# How to determine rate of interest

According to monetarist approach rate of interest is determined with the help of demand for loanable fund and supply of loanable fund.

Demand for loanable fund shows the amount which borrowers are willing and able to buy at the given rate of interest in specified period of time. There is an inverse relation between rate of interest and demand for loanable fund, hence demand curve will be negatively sloped.
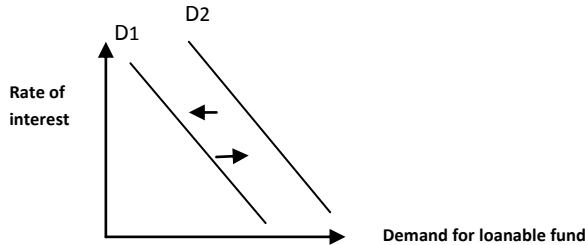
If demand for loanable fund changes due to non-interest factors, there will be a complete shift in demand curve, either rightwards or leftwards, for example business optimism may shift it rightwards and vice versa.

Individuals borrow to buy durable goods, firms borrow to expand or to buy some fixed assets like machinery as well as to bridge up income and expenditure gaps or to sort out cash flow problems. Government borrows to meet the budget deficit and even local government and authorities also borrow to meet expenditures. Usually firms and individuals consider rate of interest before borrowing but government borrows according to the policy.

Supply of loanable fund shows the amount which lenders are willing and able to lend at the given rate of interest in specified period of time. The quantity supplied is directly related to the interest rate i.e., as interest rate rises supply of loanable fund increases and vice versa.
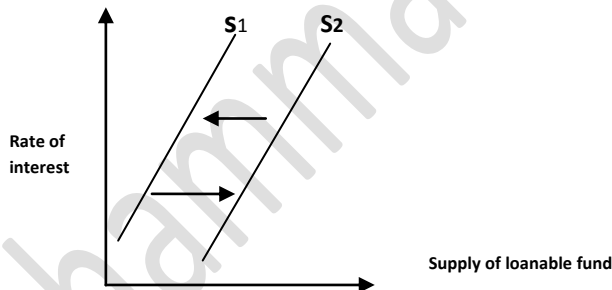
However, if supply of loanable fund increases due to non-interest factors, there will be a complete shift in supply curve, either rightwards or leftwards. For example if banks reduce their reserve ratio, supply of money will be increased and supply curve shifts rightwards.

Sources of supply of loanable funds may be in terms of individual savings, business savings in terms of retained profits and other earnings, local or federal governments' surplus budgets or increase in Federal Reserve's because of increase in money supply.

Rate of interest is determined at that point where demand for loanable fund is equal to the supply of loanable fund.


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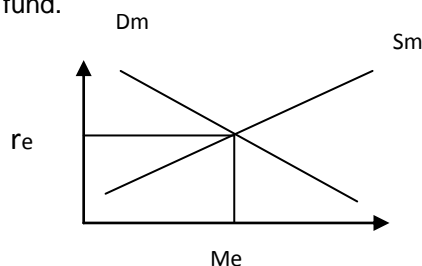
Where 'ře' stands for equilibrium interest rate and 'Me' stands for equilibrium loanable fund.

Equilibrium will be changed as there is any change occurs in non interest rate factors for demand for or supply of loanable funds. If Dm increases, rate of interest increases and vice versa and similarly as Sm increases rate of interest falls and vice versa.

Liquidity Preference Theory

According to Keynesian economics, **liquidity preference** refers to the demand for money, considered as liquidity i.e., why people prefer to hold money in liquid form. He describes three different reasons/ objectives/ motives for demand for money. These **are transactionary**, **precautionary** and **speculator**y.

According to transactionary motive households and firms hold for daily transactions. Such as, households hold money to buy groceries, food, transportation etc. Firms hold to buy raw material, pay daily wages, for petty cash etc. Demand for this objective is interest inelastic i.e., no change for this motive even rate of interest changes. However, demand changes if there is a change in income or inflation. Due to increase in income or inflation demand for this objective shifts rightwards and vice versa.
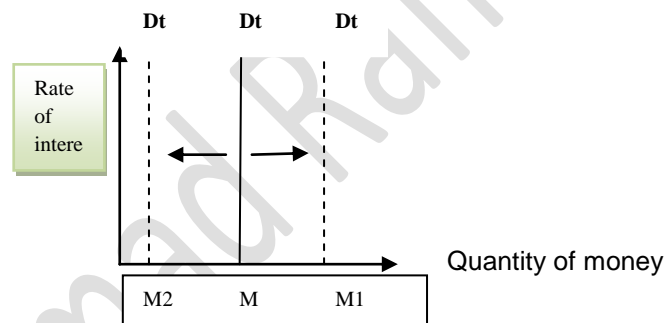

