KENYATTA UNIVERSITY

SCHOOL OF ECONOMICS

DEPARTMENT OF ECONOMIC THEORY

COURSE: MACROECONOMIC THEORY 1(EET 101)

<u>COURSE OUTLINE</u>

1. INTODUCTION
   - Definition of key terms
   - Macroeconomic models
   - Importance of Macroeconomics
   - Major goals of macroeconomic policy
   - Limitations of macroeconomics

2. NATIONAL INCOME, OUTPUT AND EXPENDITURE
   - The circular flow of income
   - Three approaches to measurement of National income
   - GDP and its related concepts
   - Difficulties in measuring National income
   - Factors determining size of an economy's National Income
   - Uses of National income accounting
   - National income and social welfare

3. CONSUMPTION, SAVINGS AND INVESTMENT
   - The consumption function
   - The savings function
   - Theories of Consumption
   - Determinants of Consumption Spending
   - Types of Investments
   - Determinants of Investment
   - Theories of investment

4. THE KEYNESSIAN MODEL OF INCOME DETERMINATION (EQUILIBRIUM INCOME DETERMINATION)
   - Equilibrium in the goods market
   - The S = I equilibrium condition of the goods market
   - The IS Equation and curve
   - Dis-equilibrium Income
   - The Multiplier concept
   - Paradox of Thrift
   - Inflationary and Deflationary Gaps

5. THE MONEY MARKET
   - Money and its Basic Functions
   - Properties of Money
   - Creation of Money
   - Financial Institutions
   - Demand for Money
   - Money supply
   - Equilibrium in the money market
   - General equilibrium
   - Open economy and the extended IS-LM model

6. FOREIGN EXCHANGE MARKETS
   - Definitions
   - Exchange rate regimes
   - The J – Curve Phenomenon
   - Methods used to correct trade deficit
   - Effects of Devaluation of a Currency

7. UNEMPLOYMENT AND INFLATION

I. Unemployment
   - Definition
   - Types of unemployment
   - Causes of Unemployment
   - Policies for curing Unemployment

II. Inflation
   - Definitions
   - Forms of Inflation
   - Types of Inflation
   - Measurement of Inflation
   - Causes of Inflation
   - Effects of Inflation
   - Remedies of Inflation

1. INTRODUCTION

Basic concepts and scope of macroeconomic analysis

Economic Theory

A box of tools with which an economist constructs economic models that facilitate the study of the real world

Economic Models

These refer to simplified explanations of how the economy works.

Macroeconomics

This is the branch of economics that attempts to analyze and explain the interrelationships between aggregate (totals) variables such as output, employment, interest rates, money and prices in the economy. These are the key variables that determine economic activities and level of national income in an economy. Macroeconomics therefore analyses the performance of the economy as a whole.

Macroeconomics deals with the following:

(i)   Total output of goods and services (GNP)

- What determines the GNP level?
- Why is it that GNP grows at a lower rate in some years than in others?

(ii)   Total employment and unemployment levels

- What proportion of total population is unemployed?
- What determines levels of unemployment?

(iii)   General price level

- Shows cost of purchasing by a typical consumer
- Estimates inflation and anticipated effects

(iv)   Balance of payment problem

(v)   Exchange rates

Macroeconomic Models

These are simplified explanations or theories of how the economy works, i.e. simplified explanations of the real word.

For example

The behaviour of consumption spending in an economy can be represented by a simple model as follows

$C_t = \alpha + \beta Y_t + \gamma Y_{t-1}$
Where
$C_t = consumption\ in\ the\ current\ period$
$Y_t = Current\ level\ of\ income$
$Y_{t-1} = \Pr evious\ period's\ level\ of\ income$

This model is a simplification of the real world situation because some factors that are important in influencing consumption behaviour are excluded. The other factors that affect level of consumption in the economy include; wage rate, interest rate, price, capital gains, money stock, attitudes, consumer credit and money illusion among others.

Macroeconomic models help in the forecasting of future trends of the economy.
A model can be tested by how well it can explain past events and if it can predict accurately the path of the economy.
A good model improves understanding, forecasts and decision-making by policy makers.

The major goals/aims of Macroeconomic Policy

1. Full employment
    - Unemployment is where some resources are not optimally utilized and are lying idle. Full employment is favoured because the greater the level of employment, the greater the amount of goods and services available in the

economy. It is also argued that the burden of unemployment and loss of goods and services fall disproportionately on people who are without jobs.

2. Price stability
   - Inflation should be avoided at all costs so that prices remain stable and predictable over time. This is important because inflation affects other people more adversely than others. For example, people whose incomes rise more rapidly than prices and those who are able to borrow at relatively low interest rates prior to inflation benefit from inflation.

3. Economic growth
   - Economic growth takes place when real output increases more rapidly than the increase in population, thus with economic growth the society has more goods and services at its disposal and a correspondingly higher standard of living.

4. External balance
   - If a country has a fovourable balance of payment (BOP), its foreign exchange reserves will increase, hence can import the much needed capital for investment. Unfavourable BOP would lead to an outflow of foreign exchange to finance the trade deficit

Importance of Macroeconomics

1. Facilitates estimation of GNP, which aids in the analysis of the economy's performance;
2. Facilitates the study of the nature and size of material welfare of the society;
3. Knowledge of macroeconomics is important in economic policy formulation by governments. For example we are able to understand how aggregate variables like GNP, wage rate, consumption, savings, investment, interest rates etc, will be affected by a change in government expenditure, tax policy, monetary policy, foreign exchange rates,

4. It predicts the impact of exogenous variables on the endogenous variables.

The limitations of Macroeconomics

1. Macroeconomic theory treats the aggregate which it deals with as internally homogenous. Therefore, it overlooks the significance of internal composition and structure of such variables

2. It tends to make generalizations about the whole economy based on small samples, yet the samples may not accurately reflect the overall picture. The propositions that are true for individuals or small groups are not necessarily true for the economy.

3. The aggregates may not be functionally related. In such a case, the macroeconomic policies that are formulated will be erroneous. For example, aggregate consumption will only be useful for analysis if it is functionally related to levels of income, wealth interest rates, capital gains, relative prices, money stock, attitudes and expectations, consumer credit, etc

4. Aggregate models that may be derived to explain the behaviour of the economy may end up not conforming to the real world. For example, the bulk of the macroeconomic theory developed so far has been relevant to developed countries since most models have been constructed in those countries. These models are far from reality in developing countries

2. NATIONAL INCOME, OUTPUT AND EXPENDITURE

The circular flow of income

The circular flow model describes the flow of resources, products and incomes among economic actors.

For simplicity, consider an economy with only two actors; households and firms. They interact in a circular pattern as in the diagram below
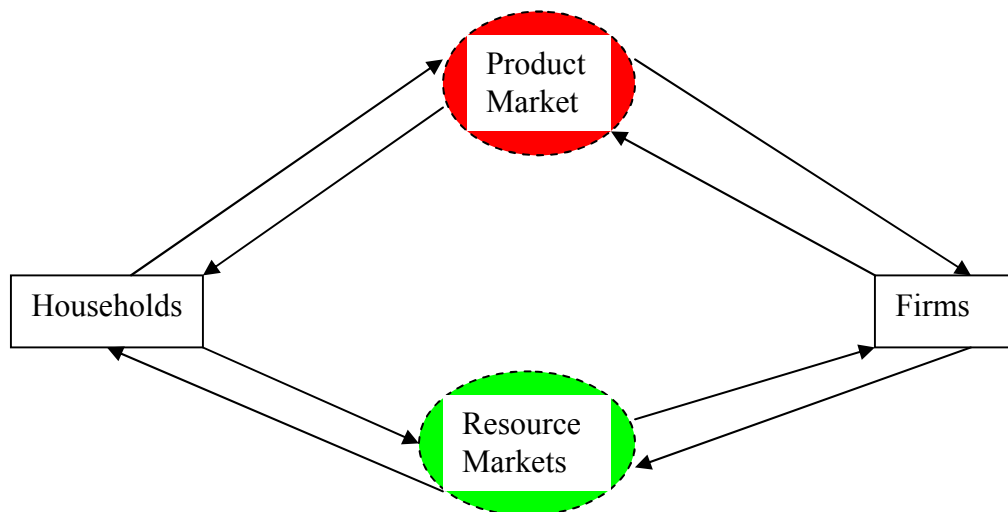
The households

- Supply resources (land, labour, capital and entrepreneurial skills) to the resource markets and receive earnings for those resources
- Demand goods and services from the product markets. make payments for those goods and services using the incomes they receive

The firms

- Demand resources from the resource markets for production of goods and services
- supply goods and services to the product markets

Products and resources flow in a counterclockwise direction while payments for these items flow in the opposite direction

The above case assumes an economy with no government and does not participate in foreign trade. However, many countries trade with others and also have governments that actively participate in the economic activities. Thus in such an economy there are 4 actors; Households, firms, government and rest of the world

Other than there being only resource and product markets there are also money markets in the economy. a more elaborate circular flow model would therefore include all these actors and the markets in which they interact as follows.
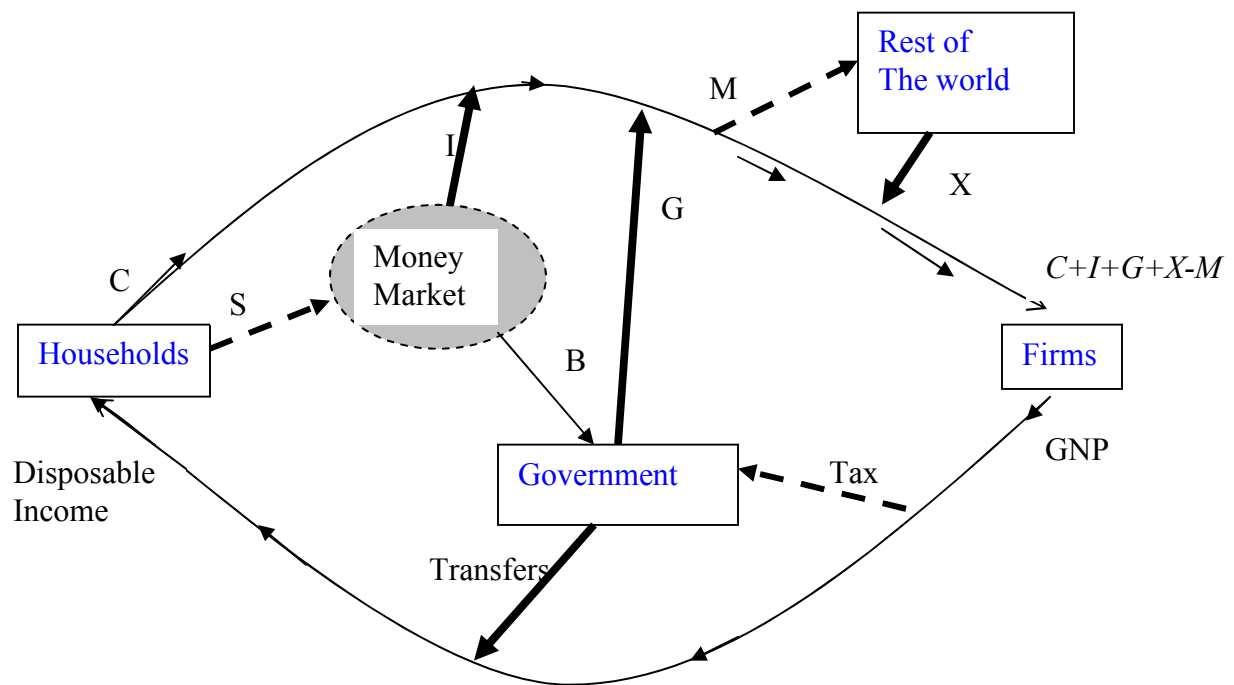
C = Consumption expenditure   G = Government purchases and Spending

S = Savings   M = Imports

I = Investment spending   X = Exports

B = Government borrowing

Leakages

These refer to any diversion of aggregate income from the domestic spending i.e. a withdrawal from the circular flow. They include; Savings (S), Taxes (T), and Imports (M)

<u>Injections</u>

These refer to any payment of income other than by firms or any spending other than by domestic households on an economy. These include; Investments, Government purchases including transfers (G), Exports (X),

Three approaches to measurement of National income

(i)   Expenditure Approach

Sum up all the market expenditures by final consumers including the purchases of capital goods by the business community. we include expenditures on final goods and services only.

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

(ii)   Income Approach

Sum up all the incomes received by individuals and firms. These include; wages, salaries, profits, interests, rents, e.t.c. Payments or earnings for people who do not supply goods or services (transfer payments) are excluded.

Aggregate income(Y) = w + r + i + π

(iii)   Product or Output Approach

Add contributions of all individuals at each stage of production to total outputs plus value added of each industry from public, private, and subsistence sectors. We only consider contribution to production for each firm (Net output). The method is also referred to as Value Added Approach.

GDP and its related concepts

Gross Domestic Product (GDP)

The total money value of all final goods and services produced in a country during any given period of time usually one year.

Gross National Product (GNP)

The total money value of all final goods and services produced from factors of production owned by a country's nationals during any given period of time regardless of where they are located.

Net National Product (NNP)

The total output of consumer goods produced by residents plus the net increase in the economy's total capital stock (That is, production of new capital goods in excess of replacement of depreciated capital goods) during any given period of time. It is computed as follows;

NNP = GNP – Depreciation (capital consumption allowance)

National income (NI)

This refers to the total amount of income earned by the factors of production in an economy during a certain period. it is computed thus;

NI = NNP – (indirect taxes less subsidies)

Per capita income

Refers to national income divided by the population of that particular country

Personal Income (PI)

Refers to the total income of persons or households from all sources before taxation; computed as;

PI = NI – (retained corporate profits + social insurance payments) + (interest incomes received by households + transfer payments to households)

Disposable Income

Referred to as the after tax personal; incomes to households. Thus it is computed as;

DI = PI – Personal income taxes. This is the total amount of income which is available for use by households. This money can either be saved or incurred in the form of consumption expenditure (DI = C + S)

Summary

= GNP at market price

minus depreciation (capital consumption allowance)

= Net National Product (NNP)

minus direct taxes less subsidies

= National income (NI)

(Compensation to employees + Rental income + corporate profit + Proprietors income+ Net interests) **Also referred to as GDP at factor costs**

minus (corporate taxes + undistributed corporate profits + social insurance payments)

plus (dividends + interest on government debt + government transfers to persons + business transfer payments)

= Personal income (PI)

minus Personal taxes

= Personal disposable income (PDI)

minus (Personal Consumption expenditures + Interest payments by consumers + personal transfer payments)

= Saving (S)

Difficulties in measuring National income

1. *Incomplete Information*- some important information may not be available or may be inaccessible
2. *Danger of double counting*- Costs of raw materials (intermediate goods) may be included in national income accounting
3. *Unpaid services*- Services that people do for themselves and others that are not paid for are usually excluded from national income accounting
4. *Depreciation*- Replacement costs for worn out parts may not be considered
5. *Inventory valuation*- there are many methods that can be used and each may give different results.
6. *Changes in the value of money*- changes in the market prices (value) of final products due to inflation may result into changes in the measure of national income even if real output may not have changed.

Factors determining size of an economy's National Income

(i)   Stock of factors of production in terms of both quality and quantity
-     land (fertile or infertile)
-     Labour (required skills or not)
-     availability of good or bad infrastructure

(ii)   the state of technical knowledge
-     whether there is know-how or not and whether the technology is appropriate or not

(iii)   Participation rate
-     proportion of economically active group compared to the general populace

(iv)   political stability
-     whether the country is politically stable or not

Uses of National income accounting

- Highlights information about size of various sectors in the economy. For example GNP gives information about consumer expenditures, taxes and investments
- Highlights information about economic performance of the economy overtime. for example annual growth rates
- It is an indicator of structural change (transformation) in the economy of a country

National income and social welfare

The question asked here is that; is per capita income a good measure of material well being of the people?

Per capita income is not a good measure of material well being of the people because of the following reasons;

- it does not look at the distribution of income within the economy
- increased national income could be due to increased number of working hours, implying that people do not have leisure which adversely affect their health conditions
- It is a measure of production and consumption which are not measures of welfare of people
- it does not consider deterioration to the environment through air and water pollution, deforestation etc
- is a statistical device that measure changes in economic activity and thus does not deal with quality of life
- it does not account for varying demands for different countries
- there are inaccuracies in computing statistical data thus figures for such income =are suspect
- Changes in GNP figures can be due to changes in prices over time but not due to changes in output.

3. CONSUMPTION, SAVINGS AND INVESTMENTS

Consumption Function

$C = \alpha + \beta Y$

The function shows that consumption is an increasing function of income.

However, the marginal increase in consumption will be less than the marginal increase in income. That is $\beta < 1$.

The marginal increase in consumption resulting from an increase in income is called marginal propensity to consume (MPC).

MPC is the change in consumption arising from a unit change in income and is represented by $\beta = \left(\dfrac{\Delta C}{\Delta Y} \right)$

The Consumption function is composed of autonomous consumption (α) and induced consumption $((\beta Y)$.

The autonomous part of consumption does not depend on disposable income. Thus it is the consumption when income is zero. There is consumption at zero income because consumption also depends on other factors e.g. transfer payments and savings.

