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### **IS-LM Model**

#### **Introduction**

IS-LM approach also known as Hicks Hansen approach. This model was developed by J.R Hicks in 1937 and it was extended by Alvin Hansen.

IS shows product market equilibrium (equality of investment and saving). LM shows money market equilibrium (equality of money demand and money supply)

This model basically shows how the income (Y) and rate of interest (R) determine equilibrium simultaneously in both the money and product market.

#### **Good Market equilibrium**

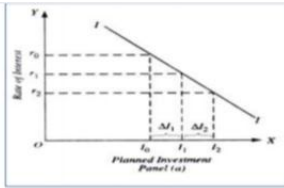
The goods market equilibrium when aggregate demand is equal to income. The aggregate demand is determined by consumption demand and investment demand. ROI is an important determinant of investments.

When the rate of interest falls the level of investment increases and vice versa. Thus, changes in rate of interest affect aggregate demand or aggregate expenditure by causing changes in the investment demand.

Thus, IS curve relates different equilibrium levels of national income with various rates of interest.

The lower the ROI, the higher will be the equilibrium level of national income. Thus, the IS curve is the locus of those combinations of rate of interest and the level of national income at which goods market is in equilibrium.

#### **Graphical explanation:**

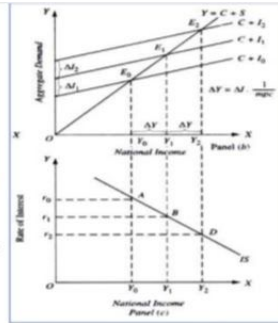


the relationship between rate of interest and planned investment is depicted by the investment demand curve II.

at rate of interest  $Or_0$ , the planned investment is equal to  $OI_0$ .

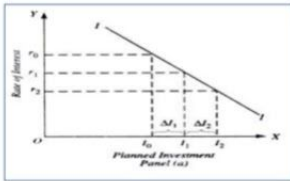
With  $OI_0$  as the amount of planned investment, the aggregate demand curve is  $C + I_0$  which, as will be seen in panel (b) equals aggregate output at  $OY_0$  level of national income.

against rate of interest  $Or_2$ , level of income equal to  $OY_0$  has been plotted.



Now, if the rate of interest falls to  $Or_2$  the planned investment by businessmen increases from  $OI_0$  to  $OI_1$

the aggregate demand curve shifts upward to the new position  $C + I_1$  in panel (b),

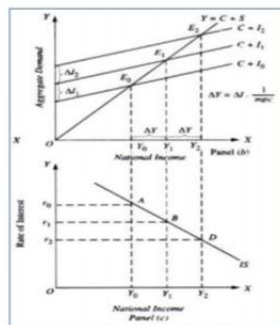


and the goods market is in equilibrium at  $OY_1$  level of national income.

the level of national income  $OY_1$  is plotted against the rate of interest,  $Or_1$ .

Similarly so on

By joining points A, B, D representing various interest-income combinations at which goods market is in equilibrium we obtain the IS Curve.



It will be observed that the IS Curve is downward sloping (i.e., has a negative slope)

which implies that when rate of interest declines, the equilibrium level of national income increases.

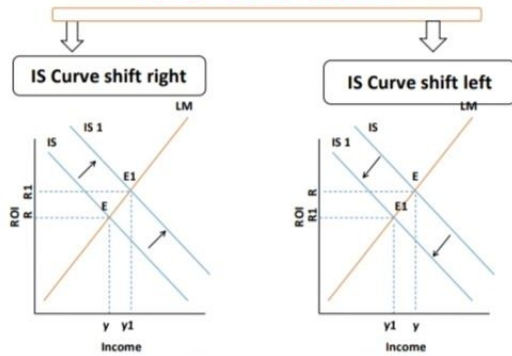
**IS curve shows investment saving relationship.**

The independent variable is interest rate and dependent variable is level of income that's why interest rate is on y-axis and income is on x-axis.

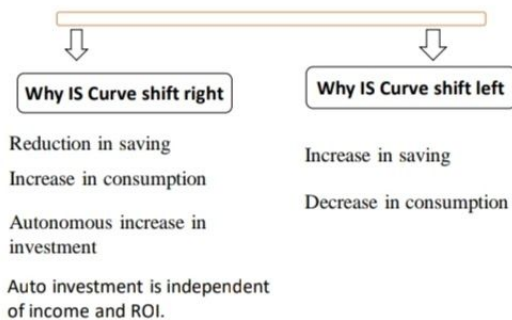
**The Slope of IS depends on:**

1. Sensitiveness(elasticity)
2. Size of multiplier

## SHIFT IN IS CURVE



## SHIFT IN IS CURVE



## Money market equilibrium

The LM curve can be derived from the Keynesian theory from its analysis of money market equilibrium.

According to Keynes, demand for money to hold depends upon **transaction motive, precaution motive and speculative motive**.

It is the money held for transaction motive which is a function of income.

