

Q. Define ex ante and ex post.

→ Ex ante refers to the planned or desired values of a variable while ex post means the actual or accounting values of the variable.

To cite an example let us suppose a producer plans to add ₹100 worth good to his stock by the end of the year. His planned investment is therefore, ₹100 in that year. However, due to an unforeseen upsurge of demand for his goods, the volume of his sales exceeds what he had anticipated to sell and to meet this extra demand he has to sell goods worth ₹30 from his stock. Therefore, at the end of the year, his inventory goes up by

$(₹100 - ₹30) = ₹70$ only. Hence his planned / ex ante investment is ₹100 whereas his actual / ^{ex post} ~~exposed~~ investment is ₹70 only.

Q. What are called ^{determined values} exogenous and ^{not determined} endogenous variables?

→ Exogenous variables are those whose values are given from outside while endogenous variables are those whose values are determined within the model.

Q. Define ex ante and ex post saving and investment.

→ Ex ante saving is what the savers plan to save at different levels of income in the economy.

Similarly ex ante investment is what the investors plan to invest at different levels of income.

in the economy.

On the other hand, ex post saving and investment refer to actual saving and investment in the economy. Accordingly, ex post savings are always equal to ex post investment.

Q. Define induced investment and autonomous investment.

→ Induced investment : At higher levels of income, consumption expenditure tends to increase. Increased consumption expenditure raises expected profitability of the producers who accordingly are induced to make greater investment. Thus, induced investment is positively related to ~~the~~ the level of income. [Private investment]

Autonomous investment : An investment which is not influenced by expected profitability or level of income is called autonomous investment. In fact, it is an investment expenditure incurred by the govt. with a view to promoting the level of aggregate demand. [Govt. investment]

Q. Define consumption function, propensity to consume, average propensity to consume (APC) and Marginal Propensity to Consume (MPC).

→ Consumption function expresses the relationship between the income of the economy and the level of consumption made by the households. Thus, algebraically, $C = f(Y)$ where
where,
 C = Consumption of households,
 Y = Disposable income.

The consumption function is based on ~~the~~ Keynes's famous psychological law of consumption. This law states that as income increases, consumption also increases but less than the increase in income. Infact, a true consumption function may be represented as $C = \bar{C} + bY$ where, $C = \bar{C} + bY$ where,

or $C = \text{Consumption}$.

$\bar{C} = \text{Autonomous Consumption (C when } Y=0)$

$b = \text{MPC (Marginal Propensity to consume)}$

$Y = \text{Level of income}$.

Undue consumption in we encounter 2 aspects

A schedule showing various amounts of consumption which correspond to different levels of income is known as propensity to consume. It has two aspects -

i. APC : The ~~an~~ Average Propensity to Consume is the ratio of consumption expenditure to level of income. So, $APC = \frac{C}{Y}$

Eg. : If income (Y) is ₹ 100 cr. and consumption is ₹ 80 cr. then

$$APC = \frac{C}{Y}$$

$$= \frac{80}{100}$$

$$= 0.8 / 80\%$$

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

This indicates that 80% of the income is spent by way of consumption expenditure.

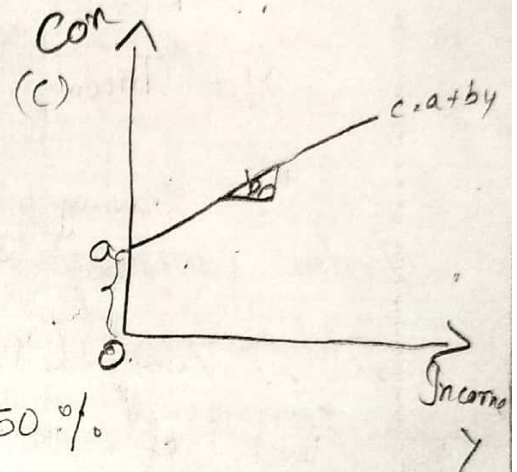
ii. MPC: Marginal Propensity to Consume is the ratio of change in consumption to a change in income.

