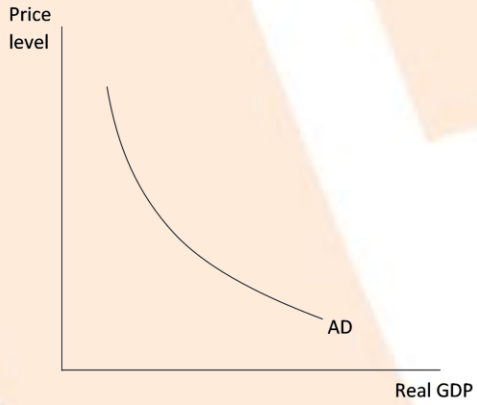
Revision Notes

Class - 12 Macroeconomics

Chapter 4 – Determination of Income and Employment

AGGREGATE DEMAND (AD)

- It refers to the total value of all final goods and services that are planned to be purchased by all sectors of the economy at a given level of income over a given time.
- AD denotes the total expenditure on goods and services in an economy over a given time.



Components of Aggregate Demand in an Open Economy:

- Consumption expenditure by households (C).
- Investment expenditure (I).
- Government consumption expenditure (G).
- Net exports (X – M).

Therefore,

AD = C + I + G + (X – M)

Components of Aggregate Demand in Closed Economy:

- A three sector economy;

  AD = C + I + G

- A Two sector economy;

  AD = C + I

Ex-ante aggregate demand:

- The term ex-ante refers to what has already been planned.
- So, it is planned aggregate demand.

Ex-post aggregate demand:

- Actual consumer spending and business capital investment are included in ex-post aggregate demand.
- In other words, the ex-post describes what actually occurred.

AGGREGATE SUPPLY (AS):

- It is the monetary value of all final goods and services purchasable by an economy over a specific period.
- It refers to the movement of goods and services in the economy.
- AS is nothing more than national income because the money value of final goods and services equals net value-added.

  AS = C + S

  The aggregate supply represents the country's national income.

  AS = Y (National Income)

CONSUMPTION FUNCTION:

- Household income is the most important determinant of consumption demand.
- The relationship between consumption and income is described by a consumption function.
- The most basic consumption function assumes that consumption changes at the same rate as income.

Equation of Consumption Function

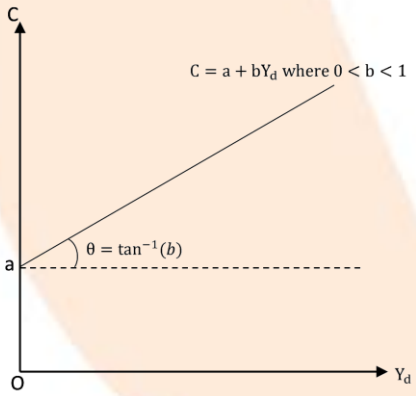
$C = \bar{C} + cY$

C = Consumption

$\bar{C}$ = Autonomous consumption

cY= Induced consumption

Y= Income



The consumption curve starts from the Y axis because, even when the income is zero, there is some consumption.

Autonomous Consumption:

- Autonomous consumption is denoted by $\bar{C}$ and represents consumption that is unaffected by income.

- When consumption occurs even when income is zero, it is due to autonomous consumption.
- Hence this consumption is independent of income.

Induced Consumption:

- The induced component of consumption, cY, demonstrates consumption's dependence based on earnings/ income.
- Hence, this consumption is dependent on income.