In case of precautionary motive households and firms hold for some unexpected expenditures. For example, households may hold for some unexpected guests, or for illness. Similarly firms can hold for unexpected orders or for breakdown of machinery. Demand for this objective is also interest inelastic but there is a change in holdings as income changes or due to inflation. As inflation occurs or income increases demand for this objective will be increased and demand curve shifts rightwards and vice versa. Transactionary and precautionary balances are considered as **'active balances'**.
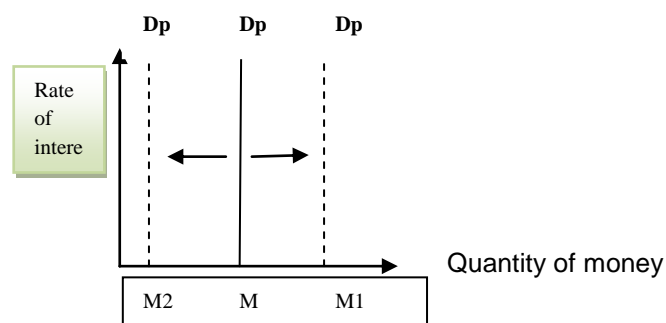

For speculatory motives people want to keep cash with them to take advantage of the changes in the prices of bonds and securities. There is an inverse relationship between rate of interest and prices of bonds and securities. Prices of bonds and securities are changed due to change in demand for or supply of bonds, whereas, interest is paid on the face value. As price of bonds exceed to its face value, actual rate of interest falls and on the other hand if price of bond is below then the face value,

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actual interest rate rises. For example, if face value of bond is $100 and interest is paid at the rate of 10% per annum. If market price of the bond increases to $200, actual interest rate will fall to 5% ($10 on $200). On the other hand, if market price of bond decreases to $50, actual interest rate will rise to 20% ($10 0n $50). This is why, when prices of bonds and securities are high speculators hold back money and wait for fall in prices of bonds and securities to earn better yield.

Demand for this objective is interest elastic i.e., as rate of interest increases, people hold less and prefer to buy bonds and as interest rate falls, there is an increase in peoples' holdings. Due to increase in income demand curve will be shifted rightward and vice versa. However, during inflation people hold more for transaction and for precautionary motive and less is left for speculatory motives, therefore demand curve shifts leftwards. Speculatory balances are called as **'idle balance'**
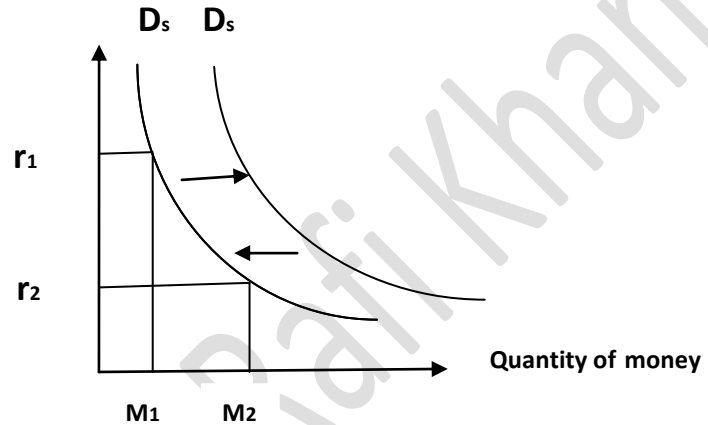
Liquidity preference curve can be drawn by adding **Dt, Dp** and **Ds.** Lower part of the liquidity preference curve is parallel to X-axis, hence it is perfectly interest elastic. Liquidity preference curve determines overall demand for money at different rates of interest in an economy in the given period of time. Any shift in any of the given motives will shift the LPC rightwards or leftwards. Rightwards shift shows an increase in demand for money and leftwards shift shows a fall in demand for money.