$$\text{i.e. } MPC = \frac{\Delta C}{\Delta Y}$$

Eg: If income increases from ₹ 100 cr. to ₹ 120 cr. and consumption increases from ₹ 80 cr. to ₹ 90 cr. then,

$$MPC = \frac{\Delta C}{\Delta Y} = \frac{100}{200}$$

$$= 0.5 \text{ or } 50\%$$



This indicates that 50% of the additional income is spent for additional purposes.

Moreover we can say that with the increase in income, consumption exp. also increases ($MPC > 0$). ~~But~~ ^{but} entire increase in income is not spent on consumption (i.e. $MPC < 1$). Hence the value of MPC always lies between 0 and 1.

$$\text{i.e. } 0 \leq MPC \leq 1.$$

Q. Define propensity to ^{save} ~~save~~, average propensity to save (APS) and Marginal propensity to save (MPS)

→ A saving function expresses the relationship between saving (S) and income (Y). Thus $S = f(Y)$

Algebraically it is expressed as,

$$S = -\bar{S} + sY \quad C = \bar{C} + c'Y$$

Here,

S = Saving.

$\bar{S}$ = Autonomous saving. (S when $Y=0$)

s = MPS.

Y = Income.

Saving tends to increase with increase in income. So that there is a positive relationship between income (Y) and saving (S). However, when the level of income is very low and $C > Y$ then, saving is negative. It is a situation of withdrawal from past savings or borrowing money from others.

A ~~Propensity~~ ^{Propensity} to save may be defined as a schedule showing various amount of saving which correspond to different levels of income. Propensity to save has two aspects.

i. APS : Average Propensity to save is the ratio of saving to income. i.e., $APS = \frac{S}{Y}$.

ii. MPS : Marginal Propensity to save is the ratio of change in savings to a change in income. i.e., $MPS = \frac{\Delta S}{\Delta Y}$.

Q. Explain the relationship between

i. APC and APS

ii. MPC and MPS.

→ i. We know that $APC = \frac{C}{Y}$ and $APS = \frac{S}{Y}$

we also know that $Y = C + S$

so that $APC + APS = \frac{C}{Y} + \frac{S}{Y}$

$$= \frac{C + S}{Y}$$
$$= \frac{Y}{Y} \quad [\because Y = C + S]$$
$$= 1$$

$\left\{ \begin{array}{l} Y = C + S \\ \therefore \text{both sides} \\ Y = \frac{C}{Y} + \frac{S}{Y} \\ 1 = APC + APS \end{array} \right.$

We can also write.

$$APC = 1 - APS \quad \text{or} \quad APS = 1 - APC$$

ii. We know that $MPC = \frac{\Delta C}{\Delta Y}$ and $MPS = \frac{\Delta S}{\Delta Y}$

We also know that $\Delta Y = \Delta C + \Delta S$.

so that $MPC + MPS = \frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y}$

$$= \frac{\Delta C + \Delta S}{\Delta Y}$$
$$= \frac{\Delta Y}{\Delta Y} \quad [\because \Delta Y = \Delta C + \Delta S]$$
$$= 1$$

$\left\{ \begin{array}{l} Y = C + S \\ \Delta Y = \Delta C + \Delta S \\ \frac{\Delta Y}{\Delta Y} = \frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y} \\ 1 = MPC + MPS \end{array} \right.$

We can also write.

$$MPC = 1 - MPS \quad \text{or} \quad MPS = 1 - MPC$$

Q. Discuss the concepts of aggregate demand (AD) and aggregate supply (AS) with their different components.

→ Aggregate demand refers to total volume of final goods and services demanded in an ~~an~~ economy during one year. In other words, it implies the total amount of expenditure that people are ready to spend in an economy. Therefore AD and ~~AE~~ aggregate expenditure mean the same thing.