PROPENSITY TO CONSUME

Propensity to consume is of two types:

a. Average Propensity to Consume (APC):

- It refers to consumption per unit of income.
- It is denoted as $\frac{C}{Y}$

Points to Remember about APC

- **APC>1:** APC is greater than one if consumption exceeds national income before the break-even point i.e., APC > 1.
- **APC=1:** When APC=1, consumption equals national income at the break-even point.
- **APC<1:** When APC is less than one after the break-even point consumption exceeds national income.
- **Inverse Relation with Income:** APC decreases as income increases, hence income and APC are inversely related.
- **APC can never be zero:** APC can never be zero because autonomous consumption exists even at a zero level of national income.

b. Marginal Propensity to Consume (MPC):

- It is the change in income per unit change in consumption.
- It is represented by c and equals $\frac{?C}{?Y}$, where $\triangle C$ is change in consumption and $\triangle Y$ is the change in income.
- That is MPC= $\frac{?C}{?Y}$

Points to Remember about MPC

- **MPC=1:** If all the extra income is consumed, then $\triangle C = \triangle Y$, resulting in MPC= 1.
- **MPC = 0:** However, if the entire additional income is saved, $\triangle C = 0$, and MPC= 0.
- **Constant MPC:** MPC is the slope of the consumption curve, and it remains constant in the short run.
- APC value > MPC.

SAVING FUNCTION:

- The functional relationship between saving and national income is referred to as the saving function.

Equation of saving function

S = f (y)

Where,

S = Saving

Y = National Income

f = Functional relationship.

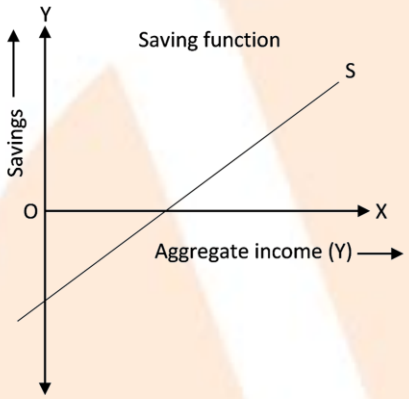
$S = -a + (1 - b)\, y$

Here,

1-b = MPS

Y= Income

-a = Savings, when Y is 0



In the diagram, the S curve starts from below 0, as when income is zero, the savings are negative.

PROPENSITY TO SAVE

Propensity to Save is of two types:

a. Average Propensity to Save (APS):

- It refers to the savings per unit of income.
- It is denoted as $\frac{S}{Y}$

Points to Remember About APS

- Savings can never be equal to or greater than income, so APS can never be one or more than one.
- At the break-even point, when C= Y, APS can be zero, as here S= 0. This is because when a person consumes equals to what he/she earns, there are no savings.

- When consumption exceeds income at income levels lower than the break-even point, APS can be negative.
- With an increase in income, APS rises. Hence, APS and income are directly related.

b. Marginal Propensity to Save (MPS):

- It is the change in savings per unit of income change.
- It is represented by s and equals 1-c. This is because 1 is the whole, and if we less consumption from it, we can get the savings.
- It follows that, S + C = 1, i.e, the total of savings and consumption equals one.
- That is MPS= $\frac{?S}{?Y}$

Points to Remember About MPS

- MPS ranges from 0 to 1.
- MPS is the saving curve's slope.
- In the short run, MPS remains constant.

Relation between APC and APS

The product of APC and APS equals one.

It can be demonstrated as follows:

APC + APS = 1.

Y = C + S

Dividing both side by Y, we get

$$\frac{Y}{Y}=\frac{C}{Y}+\frac{S}{Y}$$

That is,

1= APC + APS

As, $APC = \frac{C}{Y}, APS = \frac{S}{Y}$

Therefore,

APC + APS = 1

Relation between MPC and MPS

We know MPC + MPS = 1

Also,

Y = C +S

Hence

$\Delta Y = \Delta C + \Delta S$ - (i)

Where,

$\Delta C =$ Change in consumption

$\Delta Y =$ Change in income

$\Delta S =$ Change in savings

And,

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

And,

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

So dividing eq (i) with change in Y on both sides

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

$$1 = \frac{\Delta C}{\Delta Y} + \frac{\Delta S}{\Delta Y}$$

1 = MPC + MPS

INVESTMENT:

- An investment is an asset or item purchased with the intention of earning income or increasing in value. An increase in the value of an asset over time is referred to as appreciation.