Supply of Money Graph

Interest rate

Sm Sm'

i
i'

Dm

0   M   M'   Quantity of money
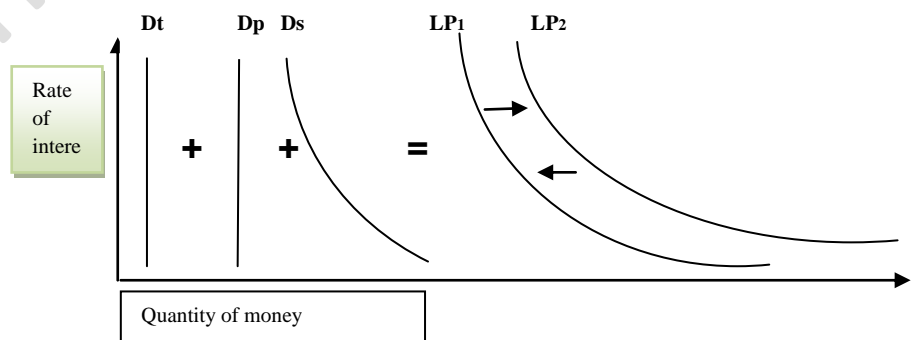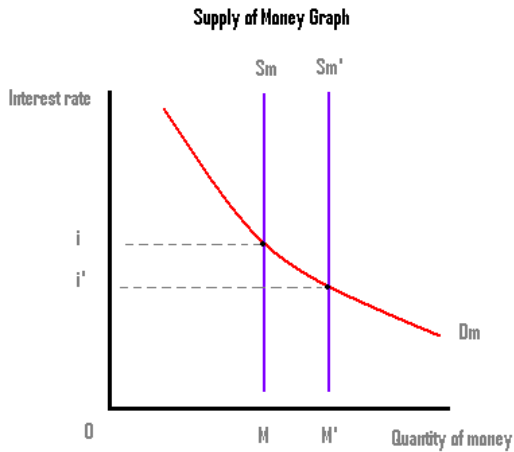
Equilibrium rate of interest is determined at that point where LPC intersect supply of money. The supply of money refers to the total quantity of money in the country. Though the supply of money is a function of the rate of interest to a certain degree, yet it is considered to be fixed by the monetary authorities. Hence the supply curve of money is taken as perfectly inelastic represented by a vertical straight line. However, if supply of money changes there is a complete shift in supply curve of money rightwards or leftwards. At the given demand for money(Dm) i.e. liquidity preference curve, if there is any change or shift in the supply of money will change the rate of interest. If supply of money(Sm) rises, rate of interest falls and if supply of money falls, there is a rise in rate

of interest.

On the other hand if there is a rightwards shift in demand curve of money, rate of interest rises but if demand for money falls, rate of interest falls too.

r_1

r_2

Quantity of money

M_1 M_2
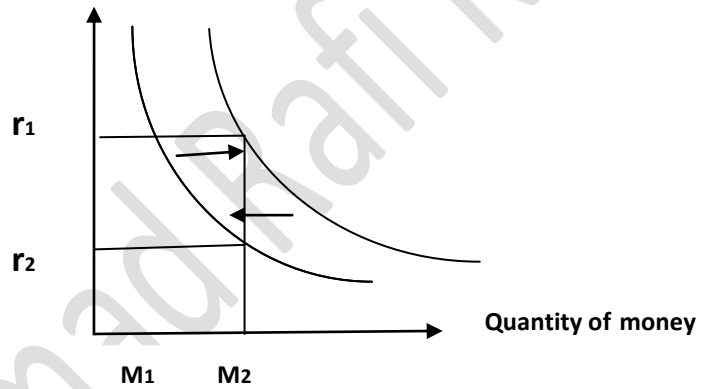
Liquidity Trap

A liquidity trap refers to the phenomenon when increased money supply fails to lower interest rates. That part of the liquidity preference curve is perfectly elastic and parallel to x-axis. At this stage interest rate is so low that people prefer to hold back money (savings) and expansionary monetary policy becomes ineffective.