Expenditure incurred by the people becomes revenue at the hands of producers. We can, therefore, define AD as the receipts / revenue which producers of an economy expect to realise from the sale of output during a year.

The main components of AD are consumption demand (C), investment demand (I), ~~govt~~ governments demand for goods and services (G) and Net demand by foreigners i.e. net exports (X - M).

$$\text{Thus, } AD = C + I + G + X - M$$

Following is a brief description about these components.

- i. Private consumption demand / Private consumption expenditure (C) : It implies demand for goods and services by the households of a country. Households make demands for ~~goods~~ a number of goods viz. food, clothes, furniture, tv set, education ~~and~~, health services etc. ~~to~~ However the consumption expenditure that

we are discussing is ex ante or planned consumption expenditure.

ii. Private investment demand / investment expenditure (I):

It refers to planned or ex. ante investment expenditure by the private firms. Investment means addition to the capital stock or expenditure incurred for creation of new capital assets. However the demand for investment is largely affected by two factors — Marginal Efficiency of Capital (MEI) and rate of interest (r). In other words, the investors judge whether the expected rate of return on new investment is equal to or greater than or less than the rate of interest.

iii. Government demand / government expenditure (G): It includes both govt. consumption expenditure and govt. investment expenditure. Government consumption expenditure is the expenditure on the purchase of consumption goods meant for collective consumption; eg: expenditure on public hospitals, public educational institute, etc. On the other hand govt. investment expenditure is like the exp. on construction of roads, bridges etc.

iv. Net exports: It is the difference between exports and imports. Foreigner purchase domestic goods and services which adds to the demand for domestic goods and services and hence is a part of aggregate demand. But our spending

on foreign goods and ~~etc~~ services has to be subtracted from the demand for domestic goods and services in order to get the correct estimate of aggregate demand.

Aggregate supply: It refers to the total supply of goods and services in the economy during one year. In Keynesian sense aggregate supply means total output of goods and services produced in an economy. The producers of these goods and services must get a minimum price from the sale of their output to cover the cost. If they do not get this minimum price they will not produce at all. The cost of production is what they have to pay to the different factors of production in the form of rent, wages, interest and profit. And the sum total of factor payments in an economy is nothing but NNP_{FC} or NI . Thus we can say that aggregate supply and NI are the same things. Since a major part of income is consumed and the rest is saved hence we can say that,

$$AS = C + S.$$

i. Consumption (C): Consumption, as a component of income is always positive. It is never 0 even when income is 0. When income is 0, we withdraw our past savings or borrow from others.

ii. Saving (S): Saving, as a component of income, can be negative when level of income is low. When $C > Y$, we withdraw our past savings or we borrow from others. This is a situation of -S.

Q. Write a note on AD schedule and AS schedule.

→ AD schedule is a table showing the combined behaviour of C and I. desired expenditure of the people at different levels of income. For the sake of simplicity we are considering an economy with no govt. so that desired.

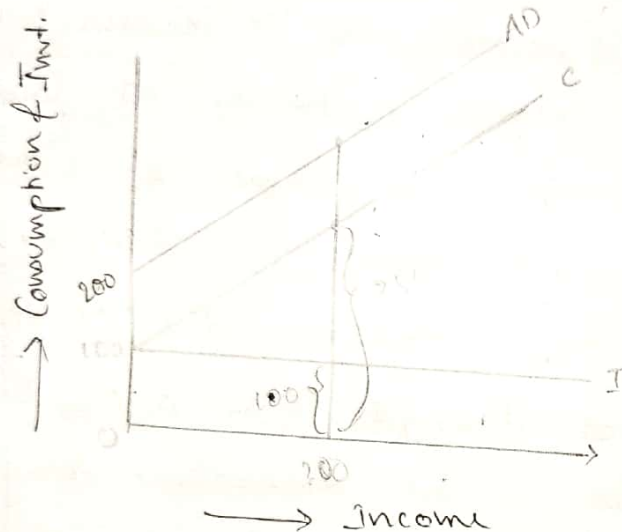
consumption of the people consists of any two components viz. consumption (C), investment (I)

Accordingly AD schedule may be defined as a schedule showing combined behaviour of C and I in an economy. Following is an AD schedule.