Two heads of investment:

- **Induced Investment:** It is defined as an investment that is based on profit expectations and is directly influenced by income level.
- **Autonomous Investment:** It is defined as an investment that is not affected by changes in income and is not motivated solely by a profit motive.

Ex-ante Investment:

- Ex-ante investment refers to the investment made by firms in the economy during a specific period. The planning is done with future expectations in mind.

Ex-post Investment:

- This refers to the actual investment made by all entrepreneurs in the economy during a given period. It is the outcome of actual investment.

EQUILIBRIUM LEVEL OF INCOME

- The equilibrium level of income is only determined when AD = AS or S = I, i.e., when the flow of goods and services in the economy equals the demand for goods and services.

- However, it cannot always be at full employment and may be less than full employment.

SHORT RUN EQUILIBRIUM OUTPUT:

The quantity of real GDP that will exist when AD intersects Short Run Aggregate Supply in a short-run macroeconomic equilibrium is the amount of aggregate output produced.

Assumptions:

- **Closed Economy:** In the framework of a two-sector model (households and firms), the determination of equilibrium output will be investigated. It implies that there is no government or international sector. Such that AD=C+I
- **Self contained Investment:** It is assumed that investment expenditure is self-contained, i.e., investments are unaffected by income levels.
- **Short-period analysis:** This analysis is with reference to short period only.

AD-AS APPROACH:

- The level of output where the Aggregate Demand equals Aggregate Supply (AD = AS) in an economy.
- It indicates that whatever the producers intended to manufacture during the year is exactly equal to what the buyers intended to purchase during the year.

Here,

AD = C + I (for a two-sector economy), and

AS = C + S

That is,

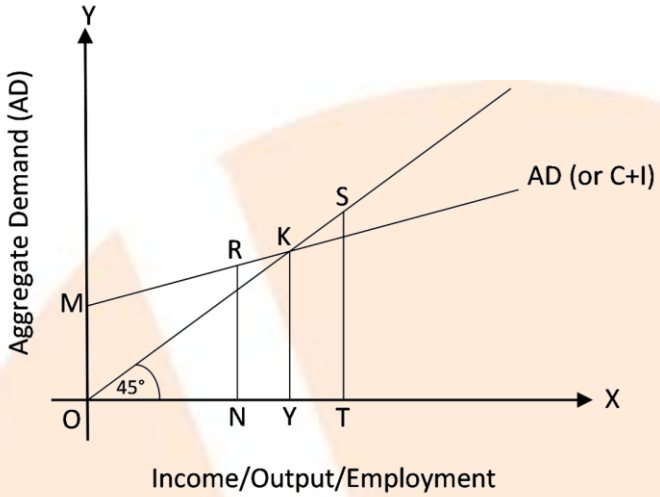
AD = Aggregate Demand,

AS = Aggregate Supply,

C = Consumption,

I = Investment,

S = Saving



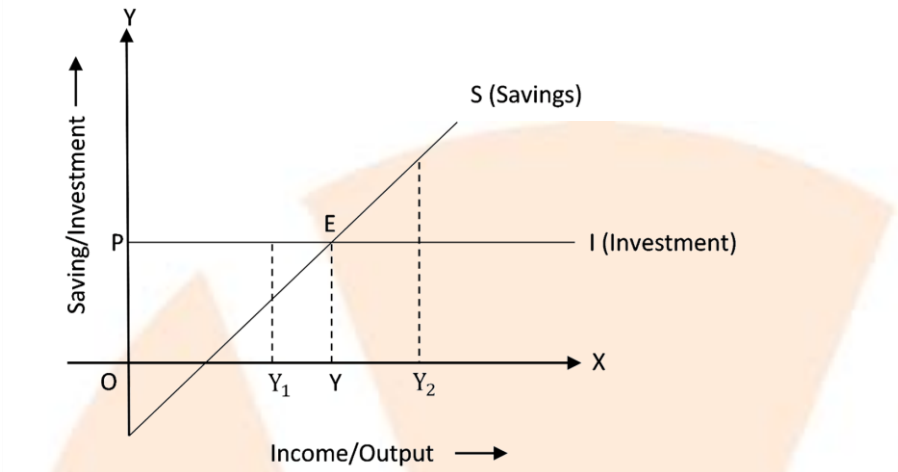
The diagram represents aggregate demand, and the situation of equilibrium at point K, where AD=AS, and the level of equilibrium output at point Y.