Graphically, the consumption function is presented as follows:
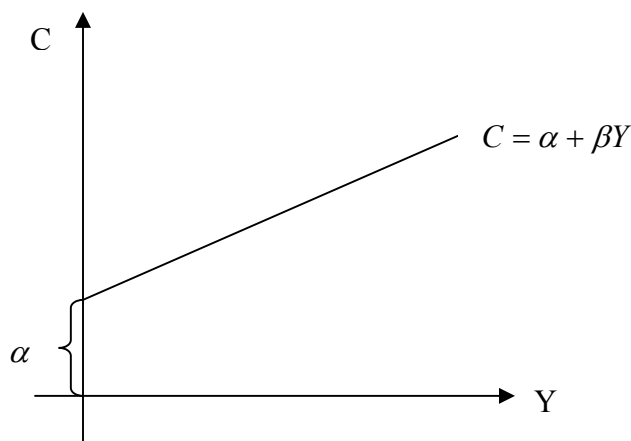
Average propensity to consume, (APC) is the proportion of disposable income that is spent on consumption. It is given by C/Y.

Therefore: from the above consumption function,

$$APC = \frac{C}{Y} = \frac{\alpha + \beta Y}{Y} = \frac{\alpha}{Y} + \beta,$$

$$MPC = \beta = \frac{\Delta C}{\Delta Y} = \frac{dc}{dy}$$

Savings Function

It describes the total amount of savings at each level of disposable personal income. Savings is the difference between disposable income and consumption.
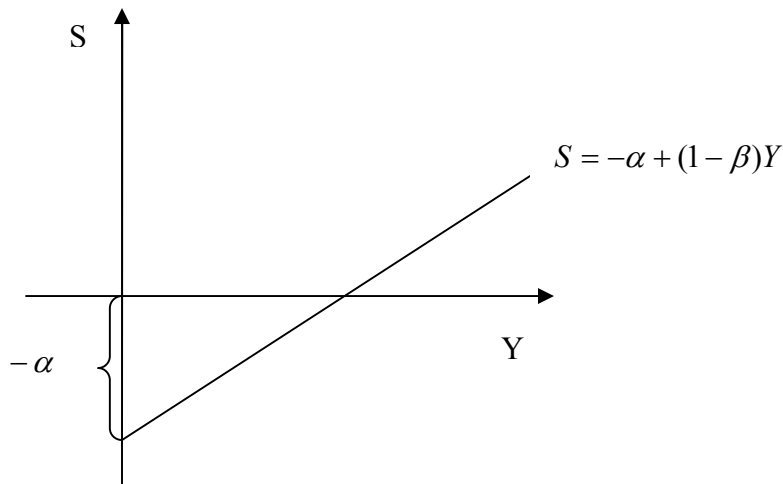
Savings function is given by:
$S = Y - C$

Given the consumption function, we can derive the savings function.

Suppose $C = \alpha + \beta Y$, then
$S = Y - \alpha - \beta Y \Rightarrow S = -\alpha + Y - \beta Y$,

Therefore, $S = -\alpha + (1 - \beta)Y$ is the savings function.

The savings function is upward sloping, implying that savings is an increasing function of income.

The slope of the savings function is the marginal propensity to save (MPS).

MPS is the change in savings resulting from a unit change in personal disposable income. The average propensity to save (APS) is the proportion of disposable personal income that is saved. It is given by S/Y, which implies that as income increases, APS decreases and vise versa.

Mathematically, the relationship between MPC and MPS is given as;

$$MPS = I - MPC \Rightarrow MPS + MPC = 1$$

Income as a Determinant of Consumption

Income is the major determinant of consumption.
Keynesian consumption theory suggests that consumption is linearly dependent on income so that in the short run, $C = \alpha + \beta Y$.

In Keynesian theory, savings is a function of income while investment is a function of interest rate (r). In the long run, it is assumed that consumption entirely depends on income because with time as Y becomes very large α disappears.
Diagrammatically this is shown as follows:
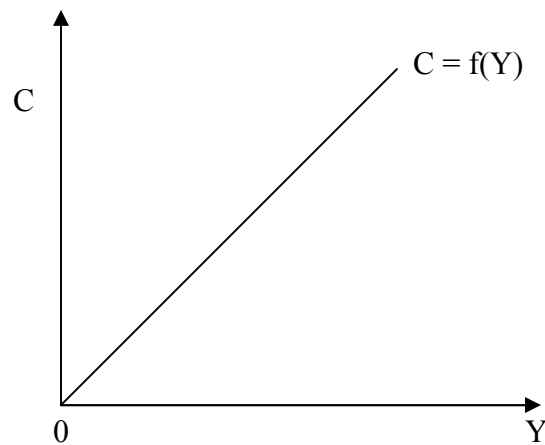
Long run consumption function

In classical economics, savings is a function of interest rate i.e. $S = f(r)$. It is assumed that depending on the interest rate in commercial banks, households decide how much to save, before devoting the balance to consumption i.e. $C = Y - S$ and $S = f(r)$. Note that in

this case S is an increasing function of interest rate hence C is a decreasing function of interest rate (r).

Whereas classical theory emphasizes consumption as a function of interest rates, Keynes' emphasis is on income as the main determinant of consumption. Therefore, the following inferences can be drawn:
- Consumption is a stable function of real income
- Generally, consumption increases as income increases, but not as much as the increase in income
- Short run marginal propensity to consume is less than the long run marginal propensity to consume.
- In the long run, a greater proportion of income will be saved as real income increases hence the APC falls with increase in income.

Theories of Consumption

1. Absolute Income Hypothesis

This hypothesis was postulated by Keynes.

According to this hypothesis, consumption is a function of current level of disposable personal income.

Consumption is directly, but not proportionately related to current level of aggregate disposable income both in the short run and long run. This implies that C/Y decreases as income increases.

Keynes bases this assumption (disproportionate consumption change) on the argument that consumers' reaction to income change is not instant, but gradual since change in income may not be permanent.

Therefore, $C_t = \propto + \beta Y_t + dC_{t-1}$.

This means that consumption over time (C_t) is not only dependent on income overtime (Y_t), but also previous level of consumption (dC_{t-1})

2. The Relative Income Hypothesis

This hypothesis was put forth by James Duesenberry in 1949.

It makes two assumptions:

- Consumption behavior of individuals is interdependent.

- Consumption relations are irreversible over time.

(i) *Consumption behavior of individuals is interdependent.*

This means that the ratio of income consumed depends on the individual's absolute income as well as their relative income, i.e. consumption will depend on the individual's percentile position in the total income distribution within a community. In any given year, an individual will consume small percentage of his/her income if increase in his/her income is accompanied by improvement in his/her percentile position and vice versa. If his/her percentile position remains unchanged over time, the individual will consume the same percentage of his/her income despite changes in the absolute income.

(ii) *Consumption relations are irreversible over time.*

This assumption makes the relative income hypothesis to be referred to as previous peak theory. It means that when income falls during cyclical downswing the resultant fall in consumption will be less than proportionate because individuals base their consumption patterns on previous levels of income. When income increases, consumption increases proportionately, but when income falls below the previous peak, consumption does not fall proportionately.
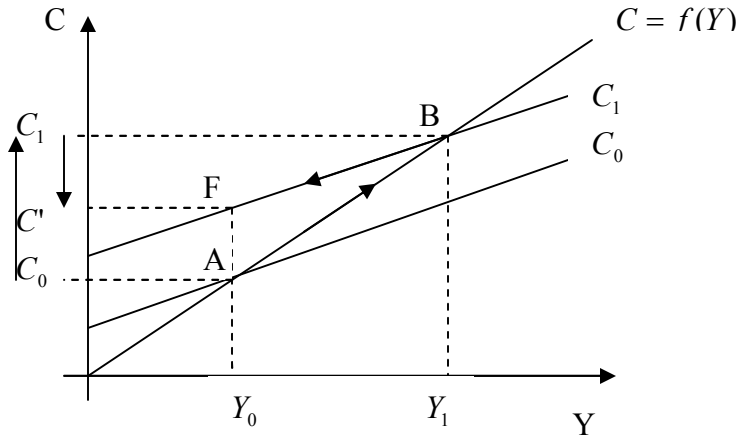
$C = f(Y) = $ *Long run consumption function.*
C_0 & $C_1 = $ *short run consumption functions.*

If income increases from Y_0 to Y_1, the consumer moves along the long run consumption function to Y_1 and consumes at point B from point A. The increase in income causes the short run consumption function to shift from C_0 to C_1. However, a decrease in income does not lead to a downward shift of the short run consumption. This is called the **Ratchet effect**.

Ratchet effect makes the consumer to move back along the short run consumption function following a decrease in Y. When income falls back to Y_0 consumption expenditure moves along the short run consumption function C_1 to point F from point B. F is clearly higher than A.

3. Permanent Income Hypothesis

It was put forward by Friedman in 1957.

It states that consumption depends on permanent income. Permanent income is defined as the present value of the expected flow of long-term income.

According to this hypothesis, permanent consumption (C_P) is proportional to permanent income (Y_P), i.e. $C_P = f(Y_P)$.

The ratio of consumption (C_P) to induced consumption (βY_P) is constant at all levels of income.

Income consists of two components namely: permanent income (Y_P) and transitory income (Y_T).

Transitory income refers to temporary unexpected rise or fall in income. It is given by the difference between measured income (Y) and permanent income (Y_p), i.e. $Y = Y_P + Y_T$.

Note that Y_T can be positive, negative or zero, and that the sum of transitory incomes for a group of persons is equal to zero, i.e. $\Sigma Y_T = 0$.

Like measured income, measured consumption (C) has two parts, permanent consumption (C_P) which is the normal or planned level of spending and it is a function of permanent income, and transitory consumption (C_T) which is unplanned, temporary and is a function of transitory income. Thus

$C = C_P + C_T$

Since $\Sigma Y_T = 0$, then $\Sigma C_T = 0$.

Therefore, we can write basic consumption function as a specific function in permanent income given by

$C = kY_P,$

Where k is the marginal propensity to consume

4. Life Cycle Income Hypothesis

This hypothesis was formulated by Modigliani, Ando and Brumberg. It is therefore also called the MBA hypothesis.

It states that consumption is a function of the expected stream of disposable income over a long period of time and the present value of wealth.

Individuals are assumed to spread out the present value of all future income streams on consumption through out their lifetime. Therefore, consumption is assumed to be a function of lifetime income.

Graphically this is shown as follows:

C,S,Y

S>0,
Net saver

S<0, Net dis-saver

C

S<0, Net borrower

Y

0   Time (Years)
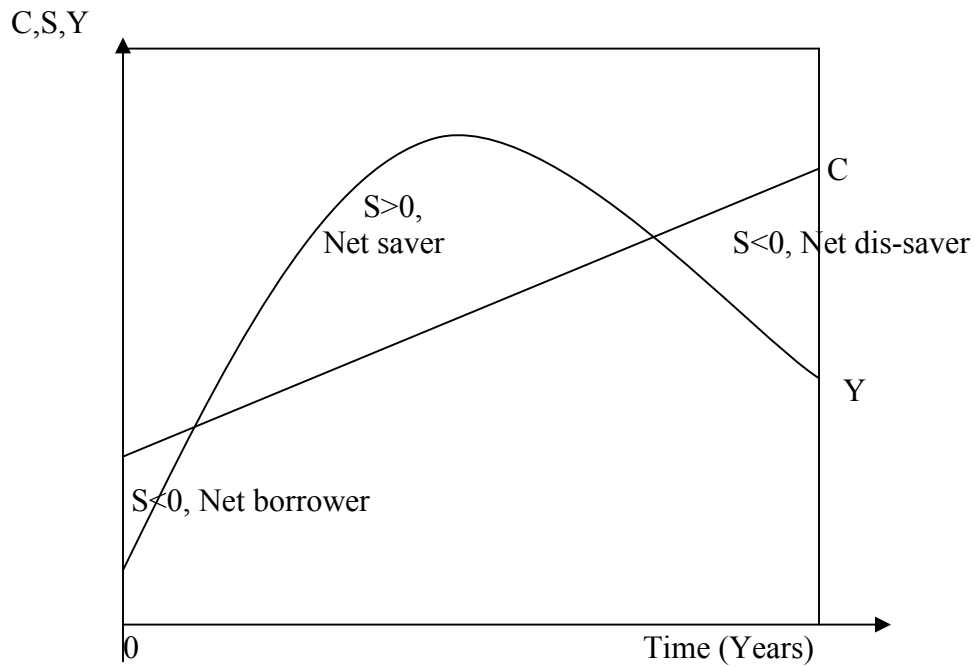
Where   C = Consumption
Y = Income
S = Savings

When, C>Y, the individual is borrowing to consume and build up human capital;

Y>C, the individual is paying loans and saving for future consumption, investment
and   for   bequests; and when

C > Y, the individual is consuming out of savings, pension and social security
fund.

According to the life cycle income hypothesis, the average propensity to consume (APC) is high in the early and late years of an individual's life. This is why there is non-proportionality in income and consumption relationship in the short run. In the long run however, consumption and income relationship will be proportional.

Other Determinants of Consumption

1. *Rate of Interest:* According to classical economists, individuals will save more and spend less as interest rate increases

2. *Relative Prices:* This influences consumption behaviour with consumers shifting to relatively cheaper goods.

3. *Capital gains:* According to Keynes, windfall gains/losses will influence consumption. Keynes argued that consumption of wealth owners can be influenced by sudden changes in the money value of their wealth. Sudden changes are common where the stock exchange market is composed of speculators.

4. *Wealth:* High stocks of wealth lead to low marginal value of wealth and hence less desire to accumulate more. As a result, this leads to increased consumption.

5. *Money stock (Liquid assets):* The higher the stock of liquid assets the higher the marginal propensity to consume.

6. *Availability of consumer credit:* Readily available and/or cheap consumer credit leads to consumers borrowing for consumption purposes. This pushes up the aggregate consumption function.

7. *Attitudes and Expectations of Consumers*: Both change in consumer attitudes and expectations affect their consumption behaviour. If for instance, consumers expect a price increase of a certain good, they may increase their current purchase of the same good.

8. *Money Illusion*: Consumption will go up when consumers suffer from money illusion. Money illusion occurs when consumers fail to realize the price increase accompanying the increase in their nominal income, thereby behaving as though their real income has increased when it has not. Money illusion is also called Pigou or real cash balance effect.

9. *Distribution of Income*: Redistribution of income may cause a shift in the aggregate consumption function, or lead to both a shift to a change in the slope of the function. It therefore affects the level of aggregate consumption, if the recipients have different marginal propensity to consume and average propensity to consume.

10. Composition of Population: Population composition in terms of age, sex and class determines consumption.

Investment Demand Theory

Investment refers to the addition of capital stock in an economy. Therefore, it is given by the value of that part of aggregate output for any given year that takes the form of:

- Construction of new structures
- Changes in business inventories
- New capital investment

Types of Investment

1. *Autonomous Investment* (I_0): This is investment that does not depend on the level of income. It is determined by exogenous functions e.g. inventories, population growth, wealth changes, research, etc.

2. *Induced Investment*: This is investment that depends on income or profit. It is influenced by the factors, which affect income and profit e.g. prices, wages, interest, etc.

   Induced investment is a function of income and is given by the equation

   $$I = I_0 + \lambda Y,$$

   Where λY = Induced Investment

   λ = Marginal propensity to invest (MPI)

   I_0 = Autonomous Investment

   MPI is the change in investment due to a unit change in income i.e. $\Delta I / \Delta Y$, while API is the ratio of investment to income i.e. I/Y.

3. *Gross and Net Investment:*

   Gross investment is the total increase in capital stock in a year.

   Net investment is the net addition to capital stock in an economy after deducting capital consumption allowance from gross investment.

4. *Intended and Unintended Investment*

   Intended (voluntary/planned) investment refers to deliberate accumulation of capital stock aimed at achieving a specific objective.

Unintended (Involuntary/unplanned) investment is where capital stock accumulated due to unexpected fall in demand.

5. *Private Investment*
   - It is investment made by private investors in an economy. It is normally made in response to profit expectations. It depends on the interest rate and the marginal efficiency of capital. It increases as the interest rate falls. It also increases as the marginal efficiency of capital (MEC) increases.

6. *Public Investment*
   - It is investment made by the government and other public enterprises.

Determinants of Investment

1. *Interest rate (i):* Investment is inversely related to interest rate.
2. *Internal rate of Return (IRR):* It is the rate of interest that equates the present value of benefits from a project to the present value of its costs. A decision to invest is based on the comparison between IRR and i.

   If IRR > i, investment is made

   IRR < i, no investment

   IRR = i, other factors are considered in deciding whether or not to invest.
3. *Expected future income flows*;- if the investor expects high profits, then investment will be undertaken and vise versa
4. *Initial cost of the capital good and its useful life*: - if the capital good is affordable then it will be purchased and vise versa. An investor will purchase a good that is likely to last longer
5. *Degree of certainty*: An investor considers the risks and uncertainties involved in a particular investment. if they are high he may not invest
6. *Existing stock of capital:* If the existing capital is large potential investors may be discouraged. Similarly if there is excess or idle capacity in existing capital stock, investment may be discouraged.

