Economics Honours

Semester IV (Intermediate Macroeconomics-II)

Demand for Money – Regressive expectation Model

The demand for money refers to the desire to hold money as an alternative to purchasing an income-earning asset like a bond. Now the question arises: if bonds earn interest and money does not, why should a person hold money? The regressive expectations model attempts to answer this question.

We know that Keynesian theory says that people hold money when they expect bond prices to fall, that is, interest rates to rise, and, thus, expect that they would gain if they wait now (that is, would incur a loss if they were to buy bonds now). 'Bonds' here represent the whole range of risky assets that exist in reality. Since different persons' estimates of whether the interest rate is likely to rise or fall — and by how much — vary widely, at any given interest rate there will be some people expecting it to rise and, thus, they would be holding money, and some people would expect interest rates to fall, and thus, would hold bonds.

According to the regressive expectations model, a bond holder has an expected return on the bond from two sources, the bond's yield — the interest payment he receives — and a potential capital gain — an increase in the price of the bond after he buys it. The bond's yield i is normally expressed as a percentage yield equal to total interest income (Y) from that bond divided by the face value of the bond. Thus

$$i = Y/P_b \ldots (1)$$

The expected percentage capital gain is the percentage increase in price from the purchase price P_b to the expected sale price P^e_b. From this we can derive the percentage capital gain:

$$g = (P^e_b - P_b)/P_b \ldots (2)$$

From equations (1) and (2), with a fixed Y on the bond, we can get an expected price P^e_b, corresponding to an expected interest rate, $i_e = Y/P^e_b$. Thus, in terms of expected and current interest rates, the capital gain can be expressed as

$$g = \frac{i}{ie} - 1 \ldots (3)$$

This is the expression for expected capital gain in terms of current and expected interest rates.

The total percentage return (earning) on a bond — denoted by e — is the sum of the market rate of interest at the time of purchase plus capital gains, e = i + g. Now if we substitute for g from equation (3), we get an expression for the total percentage return as the sum of interest yield and capital gains:

$$\mathbf{e} = i + \frac{i}{ie} - 1 \ldots (4)$$

So, we have an expected return on bonds given by e. We also know that there is zero return on money. Therefore, the asset-holder can be expected to put his entire liquid wealth into bonds, if he expects the return e to be positive. On the other hand, if the return on bonds is expected to be negative, he will put all his liquid wealth into money. So, for the individual, it is always an **'All or Nothing'** choice. However, as different persons have different expectations, the same is not true for the society as a whole. That is, we

will find that some are holding only cash, and some only bond; so that at practically each rate of interest, there is some demand for cash.

In Keynes' regressive expectations model, each person is assumed to have an expected interest rate i^e corresponding to some normal long-run average rate that is likely to prevail in the market. If actual rate rises above **his long-run expectation**, he expects them to fall, and vice versa.

Thus, his expectations are regressive. Here we assume that his expected long- run rate does not change much with changes in current market conditions.

The investor's expected interest rate $\mathbf{i^e}$, together with the actual market interest rate **i**, determines his expected percentage return **e**. On the basis of this we can compute the critical level of the market rate i_c, which would give him a net zero return on bonds, that is, the value of i that makes **e = 0.** By solving from equation (4), we get:

$$\mathbf{i_c} = 1 / \left(\frac{\mathbf{1}}{\mathbf{ie}} + 1 \right) \ldots (5),$$

or, $\mathbf{i_c} = i^e / (1 + i^e)$

where **i_c is a person's critical rate of interest for which e=0, and the person becomes indifferent between cash and bond.**

When actual $i > i_c$, we would expect him to hold all his liquid wealth in bonds. When $i < i_c$, he moves 100%, into money.

Here i_c, the critical market rate of interest that makes e = 0, is expressed as $i^e/(1 + i^e)$. This relationship between the individual's demand for real balances and the interest rate is shown in Fig. 1. Here we show the demand for real balances on the horizontal axis.