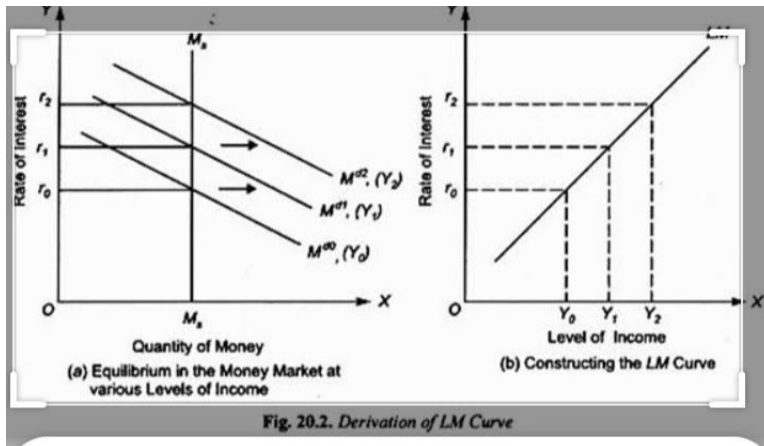
The demand for money also depends on the rate of interest which is the cost of holding money.

Thus demand for money ( $M_d$ ) can be expressed as:

$$M_d = L(Y, r)$$

The LM curve tells what the various rates of interest will be at different levels of income.

As income increases, money demand curve shifts upward and therefore the rate of interest which equals supply of money, with demand for money rises.



In the given diagram, income is on the x-axis and the level of income corresponding to the various interest rates (at y-axis) determined at those income levels through money market equilibrium by the equality of demand for money (L) and supply of money (Md)

### The slope of LM curve:

There are two factors which cause change in the slope of LM curve.

- Income elasticity of demand for money

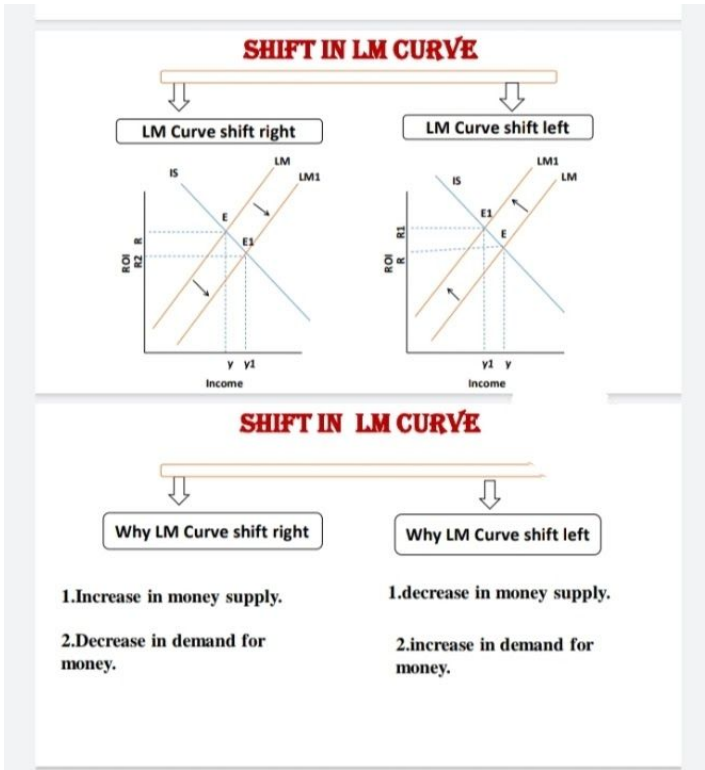
As the income increases, say from  $Y_0$  to  $Y_1$  the demand curve for money shifts from  $M^0_0$  to  $M^0_1$  i.e; with an increase in income, demand for money would increase for being held for transaction motive,  $M^d$  or  $L = f(Y)$

In the new equilibrium position, with the given stock of money supply, money held under transactions motive will increase whereas the money held for speculative motive will decline.

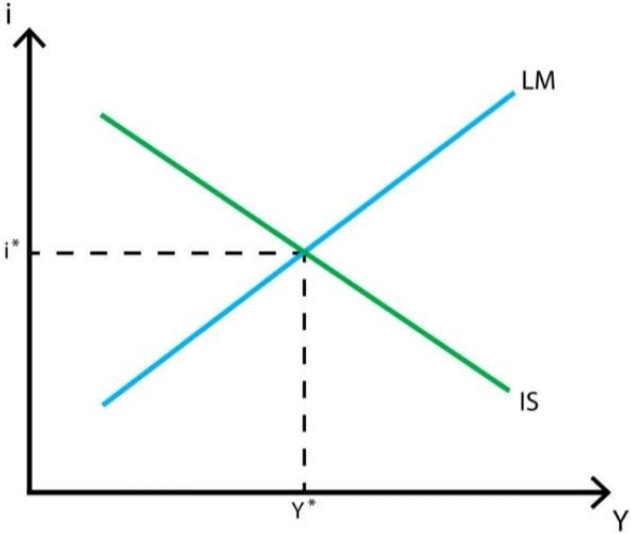
- Interest elasticity of demand for money

The second factor which determines the slope of the LM curve is the interest elasticity of demand for money. The lower the elasticity of liquidity preference for speculative motive with respect to the changes in rate of interest, the steeper will be the LM curve. On the other hand, if the elasticity of liquidity preference (money demand function) to the changes in rate of interest is high, the LM curve will be flatter or less steep.

**The LM schedule slope upward from left to right ( positively sloped)**



**Determination of equilibrium in ISLM model:**



In ISLM model, equilibrium in the both product and money market determines simultaneously with the help of ROI and level of income. In the above given graph, the point at which LM and IS schedules interest each other will be the point of equilibrium in the both market.

**Conclusion:** This analysis plays a very significant role in the macro- economics. In this model, we see that how the equilibrium determine in the two markets simultaneously. It is an extraordinary work of Hicks and Hensan.