8) + (100 \times .8^2) + (100 \times .8^3) - - - -$ (or)

$\Delta Y = 100 + 80 + 64 + 54 + 43.2 \; - - - \; - -$

MPC $= .8$

Illustration

(a) $C = 100 + .8Y$, $I = 100$, we know $Y = C + I$

$Y = 100 + 0.8Y + 100$

$1Y - .8Y = 200$

$.2Y = 200$

$Y = \frac{200}{.2} = 1000$

(b) If $I = 0$

$Y = C + I$

$Y = 100 + .8Y$

$1Y - .8Y = 100$

$.2Y = 100$

$Y = \frac{100}{.2} = 500$

(c) If $I = 100 + 10 = 110$

$Y = C + I$

$Y = 100 + .8Y + 110$

$1Y - .8Y = 210$

$.2Y = 210$

$Y = \frac{210}{.2} = 1050$

(a) Point A, $Y = C = 500$

I (or) $S = 0$

(b) Point B, $Y = 1000$, $C = 900$, $I = 100$

(c) Point C, $Y = 1050$, $C = 940$, $I = 110$

When I is increased by 10 [i.e) 110 − 100], Y is increased by 50 (i.e 1050 − 1000)

Multiplier $k = \frac{\Delta Y}{\Delta I}$

$k = \frac{50}{10} = 5$

here, $\Delta Y = (1050 - 1000)$

$\Delta I = (110 - 100)$

$\therefore$ Multiplier $\boxed{k = 5}$

LEAKAGES OF MULTIPLIER

- Payment towards past debts.
- Purchase of existing wealth
- Import of goods and services
- Non availability of consumer goods
- Full employment situati

KINDS OF MULTIPLIER

- 1. Tax multiplier
- 2. Employment multiplier
- 3. Foreign Trade multiplier
- 4. Investment Multiplieron

THE ACCELERATOR PRINCIPLE

Meaning:

- A given increase in the demand for consumption goods in the economy generally leads to an accelerated demand

Accelerator Effects

- Increase in consumer demand
- Films get close to fill capacity
- Films invest to meet rising demand
- for machineries (investment goods).

$$\textbf{Accelerator } (\beta) = \Delta C / \Delta I$$

ΔI = Change in investment outlays

ΔC = Change in consumption demand

ACCELERATOR

- **DEFINITION:**

"The accelerator coefficient is the ratio between induced investment and an initial change in consumption."

- **Eg:** Assuming the expenditure of ₹50crores on consumption goods, if industries lead to an investment of ₹ 100 crores in investment goods industries, we can say that the accelerator is 2.

- Accelerator = $(\beta) = \Delta C / \Delta I$

- Accelerator = 100/50 = 2

Operation of the Acceleration Principle

Assumptions

- 1. Absence of excess capacity in consumer goods industries.
- 2. Constant capital - output ratio
- 3. Increase in demand is assumed to be permanent
- 4. Supply of funds and other inputs is quite elastic
- 5. Capital goods are perfectly divisible in any required size.

OPERATION OF THE ACCELERATION PRINCIPLE

Suppose that demand for consumer goods rises by 10 percent (ie from 1000 to 1100). This results in increase in demand for 10 more machines. So that total demand for machines is 20. (10 for replacement and 10 for meeting increased demand). It may be noted here a 10 percent increase in demand for consumer goods causes a 100 percent increase in demand for machines (from 10 to 20). So we can conclude even a mild change in demand for consumer goods will lead to wide change in investment