7. *Level of income;* a rise in the level of income in the economy due to rise in money wages and other factors prices raises the demand for goods and services and this in turn will induce an increase in investment

8. *Business expectations*; if businessmen are optimistic and confident regarding future returns from capital goods they invest more.

9. *Consumer demand*; If the current demand for consumer goods is increasing rapidly, more investments will be made

10. *Liquid assets*; If investors posses large liquid assets then their inducements to invest is high

11. *Invention and innovation*: If investments and technological improvements lead to more efficient methods of production, which reduce costs, the marginal efficiency of new capital assets will rise, hence firms will invest more.

12. *New products*; if sale prospects of the new product is high and the expected revenue more than costs, investment will be encouraged

13. *Population growth;* this implies that there is a growing market (demand) for goods and services that must be met by increased production hence investment will increase to provide the capital goods required to increase production..

14. *Government policy:* Government can encourage investment through reduction in taxes and provision of social amenities for those investing in particular sectors.

15. *Political climate and stability;* if there is political instability in the economy, investment will adversely be affected.

4. EQUILIBRIUM INCOME DETERMINATION

Equilibrium in the Goods Market

Equilibrium occurs when there is no tendency for change. In the macroeconomic goods market, equilibrium occurs when planned aggregate expenditure is equal to aggregate output.

Assuming a simple closed economy;

Aggregate Output = Y

Planned Aggregate Expenditure (AE) = C + I

Thus at equilibrium; AE = Y = C + I

If this condition does not hold then there will be dis-equilibrium. For example,

If Y > AE, Output is greater than planned aggregate expenditure and there will be unplanned increase in inventories

If Y < AE, Output is less than planned aggregate expenditure and there will be unplanned decrease in inventories.

Therefore equilibrium occurs only when planned aggregate expenditure equals output.

Example:

Suppose that

$C = 10 + 0.8Y$
$\bar{I} = \text{Ksh. } 500$

Compute Equilibrium Income $(\bar{Y})$

Solutions:

$Y = C + \bar{I}$

Therefore:

$Y = 10 + 0.8Y + 500$

$Y - 0.8Y = 10 + 500$

$(1 - 0.8)Y = 510$

$$0.2Y = 510$$

$$Y = \frac{510}{0.2}$$

$$\bar{Y} = \text{Ksh. } 2550$$

Alternatively,

$$Y = \alpha + \beta Y + \bar{I}$$
$$Y - \beta Y = \alpha + \bar{I}$$
$$Y(1 - \beta) = \alpha + \bar{I}$$
$$Y = \frac{\alpha + I}{1 - \beta}$$

Therefore

$$Y = \frac{10 + 500}{1 - 0.8} = \frac{510}{0.2} = Ksh.2250$$

The S = I equilibrium condition of the goods market

Assuming an economy that does not involve in foreign trade, using the income approach National Income (Y) is expressed as Y = C + S + T.

Using the expenditure approach, it expressed as Y = C + G + I = AD

Where: Y = National Income   C = Consumption   S = Savings   T = Tax

G = Government Expenditure and I = Investment

Equilibrium in the goods market requires that aggregate income (output) be equal to aggregate expenditure. Therefore, the goods market equilibrium can be expressed as
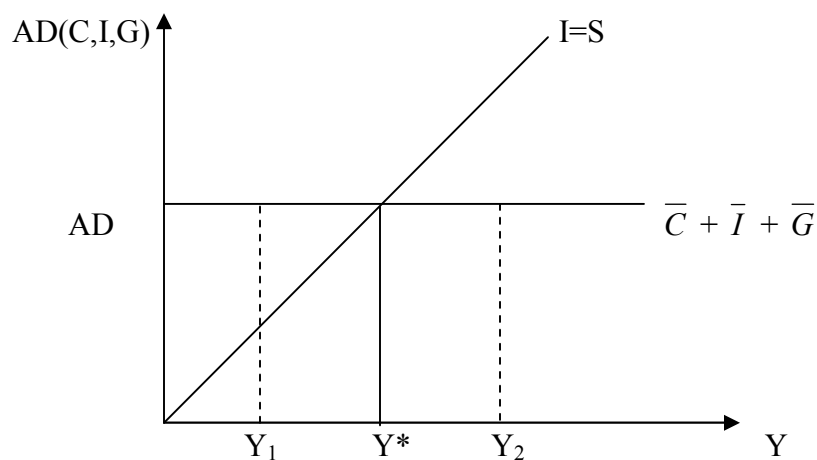
C + S + T = C + G + I

S + T = G + I

Assuming that G = T, then equilibrium is achieved when I = S.

Therefore, I = S is the equilibrium condition in the goods market, meaning that the economy should be at equilibrium at any point along S = I line.

AD
(C+I+G)

I=S

AD

Y*
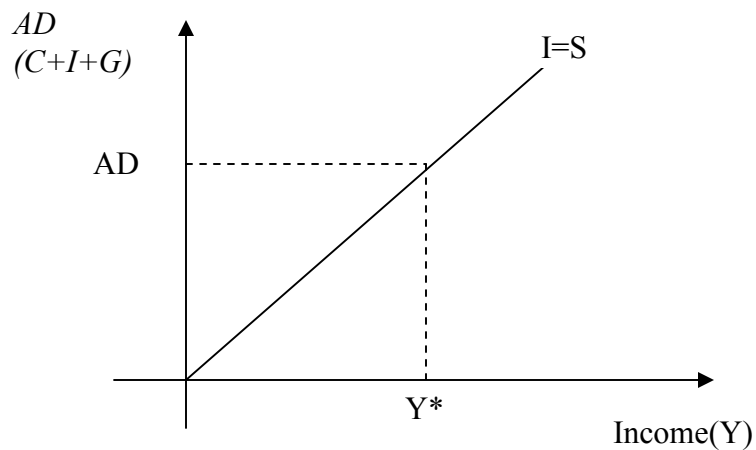
Income(Y)

At equilibrium, all variables are fixed. This means that $AD = \bar{C} + \bar{I} + \bar{G}$

AD(C,I,G)

I=S

AD

$\bar{C} + \bar{I} + \bar{G}$

Y_1 Y* Y_2 Y

The above figure shows condition for equilibrium income.

At Y_2, there is excess supply hence disequilibrium exists in the economy.

At Y_1, demand is greater than supply and disequilibrium exists in the economy.

These situations of disequilibrium are normally short-lived as there is tendency for income to move towards Y*.

If consumption is a function of income, i.e. C = f(Y), and investment is constant, then equilibrium income can be shown as follows:
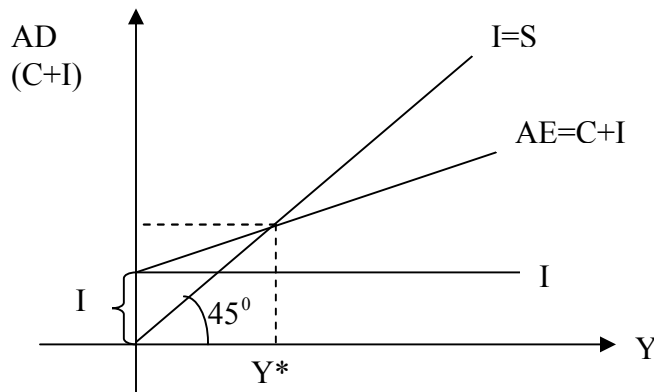
Y* is the equilibrium income, i.e. Income level where desired S = desired I

When Y < Y*, desired S < desired I.

When Y > Y*, desired S > desired I

When savings is equal to investment, the addition to demand due to increase in investment is equal to subtraction from demand due to less spending by households.

We know that aggregate demand is given as $AD = C + I + G$

If both government expenditure and investment are given (Constant) then changes in AD will be due to changes in consumption. The following diagram shows equilibrium incomes in a closed economy at different levels of Aggregate expenditure.
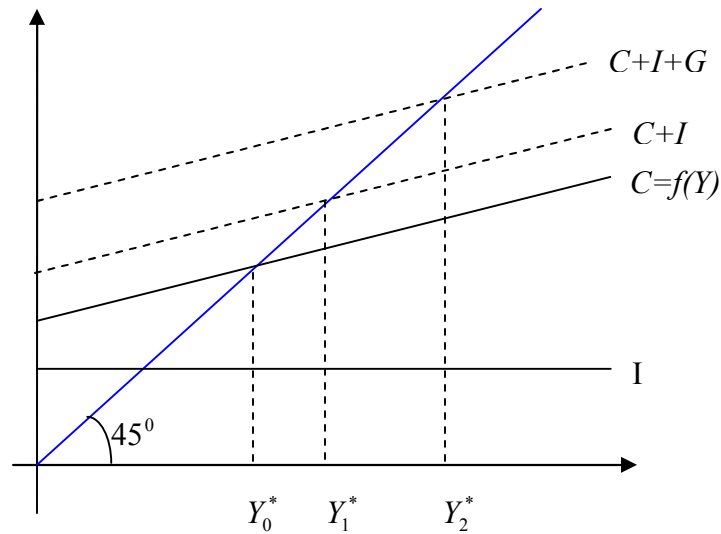
The above diagram shows that equilibrium income increases with every addition of injections into the economy in form of investment and government expenditures.

The IS Equation and curve

We have seen that equilibrium in the goods market require that S = I. all factors that cause changes will Consumption, Savings and Investments will therefore influence the equilibrium position

Suppose the consumption (C) and investment functions are given as

$C = \alpha + \beta Y;$ $0 < \beta < 1$
$I = I_0 - kr;$ $0 < k < I$

Where; I_0 = autonomous investment; α = autonomous consumption; r = interest rate

     and β & k = parameters

1. Using the expenditure approach of deriving the IS equation, and we assume absence of government

$Y = C + I$

$Y = \alpha + \beta Y + I_0 - kr$

$Y - \beta Y = \alpha + I_0 - kr$

$Y(1 - \beta) = \alpha + I_0 - kr$

$$kr = \alpha + I_0 - Y \, (I - \beta)$$

$$r = \frac{\alpha + I_0}{k} - \frac{(I - \beta)Y}{k} \Rightarrow IS \; equation$$

2. Using the savings approach of deriving the IS equation we recall that $S = sY$; *where* s is a parameter and $0 < s < I$
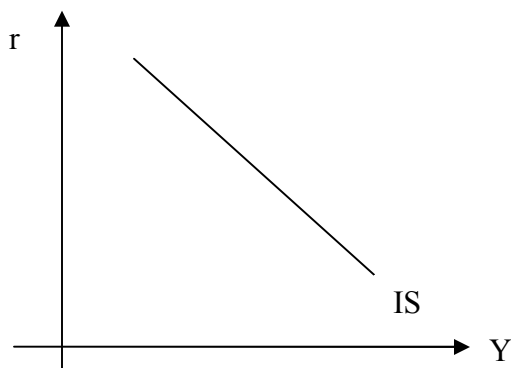
At equilibrium $S = I$; therefore

$$sY = I_0 - kr$$
$$kr = I_0 - sY$$

Hence

$$r = \frac{I_0}{k} - \frac{sY}{k} \Rightarrow IS \; equation$$

The IS equation expresses the interest rates as a function of Income. From the equation it can be noted that at equilibrium in the goods market, interest rates and Incomes are inversely related. Therefore the IS curve is downward sloping


Graphical derivation of the IS curve

The aggregate expenditure function (E) determines a specific national equilibrium income (Y). Since $AE = C + I$; and $I = f(r)$; then AE is also function of interest rate (r). Different levels of expenditure E_1, E_2, and E_3 will be realized at different interest rates r_1, r_2, and r_3. Consequently different levels of equilibrium income (Y) will be Y_1, Y_2, and Y_3 will be realized in the goods market

The IS curve can therefore be derived as follows
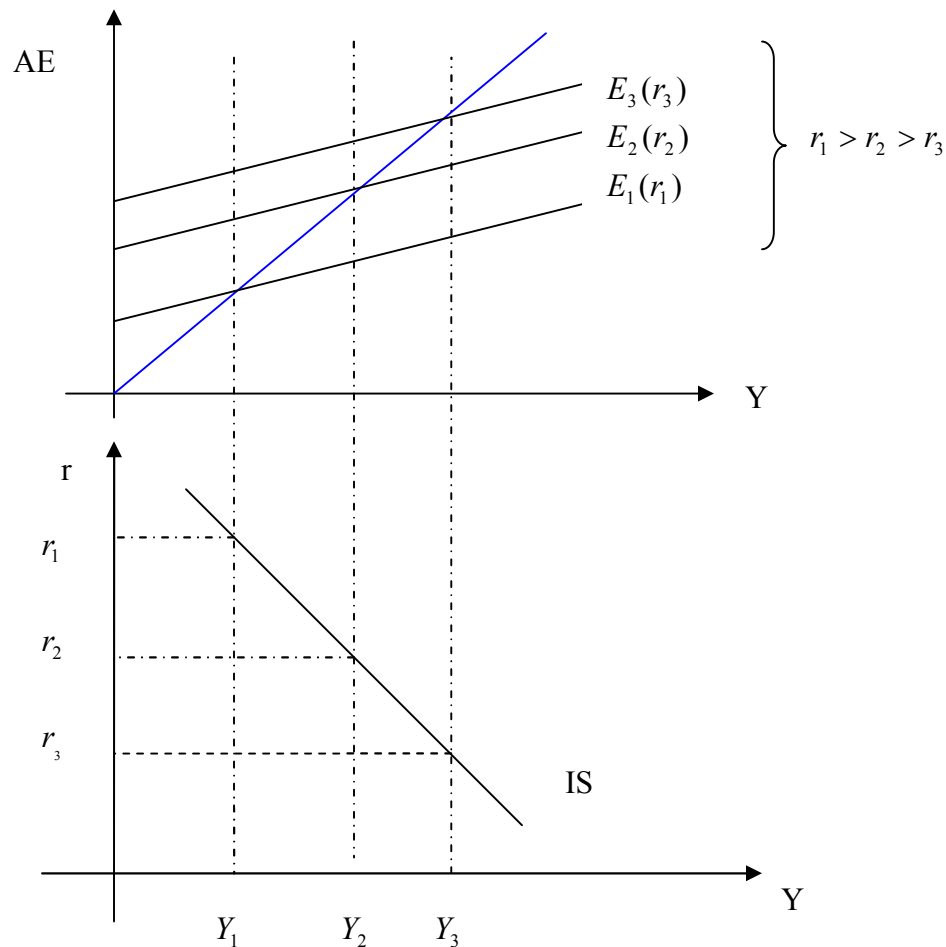
The IS curve shows the equilibrium positions where desired expenditure is equal to desired income. It is downward sloping since investment is an inverse function of interest rate. At higher the interest rates, there is lower investment spending, hence the lower the aggregate income.

From the above diagram, at E_1, interest rate is r_1 and corresponding income is Y_1. As interest falls to r_2 and then r_3, aggregate expenditure curve shifts to E_2 and then E_3 while income increases to Y_2 and then Y_3.

Shifts of the IS curve

Above the IS curve, $Y > E$, savings will increase and the IS curve will shift outwards. Below the IS curve, $E > Y$, is savings decline and the IS curve shifts inwards.

On the IS curve, E = Y and hence the goods market is in equilibrium. The IS curve is defined as the locus of points corresponding to rates of interest and levels of income that produce equilibrium in the goods/product market.

An outward (inward) shift of the IS curve will be caused by an increase (decrease) in any of the following:

- autonomous investment
- autonomous consumption
- government expenditure
- exports (Net)

Dis-equilibrium Income

This occurs when I is not equal to S.

S > I implies that AD = C + I < Y and C + S > C + I.

This leads to accumulation of inventory forcing firms to reduce production and induce a decline in income and employment until S = I.

S < I implies that AD = C + I > Y and C + S < C + I.

This means inventories will be sold and businesses will produce more leading to increase in supply of goods and income until S = I.

Planned investment and planned savings don't always equal each other. Changes in employment, production and income occur causing changes in savings and investment. The direction of these changes will be towards equality of Savings and Investments (S=I)

If planned investment and planned savings differ, changes in production will force consumers to change their savings plans or firms to change their investment plans (or both will occur) until I = S.

It is only at equilibrium that both planned and realized investments and savings will be equal. However, realized investment and realized savings are always equal.

The Multiplier concept

The multiplier is the number by which national income changes due to a unit change in any of its components.

Recall that at equilibrium $Y = C + I$ where;

$$C = \alpha + \beta Y \quad \text{and} \quad I = I_0$$

Thus by substitution

$$Y = \alpha + \beta Y + I_0$$
$$Y - \beta Y = \alpha + I_0$$
$$(1 - \beta)Y = \alpha + I_0$$

Hence

$$Ye = \frac{\alpha + I_0}{1 - \beta}$$

Now suppose that autonomous investment I_0 increases by ΔI; the new equilibrium income will be given as

$$Y_N = Y_1 + \Delta Y$$

$$Y_N = \frac{\alpha + I_0}{1 - \beta} + \frac{\Delta I}{1 - \beta}$$

Therefore: $\Delta Y = Y_N - Y = \left[\frac{\alpha + I_0}{1 - \beta} + \frac{\Delta I}{1 - \beta} \right] - \frac{\alpha + I_0}{1 - \beta} = \frac{\Delta I}{1 - \beta}$

Therefore: $\Delta Y = \left[\dfrac{1}{1 - \beta} \right] \Delta I$

And

$\dfrac{\Delta Y}{\Delta I} = \left[\dfrac{1}{1 - \beta} \right]$ which is the simple investment multiplier.

