8. Money Market

17.04.24.

- Features of Money.
  - → Generaly acceptable
  - → Durable & long lasting
  - → Effortlessly recognisable
  - → Difficult to counterfeit
  - → relative scarce, but has elasticity of supply
  - → easily transported or portable.

- Money is any that serves as

1) Store of Value - which & me and use later.

2) Unit of Account :- common base of prices.

3) Medium of exchange - can be used sell or buy something from one another.

- Advantages of money:

i) You don't need to find particular person for barter, Don't need to barter for individual goods.

ii) You exchange your goods and services for a common medium of exchange

=

- People become more specialized → produce more → more demand for transaction → more demand for money
- Money holds value over time
- easily translated to price.
- widely accepted
- Demand for money is derived demand
-

Fiat Money:

- Demand for money:
  a) Transaction motive
  b) Precaution motive
  c) Speculative motive

- Determinants:

→ income, interest rate, the degree of financial innovation
→ Higher income, → higher expenditure → highe demand for money.
→ ~~Higher rate on deposits, th~~ Higher rate on deposits → highe opportunity cost for holding money → Less demand for money. → Vice-Verca
→ Financial innovations → internet banking → ATM reduces need for holding money → demand for money reduces.

Theory of Demand for money:-

1. Classical approach:-

The quantity theory of money (QTM)

→ Given by Irving Fischer of Yale University
→ 16th Century

America → Europe (flow of money) → Price level in europe ↑

→ Based on this observation, dereloped quantity theory of money in 1911

→ There is positive relationship between Price and Quantity of money

Quantity of money ↑ Price Level ↑

↳ Purchasing Power

→ Value of money & price level is inverly related

i.e P↑ value of money ↓
P↑ Value of money ↑

→ Quantity of money ↑ Price level ↑ Value of money ↓ & vice versa.

→ Irving Fisher explained relationship between Quantity of money, price level, value of money.

- Assumptions:

1. Velocity of money (v) is constant
2. Volume of transactions is constant (T)
3. Economy is at full ~~em~~ employment
4. Price is passive factor
5. Money → Medium of exchange
6. Long run.

equation of

- ~~Fisher~~ Measure of Money Supply or fishers Version / Equation of exchange / Transaction equation

$$MV = PT$$

where M → Quantity of money
V → Velocity of money
PT → Volume of Transactions
P → Avg Price level

* $\boxed{M \times V}$ = Total supply of money in eco

* $\boxed{P \times T}$ = Total demand ~~for~~ of money for transaction purpose.

$$\textcircled{M}V = \textcircled{P}T$$

Assumption → V & T are constant

→ Quantity of money & Price level → Directly related.

- Subsequently, extended the equation of exchange to include demand [Bank deposits - M'] and their Velocity (V') in the total supply of money ∴

- Expanded form of equation = $MV + M'V' = PT$

where,
M' = Total quantity of Credit money
V' = Velocity of circulation of credit money

Total supply of money = $MV + M'V'$
PT = Demand for money.

⊙ Critism

→ Fisher ~~ea~~ evaluation → Abstract
→ Based on Truism
→ Other functions of money were ignored.
→ Economy → full employment (Myth)

The Cambridge Approach.
OR Cash Balance Approach.

→ In the 1990's, cambridge economists Alfred Marshall, A.C. pigou, D.H. Robertson, and John Maynard Keynes further extended the theory.

→ Value of money is decided by Demand & Supply of money.

→ Also considered money as store of value.

→ People hold their nominal income for future use.

→ k → portion of nominal income held in the form of cash balance.

A Cambridge Equation

$$Md = kPY$$

where Md = Demand for money
k = Portion of money that people want to hold in cash.
P → Avg. price level
Y → Real national income.

- Equilibrium:

Demand for money = Money Supply

$$Md = M \quad \text{—} ①$$

$$Md = kPY \quad \text{—} ②$$

From ① and ② $\boxed{M = kPY}$

☐ The Keynesian Theory of Money Demand

→ Keynes theory is also known as Liquidity preference theory.

People's desire to hold money rather than securities.