Y	C	I	AD = C + I
Level of income	Consump. Exp.	Investment Exp.	Agg. Exp/ AD
0	100	100	200
100	150	100	250
200	200	100	300
300	250	100	350
400	300	100	400
500	350	100	450

The above table shows that consumption exp. increases with every increase in the level of income. Though not in the same

proportion as the income increases. Initially Agg. Consumption Exp. is greater than the level of income and the community meets its consumption needs either from past savings or borrowing money from others. But at higher levels of income (say 500) consumption exp. though also increases but lags behind income. The consumption exp. curve, therefore, slopes upward as shown in the following figure.

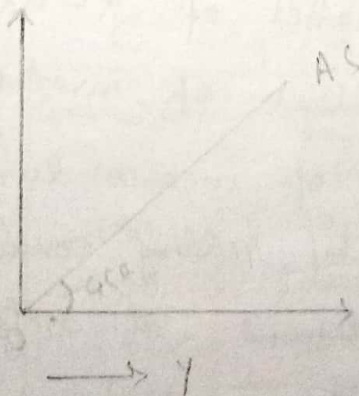


It is seen from the figure that investment curve is a straight line parallel of x -axis, because according to Keynes, level of investment remains constant at all levels of income during short period. AD can be derived by adding consumption ~~exp.~~ demand and investment demand at different levels of income.

AS schedule : It is a table showing the combined behaviour of consumption (C) and saving (S), corresponding to different levels of income. Following is an example of an AS schedule.

Income (Y)	Consumption (C)	Saving (S)	AS = C + S
0	20	-20	0
20	25	-5	20
40	40	0	40
60	45	15	60
80	50	30	80
100	55	45	100
120	60	60	120

The above table shows that C and S are ^{both} positively related to Y. C increases as Y increases; also S increases while Y increases. However, at lower levels of income, $C > Y$, and in such a situation we withdraw our past savings or borrow from others. So that S is negative till Y reaches to 40. When $Y = 40$ and $C = 40$ then $S = 0$. Beyond it, savings are positive. The ~~diagrama~~ diagrammatic presentation of the above schedule is given below-



Assumption of multiplier

- 1) There is no induced investment. multiplier specially applies to autonomous investment which is free from profit motive
- 2) The MPC remains constant during the adjustment process. Consumption
- 3) Consumption is a fn of current income
- 4) The new level of investment is maintained for the completion of the adjustment process.
- 5) There are no time lags involved in the multiplier.

Q. a. Define multiplier

b. Explain the relationship between Φ multiplier and MPC

OR
Prove that multiplier $(K) = \frac{1}{1-MPC}$

→ a. The literal meaning of multiplier is multiple.
* The concept of investment multiplier, output multiplier refers to the factors by which income increases because of increase in investment.

Algebraically, $K = \frac{\Delta Y}{\Delta I}$

where, K = multiplier, ΔY = change in income
 ΔI = change in investment.

b. It is seen that the value of ~~the~~ multiplier is determined by the value of ~~the~~ MPC. Higher the MPC, greater is the value of multiplier. Conversely, lower the value of multiplier smaller the relationship between multiplier and MPC can be expressed under —

$$K = \frac{\Delta Y}{\Delta I} = \frac{1}{1-MPC}$$

Since, $MPC + MPS = 1$

We can also write multiplier as $\frac{1}{MPS}$ —

$$K = \frac{1}{MPS}$$

Proof

We know that,

$$K = \frac{\Delta Y}{\Delta I} \quad \text{--- (i)}$$

We also know that,

$$Y = C + I \quad (\text{in a state of equilibrium})$$

Accordingly, $\Delta Y = \Delta C + \Delta I$ or

$$\Delta I = \Delta Y - \Delta C \quad \text{--- (ii)}$$

where,

ΔI = change in investment

ΔY = change in income

ΔC = change in consumption.