Example

Suppose $Y_0 = 100$

$\Delta I = 25$

$MPC = \beta = 0.8$,

Change in income (ΔY) will be given by:

$$\Delta Y = \frac{1}{1-0.8} \times 25 = \frac{25}{0.2} = 125$$

Investment multiplier will be given by:

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1-\beta} = \frac{1}{0.2} = 5$$

$$= \frac{125}{25} = 5$$

Multiplier with Induced Investment

Induced investment depends on income. Given Investment function; $I = I_0 + \lambda Y$

λY = Induced Investment and λ = Marginal propensity to invest (MPI)

With induced investment, $Y = C + I$ becomes

$Y = C + I_0 + \lambda Y$.

But $C = \alpha + \beta Y$

Therefore:

$Y = \alpha + \beta Y + I_0 + \lambda Y$.

$Y - \beta Y - \lambda Y = \alpha + I_0$

$Y(1 - \beta - \lambda) = \alpha + I_0$

$$Ye = \frac{\alpha + I_0}{1 - \beta - \lambda} = \frac{\alpha + I_0}{1 - MPC - MPI}$$

Now suppose that autonomous investment (I_0) increases. The new equilibrium income will be

$$Y_N = Y + \Delta Y = \frac{\alpha + I_0 + \Delta I}{1 - \beta - \lambda}$$

$$Y_N = \frac{\alpha + I_0}{1 - \beta - \lambda} + \frac{\Delta I}{1 - \beta - \lambda}$$

$$\Delta Y = Y_N - Y = \left[\frac{\alpha + I_0}{1 - \beta - \lambda} + \frac{\Delta I}{1 - \beta - \lambda}\right] - \left[\frac{\alpha + I_0}{1 - \beta - \lambda}\right]$$

$$\Rightarrow \Delta Y = \frac{\Delta I}{1 - \beta - \lambda} = \frac{1}{1 - \beta - \lambda} \Delta I$$

Therefore:

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1 - \beta - \lambda} \Rightarrow \text{The multiplier with induced investment}$$

The multiplier with Government Spending

Given

$Y = C + I + G$ and $Y = C + S + T$

At equilibrium, $Y = C + I + G = C + S + T$

So that $I + G = S + T \Rightarrow$ Equilibrium condition.

But, $Y_d = Y - T$ and Consumption is a function of disposable income Y_d not Y.

Therefore:

$$Y = \alpha + \beta\,(Y - T) + I + G$$

$$Y = \alpha + \beta\,Y - \beta\,T + I + G$$

$$Y - \beta Y = \alpha - \beta T + I + G$$

$$(1 - \beta)Y = \alpha - \beta T + I + G$$

Hence

$$Ye = \frac{1}{1-\beta} \left[\alpha - \beta T + I + G \right] \quad \text{Where the coefficient } \frac{1}{1-\beta} \text{ is the multiplier}$$

Government expenditure multiplier is derived as the effect on income arising from a unit change in government expenditure (ΔG).

Therefore: $\Delta Y = \frac{1}{1-\beta} (\Delta G)$

Hence

$$\frac{\Delta Y}{\Delta G} = \frac{1}{1-\beta} \Rightarrow \text{The government expenditure multiplier}$$

After change in government spending (G), new equilibrium income will be

$$Y_N = Y + \Delta Y = Y^* + \frac{1}{1-\beta} \Delta G$$

The Tax multiplier

If taxes change by ΔT, then

$$\Delta Y = \frac{1}{1-\beta} \left[-\beta \Delta T \right] = \frac{-\beta}{1-B} \Delta T$$

Therefore

$$\frac{\Delta Y}{\Delta T} = \frac{-\beta}{1-\beta} \Rightarrow \text{Tax multiplier}$$

Example
Suppose MPC = 0.8, Y = ksh.1160 and ΔT = ksh.40. Compute the change in income.

$$\Delta Y = \frac{-B}{1-B} (\Delta T) = \frac{-0.8}{1-0.8} \times 40 = \frac{-0.8}{0.2} \times 40 = -4 \times 40 = -160/=$$

Therefore: Income reduces by 160/=

New income then becomes YN = Y + ΔY = 1160 – 160, Y_N = 1000/=

Balanced Budget Multiplier

Balanced budget implies that planned government expenditures equal revenue.

That is, G = T

> When G > T, the budget is in deficit
> When G < T, the budget is in surplus
> When G = T, the budget is balanced

Increase in equilibrium income due to an increase in government spending, in a closed economy with lump sum taxes only, is given by $\Delta Y = \dfrac{\Delta G}{1-\beta}$

The fall in the equilibrium income due to the increase in lump-sum taxation to meet the revenue needs of increase in G is:

$$\Delta Y = -\frac{\beta \Delta T}{1-\beta}$$

If taxes and government spending change simultaneously, the combined effect on income is given by:

$$\Delta Y = \frac{\Delta G}{1-\beta} - \frac{B\Delta T}{1-\beta}$$

If the government maintains a balanced budget, it means that $\Delta G = \Delta T$. Therefore:

$$\Delta Y = \frac{\Delta G}{1-\beta} - \frac{\Delta G}{1-\beta} = \left[\frac{1-B}{1-B}\right]\Delta G = \Delta G$$

Therefore: Balanced budget multiplier is 1

Example:

Suppose $\beta = 0.75$,

$$\frac{\Delta Y}{\Delta G} = \frac{1}{1-0.75} = \frac{1}{0.25} = 4,$$

$$\frac{\Delta Y}{\Delta T} = \frac{-\beta}{1-\beta} = \frac{-0.75}{1-0.75} = \frac{-0.75}{0.25} = -3$$

This means that a change in tax will change income by a multiple of 1 less than an equal change in G. A balanced budget therefore does not have a neutral impact on the system.

Multiplier when Tax Depends on Income

If tax is a function of income, then tax function can be represented by
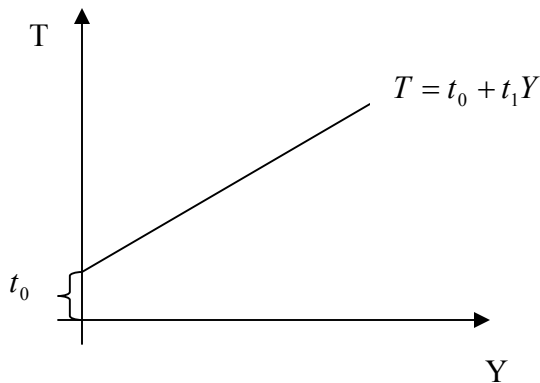
$T = t_0 + t_1 Y$

  Where t_0 = autonomous tax

        t_1 = tax rate

      $t_1 Y$ = Tax dependent on Y

This can be represented graphically as follows;

But

$$Y = C + I + G$$
$$C = \alpha + \beta(Y - T)$$
$$= \alpha + \beta Y - \beta T$$
$$= \alpha + \beta Y - \beta(t_0 + t_1 Y)$$
$$= \alpha - \beta t_0 + \beta Y - B t_1 Y$$

Thus

$$Y = \alpha - \beta t_0 + \beta Y - B t_1 Y + I + G$$
$$Y - \beta Y + \beta t_1 Y = \alpha - \beta t_0 + I + G$$
$$Y[1 - \beta(1 - t_1) = \alpha - \beta t_0 + I + G$$

Therefore

$$Y = \frac{1}{1 - \beta(1 - t_1)}\left[\alpha - \beta t_0 + I + G\right]$$

Therefore: where tax is a function of income, the multiplier is given by

$$\frac{1}{1 - \beta(1 - t)}$$

Multiplier with Foreign Sector

In equilibrium,

$$Y = C + \bar{I} + \bar{G} + (\bar{X} - M)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$
$$C = \alpha + \beta(Y - T)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$
$$T = tY \qquad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3)$$
$$M = M_0 + dY\dots\dots \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

Substituting equation 2 – 4 into equation 1 we get:

$$Y = \alpha + \beta(Y - tY) + \bar{I} + \bar{G} + \bar{X} - M_0 - dY$$

$$= \alpha + \beta Y - \beta tY + \bar{I} + \bar{G} + \bar{X} - M_0 - dY$$

$$Y - \beta Y + \beta tY + dY = \alpha + \bar{I} + \bar{G} + \bar{X} - M_0$$

$$Y(1 - \beta + \beta t + d) = \alpha + \bar{I} + \bar{G} + \bar{X} - M_0$$

$$Y = \frac{\alpha + \bar{I}}{1 - \beta(1 - t) + d}$$

Effect of a change in investment on income is;

$$\Delta Y = \frac{\Delta \bar{I}}{1 - \beta(1 - t) + d}$$

Therefore the injections multiplier is given by: $\dfrac{1}{1 - \beta(1 - t) + d}$

41

Note: Changes in $\overline{G}$ and $\overline{X}$ will have the same multiplier effect on national income as changes in $\overline{I}$. However, effect of change in $\overline{T}$ is given by:

$$\frac{-\beta\Delta T}{1-\beta(1-t)+d}$$

Paradox of Thrift

This shows that an attempt by the community to save more out of any given income will lead to a decrease in the actual amount it succeeds to save.
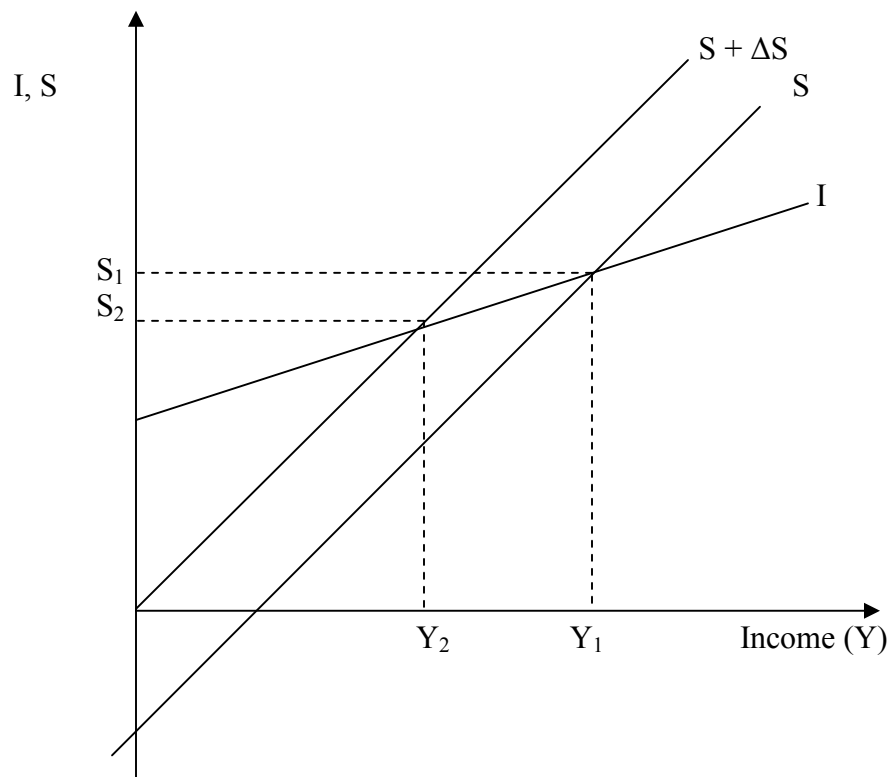

The above figure illustrates the paradox of thrift.

With the original savings function (S) and the investment function (I) equilibrium income is Y_1 and realized savings is S_1. An upward shift in the savings function to $S + \Delta S$, which shows the community's effort to save more (increase in the marginal propensity to save), leads to a new equilibrium income Y_2 and new realized savings of S_2. **Note that $S_2 < S$**

Inflationary and Deflationary Gaps

Inflationary gap arises when an increase in spending moves the economy away from the equilibrium at full employment position. Inflationary gap is the amount by which aggregate demand rises above the level necessary for full employment in the economy.

C, I

C+I+ΔI

I-G

C+I

C+I-ΔI

D-G

Y_{DG} Y_F Y_{IG}
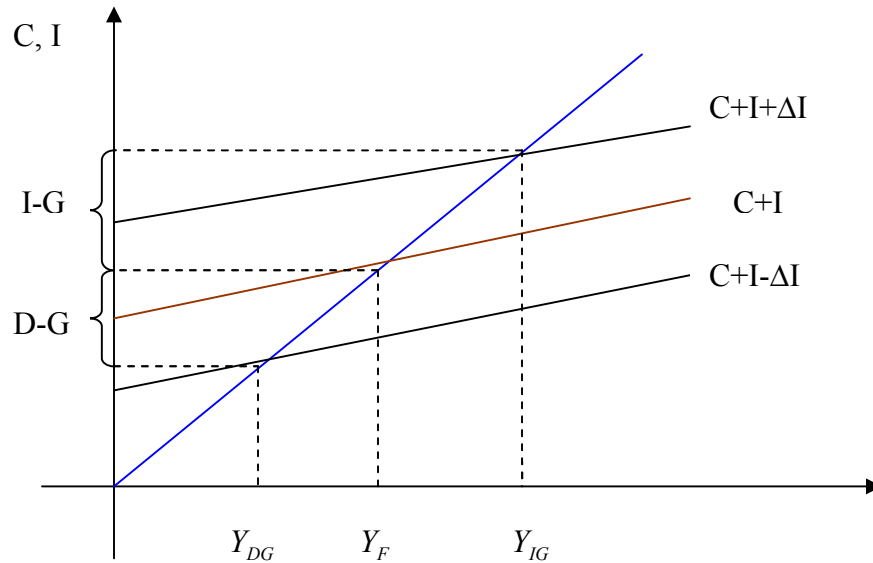
The above diagram shows inflationary and deflationary gaps.

When aggregate demand increases from $C + I$ to $C + I + \Delta I$, Y_{IG} becomes the equilibrium income. However, Y_{IG} is unattainable since at Y_F all resources are fully employed. This means that people have more money chasing fewer goods and services, hence prices of products increase, pushing up the nominal national Income to Y_{IG}. The difference between Y_F and Y_{IG} is due to inflation and it is called the inflationary gap.

Inflationary gap can be removed by increasing prices through

- increased indirect taxes
- reducing people's incomes through direct taxes and
- reduced government expenditures.

Deflationary gap is the amount that demand falls short of the necessary level required for full employment in an economy. When aggregate demand falls from $C + I$ to $C + I - \Delta I$, Y_{DG} becomes the equilibrium income. However, this level is undesirable, as it causes

unemployment. This means that the consumers have less money chasing too many products, hence a slump in prices and employment. The difference between Y_{DG} and Y_F is the deflationary gap. The deflationary gap can be removed by a combination of some or all the following:

- increasing people's incomes through reduction of income taxes
- reducing prices through reduction of indirect taxes
- increase in government expenditures.

NOTE: Increase (decrease) in spending (aggregate demand) arises due to an increase (decrease) in investment.

5. THE MONEY MARKET

Money and its Basic Functions

Money is an asset that is generally acceptable in transactions. Money can be defined as narrow or broad money. Narrow money is composed of money balances that are held to carry out the day-to-day spending. Broad money refers to money balances held as a store of value in addition to that held for transaction purposes.

Money has four basic functions

1. *As a unit of account*: it is a unit of measurement and therefore facilitates quick comparison of the values of various goods and services. It also aids in financial accounting of business as well as expressing the values of a country's GNP and balance of payment.

2. *As a store of value*: It enables individuals to delay a potential purchase to the most convenient time by providing them with a way in which to store their purchasing power. Its efficiency as a store of value however, is affected by inflation.

3. *As a medium of exchange*: It simplifies the transaction process since the double coincidence of wants, required for barter is unnecessary.

4. *A standard of deferred payment*: Since many transactions are conducted on the basis of credit, it is convenient for the debts to be expressed and payment made in money terms. This particular role of money is also affected by inflation, making money less efficient.

Properties of Money

As a medium of exchange, money needs the following properties.

1. Durability: Money needs to be durable to withstand the frequent movement from one hand to another as a medium of exchange.

2. Acceptability: Money must be acceptable by all those involved in transactions otherwise it will collapse as a medium of exchange.

3. Divisibility: Money should be divisible to facilitate effective exchange since different goods and services fetch various prices.

4. Portability: Money should not be cumbersome to carry
5. Liquidity: Money should be liquid i.e. it should be easy to carry out transactions using it.

Financial Institutions

Are organizations legally bound to deal with finances. There are three categories of these institutions namely: -

- Commercial Banks
- Central Bank
- Non-bank financial institutions

A **commercial bank** is a financial institution, which accepts deposits and gives credit. It performs three main functions:

- To facilitate exchange
- To provide facilities for savings to depositors
- Distribute credit to business enterprise and consumers

Creation of Money

This is the process by which banks multiply money in the economy using customer's deposits. When an individual deposits cash in a bank, the deposited cash becomes a liability to the bank and an asset to the depositor. The bank converts this liability into an asset in form of reserves and loans given out to borrowers. This process of money creation is referred to as credit creation and it operates as follows:

Suppose that there is only one bank, A. If Mr. X deposits 1000/= with the bank it will be entered in the banks books as:

A Bank

Assets	Kshs.	Liabilities	Kshs.
Reserve (10%)	100	Deposits	1000
Loans	900		
	1000		1000

The bank lends 900/= to Mr. Y who has an account in the same bank. Mr. Y deposits the money.