Two different situations:

- **AD > AS:** In this case aggregate demand exceeds aggregate supply, and a situation of unfulfilled demand persists. To curb this situation, the producers will enhance the level of output and production such that AS could increase and become equal to AD, and the situation of equilibrium is restored. This is shown as point R in the diagram, where AD>AS.
- **AD < AS:** In this case aggregate demand is less than the aggregate supply, and a situation of unwanted stocks persists. To curb this situation, the producers will decrease the level of output and production such that AS could decrease and become equal to AD, and the situation of equilibrium is restored. This is shown as point S in the diagram, where AD<AS.

SAVINGS-INVESTMENT APPROACH:

- It is the point of equilibrium, where S=I. Here, S = savings, or withdrawal, and I = investment, or injection.



Explanation of Diagram

- Point E on the diagram represents the equilibrium point where S = I. The quantity of money removed (S) from the economy equals the amount of money put (I) into the economy at this point.
- In the economy, AD = AS at this level.

Two Situations:

- **S > I:** At this point, some of the anticipated output remains unsold, forcing companies to keep unsold items on hand. In order to clear the stocks, producers will cut production, resulting in a decrease in output. As a result, the economy's income decreases. Less income means less savings, and this cycle will continue until saving equals investment.
- **S > I:** People spend more money than is necessary to purchase the projected output when S > I. This means that AD outnumbers AS in the economy. As a result, manufacturers will increase output to compensate for the situation. As a result, investment rises to the point where it equals investment.

Equilibrium

So, equilibrium is reached when:

AD = AS... (i)

We already know that AD is the sum of Consumption (C) and Investment (I):

AD = C + I... (ii)

Additionally, AS is the sum of consumption (C) and saving (S):

AS = C + S... (iii)

When we substitute (ii) and (iii) into (i), we get:

C + S = C + I, or

S = I

Note: It's important to remember that AD, AS, Savings, and Investment are all ex-ante variables.

TYPES OF EMPLOYMENT

- **Full employment:** This occurs when all those who are able and willing to work at the prevailing wage rate are given the opportunity to do so.
- **Voluntary unemployment:** This occurs when a person is able to work but unwilling to work at the prevailing wage rate.
- **Involuntary unemployment:** This occurs when a worker is able and willing to work at the prevailing wage rate but is unable to find work.
- **Under employment:** It occurs when all those who can work at current wage rates are unable to find work. It refers to the economic situation in which AS= AD or S = I, but there is insufficient labour force utilisation.

MULTIPLIER MECHANISM:

- The multiplier shows us what the eventual change in income will be as a result of a change in investment. Changes in investment lead to changes in income.
- The aggregate demand rises when the autonomous measures (A) rise.

- As a result, output and income will rise in the next round, causing consumption and the AD to rise. This is referred to as the multiplier mechanism.
- It is represented symbolically by:

$\Delta I \rightarrow \Delta Y \rightarrow \Delta C \rightarrow \Delta Y$

The operation of a multiplier can be illustrated using the table below, which is based on consumption, that is, $\Delta K = 1000$ and $MPC = \frac{4}{5}$.

Working of multiplier:

The process of income generation is shown below.