→ **Liquidity Preference** - a term was coined by John Maynard Keynes in his masterpiece "The General Theory of Employment, Interest & Money". (1936)

- According to keynes, People hold money in cash for 3 motives:

(a) Transaction motive
(b) Precautionery motive
(c) Speculative motive

(a) Transaction motive :- i) The need for holding cash for personal & business exchange.

ii) The transaction demand for money is directly related to the level of income

$$L_T = k y$$

L_T → Transaction demand for money
k → ratio of earnings kept for transaction purpose
Y → earnings.

→ Keynes considered agregate demand for transaction purposes as the sum of individual demand and therefore, the aggregate transaction demand for money is function of National Income

(b) The Precautionery Motive

→ Many unforseen and unpredictable condingencies involving money payment occur in day to day life. Individuals and businesses keep portion of their income to finance such unanticipated expenditure.

→ The precautionery demand for money depends on the size of income, prevailing economic as well as political conditions and personel characteristics of the individual such as optimism/pessimism farsightedness, etc.

(c) Speculative demand for money.

The speculative motive reflects people desire to hold cash to be equiped to exploit any attractive investment opportunity requiring cash expenditure.

According to Keynes, people demanded to hold money balances to take advantage of future ~~advantages~~ changes in the rate of intrest, which is same as future changes in bond price.

The market value of bonds and interest rate of market are inversely related.

Market ROI ↑ Market Value of bond ↓
& Vice Verca.

Generally investors have a relatively fixed concept of normal and critical interest rate and compare the current rate of interest with such normal and critical int rate.

and for money depends on
prevailing economic as well
and personal characteristi-
such as optimism/pessimism

or money.

tive reflects people desire
equiped to exploit any
opportunity requiring cash

nes, people demanded to hold
take advantage of future ~~advanta-~~
e rate of intrest, which is
hanges in bond price.

of bonds and interest rate of
ely related.

Market Value of bond ↓
& Vice Verca.

rs have a relatively fixed
nal and critical interest rate
e current rate of interest with
nd critical int rate.

→ If wealth holders considered the current Int rate as low compared to Normal Int rate, Investors expect ~~accept~~ the current int rates to rise in near future (Bond prices to fall). The investors would prefer to hold wealth in liquid cash rather than bonds, Because

- ⊙ The loss suffered by way of interest foregone is ~~a~~ samall.
- ⊙ They can avoid capital loss that would result from anticipated increase in Int rates.
- ⊙ Return on money Balances > Return on Alternative assets.
- ⊙ If the int rate does ~~not~~ rise in future, the bond prices will fall and idle cash balances held can be used to buy bonds at lower prices & can therefore make capital gain.

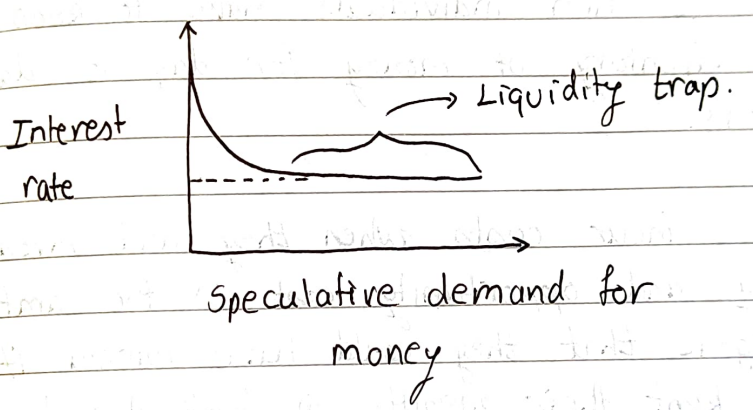
→ As long as current rate on Int is higher than critical rate of Int, a typical wealth holder would hold his asset ~~portfot~~ portfolio only govt. bonds, and if current rate of Int is lower than critical rate of Int, his asset portfolio would consist in cash.

→ If Current rate of Int = Critical rate of Int a weath holder is ~~indi~~ indifferent to holding either cash or bonds.

→ from all this, Demand for speculative money & int are inversely related.