A Bank

Assets	Kshs.	Liabilities	Kshs.
Reserve (10%)	190	Deposits	1900
Loans	1710		
	1900		1900

The bank lends 810/= to Mr. Z.

A Bank

Assets	Kshs.	Liabilities	Kshs.
Reserve (10%)	271	Deposits	2710
Loans	2439		
	2710		2710

This process continues indefinitely, subject to the following limitations:

- (i) The cash ratio

- (ii) Lack of demand for loans

- (iii) Cash drain

Central bank is the financial institution at the center of the banking system. Its functions include:

- Issue of currency (notes and coins)

- Supervision of banks and other financial institutions

- It is the bankers' bank (lender of last resort)

- Government's bank

- Represents the country in international monetary meetings.

Demand for Money

There are three approaches to the study of demand for money namely:-

- Classical approach
- Keynesian approach
- Post-Keynesian or modern approach

1. Keynesian Theory of Demand for Money

According to Keynes there are three distinctive motives for holding money.

(i) Transactions motive

(ii) Speculative Motive

(iii) Precautionary Motive

An individual's aggregate demand for money is based on a decision that takes the three motives into account.

(i) Transactions Demand for Money

This is the amount of money that households, firms and the government hold, for future exchange of goods and services. These agencies hold money because income (money receipts) and expenditure flows are not synchronized in time. Expenditure tends to be continuous while receipts are discrete. Money is therefore required to bridge the gap between receipts and disbursements. The amount of money held for transaction purposes depend on:

- Level of income
- Spending habits
- Time interval in-between income receipts

Money is held at an opportunity cost of the interest it would earn if it were invested. Holding spending habits and interval between income receipts constant, the higher the income, the higher the amount of money held for transaction motive.
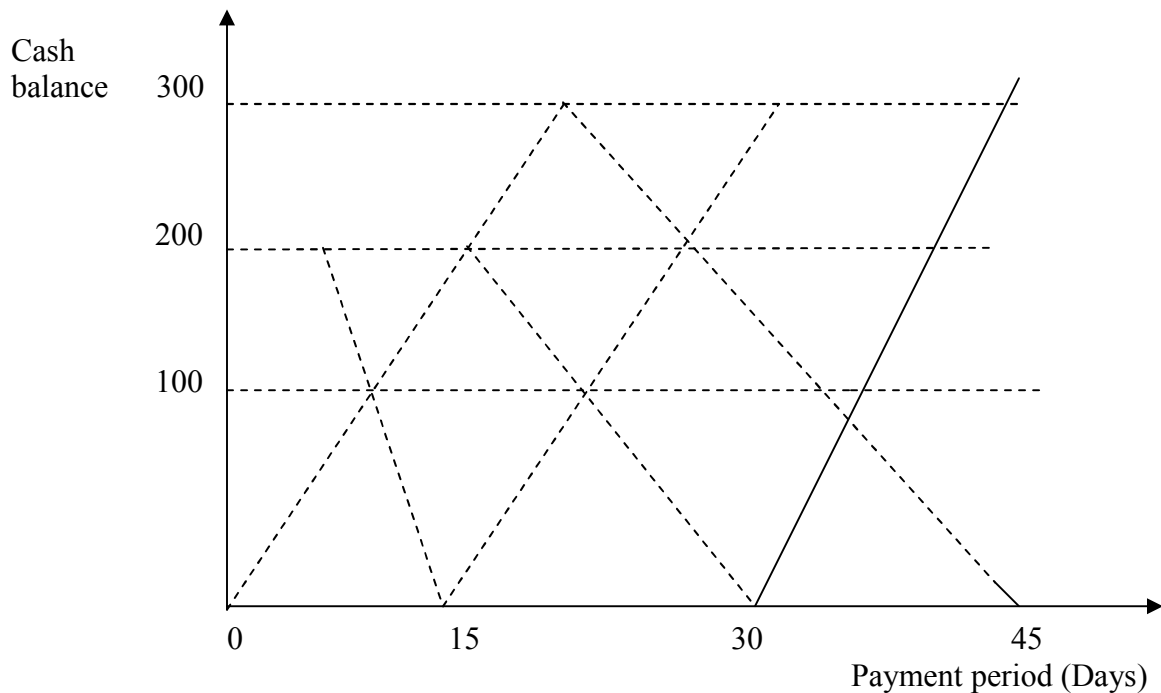
Transactions demand for money is given by

$M_t = L_t (Y)$

Where; Y = Level of income, M_t = Total amount of money demanded for transaction motive and L_t = Liquidity function corresponding to the money income

OR

$M_t = kY$

Where k = L_t and $0 < k < 1$

M_t is also a function of frequency of money receipts. The shorter the pay period, the less the income required for transaction purpose, holding other factors constant. As payment period becomes longer, people will need to hold more money for transaction purpose.

According to Keynes, transactions demand for money is interest inelastic. But at very high interest rates and with increased income, people convert some of their idle balances into interest bearing securities, such as treasury bills, etc, provided that the cost of buying and selling those securities is less than the expected interest.
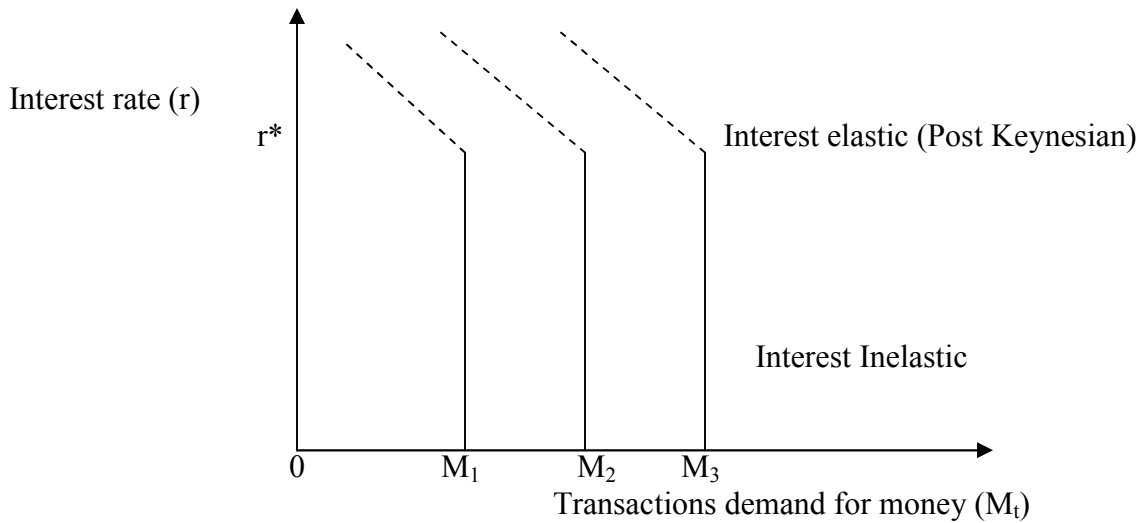
Thus according to Keynes, transactions demand for money will be interest inelastic up to point r*. Above r* transaction's demand for money becomes interest elastic.

In the post Keynesian theory therefore, transaction demand for money is a function of income (Y) and interest rate (r) i.e. $M_t = f(Y,r)$

Precautionary Demand for Money

This is the amount of money held to provide for unexpected expenditures. According to Keynes precautionary demand is determined by an individual's income and institutional factors, which he considered fixed in the short run, so that;

$M_t = kY,$

Where M_t is combined transaction and precautionary demand for real cash balances.

Unlike in the classical quantity theory where the world is assumed to be perfect with all receipts and expenditures known, in the Keynesian model, there exists uncertainty, hence need for precautionary money balances. The precautionary motive arises from the need to provide for the contingencies that require sudden expenditure and for unforeseen opportunities. Just like the transaction motive, precautionary demand for money is interest inelastic.

Speculation Demand for Money

It refers to the amount of money held to take advantage of profitable opportunities that may arise in financial markets. Whereas the transactions and precautionary motives of demand for money look at money as a medium of exchange, the speculative motive looks at it as store of value. People hold money for speculation purposes due to uncertainty about the future rate of interest. A fall in the interest rate leads to an increase in the speculation demand for money. Speculation motive is an inverse function of interest rate as shown by the following diagram.

Rate of interest (r)

$M_{SP} = L_i(r)$

0   Speculation demand for money (M_{SP})
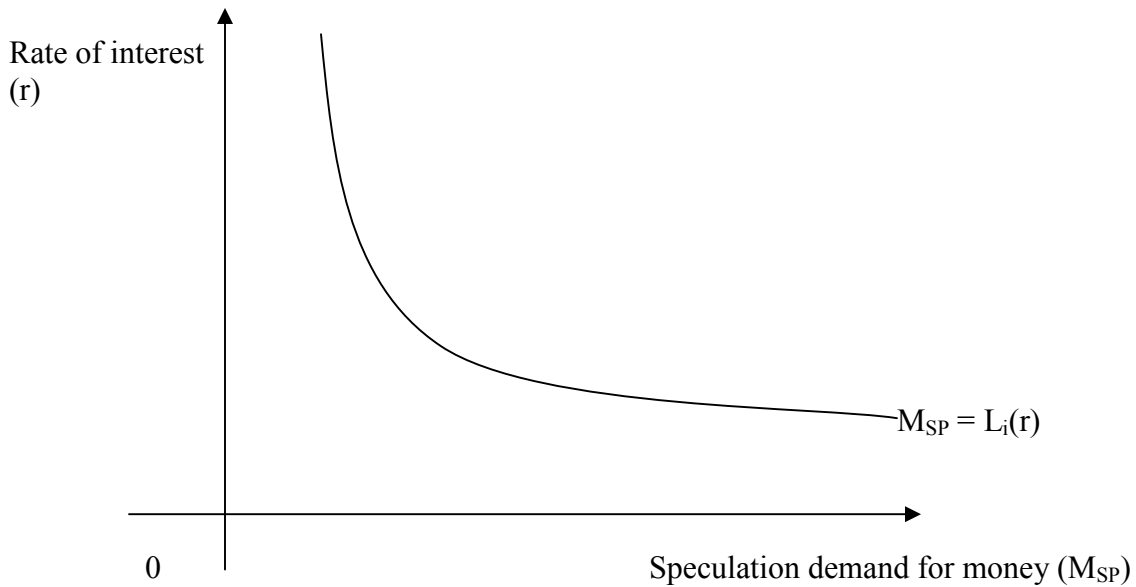
The speculation demand for money can be written in notation form as:

$$M_{SP} = L_i(r); \text{ where } \frac{dM_{SP}}{dr} < 0$$

According to Keynes therefore, the aggregate demand for money (M_d) is the sum of speculative demand, transactions demand and precautionary demand for money, i.e.
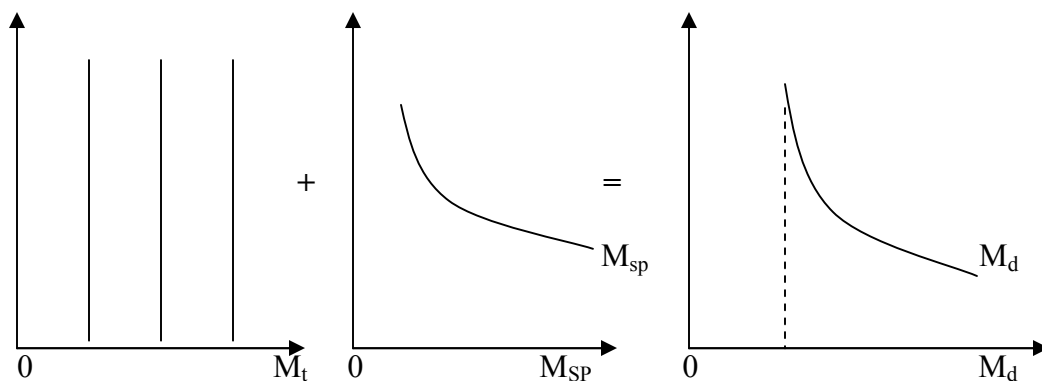
$M_d = M_t + M_{SP}$

Where M_t = Transaction and precautionary motives and M_{SP} = Speculative motive,

Thus

$M_d = kY + L_i(r)$

Graphically, this can be represented as shown below:

	+ Speculative	=	Aggregate demand
Transaction and	demand		for money
Precautionary demand			

NB: Md = L(Y,r)

Due to the effects of the speculation demand for money, the aggregate demand for money is downward sloping and convex to the origin. At a certain level of interest (r*), the aggregate demand for money curve becomes horizontal, which means that demand for money is perfectly interest-elastic. This implies that further fall in interest has no effect on the speculative demand for money. This situation is referred to as **liquidity trap.**
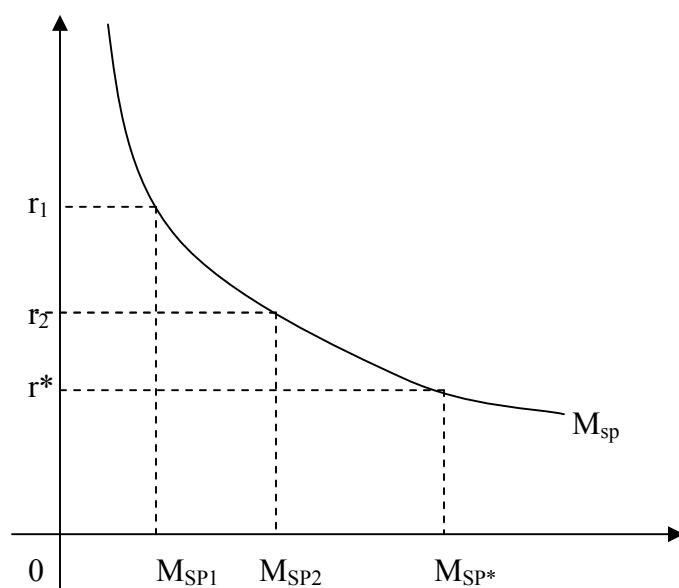
r* is the liquidity trap interest rate. At this rate people prefer to hold their wealth in cash rather than bonds, since the interest foregone is very low. At this level of interest, the net return to bonds is zero. At low interest rate, bond prices are high and therefore likely to fall. This poses a risk of capital loss for investors, hence their decision to hold wealth in cash.

1. The Modern Quantity Theory of Money

It was put forward by Friedman. According to this theory, money is just one of the many ways in which wealth can be held. The other ways include consumer durables, all kinds of financial assets, property and human wealth. This theory postulates that money has a convenience yield in the sense that holding it saves time and effort in carrying out transactions. In this model, the equation for demand for money is given as:

$$\frac{Md}{P} = f(W, r, w, T)$$

Where $\frac{Md}{P}$ = real demand for money;

W = total wealth;

r = expected rate of return on various forms of wealth;

w = ratio of human wealth to non-human wealth; and

T = Society's tastes and preferences.

- Demand for money is directly related with total wealth as long as wealth holders regard money as a normal good.
- Since rates of return on bonds and equities represent the opportunity cost of holding money, demand for money is inversely related to the expected rates of return on wealth.
- The higher the ratio of human to non-human wealth the greater will be the demand for money in order to compensate for limited the limited marketability of human wealth.

- Demand for money also depends on various factors that influence wealth holders' tastes and preferences for money.

Friedman defines income in this model as measured by permanent income. He also assumes that W & T are constant in the short run. Therefore, the aggregate money demand becomes:

$$\frac{Md}{P} = f(Y_P, r)$$

This is the modern quantity theory of demand for money equation.

Money Supply

Money is defined in two ways: **narrowly** and **broadly.**

The narrow definition for money includes coins, currency, demand deposits and other checkable deposits. The total of coins, currency, bank deposits and other checkable deposits is what we call money supply in the narrow sense. This is also called M1.

Coins:
• Are a small proportion of the total quantity of money in an economy. They come in small denominations.
• They are made of metal and normally the value of metal in them is less than the face value of the coin.

Currency
• This is paper money e.g. 50/= and 100/= bills.
• Currency constitutes the second and far larger share of the total money supply than coins.
• The central bank of Kenya issues all the currency just as it does the coins.
• Initially, there used to be gold of equivalent value to the amount of currency issued to back it and give it value. Currently, however, all the money is not backed by gold. Its value is derived from its acceptability by people.

Bank Deposits

These are bank deposits subject to payment on demand. They are much larger than coins and currency. They are also called checking accounts. These deposits are considered to be money because they can be as easily used in transactions as cash, by simply issuing a check. They are as much as money in storing value, as a medium of exchange and as a standard of value.

Other checkable deposits

These include negotiable order of withdrawal (NOW) accounts and other accounts that are very close to being demand deposits. NOW accounts are interest-bearing checking accounts at banks, savings societies and other financial institutions.