Rounds	ΔI	ΔY	ΔC
1	1000	1000	$\frac{4}{5} \times 1000 = 800$
2	-	800	$\frac{4}{5} \times 800 = 640$
3	-	640	$\frac{4}{5} \times 640 = 512$
4	-	512	$\frac{4}{5} \times 512 = 409.6$
$\downarrow \infty$	$\downarrow \infty$	$\downarrow \infty$	$\downarrow \infty$
	Total	**5000**	

According to the above table, as MPC = $\frac{4}{5}$, the initial increase in investment of Rs 1000 results in a total increase in income of Rs 5000. From the whole increase in income, Rs. 4000 will be spent and Rs. 5000 will be saved.

The derivation of the sum of total increase in income is shown below.

$$=1000+\frac{4}{5}\times1000\left(\frac{4}{5}\right)^2\times1000\left(\frac{4}{5}\right)^3\times1000+\ldots\ldots\ldots\infty$$

$$=1000\left[1+\frac{4}{5}+\left(\frac{4}{5}\right)^2+\left(\frac{4}{5}\right)^3+\ldots\ldots\infty\right]$$

$$=1000[\frac{1}{1}-\frac{4}{5}]$$

$$=1000\times\frac{5}{1}$$

= Rs. 5000 crores.

INVESTMENT MULTIPLIER:

- The investment multiplier (K) is the ratio of the change in income (Y) caused by the change in investment (I).
- The value of the investment multiplier ranges from one to infinity.

$$K=\frac{\triangle Y}{\triangle I} \text{ or } K=\frac{1}{1-MPC} \text{ or } K=\frac{1}{MPS}$$

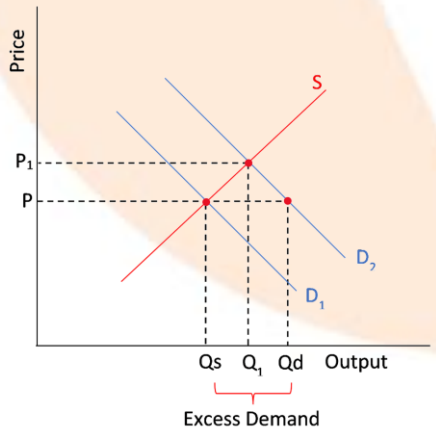
EXCESS DEMAND:

- It occurs when aggregate demand exceeds aggregate supply, resulting in full employment.
- Reasons for excess demand:

- Rise in household consumption demand due to increased propensity to consume.
- Rise in private investment demand because of higher provision and availability of credit facilities.
- Higher public (government) expenditure.
- Rise in demand for exports.
- Rise in supply of money
- Rise in disposable income.

- Impact of Excess demand on:

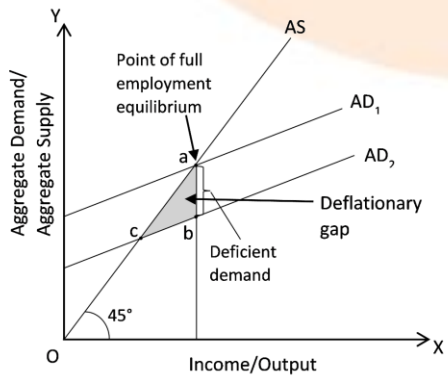
- **General Price Level:** General price level increases as when aggregate demand exceeds aggregate supply at a full employment level, there is a situation of inflation in the economy
- **Output:** It has no impact on output, as the economy is already at full employment level, thus no idle capacity exists. Hence, one cannot raise the output more than already.
- **Employment:** No impact on employment level. The economy is already operating at full employment equilibrium.



DEFICIENT DEMAND:

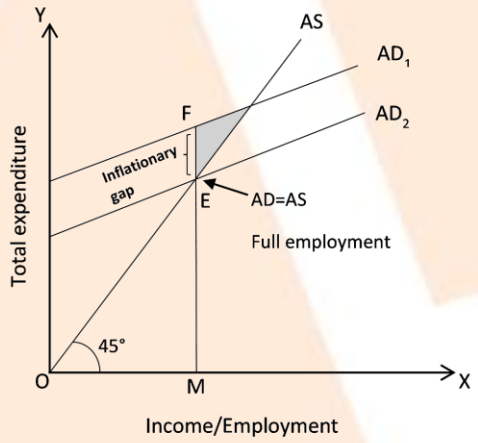
- It occurs when AD falls short of AS at full employment. To put it another way, AD < AS is at full employment. It's referred to as deficient demand.
- Reasons for Deficient demand:
  - Fall in household consumption demand due to decreased propensity to consume.
  - Fall in private investment demand because of lesser provision and availability of credit facilities.
  - Reduced public (government) expenditure.
  - Fall in demand for exports.
  - Fall in supply of money
  - Fall in disposable income.
- Impact of Deficient demand on:
  - **General Price Level:** General price level falls as when aggregate demand is less than aggregate supply at a full employment level, there is a situation of deflation in the economy
  - **Output:** Low output levels, due to unemployment, and reduced investment.
  - **Employment:** Low employment levels, as there will be a case of involuntary unemployment.

Diagram



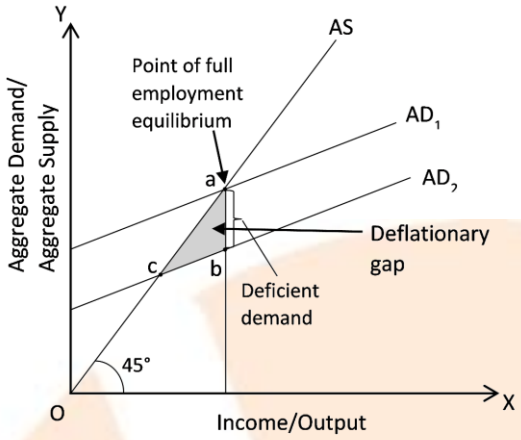
INFLATIONARY GAP:

- The difference between actual aggregate demand and the level of aggregate demand required to achieve full employment is known as the inflation gap.
- It assesses the magnitude of excess demand.
- The area between FE represents the inflationary gap, as here aggregate supply, EM, is less than aggregate demand FM.
- As the output could not be increased beyond the full employment level, prices will rise, and there will be a situation of inflation in the economy.



DEFLATIONARY GAP:

- Deflationary gap refers to the difference between the actual aggregate demand and the level of aggregate demand required to achieve full employment.
- It assesses the degree of deficient demand.
- The area between a and b shows deflationary gap, as here the Aggregate supply is greater than that of aggregate demand.



MECHANISM TO CONTROL EXCESS DEMAND OR DEFICIENT DEMAND:

1. Fiscal Policy:

Fiscal policy refers to the general government's expenditure and income policies used to achieve its objectives. It includes:

a. Change in taxation:

Taxation is used to represent revenue policy.

- **Excess Demand:** During an inflationary period, the government raises taxes, resulting in a loss in people's purchasing power. This is due to the fact that in order to limit excess demand, the economy's liquidity must be reduced.
- **Deficient Demand:** In case of deficient demand, tax rates

b. Change in public expense:

The government must invest heavily in public works projects like roads, buildings, and irrigation systems.

- **Excess Demand:** During an inflationary period, the government should limit (lower) its expenditure on public works such as roads, buildings, and irrigation projects, therefore reducing people's money income and consumer requirements.

- **Deficient Demand:** During deficient demand, the government should increase its expenditure on public works such as roads, buildings, and irrigation projects, therefore increasing people's money income and consumer requirements.

c. A Shift in public borrowing:

- **Excess Demand:** This measure implies that the government should borrow money from the general population, which reduces people's purchasing power by leaving them with less money. As a result, during periods of high demand, the government should resort to increased public borrowing.
- **Deficient Demand:** This measure implies that the government should reduce the borrowings from the general population, which increased people's purchasing power. As a result, during periods of deficient demand, the government should resort to reduced public borrowing.

2. Monetary Policy:

It is the policy of a country's central bank to control the amount of money in circulation and the availability of credit in the economy.