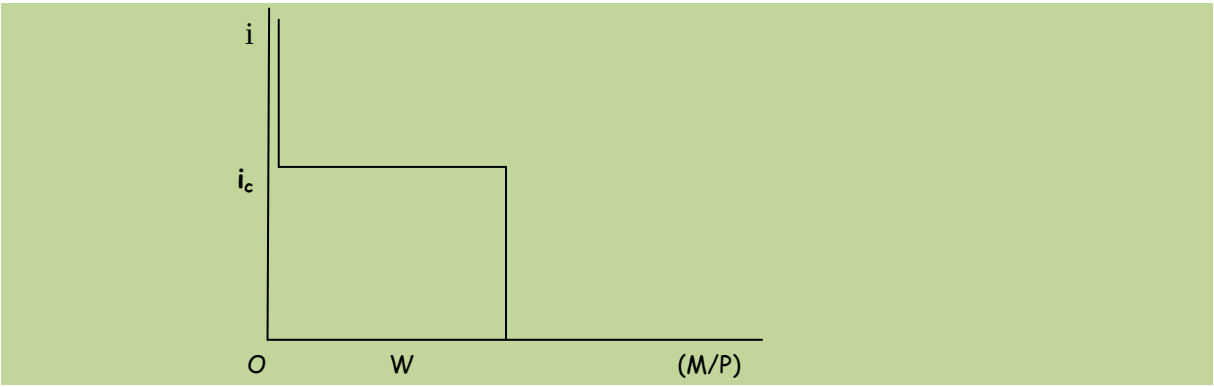

Fig 1: Relation between demand for money and interest rate (for an individual)

It is the demand for real balances, M/P, which depends on the interest rate. Since we are implicitly holding the general price level constant, changes in real balances M/P correspond to changes in M.

In Fig. 1, if i exceeds i_c, the investor puts all his W into bonds, and his demand for money is zero. As i falls below i_c — so that $e < 0$— the investor puts his entire liquid wealth (W) into cash.

This gives us the individual demand-for-money curve that looks like a step function. When i exactly equals e = 0 and the investor is indifferent between bonds and cash. At any other value of i, the investor is either 100% in money or 100% in bonds.

The individual demand curves (as in Fig. 1) can now be added up to get community demand for money. Let us locate the individual with the highest critical interest rate, i_c^{max} in Fig. 2. As the interest rate falls below that i^{max} he shifts all of his liquid wealth into money.

As the interest rate falls, more individual i_c's are crossed and more people shift from bonds to money. Ultimately, i will fall to the lowest $\mathbf{i_c}$, that is, i_c^{min} so that no one will want to put his liquid wealth into bonds, and the demand for money will equal total liquid wealth of the society, ∑W (see fig 2)

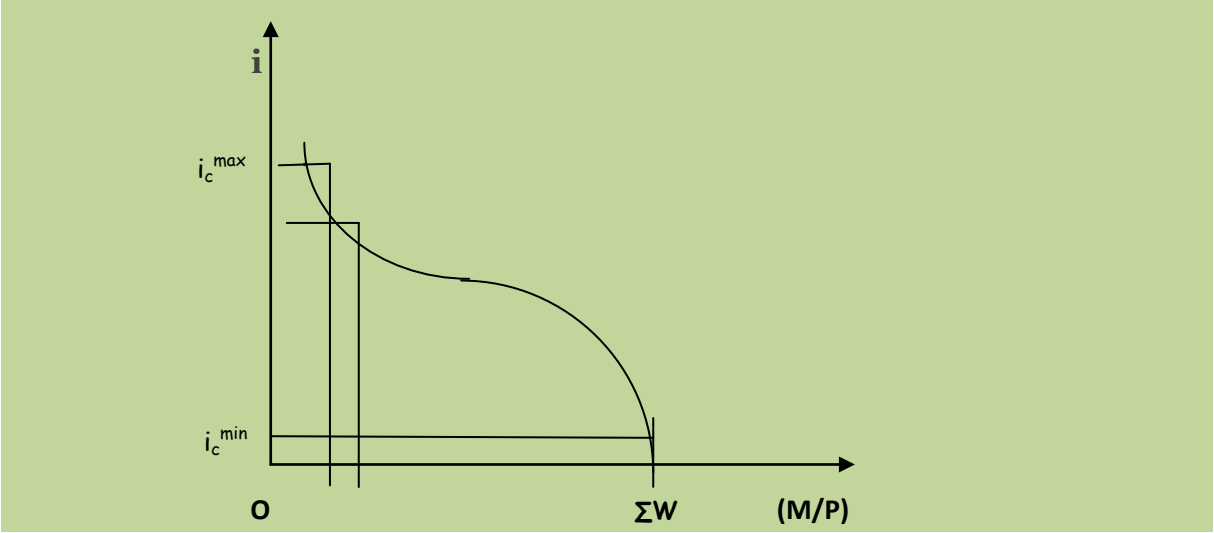

Fig 2

Thus, according to the regressive expectations model as interest rates fall, the demand for money increases. Ultimately, it attains a vertical shape at i_c^{min}

The main problem with this view is that it suggests that individuals should, at any given time, hold all their liquid assets either in money or in bonds, but not some of each. This is not consistent with real life experience.

This prediction of the regressive expectations model — that the elasticity of demand for money with respect to changes in the interest rate is increasing over time — is not supported by facts.