Money supply is *broadly defined* as narrow money plus savings and small time deposits, money market mutual fund balances and money market deposit accounts. This money supply broadly defined is also called M2.

The reason why time and savings deposits were excluded from the narrow definition of money is that they are not readily withdrawable and so can't perform effectively the role of being medium of exchange. However, since they perform the other functions of money and can actually be withdrawn and used for transaction (though not readily), they have been included in M2.

NB

Note that there is no clear dividing line between money and non-money, since many assets have some characteristics of money. For instance, it is easy to convert government bonds into money, but they are not included in money because their prices fluctuate with interest rates and so they are not a good store of value. Assets that are easy to convert into cash are called rear-money. There is disagreement, however, among economists as to what is to be considered rear-money and what not to be considered rear-money.

The concept of velocity of money

- Velocity of circulation of money is the rate at which money stock is used to make transactions for final goods and services.
- This was put forward by Irving fisher, in his version of the quantity theory of money
- Fisher summarized the quantity theory of money in the following equation:

$$MV \equiv PT$$

Where: M = nominal stock of money in the economy

V = the transactions velocity of circulation of money

P = the general price level of all transactions

T = the number of transactions that take place during the time period

- Both MV and PT measure the total value of transactions during the time period hence are always identical.
- For example if we suppose that in a given economy the number of transactions (T) = 100 and the average price (P) is 10/=, then PT = 1000/=. If the stock of money is 100/=, then the number of times it changes hands (V) = 10.
- Therefore given any three of the components of the identity MV = PT, it is possible to compute the value of the remaining component.

Classical theory of money supply

- Classical economists assumed that both V and Q are constant.
- V is constant because the peoples stable behavior of holding money.
- Q is constant because the economy is assumed to be at full employment.
- If those assumptions hold, then from the exchange equation (MV = PQ), the price level must be proportional to money supply (M).
- In the short run the real GNP will not change hence

$$P = \left(\frac{V}{Q}\right)M$$

Where $\dfrac{V}{Q}$ is constant

Equilibrium in the Money Market

Equilibrium in the money market occurs only when money supply equals money demand; $M_d = M_S$.

But $M_d = M_t + M_{SP}$; hence at equilibrium; $M_S = M_t + M_{SP}$

M_S is taken as an exogenous variable, determined by the Central Bank's monetary policy.

Based on this assumption therefore, M_S curve is given as shown in A and equilibrium as in B below
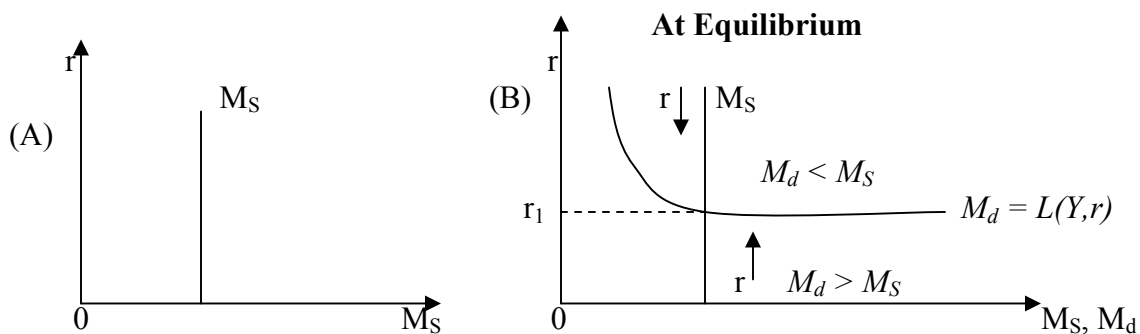
At r_1, the money market is in since $M_d = M_S$ thus r_1 is the equilibrium interest rate. Any other rate of interest will cause disequilibrium in the money market. for example;

- below r_1 ($M_d > M_S$) - interest rate must increase so that demand for money reduces to bring about equilibrium

- above r_1 ($M_d < M_S$) – Interest rate must reduce in order to increase demand for money to equate it to supply of money

Effects of increase in Money Supply on Interest Rate

Increase in money supply leads to a fall in the interest rate.
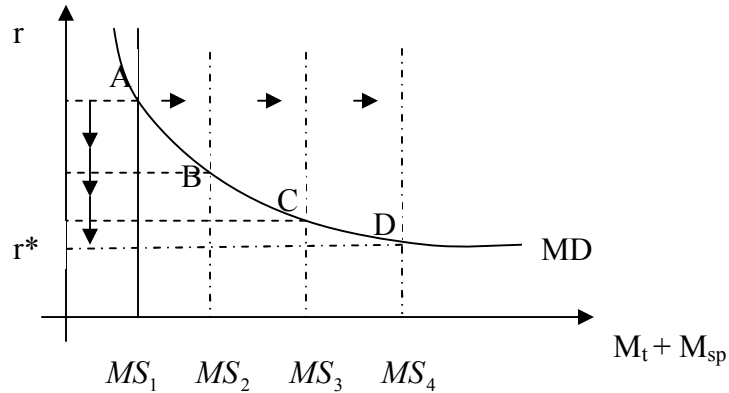
r* is the interest rate at the liquidity trap

- Expansion of money supply from M_{S1}, through to M_{S4} will lead to interest falling from r_1(A) to r_2(B) to r_3(C) and eventually to r*(D). This increases Investment.

- Depending on the interest elasticity of the investment demand function and the value of the investment multiplier, therefore, expansionary monetary policy can help reduce unemployment and expand output in the economy.

- Any increase in money supply (MS) beyond MS_4 will be ineffective in bringing about a fall in interest rate (r).

- This is because MS_4, the liquidity trap exists and therefore, the entire increase in money beyond this point goes to satisfy the demand for idle speculation balances.

The Effect of a Change in Income on Interest Rate

If speculative demand for money (M_{SP}) and nominal supply of money (M_S) are fixed, interest rate (r) will vary directly with changes in income i.e. increase in income will lead to increase in interest rate.

$Y_2 > Y_1$
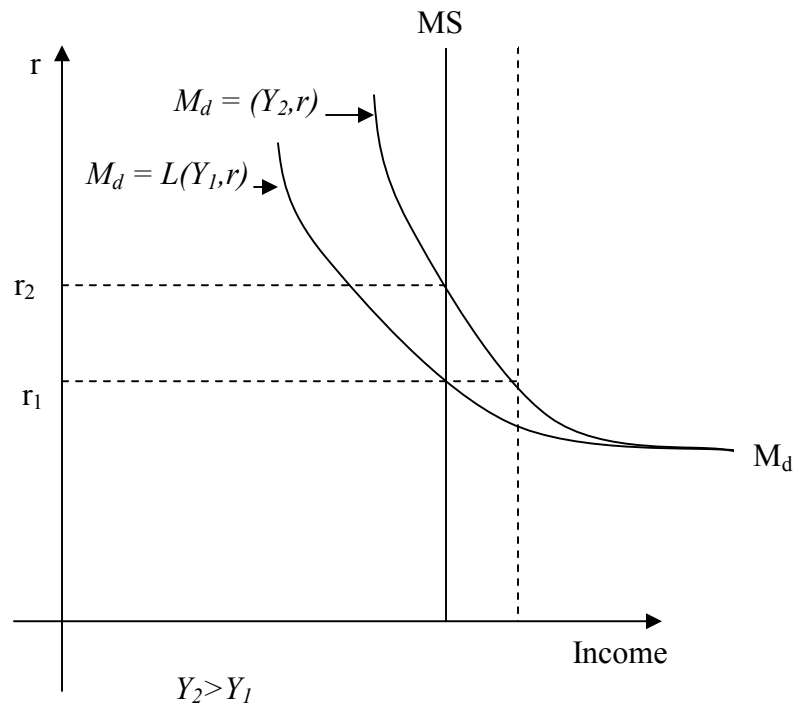
If Y increases while M_{SP} and M_S remain constant, r will rise from r_1 to r_2.

When income increases, people need more money for transactions purposes. Since we have assumed fixed money supply, then to increase transactions money balances people reduce their speculative money balances. They do so by selling off some of their interest bearing securities. This disposal of bonds leads to bond prices falling while interest rate increases.

If income falls, with money supply held constant, the transactions balances held by people exceed the desired levels. The surplus balance is used to purchase securities. This leads to bond prices increasing and interest rates falling. This continues until all the surplus transactions balances are converted into speculative money balances.

NB:

- If there is an increase in real income due to expansion of economy, the monetary authority (Central Bank) should bring about an increase in interest rate by increasing money supply. This policy would have an adverse effect on investment spending and on any further increase of real income because if income increases, money supply decreases and changes in interest rate are suppressed.

- If money income increases due to an increase in the price level, the monetary authority should adopt a neutral policy of keeping the money supply fixed at old level through what is called a tight money policy. This will ensure the real money supply goes down and interest rate increases and therefore, checks/controls inflation.

The L-M Curve

It is a locus of points corresponding to the rates of interest and levels of income that produce equilibrium in (or clears) the money market.

Deriving the L – M Equation

At equilibrium $M_d = M_s$

$$M_d = M_t + M_{sp}$$

$$M_t = kY$$

$$M_{sp} = l(r) = \alpha - \beta r$$
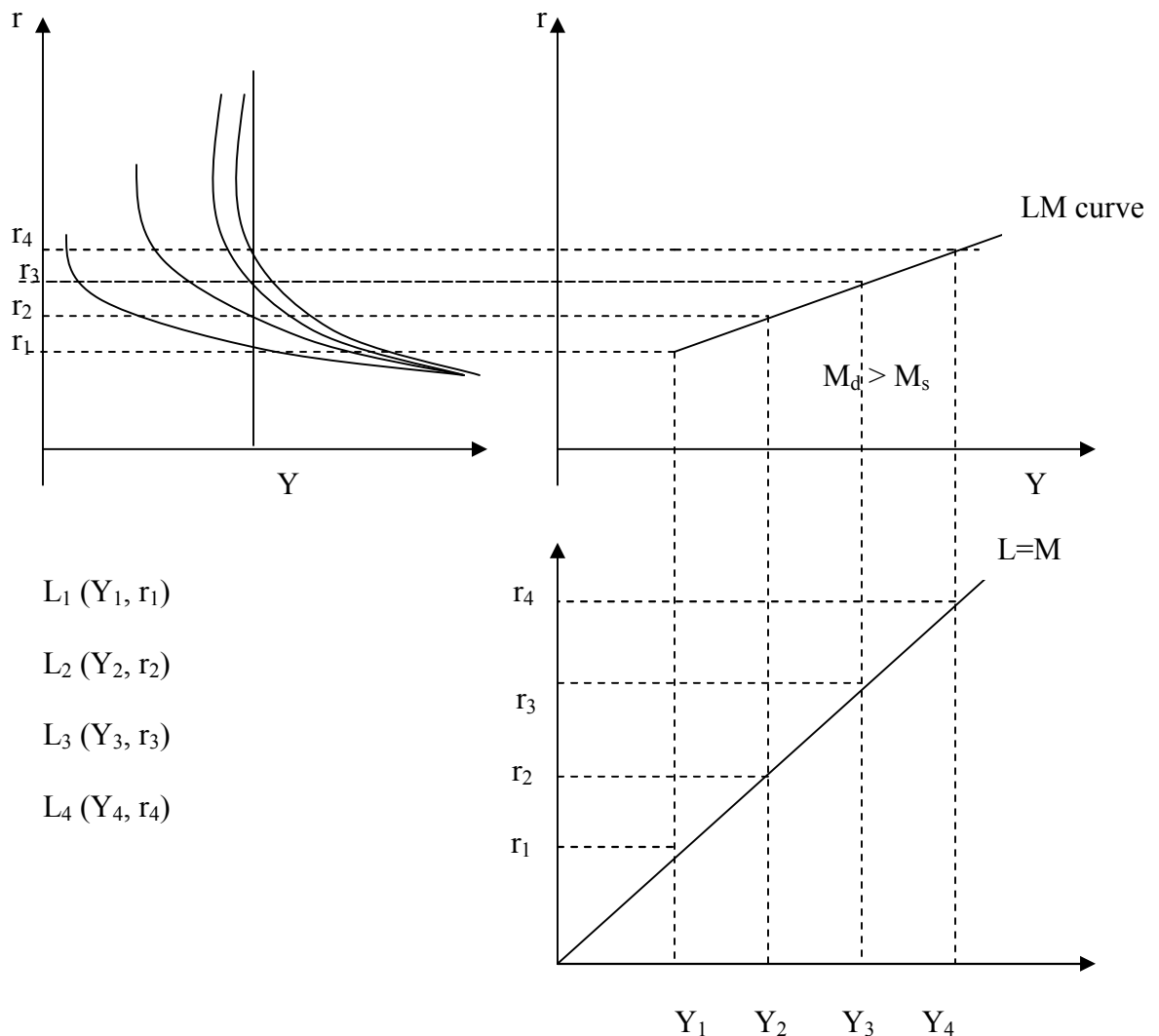
Let $M_s = \lambda$; then

$$\lambda = kY + \alpha - \beta r$$

$$\beta r = \alpha - \lambda + kY$$

$$r = \frac{\alpha - \lambda}{\beta} + \frac{k}{\beta} Y$$

This is the mathematical representation of the LM equation. It can be noted that it is upward sloping since it has a positive slope.

Graphical Derivation of the LM Curve

$L_1 (Y_1, r_1)$

$L_2 (Y_2, r_2)$

$L_3 (Y_3, r_3)$

$L_4 (Y_4, r_4)$

NB: Money supply is fixed, and income $Y_1 < Y_2 < Y_3 < Y_4$.

The positive slope of LM curve shows that with fixed money supply and rising levels of income, equilibrium in the money market is only attainable through increase in the rate of interest.

The positive slope of LM curve shows that with fixed money supply and rising levels of income, equilibrium in the money market is only attainable through increase in the rate of interest.

The general equilibrium

General equilibrium occurs when IS and LM curves intersect.
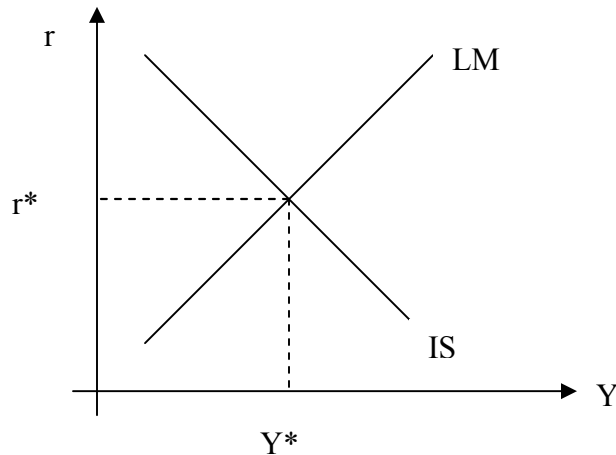
The intersection of the curves gives a unique combination of income and interest rates
(Y*, r*) that produce equilibrium in both the money and goods markets. The following
conditions are satisfied at this intersection

- Intended or planned investment is equal to savings
- the demand for goods is equal to the supply of goods in the product market (AE=Y)
- the demand for money is equal to the supply of money in the money market

Therefore both the goods market and money market clear and are stable at the given level
of interest rate and income. Anywhere else out of this point of intersection, the markets
will be in disequilibrium and there will always be a tendency to move back to
equilibrium.