Now putting the value ΔI from eqⁿ (ii) to eqⁿ (i) we get

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

Now, dividing right side of the above eqⁿ by ΔY we get,

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

$$\begin{aligned} \therefore K &= \frac{\Delta Y / \Delta Y}{\Delta Y / \Delta Y - \Delta C / \Delta Y} \\ &= \frac{1}{1 - MPC} \end{aligned}$$

since,

$$MPC + MPS = 1$$

$$\therefore \cancel{MPS} = 1 - \cancel{MPC} \therefore MPS = 1 - MPC$$

Thus we can also write the formula for multiplier as,

$$K = \frac{1}{MPS}$$

Q. Discuss the working of multiplier or multiplier mechanism.

→ The following table illustrates multiplier mechanism / working of multiplier. It is based on the assumption that ~~MPC = 0.5~~ ~~MPC = 0.5~~ MPC = 0.5.

Units in Cr.

Round	Increase in Investment Exp.	Change in Income (ΔY)	Induced change in consumption (ΔC)	Leakage or saving (ΔS)
1	100	100	50	50
2	—	50	25	25
3	—	25	12.5	12.5
4	—	12.5	6.25	6.25
5	—	6.25	3.12	3.12
6	—	3.12	1.56	1.56 1.56
7	—	1.56	0.78	0.78
8	—	0.78	0.39	0.39
9	—	0.39	0.20	0.20
10	—	0.20	0.10	0.10
Total.	100	200	100	100

The above table shows that as a result of initial increase in Investment by ₹ 100 cr. there is a change in income by ₹ 100 cr. in round-1. Our assumption is that MPC is 0.5. Hence, on account of increase in income by ₹ 100 cr., consumption will increase by ₹ 50 cr. and remaining 50 cr. will be saved. In round-2, (because in round-1) of expenditure of ₹ 50 cr. on consumption, there will be an increase in income by ₹ 50 cr. Now, ($\Delta Y = ₹ 50$ cr.) would be split into $\Delta C = ₹ 25$ cr. and $\Delta S = ₹ 25$ cr. On account of increase in consumption expenditure by ₹ 25 cr. ~~there~~ there will be an increase in income by ₹ 25 cr. in round-3 and so on.

In different period/round income will go on increasing as a result of increase in consumption exp. At the end the total increase in income will be ₹ 200 cr. when the initial increase in

investment was ₹ 100 cr. and so, the multiplier is
This is shown as $K = \frac{\Delta Y}{\Delta I} = \frac{\text{₹ 200 cr.}}{\text{₹ 100 cr.}}$
 $= 2.$

OR.

$$\begin{aligned} K &= \frac{1}{1-MPC} \\ &= \frac{1}{1-0.5} \\ &= \frac{1}{\frac{1}{2}} \\ &= 2. \end{aligned}$$

Note

$$MPC + MPS = 1$$

$$\Rightarrow MPS = 1 - MPC$$

~~MPC~~

$$A = \frac{\Delta Q}{\Delta I}$$

6/ Limitation

- 1) In the ^{static} multiplier analysis, we don't consider the process in which the level of income changes from 1 eq^m to another.
- 2) Multiplier analysis is based on the assumption that all individuals have the same MPC. ~~in reality~~ But this assumption is unrealistic. In reality, the MPC is different for different groups of individuals.
- 3) The simple multiplier analysis ~~does~~ doesn't consider the role of induced investment resulting from induced consumption.
- 4) In the multiplier analysis, investment is not considered as the fn of rate of interest.