Rate of Interest

Liquidity Trap

x

Demand for money is perfectly elastic

Demand for Money (Liquidity preference)

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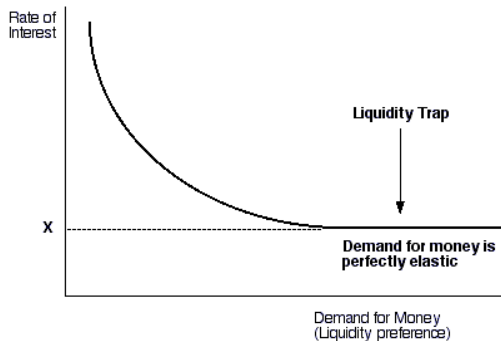
Measure of supply of money

The two aggregate are **M0 and M4**, which are useful for assessing monetary conditions at the point of time. M0 is called as 'Narrow money'. **M0** includes notes and coins in circulation plus sight deposits and bankers' operational deposits with the Central Bank. It determines the monetary base.

M4 includes M0 plus any short time deposits with the commercial banks and with building societies. It is called as 'Broad money' and it actual determines the supply of money.

What determines supply of money?

There are three factors which may determine supply of money and causes shift in supply curve. These are; Nature of the budget, if government makes deficit budget, that is, government spending exceeds tax revenue, there will be an increase in supply of money and supply curve shifts rightwards and if government makes surplus budget, supply of money falls and curve shifts leftwards. Secondly, nature of the balance of payments (BOP), in case of deficit BOP, supply of money falls and if BOP is in surplus, supply of money rises and supply curve shifts rightwards. Banking system is the third important factor to influence supply of money through its ability of credit creation. The process of credit creation occurs when commercial banks accept deposits and provide loans and advances from these deposits. When the customers deposit money with the bank, they are called primary deposits. This money will not be withdrawn immediately by them. Hence banks keeps a certain amount of deposits as reserves which is known as cash reserve ratio and provide the balance amount as loans and advances. Thus, every deposit creates a loan. Commercial banks give loans and advances against some security to the public. But the bank does not give the loan amount directly. It opens an account in the name of the borrower and deposits the amount in that account. Thus, every loan creates a deposit. The loan amount can be withdrawn by means of checks. They create deposits while lending money also. These deposits created by banks with the help of primary deposits are called derivative deposits.

Credit creation depends upon the value of 'Credit multiplier'. It is a measure of the extent to which the creation of money in the banking system causes the growth in the money supply to exceed growth in the monetary base.

$$\text{Credit Multiplier} = \frac{1}{reserve\ ratio} \textbf{ or } \frac{100}{reserve\ ratio}$$

Reserve ratio is the minimum fraction of customer deposits and notes that each commercial bank must hold as reserves. In case of high reserve ratio value of credit multiplier is low and vice versa.

Process of Credit creation

Assumptions:
  a) There is just one bank
  b) Initial deposit is $1000
  c) Reserve ratio is given and constant i.e. 20%
  d) The process must be completed in the specified period of time.

Time	Deposits	Reserves (20%)	Lending (80%)
1	$1000	$200	$800
2	$800	$160	$640
3	$640	$128	$512
4	$512	$102	-
5	-	-	-
Sum of the remaining rounds	$2048	$410	$1638

As the primary deposit is worth of $1000, which 20% ($200) is kept by the bank as reserve and rest of the amount (80% i.e. $800) is lent. Hence a new account is created. Theoretically this process will go on until nothing is left behind to lend. Since the value of the reserve ratio is 20% hence the value of

the credit multiplier is 5 **(100/reserve ratio = 100/20).** So the created money will be $5000 from the initial amount of $1000. If reserve ratio is increased to 25% than the value of multiplier will be 4 and if reserve ratio is reduces to 10% then the value of multiplier will be 10.

Limitations of the model

a) There are many banks instead of just one bank
b) Reserve ratio varies from time to time or perhaps from bank to bank
c) Borrowing from bank is a complicated and a complex process, therefore, loan is not available to all. Only those can borrow who fill certain conditions and also provide collateral securities.
d) Borrowing also depends upon economic conditions of the economy. If there is business pessimism, few are willing to borrow.
e) The whole process may not be completed in the given period of time which is quite usual; hence amount of created money will be reduced.

Balance sheet of the bank

Liabilities	$	Assets	$
Deposit in time 1	1000	Cash reserves at 20%	200
		Loan	800
Deposit in time 2	800	Cash reserves at 20%	160
		Loan	640
Deposits in time 3	640	Cash reserves at 20%	128
		Loan	512
Total	2440		2440

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