Mathematically

$$LM : r = \frac{\alpha - \lambda}{\beta} + \frac{kY}{\beta}$$

$$IS; r = \frac{\alpha + I_0}{k} - \frac{(1-\beta)}{k} Y$$

At equilibrium

$$r = \frac{\alpha - \lambda}{\beta} + \frac{kY}{\beta} = \frac{\alpha + I_0}{k} - \frac{(1-\beta)}{k}Y$$

$$\frac{\alpha - \lambda}{\beta} + \frac{k}{\beta}Y = \frac{\alpha + I_0}{k} - \frac{(1-\beta)}{k}Y$$

$$\left(\frac{k}{\beta} + \frac{1-\beta}{k}\right)Y = \frac{\alpha + I_0}{k} - \frac{\alpha - \lambda}{\beta}$$

$$Y* = \frac{\dfrac{\alpha + I_0}{k} - \dfrac{\alpha - \lambda}{\beta}}{\dfrac{k}{\beta} + \dfrac{1-\beta}{k}}$$

The value of Y* obtained is then substituted into the IS or LM equation to obtain r*

Example

The following equations describe a certain economy

$C = 400 + 0.75Y^d \rightarrow consumption\ function$
$I = 200 - 100r \rightarrow Investment\ function$
$T = 70 + 0.2Y \rightarrow Tax\ function$
$G = 100 \rightarrow CGovernment\ \exp enditure$
$X = 10 \rightarrow Exports$
$M = 150 + 0.06Y \rightarrow \text{Im}\,port\ function$
$M^S = 4000 \rightarrow Money\ \sup ply$
$M^D = 0.2Y - 10r \rightarrow Money\ demand$

Required
- Derive the IS and LM equations
- Calculate the equilibrium Y, C, T, M and I

Solution

IS equation:

$$Y = C + I$$
$$Y = 400 + 0.75(Y - 70 - 0.2Y) + 200 - 100r$$
$$Y - 0.75Y + 0.15Y = 400 - 52.5 + 200 - 100r$$
$$0.10Y = 547.5 - 100r$$
$$100r = 547.5 - 0.1Y$$
$$r = 5.475 - 0.001Y \Rightarrow IS \quad equation$$

LM equation:

$$M^S = M^D$$
$$4000 = 0.2Y - 10r$$
$$10r = -4000 + 0.2Y$$
$$r = -400 + 0.02Y$$

At equilibrium LM = IS

$$-400 + 0.02Y = 5.475 - 0.001Y$$
$$0.021Y = 405.475$$
$$Y = \frac{405.475}{0.021} = 19{,}308$$

thus equilibrium $Y* = 19{,}308$

and equilibrium $r* = 5.745 - 0.001Y* = 5.745 - 0.001 \times 19308 = -13.84$

$C* = 400 + 0.75Y* = 400 + 0.75 \times 19{,}308 = 400 + 14{,}481.25 = 14{,}881$
$T* = 70 + 0.2Y* = 70 + 0.2 \times 19{,}308 = 70 + 3861.6 = 3932$
$M* = 150 + 0.06Y* = 150 + 0.06 \times 19{,}308 = 150 + 1158.48 = 1308$
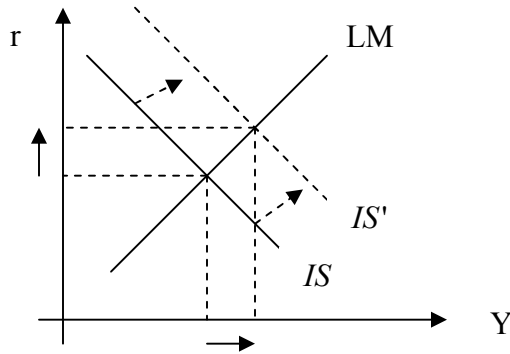$I* = 200 - 100r = 200 - 100(-13.84) = 200 + 1384 = 1584$

## Changes in the General equilibrium

Changes in the general equilibrium may result from the following

1. *An increase in aggregate Investment that increases income at each level of interest rate*
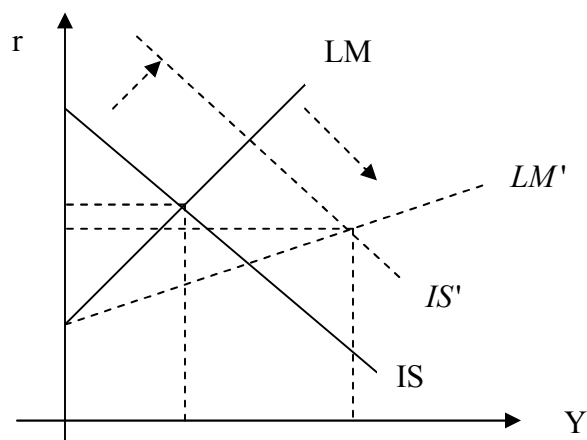

The increase in income is small because the increases in investment spending which increases the level of income raises the transactions demand for money (Mt). When this happens the interest rate actually rises.

2. *Increases in money supply. this raises the level of income and lowers interest rates*
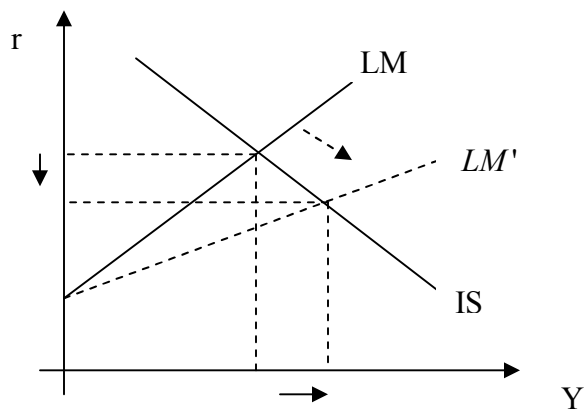
3. Simultaneous shifts in IS and LM

Where there is a simultaneous shift in LM and IS curves, the income Y will rise, but whether the interest rate r falls or rises depends on the extent of the change in Money supply

The Open Economy

The foreign sector is captured in the analysis of equilibrium through the balance of payments (BOP). *Balance of payments is a summary statement of the monetary value of the flow of economic transaction between citizens of one country and the rest of the world over a given period of time.*

BOP is made up of:

-All exports and imports of goods and services.

-All capital loans abroad and borrowing from foreign countries.

-All movements of goods and international reserves into and out of the country.

The BOP curve

BP curve is the balance of payments curve and it *shows various combinations of interest rates and levels of national income that produce equilibrium in the balance of payments at a given exchange rate*
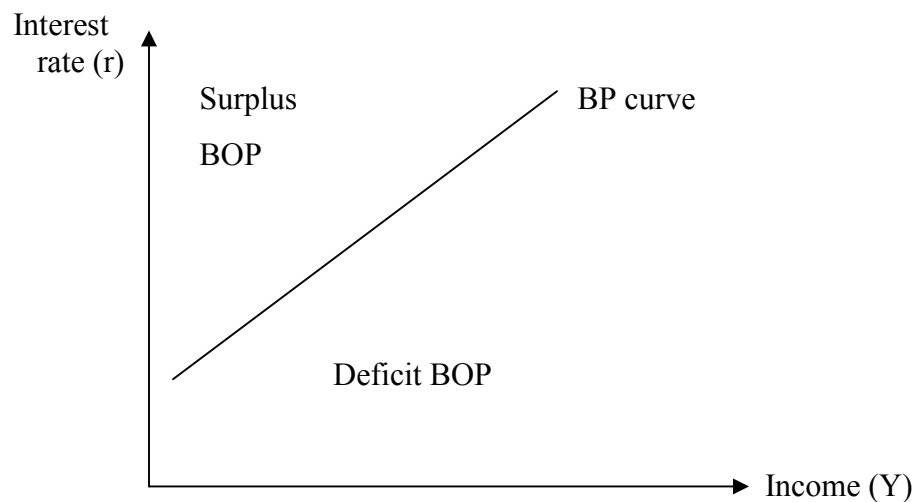
The BP curve is positively sloped because the higher the level of income, the smaller the net export balance, which can only be offset by a higher interest rate, hence reducing the net capital outflow.

- All points below and to the right of the BOP curve indicate deficits in balance of payment
- All points above and to the left of the BOP curve indicate a surplus in balance of payments

Factors that Cause Shifts in the BP Curve

1. *A change in exchange rates*. An appreciation of the exchange rate will shift the BP curve to the left. A rise in the value of the Kenyan currency makes Kenyan goods more expensive for foreign buyers and foreign goods less expensive for Kenyan buyers. As a result, exports decline and imports increase causing the BP curve to shift to the left due to decline in net export balance, and vice versa.

- For this to work, the elasticities of demand for exports and imports must according to Marshall-Lerner, exceed one. This is only likely to happen in the long-run. In the short-run. The elasticities will be low leading to a worsening in the balance of payments. This is what is referred to as the J-curve phenomenon.

- Devaluation may also fail to achieve the goal of realizing increased exports if other countries retaliate.

- If devaluation succeeds in improving the trade balance, this represents an injection of funds into the economy, which boost the level of national income. Improved normal income leads to high demand for imports, which must be checked by the government employing deflationary measures.

- Deflationary measures are necessary especially if the element is at full employment to avoid demand a pull inflation that would otherwise erode the competitive advantage gained by the country through devaluation.

- Devaluation therefore may be an appropriated policy for a country faced with a balance of payments deficit, provided the possibility of induced domestic inflation, for an economy that is close to full employment is not overlooked.

2. *A change in the ratio of domestic to foreign prices*: An increase in the ratio of domestic to foreign prices makes Kenyan goods more expensive, holding all other

factors constant. This leads to a reduction in net export balance (X – M), hence BP curve shifts to the left and vice versa.

The Extended IS – LM model

-   This model shows how the general equilibrium is determined in an open economy
-   The IS, LM and BP curves are used to determine the level of income and interest rate that simultaneously clears the goods market, the money market and the market for foreign exchange in the economy.
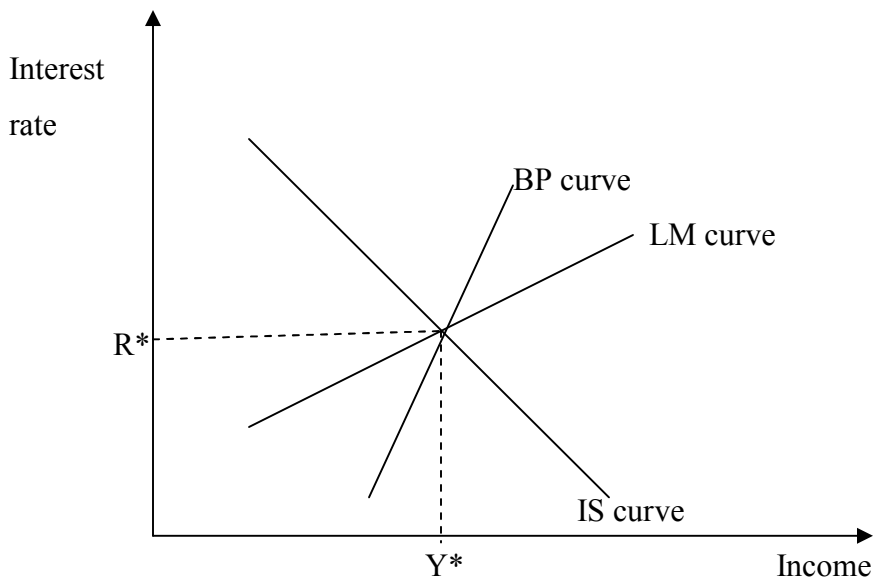
-   At R* and Y*, the product, money and foreign exchange markets are cleansing (are at equilibrium).

6. FOREIGN EXCHANGE MARKETS

Definitions

- **Exchange rate**: This is the price of one currency in terms of another currency e.g & 1 = Ksh. 80.

- **Depreciation of Domestic Currency**: Is a decline brought about by market force in the price of a domestic currency in terms of a foreign currency.

- **Devaluation of domestic currency**: Is a decline brought about by government intervention in the official price of domestic currency in terms of foreign currency.

- **Appreciation of domestic currency:** Is a rise brought about by market forces in the price of a domestic currency in terms of a foreign currency.

- **Terms of Trade**: This refers to the ratio of exchange between a country's exports and its imports

$$\text{T.O.T.} = \frac{\text{Index of value of exports}}{\text{Index of value of imports}} \times 100$$

- **Upward Revaluation of domestic currency**: Is a rise brought about by government intervention in the official price of a domestic currency in terms of foreign currency.

Exchange rate regimes

1. Fixed/flexible Exchange Rate

- Fixed exchange rate is where a country chooses a fixed value for its currency and the central bank maintains that rate by intervention in the foreign exchange market.

- The graph below shows how a country maintains exchange rate in the fixed exchange rate regime
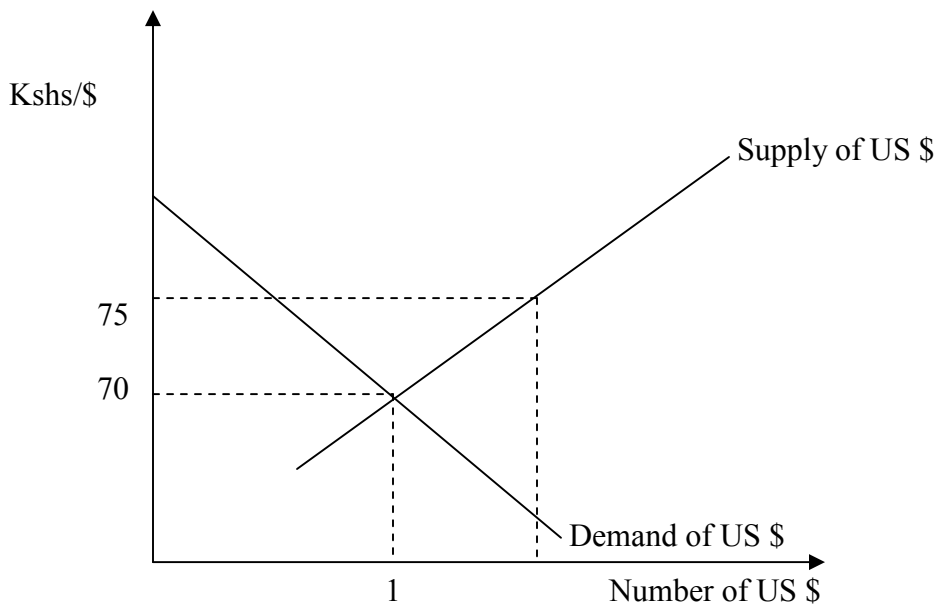
- If Kenya fixes exchange at Kshs 75 = US & 1, which is above the equilibrium exchange rate of Kshs.70/ US $ 1, there will be excess supply of dollars than demand leading to a downward pressure on the exchange rate. The exchange rate would then fall towards the equilibrium rate
- To keep the exchange rate at the fixed rate, the Kenya government would though the central Bank, buy the excess dollars.
- If the fixed exchange rate is below the equilibrium rate, the government would then sell its reserves of dollars to fill the deficit in dollar supply.
- Under a fixed exchange rate policy, the government is continuously in the market buying and selling foreign currency to stabilize the exchange rate for foreign exchange. The exchange rate under this policy is always the equilibrium rate.

The J – Curve Phenomenon
- Under a flexible exchange rate regime, market forces correct any deficit in the balance of trade, but it takes time to achieve equilibrium after an initial disturbance.
- The short-run elasticity of demand for imports and exports may be very small compared to the long-run elasticity of demand.

- The difference between the short-run and long-run elasticity of demand for imports and exports leads to what is called the J – Curve phenomenon.
- This phenomenon is defined as the short-run worsening of the balance of payments resulting to depreciation in the exchange rate.
-

Balance of Trade
(+ve)

Balance of Trade
(-ve)
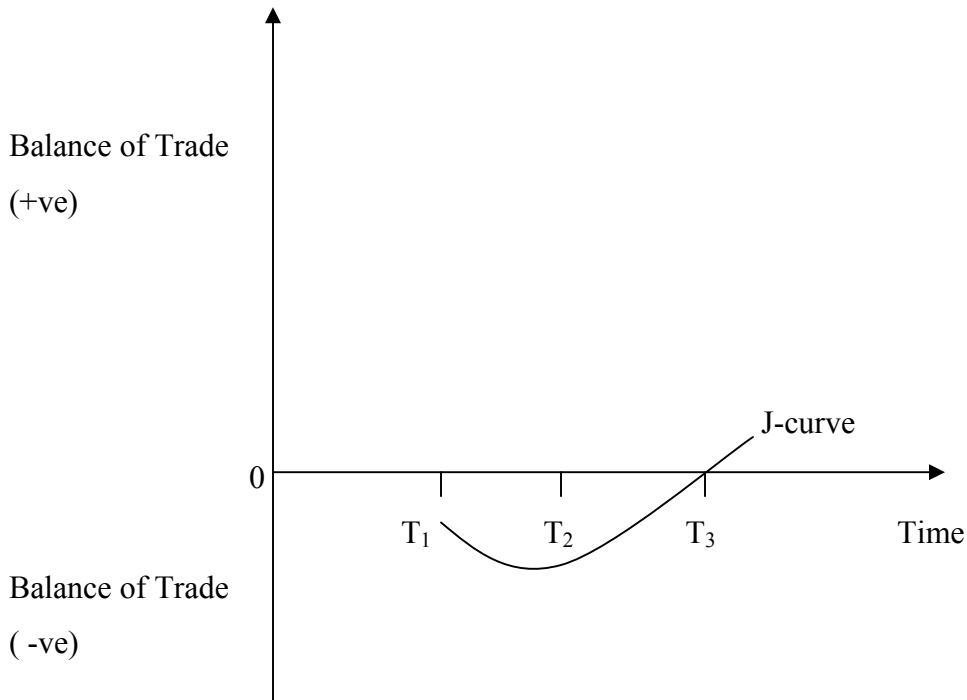
- The initial balance of payments at time T_1 , is a deficit. Under a flexible exchange rate regime, the foreign exchange market reacts to this initial deficit.
- When the shilling depreciates, it leads to an increase in the deficit between times T_1 & T_2. In the long-run, the deficit decreases until it is eventually eliminated at point T_3.
- The J – Curve phenomenon indicates that a flexible exchange rate system is not able to eliminate a balance of payment deficit in the short-run.
- Consequently, some economists recommend that the government intervenes in the foreign exchange market to prevent substantial changes in exchange rates.

Methods used to correct trade deficit

- Equilibrium in balance of payments implies that net inflow or outflow of foreign currency is zero. If the economy has a balance of payments deficit, the following measures can be instituted to correct it.

   (i)   Borrowing from abroad

   (ii)   Deplete reserves of foreign currency

   (iii)   Devaluation of currency

   (iv)   Direct controls

Effects of Devaluation of a Currency

- Devaluation makes a country's exports cheaper in terms of foreign currency and its imports more expensive in domestic currency. Suppose that Uganda shilling exchange rate is Ksh 1 – Ush. 10. A Kenyan sugar producer who sells sugar at Ksh 20 / kg. will charge Ush 200 ^{r}/kg. If the Ksh. Is devalued so that the new exchange rate is Ksh 1 – Ush 5, the sugar produces will reduce the price of sugar in Uganda to Kshs 100 and still achieve the same value of Kshs 20 in local currency.