- Liquidity trap

A liquidity trap occurs when int rates are very low and people th prefer holding cash rather than investing or spending. So, speculative demand for money becomes intact.



- Inventory Approach to Transaction Balance

→ This theory was given by Baumol and Tobin
→ This was also known as Inventory Theoretic Approach.

→ This model assumes that ~~or~~ there are two models to store value:

⊙ Money
• Int bearing alternative asset.

→ There are fixed costs of making transfers between money & alternative assets (broker charges)

→ Baumol put forward a new approach to demand for demand for money which explains the transaction demand for money from view point of Inventory management. Baumol asserts that individual holds money. (inventory for money for transaction purpose).

→ According to him individuals have to keep optimum inventory of money for day to day to transactions.

→ They also incur costs when they hold inventories of money and opportunity cost is the amt of int. foregone that they could have earned if they ~~tha~~ had kept their wealth in bank deposits or would have invested in bonds or shares.

→ Money that people hold in the form of currencies are very safe and give no int.

→ While bonds or shares provide returns but are very risky and may involve capital loss.

→ But saving deposits in banks is quite safe and risk free and earns some int as well.

→ Baumol and Tobin proclaim that transactions demand for money depends on ROI on saving deposits.

→ ROI ↑ → People will hold less money in the form of currency and vice versa. So, individuals must compare the costs and benefits of funds in the form of money with no int to that of money in the form of savings deposits with some int.

ransactions demand
saving deposits.

y in the form of
So, individuals
enefits of funds
int to that of
s deposits with

- According to Baumol

→ $C = \sqrt{2bY/r}$ → Square root rule

C → Avg amt of cash withdrawal ~~when~~ which minimizes cost

b → Broker's fee
Y → Size of income of individual.
r → Int rate

→ The Inventory Theoretic approach suggests that demand for money & bonds depends upon cost of making a transfer between money & bonds (Broker fees)

→ ↑ Brokerage fees → ↑ MC of Bond market transaction and consequently lowers the no. of such —//—.

→ ↑ Brokerage fees → ↑ Transaction demand for money and lowers the avg. bond holding over the period.

Freidman's Restatement of Quantity Theory

→ Milton freidman (1956) extended Keynes Speculative money demand theory within the framework of asset price theory.

- According to Freidman

→ It is the permanant income that determines the demand for money (Not the current income)

→ Permanent income is the present expected value of future incomes

→ Money is good as any other durable consumption good and its demand is a function of many factors. i.e. Total wealth, Price level, opportunity costs of money holdings and inflation.

- Freidman identifies 4 determinants of demand for money :-

i) is a function of Total wealth

Total wealth = $\frac{\text{Permanent income}}{\text{Discount rate}}$

ii) Total wealth is defined as the avg return on first asset classes namely, b money, bonds, equity, physical ~~capti~~ e capital and human capital.

iii) is positively related to price level, P.

iv) rises if opportunity cost of money holdings decline and vice verca.

iv) is influenced by inflation rate, a positive inflation rate reduces the real value of money balances, thereby increasing the opportunity cost of money holding.

The Demand for money as behavior towards risk.

→ James Tobin, an American economist, in his analysis makes a valid assumption that people prefer more wealth to less.

→ According to him, an investor is faced with a ~~pb~~ problem

what proportion of his portfolio of financial assets

- (earns no int) should be in the form of money ready
- Investment (which earns no int) → bonds

→ According to Tobin ~~and~~ individual should prefer combination of safe and risky assets so that risk is diversified by holding a balanced combination of safe and risky assets.

→ According to prefer Tobin an individual's behaviour shows risk aversion, which means they prefer less risk to more risk at a given rate of return.

→ If a individual chooses to posses greater ~~sh~~ proportion of risky ~~sh~~ assets such as bonds and shares in his portfolio, then he will be earning higher avg. return but will be bear higher degree of risk.

→ Tobin argues that individual who ~~h~~ is risk ~~tat~~ overtaker will not choose such portfolio with risky bonds or greater proportion of them.

→ An individual who wants to take zero risk will get no return.