A. Quantitative measures:

These are the monetary policy instruments that influence the overall supply of money/credit in the economy. These instruments do not direct or restrict credit flow to specific sectors of the economy.

a. Bank Rate:

The bank rate is the interest rate at which a central bank lends money to commercial banks with no security.

- **Excess Demand:** Bank Rate should be increased in situations of excess demand, as due to this, the quantity of money accessible to banks decreases, and the commercial bank’s capacity to provide credit also falls. Hence the aggregate demand falls down with a low credit creation and supply of money in the economy.
- **Deficient Demand:** Bank Rate should be reduced in situations of deficient demand, as due to this, the quantity of money accessible to banks increases,

and the commercial bank's capacity to provide credit also rises. Hence the aggregate demand increases as a result of high credit creation and supply of money in the economy.

b. Cash Reserve Ratio (CRR):

It is the minimum percentage of a bank's total deposits that it must keep with the central bank. As a matter of law, commercial banks must keep a certain percentage of their deposits with the central bank in the form of cash reserves.

- **Excess Demand:** CRR should be increased in situations of excess demand, as due to this, the quantity of money accessible to banks decreases, and the commercial bank's capacity to provide credit also falls. Hence the aggregate demand falls down with a low credit creation and supply of money in the economy.
- **Deficient Demand:** CRR should be reduced in situations of deficient demand, as due to this, the quantity of money accessible to banks increases, and the commercial bank's capacity to provide credit also rises. Hence the aggregate demand increases as a result of high credit creation and supply of money in the economy.

c. Statutory Liquidity Ratio (SLR):

It specifies the minimum proportion of net total demand and time obligations that commercial banks must retain with themselves.

- **Excess Demand:** SLR should be increased in situations of excess demand, as due to this, the quantity of money accessible to banks decreases, and the commercial bank's capacity to provide credit also falls. Hence the aggregate demand falls down with a low credit creation and supply of money in the economy.
- **Deficient Demand:** SLR should be reduced in situations of deficient demand, as due to this, the quantity of money accessible to banks increases, and the commercial bank's capacity to provide credit also rises. Hence the aggregate demand increases as a result of high credit creation and supply of money in the economy.

d. Open Market Operations (OMO):

It consists of the central bank purchasing and selling government assets and bonds on the open market.

- **Excess Demand:** In situations of excess demand, the central bank should sell the government assets and bonds in the open market. This reduces the ability of commercial banks to provide loans, thus reducing the levels of aggregate demand.
- **Deficient Demand:** In situations of deficient demand, the central bank should buy the government assets and bonds in the open market. This increases the ability of commercial banks to provide loans, thus increasing the levels of aggregate demand, due to higher purchasing power in the hands of people..

B. Qualitative measures:

a. Marginal requirement:

Commercial banks extend loans to businesses and dealers in exchange for the security of their commodities. The bank will never grant credit equivalent to the entire amount of the security. It is never worth more than the security.

- **Excess Demand:** In situations of excess demand, the margin requirements are raised, as it discourages the borrowers because high margin required means less amount of loan provided to them.
- **Deficient Demand:** In situations of deficient demand, the margin requirements are reduced so as to encourage the borrowers to take loans, as low margin required means more amount of loan provided to them.

b. Credit rationing: The central bank can use this approach to direct commercial banks not to lend for specific reasons or to lend more for specific objectives or priority sectors.

c. Moral suasion: Moral suasion refers to the central bank's persuasion, request, informal suggestion, advice, and appeal to commercial banks to cooperate with the central bank's overall monetary policy.

- **Excess Demand:** In cases of excess demand, the central bank requests for contraction of credit.

- **Deficient Demand:** In cases of deficient demand, the central bank requests for extension of credit.

PARADOX OF THRIFT:

- It is defined as a situation in which people tend to save more money, and this increased saving leads to reduced consumption, resulting in a decrease in aggregate consumption. Such a savings system reduces employment levels, reduces total economic savings, and slows economic growth. This is regarded as a crucial component of Keynesian economics.