THE Concept of Accelerator,

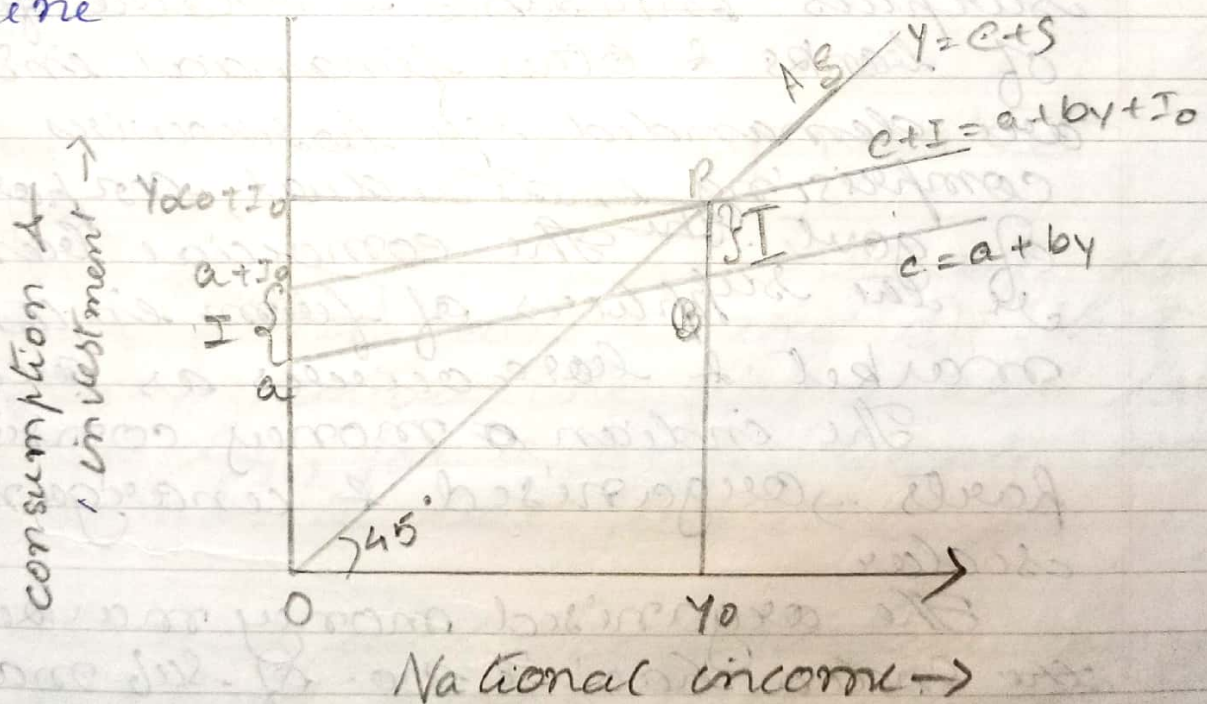
The idea of acceleration principle was first forwarded by several ~~big~~ writers but can be considered to have entered into the main body of economic theory with the work of J.N. Clark in 1920.

The acceleration principle depicts the technical relation betw a change in the ratio of current output & investment. The acceleration co-efficient

Determination of equm level of income

2 sector economic model

In a 2 sector economy equm level of income is determined at the point where aggregate demand equals the aggregate supply that is $AD=AS$. In a 2 sector economy, a AD curve is obtained by taking the vertical sum of the consumption (C) & investment (I) curves. The AS is depicted by the 45° line



in the fig-

The equm level of national income is OY_0 because it is the level of income at which $AS=AD$ at point P. At income levels OY_0 , AS (represented by 45°) line is greater than AD " " " $C+I$ line" & income has a tendency to fall. At income level less than OY_0 , $AS < AD$

The income has a tendency to
rise thus 0% is termed as
equilibrium level of national income.

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