→ Thus, people would prefer to have diversified portfolio of money, bonds & shares, with each person opting for little different balance between risk & return.

o <u>Tobin's Liquidity preference function</u>

→ Tobin derived his ~~tid~~ liquidity prefenence function showing the ~~t~~ relationship between rate of int. and demand for money.

→ At higher rate of int, demand for holding money will be less and people will hold more bonds in their portfolio & vice verca.

* Unit - 2 : The Concept of Money Supply

- Money Supply:

Total quantity of money available for people in economy.

Includes
- Eco. units
  - Households
  - firms
- Institutions
  - → Local authorities
  - → ~~NBFI's~~ NBFI's
  - → IMF holding Indin money

Excludes → Producers of money (Govt. and banking system)

↱ No time dimension

→ Supply of money is stock variable
↳ Measured at point of time

→ Stock of money with public is less than stock of money consisting in entire economy.

Rationale of Measuring money supply:

→ for assesing economic condition and formulating monetary policy.

→ It helps central banks to understand the overall liquidity in eco., track inflation & oter risks.

→ Usefull for policy makers.

Sources of money supply:

Central bank

Commercial Bank (Banking system)

→ In all countries, central banks are prime source of money supply, known as high powered money or fiat money.

→ The currency issued by the central bank is fiat money and is backed by supporting reserves and its value is gar guaranteed by govt.

Min. Reserves system

→ Curreny issued by central bank is liability of central bank and govt.

→ Under min. reserve system Central govt. is empowered by to issue currency at any extent by keeping only a certain min reserve of gold and foreign exchange reserves.

→ The second major source of money supply is the banking system. (Credit money)

→ Banks creates money supply in the process of borrowings and lending transactions with the public. Money so created by commercial banks is called credit money.

→ The High powered money and credit money constitute the measure of money supply or total money supply of country.

→ The concept of money has experienced evolution from commodity currency to metallic currency to paper to digital.

→ CBDC (central bank Digital Currency) → Legal tender issued by central bank in digi. form. CBDC's are accepted as medium of payment, legal tender and safe store of value.

→ CBDC's appear as liability on Central banks balance sheet.

→ The crypto currencies and digi currencies not issued and regulated by central authority. (for eg: Bitcoin). These currencies are not considered or ~~re~~ recognized as money.

→ In India, RBI has said that banks or other financial institutions cannot cite RBI's 2018 order that barred them from dealing with virtual crypto currencies.

◦ Measurement of money supply

→ There are various ways to measure money supply.
→ The measures of money supply vary from country to country, from time to time and purpose to purpose.

◉ Money Supply measurment in ~~th~~ India.

→ Till 1967-68, RBI published a single measure of money supply (i.e. Narrow measures of money supply)

→ Money Supply = Currency with public + Demand deposit held by public

→ from 1967-68, a broader measure of money supply called Aggregate Monetary resources (AMR) was additionaly published.

→ from April 1977, on Recommendation of Second working group (SWG) - 4 measures were published - M_1, M_2, M_3, M_4

- M_1 = Currency notes and coins with the people + demand deposits with banking system (current & saving deposits) + other deposits with RBI

- M_2 = M_1 + Saving deposits with Banking system

- M_3 = M_1 + Time deposits with banking system

- M_4 = M_3 + Total deposits with post office saving organization (Excluding NSC)
  ↳ National Saving certificate

⊙ Money Multiplier

→ The money created by RBI is the monetary base of India known as high powered money. Banks create money by making loans.

→ A one rupee increase in monetary base causes the money supply to increase by more than one rupee. The increase in money supply is money multiplier.

→ Money Multiplier (m) = Money supply / Monetary base

for eg: An injection of ₹100 cr through open market operations by RBI, leads to an increament of ₹500 cr of final money supply.

$m = 5$

$\frac{500}{100} = 5$

- Assumptions:

→ Banks never hold excess reserve
→ Individuals and non-bank corporations never hold currency.

① Determination of money multiplier.

→ Money multiplier is ~~ratio of~~ reciprocal of reserve ratio.

money multiplier = $\frac{1}{R}$ → Reserve Ratio