- However, a Ugandan maize farmer who sells maize at Ush 10000 per bag would sell a bag of maize in Kenya given initial exchange) at Kshs 1000 at the new exchange rate, the same bag will be sold in Kenya at Kshs 2000.

- This is meant to increase exports and reduce imports.

7. UNEMPLOYMENT AND INFLATION
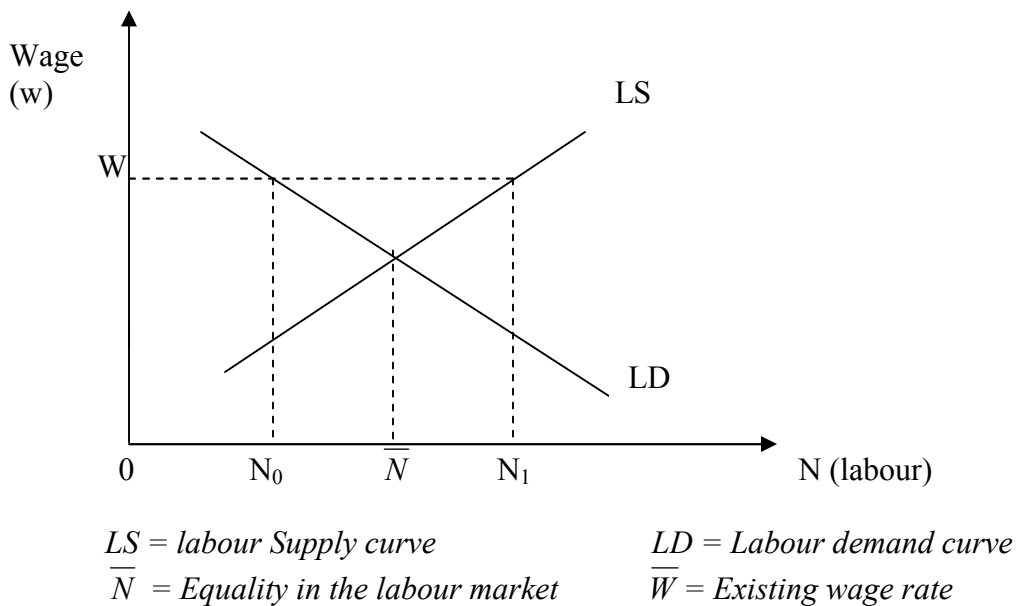
I. Unemployment

Definition

Unemployment refers to a situation where individuals that are supposed to be used in production are willing and able to be employed at the existing wage rates, but are unutilized or underutilized. Unemployment rate is computed as follows

$$\frac{Number\ \ unemployed}{Total\ \ number\ \ of\ \ workforce} \times 100$$

Types of unemployment

1. Open Involuntary Unemployment

This is where people who are not working and are able to work at the existing wage rate cannot get jobs.

LS = labour Supply curve   *LD = Labour demand curve*
$\overline{N}$ *= Equality in the labour market* $\overline{W}$ *= Existing wage rate*

From the above diagram, it can be observed that:

- People who are not working ($N_1 - N_0$) have same qualifications as those who are working (ON_0).
- Wage rate is rigid due to imperfections in the labour market, e.g. government's minimum wage rate, presence of labour unions, etc.

2. Open Voluntary Unemployment

- Is where people are able to get jobs at existing wage rate but prefer not to work.

3. Natural rate of unemployment

- This is the level of unemployment that exists when the economy is at full employment, producing its potential output.

4. Frictional Unemployment

- This is caused by the time lag involved in redeployment of labor. This land of unemployment is caused by mobility problems in the labor market, which result in friction in the labor market. This friction is either due to communication problems or mismatch between job opportunities and job seekers.

5. Seasonal Unemployment

- This arises due to the seasonal nature of some productive activities e.g. production in the agricultural sector.

6. Structural Unemployment

- Results either from change in demand occasioned by change in consumer tastes and preferences or from technological change.

7. Cyclical Unemployment

- Is caused by business cycles or swings in the economy e.g. depression and boom

8. Under-employment

- It occurs when people are working less than they would like to work. Or when people are in jobs that totally underutilize their skills and competence.

9. Disguised Unemployment

- Individuals do not want to do certain jobs because of their qualifications

10. The unemployment of Prematurely Retired

- This occurs when people are retrenched before they attain retirement age.

Causes of Unemployment

1. Lack of cooperating factors
2. rapid population growth
3. Inappropriate technology
4. Relative factor price distortions
5. The education system
6. seasonal nature of production
7. Rural urban migration

Policies for curing Unemployment

1. *Wage subsidies.* Subsidizing wages means lowering wages hence firms will employ more people.
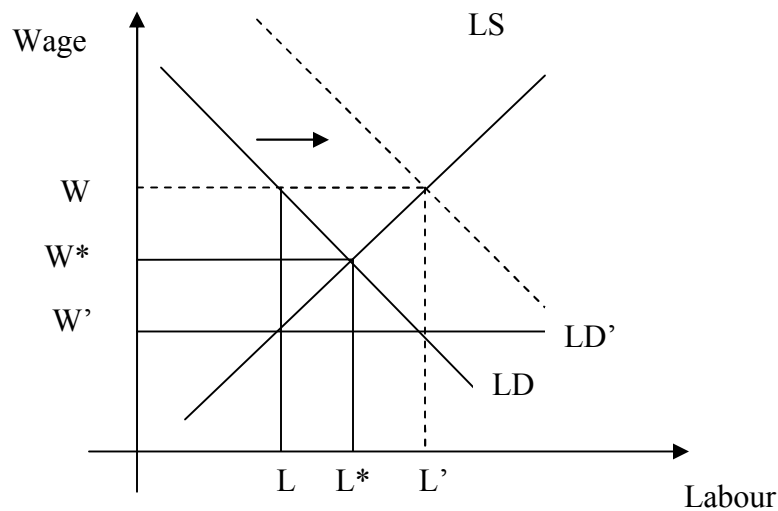
   If the wages is at W and you subsidize, you are lowering wage rates from W to W' hence employing more people

2. *Restructuring the education system* to provide more skills so that people become more productive.

3. *Increasing the number of institutions to train agricultural labour* and then subsidize capital since labour works with it

4. *Increasing incentives by changing product prices.* This raises the benefits from labour thus causes a shift in the demand for labour

5. *Import substitution*. More people will be employed in the industries that produce what the country used to import

6. *Export promotion*. This will expand output hence increase labour employment.

II. Inflation

Definitions

1. General Price level

The price level is an indicator of how or low prices are in a certain year compared to average prices in a certain base period. Given the many goods in the market, the government chooses a representative group called a market basket and calculates the cost of purchasing the items in the basket. The cost of the market basket of goods and services in the current year is then compared with the cost of the same basket in a certain base year.

2. Price Index

A price index is a number used to measure the price level. The value of the index is set at 100 in the base year or period. If the price index in a given year exceeds 100 the price level in that year is higher than it was in the base year. The reverse is true.

3. Inflation

Inflation refers to persistent increase in the general price level over time.

4. Deflation

Deflation refers to persistent downward movement in the general price level overtime for an aggregate of goods and services.

Forms of Inflation

Creeping inflation

Occurs when there is a sustained mild rise in the price level per year i.e. between one and six per cent.

Galloping inflation /hyperinflation

Occurs when there is a big increase in price
It is a situation in which prices are rising at high and unpredictable rates.

Trotting inflation
Occurs when prices increase at intermediate rates (between the two types above)

Types of Inflation

Open inflation
Occurs when there are no barriers to price rise and no government controls

Suppressed inflation
Refers to a situation where demand exceeds supply, but the effect in prices is minimized through the use of instruments like price controls and rationing of essential goods by government. The symptoms of this type of inflation include long queues, black markets and diversion of scarce resources away from essential producing industries to other industries.

Stagflation
Occurs when price increases are accompanied by declining output producing unemployment

Measurement of Inflation

Inflation is measured by:

(i) *The consumer price index (CPI)* – measures the relative changes in the prices of a specified set of market basket of consumer goods, which are bought by a typical urban household regularly.

(ii) *The producer price index (PPI)* – measures relative changes in the prices of raw materials, intermediate and finished goods i.e. at all stages of the productive process rather than at the stage of the ultimate user.

Causes of Inflation

1. Demand-pull Inflation

It arises from a situation in which aggregate demand persistently exceeds aggregate supply at current prices. In this case, the aggregate demand (C + I + G) line is too high, resulting to inflammatory pressure.
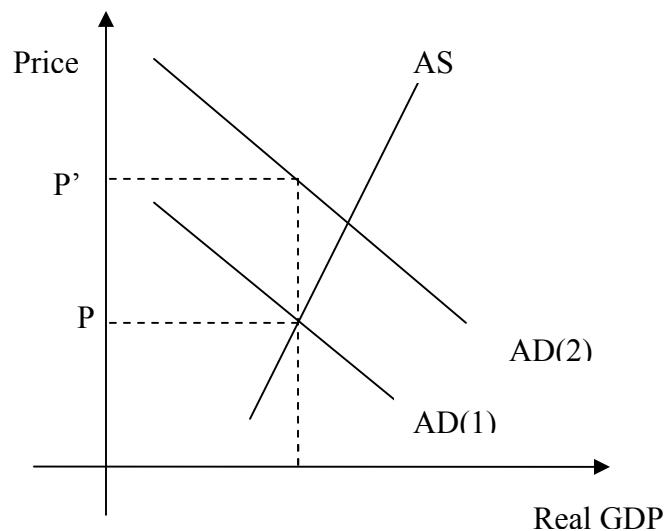
Demand-pull inflation is caused by:

(i) Increases in the level of demand for goods and services in a situation of near employment

(ii)   A general shortage of goods and services in times of disaster like floods and earthquake.

(iii) Export surplus leading to foreign currency inflows that cause increases in the money supply. These inflows become a source of inflationary pressure.

(iv)   Expansion of government spending by borrowing from the banking system where this is not marched by an increase in output.

2. Cost-Push Inflation

While GDP is below its potential level, costs are increased, perhaps because unions push up wages, and in an attempt to protect their profit margins firms push up prices. This price increases affects the cost of other firms and the consumer's cost of living. As the cost of living goes up, labourers feel entitles to, and obtains higher wages to offset the higher living costs. Firms again pass on the cost increase to the consumer in the form of a price increase. The so-called wage – price spiral is at the heart of cost-push inflation.
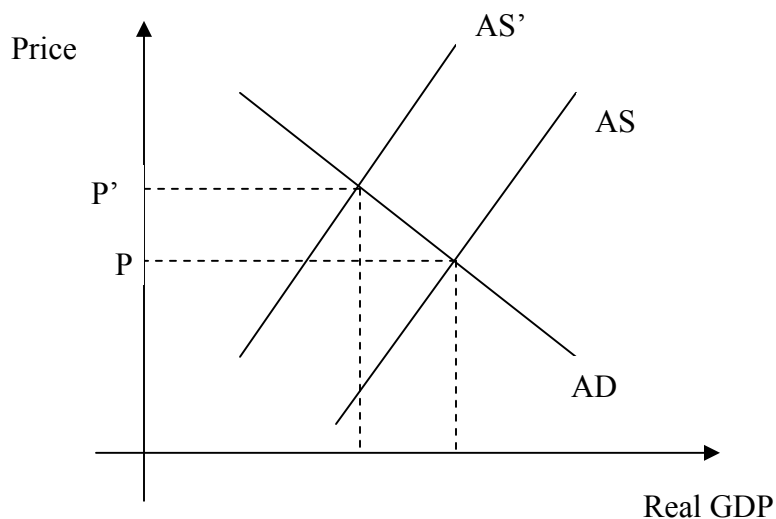
The following factors cause cost-push inflation:

(i)   Labour unions asking for higher wages without a corresponding increase in productivity.

(ii)   Manufactures fixing high profit margins

(iii) An increase in import price of an essential commodity like crude oil that leads to escalation of prices in the economy

(iv)   Government imposing new taxes of higher taxes

(v)   Structural rigidities in production that leads to increasing average costs.

Effects of Inflation

Internal Disadvantages

- Income and wealth are redistributed arbitrarily, for inflation imposes a tax on those who hold money as opposed to those holding real assets. Inflation reduces the standard of living of persons dependent on fixed incomes, for example, pensioners. It benefits debtors and penalizes lenders.

- Interest rates rise, both because people require a higher reward for lending money which is falling in value and also because the government is forced to take anti-inflationary measures.

- Investment is discouraged by government anti-inflation policy. In practice, controls imposed on prices are more effective than those on costs, particularly those on wages. The result is discouraged because postponing consumption simply means that goods cost more if bought later.

- Inflation encourages speculation by the purchase of real assets by borrowing rather than investment by the use of resources in production. Indeed inflation discourages investment in long-term projects because possible government anti-inflation policies are difficult to forecast.

- Inefficiency is encouraged because a buoyant seller' marked blunts competition as higher prices obtained for their products allow even inefficient firms to survive.

- Inflation generates industrial and social unrest since there is competition for higher incomes. Thus, because of rising prices, trade unions ask for annual wage rises. Often demands exceed the rate of inflation, anticipating future rises or seeking a larger share of the national cake to improve their members' real standard of living. Those with the most 'muscle' gain at the expense of the weaker groups.

- Additional administrative costs are incurred in offsetting go-slow and work to rule disruptions, allowing for inflation in negotiating contracts and wage rates, revising price lists and labels, among others.

- The rate of inflation tends to increase, largely because high wage settlements in anticipation of higher future price help to bring about the very rise in which people fear.

External Effects

Inflation can create serious difficulties for a country that depends on international trade. These difficulties include:

- Exports tend to decline because they are relatively dearer in foreign markets.
- Imports tend to decline because foreign goods are relatively cheaper compared to Kenyan goods.
- Higher money incomes in the economy increase the demand for imports and tend to decrease exports because the buoyant home market makes it less vital for manufacturers to seek outlets abroad for their goods.
- An outward movement of capital may take place if price rises continue since foreign traders and financiers lose confidence in the shilling maintaining its current rate of exchange.

However, a positive effect of mild demand-pull inflation is that it may lead to higher investment and therefore higher employment within the economy.

Remedies of Inflation

Fiscal and Monetary Policies

These are also known as demand management polices. They are effective especially against inflation caused by excess demand.

The fiscal policy measures include:

- A cut in government spending
- Lowering government borrowing
- An increase in taxation
- Introduction of new taxes

These measures directly reduce aggregate demand.

The monetary policy refers to actions that aim at a reduction in money supply or a reduction in its rate of growth. The measures include:

- Restricting direct lending to government

- Increasing cash or liquidity ratio requirement on commercial banks and financial institutions thereby reducing their ability to create credit.

- Rising interest rate i.e. the cost of borrowing

- Increasing the cost of overnight borrowing by commercial banks.


Prices and Incomes Policy

This type of action can take a number of forms as summarized below:

- Government exhortations to firms to avoid unjustified price rises and to unions to avoid unjustified wage claims

- The setting up of a prices and incomes board to examine proposed price increases and to contribute to collective bargaining between employers and unions.

- Bringing together of employers' and unions' organizations in an attempt to obtain some voluntary agreement from both parties to keep prices and incomes down.

- The impositions of legislation to regulate or even freeze wages and prices.

Indexation

This policy is sometimes called index linking. It works by linking economic variables for example wages, salaries, and interest payments to an index of inflation like the consumer price index. This means that as the price index rises, wages, salaries and interest payment rises simultaneously.

The Philips Curve
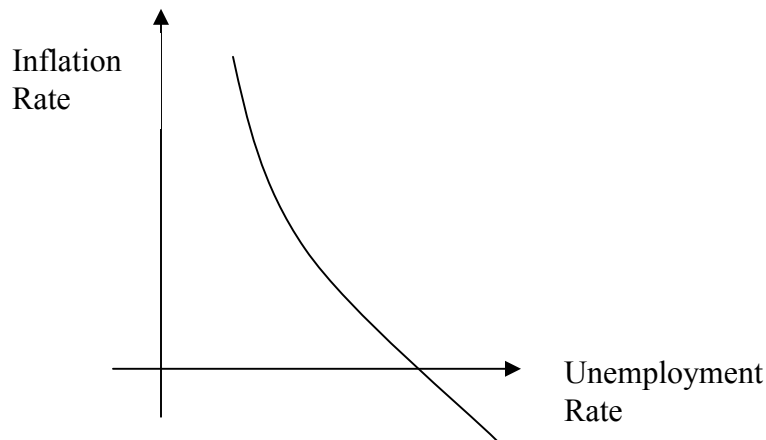
The Philips curve postulates that in general, the rate of inflation fall as unemployment rises and vice-versa.

The curve therefore shows that there is a trade-off between inflation and unemployment meaning that a lower rate of inflation could be achieved but only at the cost of higher rate of unemployment.

The Philips curve thus validates the Keynesian argument that in order to achieve full employment some level of inflation is unavoidable.