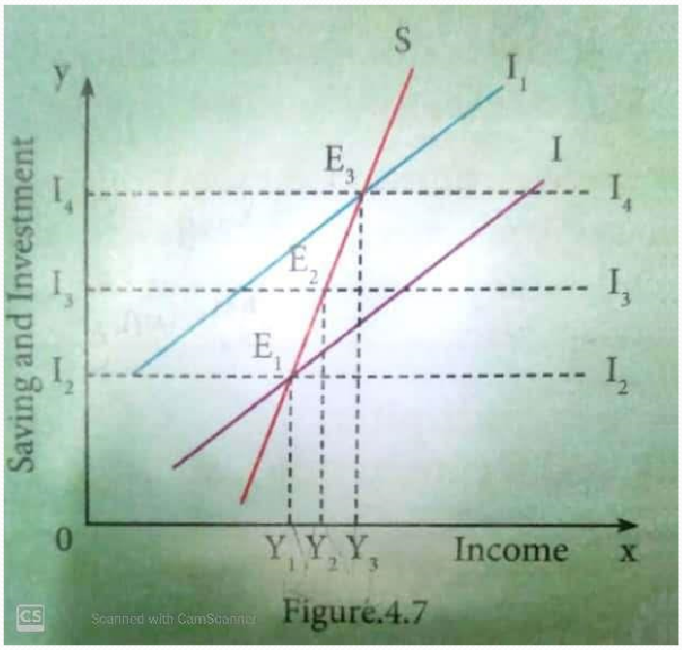


Figure.4.7

SS is the saving curve. II is the investment curve. At point E1, the economy is in equilibrium with OY1 income. Saving and investment are equal at OI2. Now, investment is increased from OI2 to OI4.

This increases income from OY1 to OY3, the equilibrium point being E3. If the increase in investment by I2 I4 is purely exogenous, then the increase in income by Y1 Y3 would have been due to the multiplier effect. But in this diagram it is assumed that exogenous investment is only by I2 I3 and induced investment is by I3 I4. Therefore, increase in income by Y1 Y2 is due to the multiplier effect and the increase in income by Y2 Y3 is due to the accelerator effect.

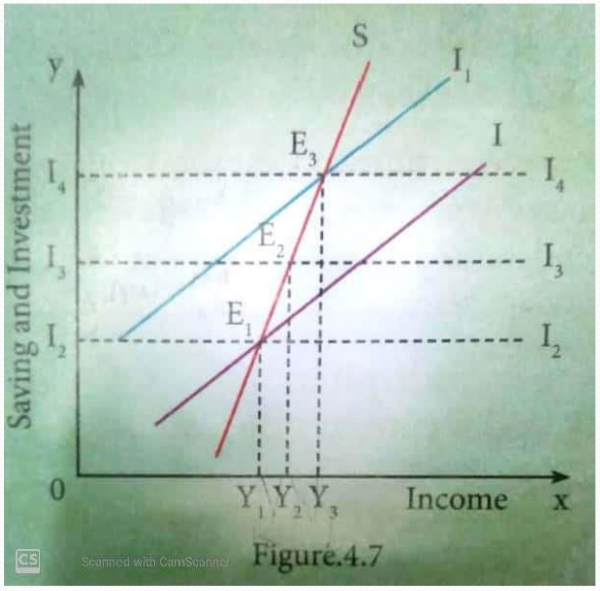


Figure.4.7

LIMITATIONS OF ACCELERATOR

1. The assumption of constant capitaloutput ratio is unrealistic.
2. Resources are available only before full employment.
3. Excess capacity in capital goods industries is assumed.
4. Accelerator will work only if the increased demand is permanent.
5. Accelerator will work only when credit is available easily.
6. If there is unused or excess capacity in the consumer goods industry, the accelerator principle would not work

SUPER MULTIPLIER (k and β Interactions)

- The super multiplier is greater than simple multiplier which includes only autonomous investment and no induced investment, while super multiplier includes induced investment.
- Hicks has combined the k and β mathematically and given it the name of the Super Multiplier.
- The super multiplier is worked out by combining both induced consumption and induced investment.

LEVERAGE EFFECT

The combined effect of the multiplier and the accelerator is also called the leverage effect which may lead the economy to very high or low level of income propagation.

Symbolically $Y = C + I_A + I_P$

Y = Aggregate income.

C = Consumption expenditure

I_A = autonomous investment

I_P = induced private investment